

THE  
AMERICAN  
LILY  
YEAR BOOK



The American Horticultural Society  
1939

THE  
AMERICAN  
LILY  
YEAR BOOK

The American Horticultural Society  
1939



## CONTENTS

Foreword .....	1
Practical Considerations in the Control of Lily Mosaic.	
L. H. MACDANIELS	2
The Lilies at Foxden, HELEN M. FOX .....	14
Work of the Lily Committee of the Garden Club of Virginia .....	53
Lilies from Seed and Scales in a Virginia Garden.	
ESTHER AYER MILLNER	55
Pictures for Beginners .....	57
Successes and Failures with Lilies, EDWIN C. POWELL .....	62
A Yellow <i>Lilium Superbum</i> and a Few Other <i>Liliums</i> . MARY G. HENRY	67
Hybrid Lilies. FORMAN T. McLEAN .....	76
Do We Consider the Lily? VIOLET NILES WALKER .....	79
Lily Experiences in an Indiana Garden. LAURA J. PAXTON .....	81
Lily Field Day .....	85
Second Annual Lily Show, Garden Club of Virginia .....	87
Short Pieces and Comment:	
<i>Lilium Brownii</i> . HELEN M. FOX .....	89
<i>Lilium</i> $\times$ <i>Scottiae</i> . HELEN M. FOX .....	92
<i>Lilium michiganense</i> . HELEN M. FOX .....	94
<i>Lilium rubellum</i> . HELEN M. FOX .....	95
From Connecticut. LUCILLE WIEDMANN .....	95
From California. ANDREA AMES .....	96
Candidum Lilies and Botrytis. LUCY L. SLAUGHTER .....	97
From North Carolina. VIRGINIA S. CREIGHTON .....	97
Lilies in Books .....	97
Lily Projects in Governmental Research .....	101
The Last Pictures .....	104
Directory .....	104





*Lilium giganteum*

*Growing in the Garden of the Late Mr. T. A. Havemeyer*



## Foreword

If it were conceivable that there could be an amateur gardener who had never seen nor heard of a lily until this year 1939 and who, upon discovering them, resorted to the nearest library to find out what he might as to their culture, if these paradoxes might occur, what would he find?

Assuming that he had catalogues for perusal in his library, he would discover that he had over 150 species and varieties offered to him as bulbs and at least 75 species and varieties offered as seeds. He would discover, of course, that these catalogues ranged through many fields of nursery endeavor from the slender list of the specialist through the general nursery list with special bulb sections to the de luxe dealer who is almost a propagandist and finally to some special lists intended chiefly for the use of florists who grow forced lilies. He would discover that some dealers claim to raise all their own stock, that some say nothing as to production and that some are frankly importers with Japan and the Netherlands the chief countries of origin.

He would discover that there is a special vocabulary of terms that appears and reappears through lily literature so that he must consult the special lily books, botanical on the one hand and horticultural on the other.

He would discover also that there is a vast literature on the ills that beset the lily in cultivation and if he read this to the full he might even conclude that he must become an interne rather than a horticulturist as far as lilies are concerned.

If he turned to botanical texts he would discover that some lilies have been in cultivation for a long time and that there have been various peaks of lily enthusiasm recorded in garden periodicals, each wave being more or less closely associated with the introduction into cultivation of some species hitherto unknown. He would find a changing conception of the organization and relationships within the genus and the comments that attach in later years to the genera *Fritillaria* and *Nomocharis* which come most close to the genus *Lilium*. He would discover the simplest of handbooks and the most magnificent of folios with gorgeous colored plates of various lilies in life size reproductions. He would discover also a vast collection of smaller works, often technical papers some of them detailing experiments of interest to the amateur grower, others only to fellow scientists and investigators.

He may, after his period in the library, this hypothetical gardener of ours, fall into a dreary study as to whether or not lilies are worth the probable troubles that lie ahead. It is just as probable, however, that he will decide either by himself or under the compulsion of some other gardener, to hazard the task and embark upon his own cycle of success and defeat.

It is to be hoped, of course, that he will find a philosophic middle course, choosing some first lilies that are rarely subject to the most insidious of diseases and supplement these with a seed frame and a clinical tent. The first of these two adjuncts will thrill him and the latter will entertain his family and friends. With this start, he may safely continue until he shall have seen what he wants to see and find out for himself that some of the lilies are scarcely worth the trouble for maintaining their health.



# Practical Considerations in the Control of Lily Mosaic

L. H. MACDANIELS

Certainly one of the important problems encountered in growing lilies in the garden is the loss or stunting of plants by the mosaic disease. Although mosaic or virus diseases have long been recognized as important problems with other horticultural crops, notably tobacco, potatoes and raspberries, definite knowledge of the virus diseases of lilies has been acquired only during the past decade and is yet far from complete. Like anything strange or new to the gardener, it tends to be emphasized perhaps out of proportion to its importance, as compared to other diseases, such as blight (*Botrytis*), various bulb rots, and damage done by some bulb pests. Not that the seriousness of mosaic as a garden problem should be minimized, but rather it should be pointed out that with accurate knowledge of the nature of any disease comes the ability to work out a control program which should become increasingly effective as information is spread among gardeners and nurserymen and adequate inspection of commercial stocks and effective regulatory measures are established. There is every reason to expect that eventually a program of control can be worked out for lily mosaic that will enable the commercial and amateur grower to "live with" the disease in the same way that the potato and raspberry growers are able to carry on. How soon such a control program can be made operative will depend on how soon adequate knowledge of effective control measures can be worked out by technical research and how rapidly these can be made operative in the whole situation. Obviously one of the most useful lines to be followed by the lily committee is to foster research and spread information looking toward nursery inspection and improved garden and nursery practice.

The exact nature of the lily mosaic disease is a matter concerning which there is some difference of opinion. During the past twenty years various explanations have had their vogue. At the present time it is generally agreed that a virus or mosaic disease is not associated with any causal organism such as a fungus or with bacteria. The trend is toward the acceptance of the theory that the disease is caused by the presence in the plant tissue of a very complex protein which is capable of reproducing itself and the presence of which causes certain symptoms to appear in the affected plant. Once a plant has become infected, it does not recover and will remain as a source of infection as long as it lives.

There is evidence to show that there are several different kinds of mosaic affecting lilies and producing different symptoms. This is to be expected when it is considered that other plants, as for example the raspberries, are affected by several distinct types of virus, producing symptoms of different degrees of severity. The range of host plants of any given virus may be large. Just what plants may carry the lily mosaic is as yet undetermined.

These other hosts are probably not too important as a garden problem, though they may be.

Mosaic diseases are spread from plant to plant by insects that pierce the tissues of the diseased plants, become infected with the virus, and then transmit the virus to other healthy plants by feeding on them. The disease can also be spread by mechanical means by which crushed diseased tissues come in contact with abrasions on healthy plants. Fortunately for the gardener the lily mosaic is not spread so easily by mechanical means as is the tobacco mosaic, for example, with which extreme precautions have to be taken. According to the early research on lily mosaic, the spread is caused chiefly by the melon aphid (*Aphis gossypiae* Glover (1)) which is widely distributed throughout the region where lilies are grown. Judging from other mosaics it is highly probable that there are other insects that will spread the virus, but this has not been definitely established.

From the nature of the case, it is obvious that the rate of spread of lily virus will depend in large part upon the prevalence of the insect carriers, the number of diseased plants, and the distance between them and the healthy plants. The same situation exists with other mosaics and it is well recognized that some localities are more favorable for growing certain crops than others because of the differences in aphid population. With lilies, observations indicate that spread of mosaic is relatively less in the North, and increases toward the South, where greater heat and longer seasons favor the build-up of large numbers of aphids. Obviously, too, spraying to control aphids is a practical consideration in the control of the spread of mosaic.

The symptoms of mosaic vary widely according to the species or even the clone of lily concerned, the time infection takes place relative to the stage of growth of the plant, and various environmental factors as for example temperature. I have had more than a dozen clones of *L. candidum* at one time or another. In some of these mosaic infection caused severe distortion of the blossoms. In others only an indistinct mottling resulted. It must be admitted that these differences might have been the result of different strains of virus upon the plants rather than different reactions of different clones to the same virus. The fact that the different clones were growing close together would support the latter interpretation. The specific virus concerned is also a factor, as is the case with other genera of plants.

The most obvious symptoms shown by a large number of species are a mottling of the leaves with yellowish or whitish streaks or spots and a distortion of flowers, stem, and leaves. Such symptoms are shown by Guterman<sup>1</sup> for some species. The accompanying photographs show the mottled leaves of *L. tigrinum* (Fig. 1) and the distorted flowers of *L. formosanum* (Fig. 2). Mottling of the leaves may be of several types. In *L. tigrinum*, *L. Maximowiczii*, *L. Sargentiae* and others, it may appear as short streaks or flecks of lighter color against the darker green. Such streaks have no relationship to the veins of the leaf and should not be confused with chlorosis of the leaves due to nutrient deficiencies, mainly iron, in the soil. In chlorosis of some species, the pattern of the veins of the leaf stands out as darker green against a yellow background (Guterman<sup>1</sup>). Chlorosis is more likely to occur in some species than in others, *Lilium Hansonii*, *L. superbum* and some other American lilies being most susceptible.



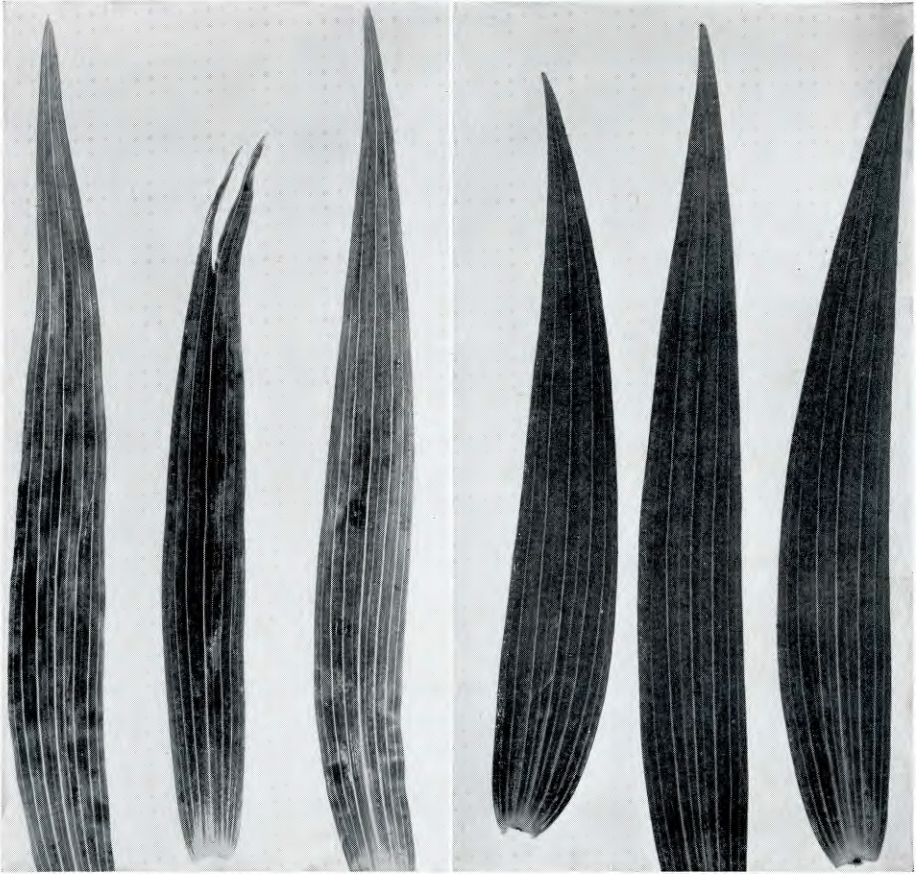


Fig. 1. *Lilium tigrinum*, infected leaves on left, healthy leaves on right.

*L. canadense* and *L. superbum*, particularly plants infected the previous season, may show streaks extending for the length of the leaves (Fig. 3). Such symptoms are striking and can be easily identified.

Among the lilies most seriously affected by mosaic are *L. auratum* and *L. formosanum*. In the former, infection during the growing season shows up as "crook neck" in which the tip of the plant bends downward, the leaves may turn black, wither and fall, leaving the bare stalk (Fig. 4). This may all take place within two weeks. Plants affected in this way usually do not come up from the bulb again. Late season infection may show up the following season as mottled leaves and distorted flowers.

Infection of *L. formosanum* shows up during the early growing season, often as a bending of the growing tip to one side. Later the plant may straighten up but the new leaves are curled and distorted and show up yellow. Later they take on the characteristic streaking and mottling (Fig. 5). This species is very susceptible to the disease and its presence in the garden





*Fig. 2. Lilium formosanum, distorted flowers and stalk.*

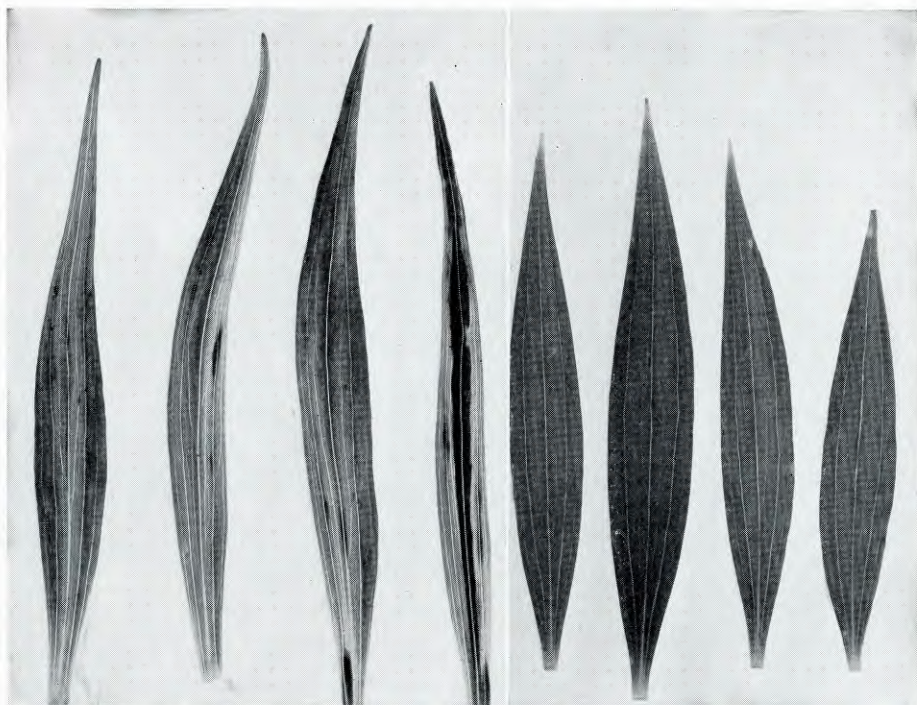


Fig. 3. *Lilium superbum*, infected (left), healthy (right).

is a good indicator of the health of adjacent plants. If either *L. auratum* or *L. formosanum* will remain healthy in the garden, it is likely that other plants nearby are free from mosaic.

One of the serious obstacles to ridding the garden of mosaic is the fact that some species may have the disease and yet not show it with sufficient definiteness to make diagnosis sure. Among these species are the hybrid lilies variously known under the names of *dauricum*, *elegans* and *umbellatum*. Besides these are *L. candidum*, *L. regale*, *L. Willmottiae*, *L. Davidii*, *L. Sargentiae*, *L. myrophyllum-superbum*, and others. *L. tigrinum* has been thought to mask the symptoms but a number of years' experience with this lily leads me to believe that the symptoms are easily discernible. Infection during the late growing season, that is, just before flowering and after, of *L. tigrinum*, *L. canadense* and some others, may show up as a browning of the leaves near the point on the plant first infected and later browning of the foliage in a streak extending down the stem. The next season typical mottling will be shown. Somewhat the same symptoms are shown by plants infected with some bulb rots.

It must be admitted that at the present time our knowledge of the symptoms of mosaic is far from complete with many of the species under cultivation. Each species is a problem in itself which must be studied under controlled conditions in a way which to date has not been possible. Such





*Fig. 4. Lilium auratum, showing the progressive symptoms of infection.*





Fig. 5. *Lilium formosanum*, early symptoms of infection.

research is under way at the present time and undoubtedly progress will be rapid.

Apparently the severity of symptoms of mosaic varies greatly in different parts of the United States, probably according to temperature. It is well known<sup>1</sup> that the mosaic symptoms of Easter lilies can be brought out by moving them to a cool house and when they are brought into the warm house the symptoms will be masked. With other species the reaction to temperature seems to be somewhat different, as mosaic symptoms seem to be more obscure in the North. In my experience, bulbs from stocks appearing healthy and performing well in Canada have shown marked symptoms and done poorly at Ithaca, N. Y. The same may be said for bulbs coming from Washington and Oregon.

A complicating factor in the identification of mosaic may be the damage caused by late spring frosts. Such damage often results in stunted growth and distorted foliage resembling mosaic symptoms. There may also be some mottling of foliage, though this does not usually resemble the typical mosaic pattern. Frost damage to *L. regale* and *L. Henryi* are shown in the accompanying photographs (Figs. 6 and 7). A knowledge of whether or not a damaging frost has occurred, and continued observation of the developing plants through the season, is helpful in determining the presence of mosaic.

The varied nature of mosaic symptoms makes the problem a difficult one for the amateur. Certainly anyone who expects to grow lilies in large numbers and variety should make every effort to learn to recognize the disease





*Fig. 6. Frost damage on Lilium regale.*



*Fig. 7. Frost damage on Lilium Henryi.*



wherever it occurs. At the present time it may be said that any plant that shows any symptoms of mottling or distortion should be regarded with suspicion unless the condition can be traced directly to frost or is obviously mineral deficiency chlorosis.

From the nature of lily mosaic and its spread, it is obvious that control should be along two main lines, one aimed at keeping the garden free from infected plants, and the other at reducing the insect carriers in the garden to a minimum. Much can be done along the latter line by regular spraying of the plants with nicotine sulphate (Black Leaf 40) or some other contact insecticide to control sucking insects. The spray can be combined with Bordeaux mixture (4-4.50)<sup>1</sup> for the control of the Botrytis disease also. The same spray combination would be effective on roses and can be part of the routine of the garden. Of course it is recognized that a complete cleanup of insect carriers is impracticable. Preventing severe infestation, however, is well worth while.

Ideally the gardener should strive to keep his plantings free from mosaic. This, however, is admittedly a difficult thing to do. It is, however, a practical possibility, as evidenced by the plantings of Dr. Abel at White Plains and by G. L. Slate at Geneva, and others.

By far the most effective method of keeping a planting free from mosaic is to grow in the garden only those lilies that have been raised from seed in a location free from the disease. There is abundant evidence that the mosaic virus is rarely if ever carried through the seed and that seedlings are free from it except as they become infected subsequent to germination.

Any program of growing mosaic-free lilies assumes that the garden is isolated from other infected lily plantings. The distance necessary between healthy and diseased plants to prevent transfer of the virus cannot be stated with any definiteness, as there are many variable factors involved in the problem, such as the number of aphids, the direction of the prevailing winds, and the presence of barriers such as hedges, wind breaks, walls, etc. Aphids are weak fliers and travel with the wind rather than against it. Ideally, healthy plants should be separated by several hundred yards from other lilies. Practically, however, much can be done with separation of a hundred feet or more, provided there are barriers of one kind or another and the aphid population is kept down. At Ithaca, New York, I have kept half a dozen large clumps of *L. tigrinum* healthy for three years in a plot surrounded by a hedge (Fig. 8) and on the opposite side of the house from lilies known to be infected. Such isolation is relatively easy in the large garden. In the small lot in the city, however, isolation can be secured only by neighborhood cooperation in destroying all infected plants.

Fortunately there are a goodly number of desirable species of lilies that can be raised from seed easily by the amateur. Among these *L. regale* and its hybrids with *L. Sargentiae* and *L. myriophyllum superbum* (i.e. *princeps*, *sulphurgale*, etc.), *L. formosanum*, *L. Henryi*, *L. pumilum* (*tenuifolium*) and *L. amabile* are of first rank both as to ease of raising and desirability as garden plants. Methods of seed culture are set forth in detail elsewhere and need not be covered here other than to say that the gardener should keep a succession of seedlings coming on to keep up the stock in the garden. As the



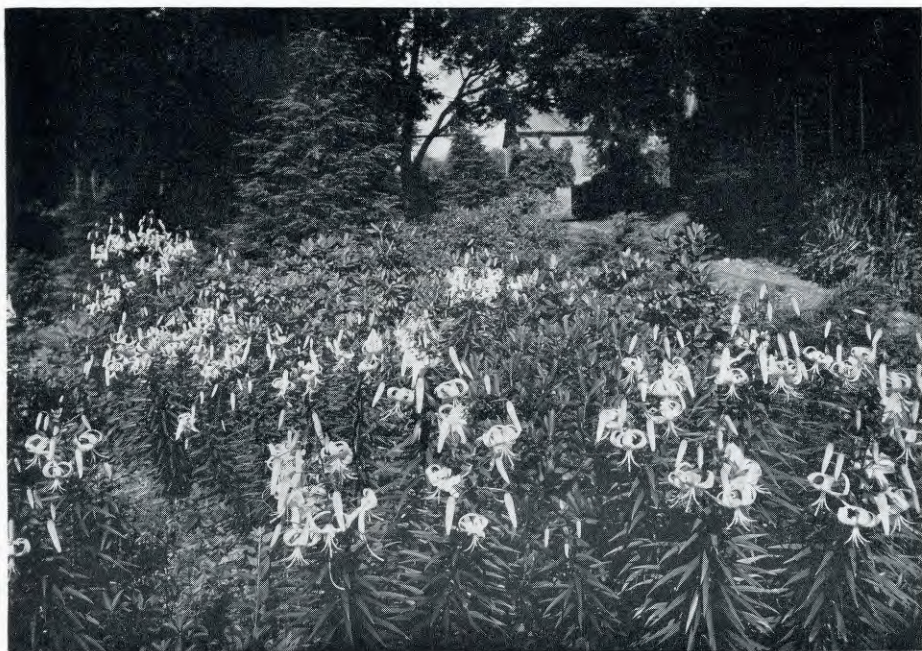


Fig. 8. *Lilium tigrinum*, healthy because isolated.

garden becomes well stocked with the easy kinds, more difficult ones can be attempted.

In keeping the planting free from mosaic, bulbs from commercial sources should not be brought in without making absolutely sure that they are free from mosaic. At the present time assurances by bulb growers that bulbs are disease-free is of little avail with a few possible exceptions, as most of the nurserymen themselves do not sufficiently understand the mosaic problems to grow clean stock. Some vegetatively propagated clones are practically 100% infected in the trade. Among these are *L. Batemanniae*, *L. Sargentiae*, *L. myriophyllum-superbum*, *L. tigrinum*, *L. candidum* and the whole lot of *davuricum*, *elegans*, *umbellatum*, hybrids. These should not be grown along with other lilies if it is hoped to keep the plantings clean. If planted at all they should be in some well isolated spot. In fact, the amateur might better leave these species alone with the possible exception of *L. tigrinum*, of which there are disease-free stocks in existence. In general it may be said that any variety or clone of lily that has been vegetatively propagated for any great length of time is to be suspected of mosaic. *L. testaceum* is in this class along with those above mentioned. Varieties grown recently from seed are relatively less likely to have the disease as, for example, *L. Maxwelli*. Bulbs collected from the wild are rarely infected with mosaic and can be brought into the garden with less risk than nursery grown stock. This is particularly true of the native American lilies such as *L. canadense*, *L. superbum*, *L. pardalinum* and many of the west coast sorts. So-called collected bulbs from the Orient may not be so in fact.



Every lily enthusiast who expects to buy bulbs from commercial sources should have an isolation spot where lilies can be grown on probation before bringing them into the garden. Plants definitely showing mosaic symptoms should be destroyed unless it is desired to keep them for breeding purposes, in which case they should be kept in a plot in which all other plants are diseased. To such a plot should be moved any plants in the garden that show suspicious symptoms. An aster-cloth house or tent is of special value in isolating plants suspected of disease or particularly choice plants that are to be protected from infection. Spread of mosaic within the tent will be negligible if insects are destroyed. Lilies, particularly the stem rooting kinds, can be moved at almost any stage of growth if it is done carefully with a ball of earth.

To keep a planting free from mosaic, a rigorous program of rogueing out the diseased plants is essential. Rogueing can be done most effectively in the early spring when the leaves first unfold, as the symptoms are more likely to be evident at that time. Rogueing should be done as early in the spring as possible because the insects that spread the disease may be present in May or possibly earlier in some seasons, or in regions south of central New York. To be effective, the diseased plants must be removed from the garden at once. Here the program is likely to fall down. It is only human to want to keep a plant until it blooms and by that time the damage it might do as a source of infection is largely done, for it is during the succulent stages of growth that aphids work upon plants the most.

As an indicator of the freedom of a garden from infected plants, the growing of *L. formosanum* here and there is of value. This lily shows the symptoms within a short time after infection, remains susceptible over a long season, and is easy to raise from seed.

Although the transfer of lily mosaic from other kinds of plants has not been demonstrated, those susceptible to viruses of the cucumber type might be well removed from the lily garden. Among these are the myrtle (*Vinca*) and various milkweeds. The wild milkweed frequently shows mosaic symptoms and is to be strongly suspected.

The above statement of the lily mosaic problem with its various ramifications probably makes it seem too complicated and difficult for any but those specializing in lily growing. It is recognized that amateurs with small gardens would not be able to carry out the entire program suggested. There are several practical suggestions for the small garden besides growing only seedling lilies; one of these is to grow those species that escape mosaic for the most part. Among these are *L. Hansonii*, *L. Martagon*, the Backhouse hybrids, *L. regale*, *L. Willmottiae*, *L. Davidii*, *L. Henryi*, *L. canadense*, *L. superbum*, *L. pardalinum*, *L. amabile*, *L. cernuum*, *L. concolor*, and others. These species will persist apparently without mosaic under conditions where *L. auratum* and *L. formosanum* would become infected with certainty. Then there are the group of lilies that do fairly well, even when they are infected with mosaic. Among these are *L. candidum*, *L. testaceum*, *L. tigrinum*, *L. regale*, *L. princeps*, the elegans-dauricum group, *L. Sargentiae*, *L. speciosum*, and some others. Growing these lilies that are known to be infected is not likely to be satisfactory because at the present time we know



too little about their behavior when infected under different conditions and with different strains of virus. Mosaic infected plants have a reputation for being fickle, for reasons not well understood, and with no species are the infected plants as vigorous and satisfactory as disease-free stock. Such plants will do better if well fertilized and watered, as under good growing conditions they withstand the disease better.

The above groupings of lilies are based largely upon my own experience and observation, modified by the opinions of others with whom I have conferred, and are suggestions only. Such experience is largely from plantings in Central New York and may not have wide application, although there is fairly general agreement on those like *L. Hansonii* that escape the disease, and the group that do fairly well in spite of it. Although not working with the mosaic problem in an experimentally controlled technical way, I have been familiar with the research done on lily mosaic and personally acquainted with the workers in the field. As the work has developed, lilies have been grown in increasing numbers and much experience has been gained first hand. Mistakes have been made in the garden chiefly by being too lenient with plants suspected of harboring mosaic and literally bushels of bulbs have been destroyed from time to time. From such experience I have no illusions as to the seriousness of the problem. There are, however, sufficient examples of what can be done by raising seedling stocks, intelligent rogueing, and control of aphids by spraying, to give confidence that lilies can be grown satisfactorily at the present time.

It remains for the future to gain more detailed information regarding the mosaic problem and use this in the education of the amateur and the commercial grower. This should eventually lead to establishing useful regulatory and inspection services that will assure the purchase of clean stocks and make the growing of this highly desirable group of plants possible and more satisfying for a greater number.

#### REFERENCE CITED

- <sup>1</sup>Guterman, C. E. F., Final Summary of the work on disease of lilies. Hort. Soc. New York Yearbook, Jan. 1930, pp. 51-102.  
Ithaca, N. Y.

# The Lilies at Foxden

HELEN M. FOX

Ten years ago in the Library of the Department of Agriculture in Washington it took a week of steady work to go over every item published on lilies since the seventeenth century. Since that time so much has been written about the beautiful flowers that it would probably take a great deal longer to sift through it. In going over the lily literature it was disturbing to find the same authors outgrowing themselves. They would think they had found the best way to raise the lilies and then later they would find a still better one. Although we are learning about growing lilies and handling the bulbs every year, there is still much to be learned and it is to be hoped that experiments on the proper way to store bulbs, the best time to plant them, the control of mosaic and *botrytis* and other cultural factors will be continued. A fine piece of work on the viability of the seeds and their behavior while germinating is being carried on at the Boyce Thompson Institute.

At Foxden, the soil was originally a stiff clay before it was ameliorated and made more friable by the addition of leaf mold, peat and humus. This was a decided disadvantage but in spite of this and my many errors in horticultural procedure a fair-sized collection of lilies has gradually been developed.

The only explanation for my seeming success is not any superlative skill or intelligence on my part but a lily version of the famous story of Robert Bruce and the spider. When the discouraged hero was hiding from his pursuers in a barn he noticed a spider attempt over and over again to fasten the silken thread of its web to the ceiling. He was so inspired by the persistent effort that he went forth once more full of courage to defeat his enemies. As applied to the garden, the secret of raising lilies is to try untold times to grow the same species. When the seed of *regale* did not germinate in the fall it was planted in the spring. If the seed of *martagon* failed to come up the first spring after it was planted it was kept in a pot in the frame over the winter and given a second year and even a third in which to germinate. When *Lilium Brownii*, the waxy trumpet lily, marked purplish brown on the outside, died out in the lily garden and again in the perennial border, it was planted in the peony bed, where it has lived, and thus it was with all the bulbs. The most suitable place has not yet been found for *candidum* and *auratum* but experiments continue and one place in the garden is tried after another. Exposure is an important factor and plants which will thrive facing north seem to pine and languish when planted facing south only ten feet away. Certain lilies will not thrive in certain localities no matter how they are handled. The *longiflorum* is not hardy at Foxden, nor are *Washingtonianum*, *rubellum*, *japonicum* and *Kelloggii*, all handsome blooms.

Most of the lilies grown at Foxden are raised from seed. Gardeners seem to be overcome with fears at the thought of growing lilies that way. If they attempt it they will find it is not a whit more difficult than raising any perennials. The lilies often produce one or two flowers the second summer after sowing the seed but on stems shorter than their full growth, and in all fairness it must be conceded that this blooming has an adolescent un-



gainliness. By the third summer many of the lilies are sufficiently mature to be attractive, among them *pumilum*, *concolor*, *callosum*, *dauricum*, *Willmottiae* and *Davidii*. They continue to improve, however, and by the fourth summer have grown taller and bear more flowers to a stem. *Henryi*, *regale* and *regale* hybrids keep on improving to their fifth year, when they reach their full magnificence. Many gardeners object to the time it takes and forget that delphiniums do not reach their full height and mature florescence until their third summer; neither do erigerons, pentstemons, certain of the campanulas, and countless other perennials.

Moreover, the lily bulbs one buys never produce as fine a flowering the first summer as they do the second in the garden and, sometimes, they too continue to improve each year for some time. We are willing to wait for years for shrubs to grow up and spread out long branches laden with colorful blossoms, why should we not wait for the slender stalk of the *regale* lily clothed all its way in linear dark green leaves and bearing from ten to twenty-four fragrant roseate white trumpets at its summit?

At Foxden the lily seeds are sown when the days grow appreciably longer between January eighth and February fifteenth. The seeds grow at almost any time, but we find the largest percentage of germination in some species when they are sown shortly after the new year. They are planted either in flats or pots, and are stood either in a cool greenhouse or in a hotbed. It is easier to watch seedlings growing in the greenhouse and there is no danger of their freezing.

The soil for growing the lily seeds is made up of one third sand, one third leaf mold and one third top soil. Here one difficulty in raising seeds is to prevent them from drying out, and lily seedlings should be kept at an even moisture. To keep the soil moist in a flat, a layer of sphagnum moss is placed across the bottom. We no longer leave the lily seed out of doors over the winter. We found they often rot and besides there is no point to this since, with certain exceptions, they begin to sprout as soon as they have been planted when grown in warmer conditions.

In from two to six weeks the seed sends out a first stem. This stem grows in two directions. Under the ground it forms a pearly thickening, and above a thin green leaf-like stem. It grows so fast that it bends over as it pushes its way up through the soil and then as it straightens out the shell of the seed is borne into the air at the tip of the stem—like a flag joyously announcing the birth of a lily. Shortly thereafter the first true leaves appear. After this the bulbs can be transplanted to another pot or flat. This gives them fresh soil and a new supply of food and causes them to push ahead with renewed energy. Formerly I was afraid to move them, but have found that they stand this transplanting as well as seedlings of other plants. The seedlings are left in the second pot or flat until September or October and are then moved into a cold frame. During the first winter they are mulched with salt hay. They are left in the cold frame until the second autumn, when they are moved into the flower beds. Sometimes, however, lily seeds will lie dormant one or two years before germinating. Some lilies such as *canadense* and *superbum* form a little embryo bulb under the soil the first year and do not push out a green leaf until the second year. *Auratum* requires two summers and one winter before germinating.

Every year the best looking lilies are marked and the seed kept only of these. Furthermore, now that we have a good start, only the strongest seedlings are kept. I think much of the difficulty in growing lilies has come about because during the years when they were so scarce growers kept the weak and less good looking stock and were not ruthless enough in eliminating the unfit.

No seed is allowed to form on flowers on the first crop. We found that forming a seed pod weakens the plant somewhat.

Since so many lilies are grown from seed the bulbs are secured at a minimum cost. Every year new lots are put into the beds to replace poor specimens and the missing. The seedlings do exceedingly well until they are planted in the flower beds and then the casualties multiply. The worst danger to my lilies is I myself and after me I suspect my gardener Joe, but have never caught him in *flagrante delictu*. Almost every time I cultivate my lily beds or go out to stake them at least once during the time I hear a cracking sound. It has an ominous note for me and signifies that I have broken the stem of a lily and consequently there will be no flower on that bulb the coming season. Another danger to growing the lilies is in cultivating the beds early in the spring before the young shoots appear above the ground. Dozens are killed that way every season. The hoe beheads the lily shoots under the ground. It would be far wiser either to cultivate the beds early in the season before there is a chance of nipping the lily shoots or waiting until after they are way up, but something always seems to prevent this being carried out to the letter.

Bulbs raised at home do not have to travel and start anew in the garden after a long and exhausting journey. Not being weakened, they are less subject to bulb rot and other secondary infections such as mites. Lilies from seed are apt to show variation in characters and this is far more amusing than having them alike. The *pumilum* for example ranges in color from the light yellowish variety Golden Gleam through a lacquer red to a very dark red. Some have hairy buds which leads me to suspect there has been a mingling with the strain of *Willmottiae*. The *regale* varies much too, some being far rosier and with red on the stems while others are almost white and with entirely green stems.

The greatest advantage of all in growing lilies from seed is the fact that in this day of prevalent mosaics, the seeds do not carry the virus which so far has proven fatal once within the bulb. For years, whenever there have been any signs of mosaic, the bulbs have been dug up and burned and there has been less and less of the sickness in the garden during the past few years. When bulbs are bought there is always a possibility of their being diseased. The sickness may not be visible the first year. When it does show itself the leaves are often twisted, the buds twisted or malformed and the leaves curiously spotted showing uneven distribution of the chlorophyll. When a healthy strain of lilies has been secured they can be increased by bulb scales and from bulbils growing in the axils of the leaves of certain lilies such as *tigrinum*, *leucanthemum* var. *chloraster*, and *bulbiferum*. They grow more quickly this way than from seeds. There are certain beautiful hybrid lilies such as the peach-colored *testaceum* and the Backhouse hybrids which do not come



true from seed or set no seed and *Hansonii* which sets no seed to its own pollen and these have to be grown from scales or bulblets or division of the bulbs.

*Botrytis* is a fungus attacking lilies and can be controlled by spraying them with bordeaux. *Candidum* is especially susceptible to *botrytis*. If given a perfect drainage, which all lilies appear to like, there is far less chance of infection. I have found that lilies grow particularly well on banks and hill-sides. In fact, many flowers grow well on slopes and it is surprising that so much gardening in the world is done on level surfaces.

Animals may make trouble. Mice used to destroy our lilies but perhaps the severity of the last three winters has not been conducive to their foraging. A mulch of freshly-gathered leaves or straw is a lure to them, so the ground should never be mulched until it is frozen hard. Lately we have not mulched the flower beds but instead have scattered a two-inch layer over them either of well-rotted leaves, compost or entirely decayed compost. We fertilize with peat dug up from a swamp when the nearby parkway was laid out. It has proved a gold mine for our garden, for it is not acid and has added humus to the soil. Rabbits used to nibble off the young tips of the *pumilum* and once when a whole planting was ready to open their scarlet blossoms, the stalks were eaten during a night. The shoots are now sprayed with arsenate of lead. Another effective remedy against the Lucullian tastes of the rabbits is a husband with a gun.

For years I have kept a diary of the plants which flowered in the garden. The season varies from year to year. The greatest differences occur in spring but by the time July has come the flower calendar has caught up and is much the same as in previous years. The time of bloom given here is for my own garden; southern gardens would be two to three weeks earlier and the more northerly ones, later.

The trumpet-shaped white *longiflorum* known as the Easter lily is not hardy in New York, but flowers in southern gardens early in the season and is the first lily of the year. It has a delicious fragrance and matures quickly from seeds.

When the lupines, aquilegias and iris are in flower either during the last week in May or the first week in June, the first lily opens its orange cup. This lily has previously been called *L. elegans*, but lately Woodcock and Coutts in their excellent and quite indispensable book, *Lilies*, say the "*elegans* with the creeping root stems should be called *L. dauricum* and the ones without the creeping root stems *L. dauricum* ssp. *Thumbertianum*." There are many forms of this lily which are the result of crosses in the wild state and in the garden. Some of the crosses are thought to have the strain of *L. bulbiferum* and *L. croceum* which the same authorities now call *L. aurantiacum*. The crosses come in many forms and colors. There are low varieties twelve to fifteen inches high, blooming among forget-me-nots and violas at the end of June, and later dwarfs flowering when the scarlet gaillardias are out and golden hypericums. Elsewhere the low *elegans* lilies push through beds of the polyantha rose, Gloria Mundi, where their orange cups make a dashing combination with the unique orange scarlet of the roses. Since I cannot dig down under the ground to examine all these lilies for



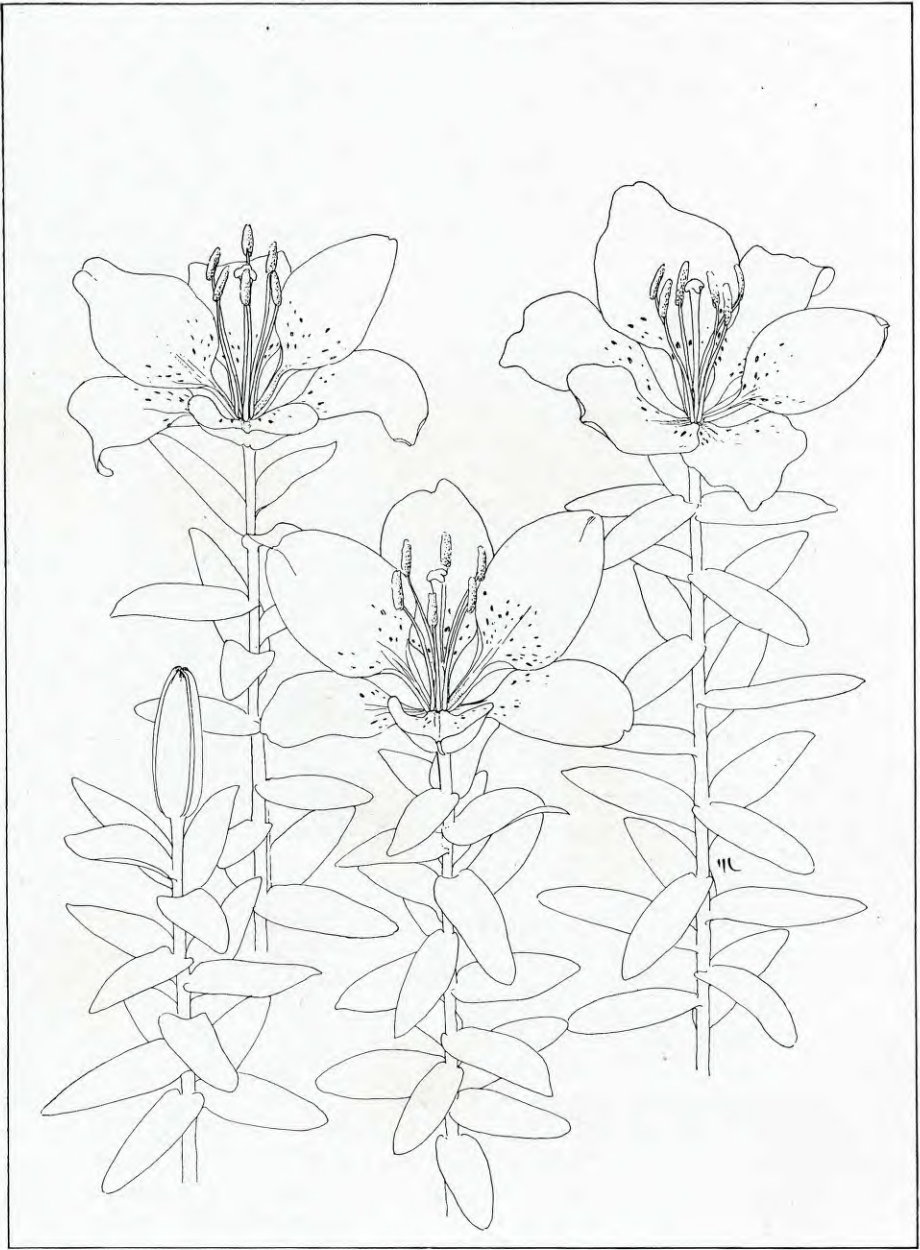


E. L. Crandall

*Lilium elegans.*

creeping root stems I am going to call them *elegans*. The tall *elegans* rise up to three feet and grow alongside of purple iris and brownish ones. The whole group look well with lupines or in front of *Thermopsis caroliniana* or *Thalictrum flavum*.





*Lilium elegans*, Alice Wilson.

One of the *elegans* is called the Candlestick lily. It bears its flowers in many branches and resembles a flaming light for a banquet table.

At one time almost all the named varieties listed in the catalogues were purchased. Then they proceeded to show mosaic and practically all of them



had to be rogued out. Their seeds were allowed to ripen and an entirely new batch was raised. The seedlings varied, as was to be expected, and many of them were quite worthless with the base of their perianth segments far apart and thin or of an ugly color, but many are handsome and resemble their parents. They come in tones of yellow, orange to scarlet and dark red. Often they are yellow shaded with orange or orange shaded with red. All of them are more or less cup shaped and upright. These lilies are somewhat coarse but are effective when planted in large clumps in the bays of the shrubbery. They increase very rapidly from the bulbs and can be divided frequently and replanted. This is the only way, except for scale propagation, to insure the continuance of a clon.

The orange lily, *L. aurantiacum*, flowers at the end of June and on into July. It has a small flower of a bright orange color and because of this brilliant orange was planted in the gardens of the protestants of Northern Ireland as a symbol of their political opinions. *L. bulbiferum* is small and insignificant in my garden but larger in its native Switzerland. It is not as brilliant, however, as the members of the *elegans* group.

By the fifteenth of June, the lily season is under way. *L. pumilum* holds the center of attention for at least ten days. It is a dainty lily with nodding lacquer-scarlet flowers and numerous tenuous leaves thickly along the stems. Surely the Chinese got the inspiration of their lacquer work from these and other shining lilies. The lilies are from eighteen inches to four feet high and bear from two to twenty-six flowers to a stem. Drifts of them all raised from seed grow on a slope in the shifting shade of trees.

One of the most pleasurable phases of gardening is the possibility of painting pictures with living plants. Such a picture is not static and is never finished, for it changes as the bulbs, shrubs and trees grow, flower and fade. No sooner has one picture materialized than another is planned in the same setting for the ensuing year.

The habit of the lilies is so well defined, so clearly outlined that they do not merge in with the billowy masses of foliage and flowers in the perennial border but stand out conspicuously. The flowers on their tall spikes are of strong colors and often of a shiny texture. There is something so full of character and quality about them that they demand that the whole garden scheme be built up around them.

It is a question of aesthetics whether to grow the yellow, orange or red lilies with contrasting colors such as violet and blue or to take all the tones of yellow, red, orange and cream and mix them together. Whether the garden artist is going to compose his scheme with similar or with contrasting colors, he will need a certain amount of white to soften the harshness of his brilliant flowers. White will also lighten up the whole effect and make it gayer. A late blooming variety of the snowy philadelphus such as *Avalanche* makes a good background, as does a *deutzia* or *Hydrangea arborescens*. If one has decided to use contrasting clumps of purple, petunias or large velvety pansies, dark red or purple violas make good foreground plants. For the middle ground among the low-growing lilies, *Delphinium chinense* in tones from light blue to the brilliant blue of a southern sky can be intermingled with the dainty *pumilum* and *concolor* lilies. Some of the pentstemons and the Swan River daisies *Brachycome iberidifolia* in blue are





*Margaret deM. Brown*

*Lilium pumilum* (Formerly *L. tenuifolium*).



attractive. White *Asperula hexaphylla* is feathery and pleasant with lilies, and so is the blue *Asperula orientalis* which self seeds.

If the same color notes are to be kept dimorphotheca, nasturtium, *Oenothera Youngii*, yellow violas, erysimums could be planted in with them, as well as *Hypericum Moserianum* and *Hypericum calycinum*, with their large golden flowers. The yellow *Primula florindae* would be perfect planted with *pumilum* and *concolor*, *amabile* and *Willmottiae*, for it blooms when they do, but it likes moisture and they require absolute drainage, so the combination must needs be an unrealized dream except in a flower show or in a bowl on the dining room table.

In England red and purple-leaved plants are most effectively used with lilies. They give a rich background and are so striking that they keep up the same high key which the lilies demand. Red-leaved Japanese maples behind great sweeps of orange lilies are stunning and the red can be carried higher with *Berberis vulgaris* var. *atropurpurea* where this is permitted, another step up with *Prunus Pissardi* and finally highest up with a purple-leaved beech. This would be striking and warmly-colored planting.

Blue delphiniums of the *elatum-cheilanthum* group have always been the classical combination with *candidum* lilies. Other blue plants such as tall *Campanula latifolia* in purple and *Campanula persicifolia*, *Campanula patula*, and *Campanula rapunculoides* (if the pest can be held in check) are handsome with *candidum* and *regale* lilies.

In the past it was thought advisable to plant lilies among broad-leaved evergreens. The effect of the snowy or orange lilies rising out of the dark green leaves was becoming to the lilies. But rhododendrons and their relatives thrive in an acid soil and require moisture while the lilies like a neutral soil and swifter drainage. This element of cultural requirements complicates the garden artist's endeavors. He can have, however, the restrained effect of lilies growing out of foliage without any other nearby flowers by planting his *regale*, *auratum*, *Brownii* or *regale* hybrids in ground carpeted with *Vinca minor*. The lustrous foliage of the vinca which seems very alive because of the lighter midrib down the darker leaf under the white lilies produces a restrained and peaceful setting. *Willmottiae* and *Davidii* can be grown with the low thalictrums. When the flowers of the thalictrums grow too high they can be cut down. Aquilegias are good with Martagon lilies. The purple and red of the Martagons combine well with the lavender, pale yellow and soft pink of certain of the aquilegias.

*L. concolor* blooms at the same time as *L. pumilum*. This year *concolor* was finer than ever before. Either this was due to their greater age or to the fact that the beds were watered all through the spring drought. The stems were from twelve to nineteen inches high and some carried as many as six starry blooms. The flowers open skywards and are diminutive and dainty. *Concolor* like *pumilum* is grown in partial shade and on a slope, but is not planted with them because they are the identical color, being "scarlet" of Ridgway, and because the difference in their silhouettes would not be as emphatic when grown side by side as when separated. The companion plants are a blue gray *Campanula barbata* in the foreground, and behind and higher up the bank is a clump of white and cream-colored





*Lilium concolor* var. *pulchellum*.



*Digitalis alba* and pale yellow *Digitalis ambigua* and *Campanula persicifolia* in white and blue.

*Lilium amabile* flowers in mid-June. Some of the stems this year were three feet high and one carried seventeen blossoms. The flowers are nodding, shiny, of a "Grenadine Red," and larger and heavier than those of *pumilum* and not as graceful; yet the species is attractive and the flowers are in good proportion to the height of the stem and size and disposition of the leaves.

Similar to these three smallish scarlet lilies and coming a little later, generally the end of June and early July, is *Lilium Willmottiae*. It carries its scarlet nodding flowers with reflexed segments in a long panicle. The linear leaves are thick along the stem, which grows from three to five feet high and bears from fifteen to twenty flowers at a time. *Campanula rotundifolia* grows at its feet and the delicate stems and blue blossoms rise up and entangle themselves in the stems of the lily. *Campanula carpatica* blooms at this time, too, and its new varieties are charming with the many orange lilies.

By mid-June the lilies from the West Coast of North America begin to flower. These lilies with the Eastern *superbum* have such a distinct character, so different from the brilliant lacquered-looking Asiatics, that they are grown all to themselves, in the peony bed, now without bloom and filled with lush foliage. The lilies are grouped in front of pines and dogwood trees so that their gold, orange and scarlet stands out against the dark green without the competition from other flowers. The first of the group is *Lilium parvum* from the Sierra Nevada Mountains in California. The flowers of *parvum* are dainty and somewhat tubular, some of them turning sideways. They are orange glowing over yellow and have red-brown spots inside of their tubular throats. The tall-growing *Humboldtii* is a graceful lily. There is a verve in the slant of the shiny leaves arranged in whorls which stand out straight from the stems like wheels or stiffened tarlatans. Their reflexed orange flowers are almost globular at maturity. Although *L. superbum* is found in low swampy lands, it grows very well on our hilltop. The clump rises seven feet high and each stalk bears nineteen flowers and more. From one original bulb planted five years ago 22 stems are now growing, each covered with whorls of leaves spaced six inches apart, and curving up and falling in an arc. The flowers are in a long loose panicle and are orange shaded reddish and spotted with brown. The three-sided buds and the triangular emerald green nectar furrows in the heart of the flower are its invariable marks. Against the dark foliage of the Austrian pine trees these spires of glowing stately lilies truly deserve their name "superb." *L. pardalinum* is a little later and is orange spotted red in orange circles on segments which are golden at the base and scarlet at the tips. *L. pardalinum minor* is a variety with smaller flowers than the type.

*Roezlii* is very like *pardalinum* and *Humboldtii*. The leaves are scattered along the stem and the flowers are in a loose raceme, face downwards, and are yellow shading to orange at the tips of the segments and heavily spotted with purple brown.

*Parryi* has light yellow bell-shaped flowers opening sideways as do the *candidum* and is a difficult and captious lily for me. But it is so lovely and





Edward Van Altena

*Young plant of Lilium amabile.*

unusual, and so fragrant, smelling of clematis, that it is almost worth having for one season alone. Perhaps it prefers a moist situation which I am unable to provide. Dr. Griffith's hybrids, which appear to be mixtures between *pardalinum*, *Humboldtii* and *Parryi*, come in July. Kulshan looks like a freckled yellowish *pardalinum*. Cyrus Gates is handsome, a lovely soft

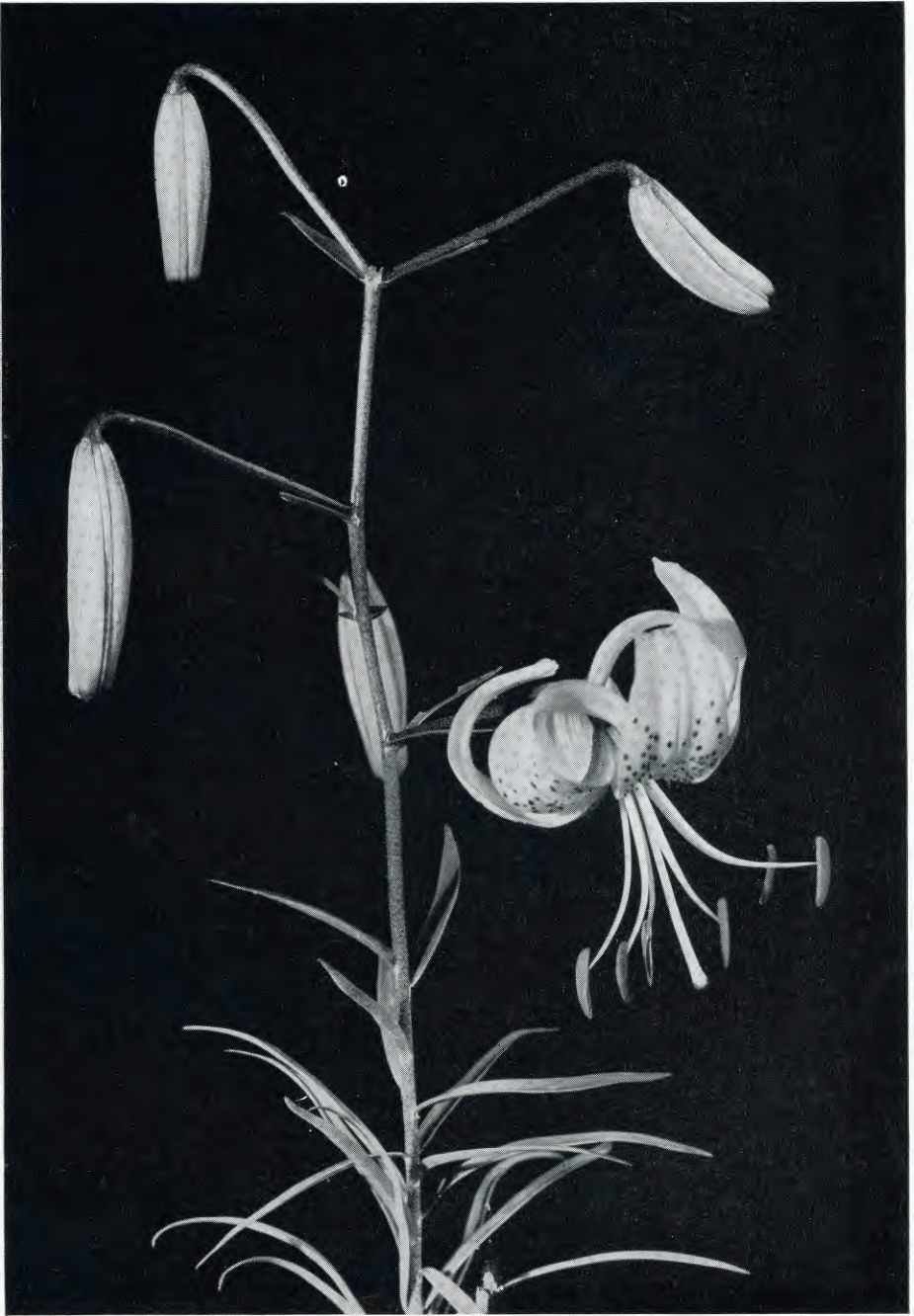




Walter B. Wilder

*Lilium amabile.*





*Young plant of Lilium Willmottiae.*



*Silvia Saunders**Lilium Willmottiae.*

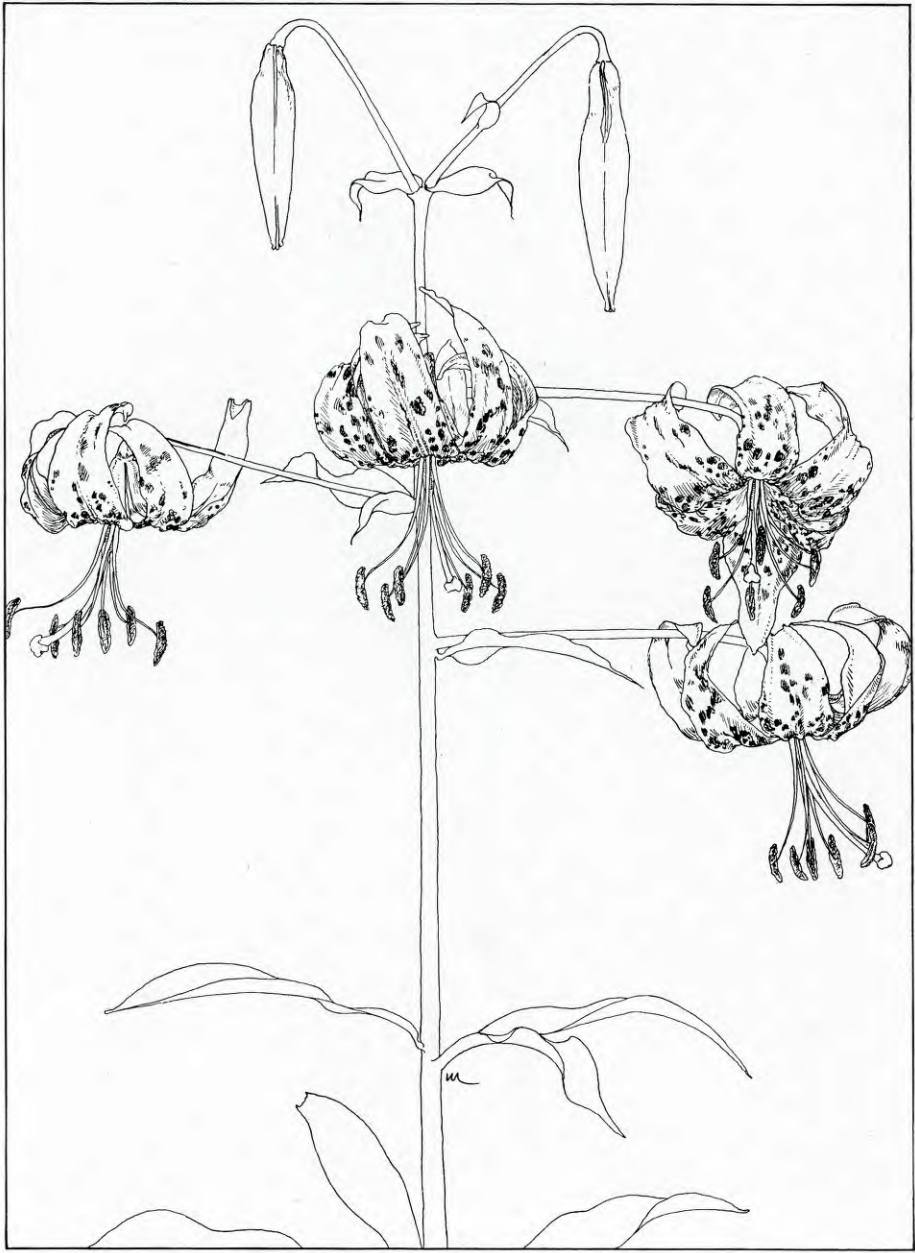




*Margaret deM. Brown*

*Lilium parvum.*





*Lilium Humboldtii.*





*Lilium pardalinum.*



orange spotted with purplish brown. The other hybrids of this group have not wintered for me out of doors.

Down the road another American lily and an Easterner, *L. philadelphicum*, is in flower. Thus far it has completely eluded all efforts to domesticate it. The lily grows wild on our hillside on a very steep dry slope, in front of sumachs and other shrubs and also in semi-shade under maple trees along the roadside. It is similar to *elegans* in shape but far more delicate, with claw-like termination to its flaming scarlet segments.

*Canadense* is a yellow bell-shaped nodding lily and native on our roadsides where it mingles happily with thalictrum, polygonum and Joe-Pye weed. *Grayii* is another native and has small red-to-orange flowers, shaped like large thimbles. To my eye the flowers are quite out of proportion to the tall stems and large leaves. One generally gets *superbum* when ordering *Grayii*, for most nurserymen who advertise it do not know the real *Grayii*. *Carolinianum* I have never been able to secure and only know it from hearsay, pictures, and herbarium specimens. I always get something else when I order it. I hear it is delightfully fragrant and handsome.

When the delphinium raise their blue spires above the garden wall, and there is the annual belated rush for stakes, then *Hansonii*, a nodding, waxy, thick-textured lily opens its heavy yellow buds. It is hardy and increases from the bulbs and likes a partial shade. I am told it thrives along the margins of a woodland. So many plants do well in such situations that it would seem advisable for most gardeners to plant high shrubs and low-growing trees to protect many of the flowers from the blistering heat of mid-summer.

The Backhouse hybrids, created by the late Mrs. R. O. Backhouse, by crossing *Hansonii* and *martagon*, are in flower the end of June. They are taller and more floriferous than either of their parents in my garden. The named varieties are Sceptre, Sutton Court, and Mrs. R. O. Backhouse. Their color in Ridgway is "Light Ochraceous Salmon" or "Light Cadmium." They are a soft yellowish tone at the base, shaded over further along with violet or rosiness, as if someone had taken a brush and laid on a thin layer of water color. They are spotted like their one parent. The stems from bulbs established in the garden for several years are five feet high and one carried twenty-two flowers. They stand in front of a tall hemlock hedge which sets them off to great advantage. My city friends go into ecstasy over these lilies and always exclaim for some strange reason: "They look just like orchids." Presumably the colors remind them of cymbidiums.

When *Leichtlinii* var. *Maximowiczii* is in flower, I run back to take another look at the *Willmottiae* to make certain of their distinction. There is a different quality of leaf and character of flower but superficially they look somewhat alike.

I can never tell the difference between *Davidii* and *Willmottiae*, except that *Davidii* flowers about ten days later and *Willmottiae* has creeping root stems. I look and look at them and think I have found the difference but see I am mistaken. *Davidii* on the whole is more robust.

The *candidum* are out by the end of June, but, alas for me, they are always smitten with *botrytis*. I have been told they should be grown right in





*Walter B. Wilder*

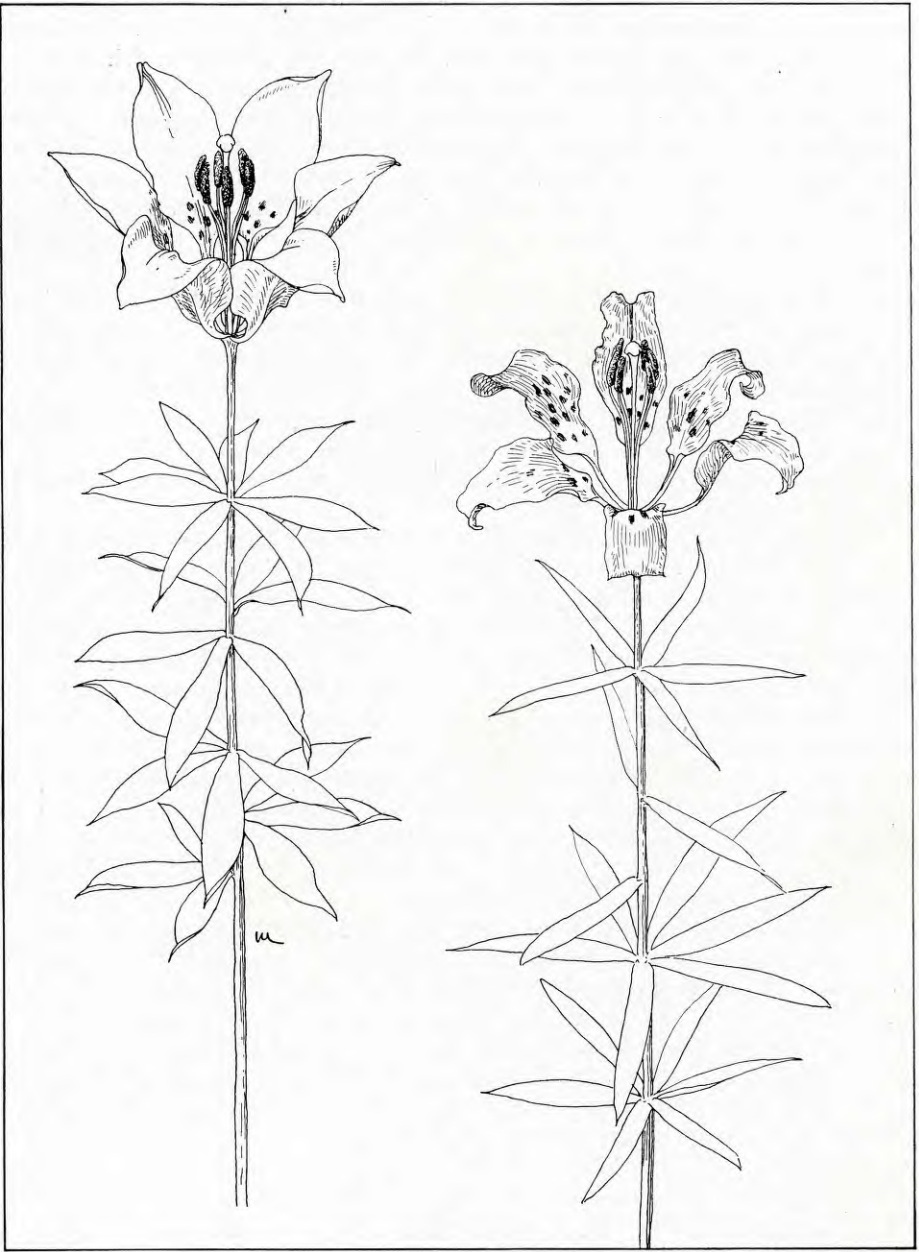
*Lilium Roeslei.*





*Lilium Parryi.*





*Lilium philadelphicum.*



among the perennials and not where there is too much space around them; but even that position has not made them any healthier. I now have a colony raised from seed sent by the Abbé Soulliet, who has a strain which is very fertile, but these plants too are sick in spite of spraying. In Virginia gardens, they grow beautifully, and in England and France they are exquisite. Their glistening snowy perianths are placed sideways on the stems and form a short panicle. The *candidum* was used as the symbol of the Annunciation to the Virgin, and painted true to life in old Flemish and Italian paintings. They have the sweetest scent of any flower that grows, to my prejudiced taste.

*Martagon album* is a beautiful lily. It is earlier than *candidum* and has a dark green stem and whorls of leaves and carries a spike of waxy white nodding flowers with reflexed segments. It is said to prefer a dappled shade. Other *martagons* come in tones of plum. If combined with harmonious colors, they look well, but a clashing companion can give them a decidedly dusty appearance. *Martagon* var. *dalmaticum* is a deep purple and var. *cattaniae* a lighter shade. Low thalictrums look well under these lilies and so does the foliage of aquilegias.

*Monadelphum*, a handsome yellow lily from the Caucasus, flowered for two years and then disappeared from the garden. It blooms in June. Once, in a tiny garden in the English Lake District, I saw thick clumps of the scarlet lily, *chalconicum*. They were breath-taking in their gorgeousness. Every time I order it from Europe, it comes so sick that it dies forthwith, and, unfortunately, when I have ordered it from American nurserymen, instead of the rare and flaming lily I expected, an ordinary *elegans* came up a decided anti-climax. *Chalconicum* is one of the parents of *testaceum*, *candidum* being the other. Another European June-flowering lily is the *pyrenaicum*, a shining yellow reflexed lily with brilliant scarlet pollen in its anthers. The flowers are small in proportion to the height of the stem and its many leaves, but it is attractive. Like the *martagons*, it has an unpleasant smell. It has been quite hardy for me.

The last week in June in most years is the height of our garden season. Then the *Regale* lilies are in flower, all the way down a walk two hundred feet long, lined with dogwood trees, clipped into standards, and carpeted with the glossy leaves of *Vinca minor*. There are a few *elegans* and a few *Willmottiae* to make bright spots of gold, but the *regale*, hundreds of them, are the queens of the realm. Their fragrance is so strong that friends living a mile away tell me they can smell them. The scent has an exhilarating, almost intoxicating effect, and is delightful out of doors, but a little too overpowering inside the house. Other clumps of the white flowers forming a crown-like cluster on top of their long stems look well in a corner in front of the *Rosa rubrifolia*, with dark red leaves which enhance the rosiness on the backs of the lilies. At their feet are masses of dwarf lavender. They also combine well with the polyantha rose, *Gruss an Aachen*, with its petals of pink-cream, and a tiny flush of blue.

*Sargale* and *princeps*, both crosses of *regale* and *Sargentiae*, come two weeks later as does *sulphurgale*, a hybrid *regale* and *sulphureum*. The crosses are much larger and *sargale* is whiter than *regale*, while *sulphurgale*





*Lilium Grayi.*





Harry G. Healy

*Lilium Hansonii.*

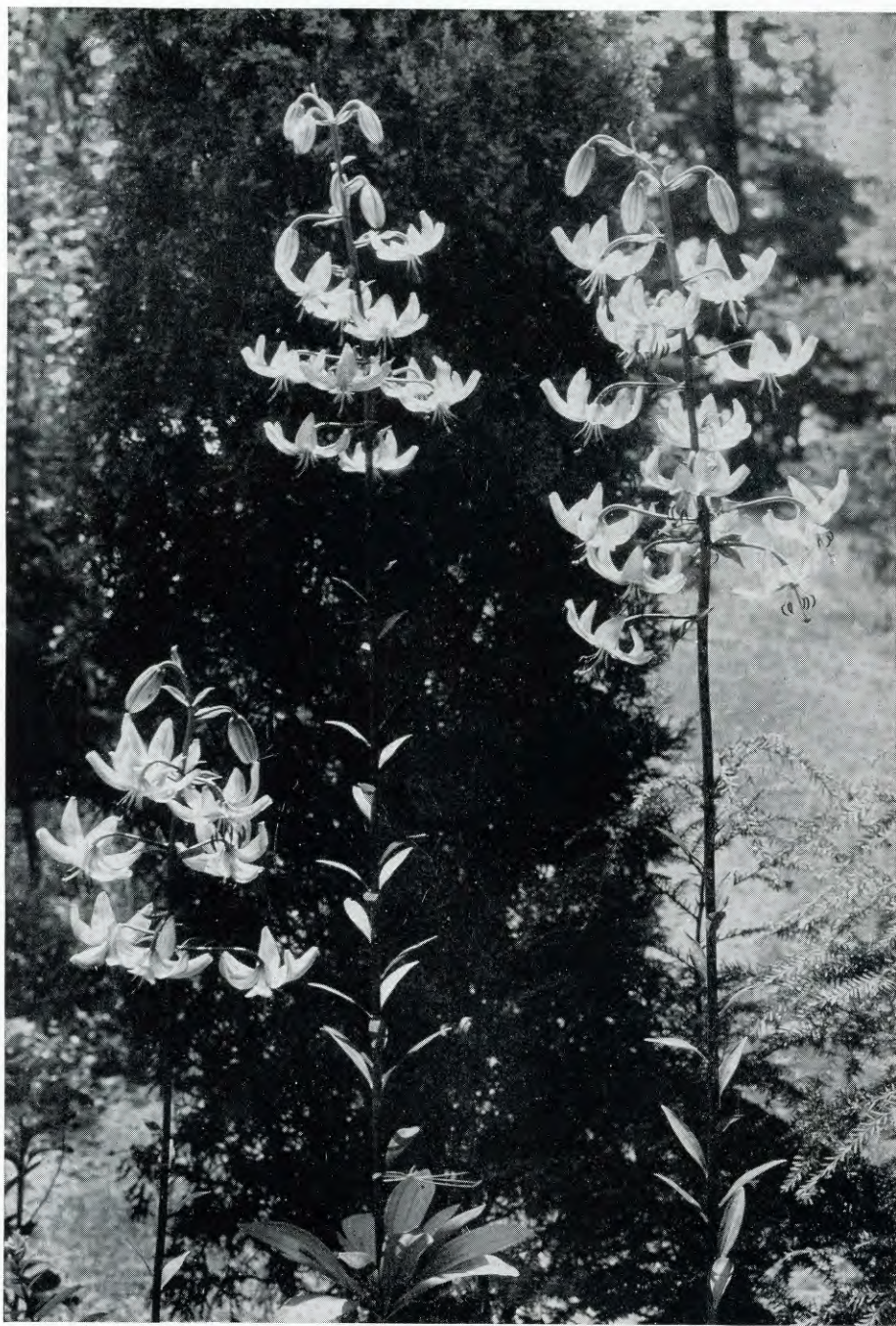




Walter B. Wilder

*Lilium Hansonii.*





*Edward Van Altena*

*Backhouse Hybrids.*





*Walter B. Wilder*

*Lilium, Mrs. R. O. Backhouse.*



has more green on the outside of the perianth and a larger green nectar furrow inside. Miss Preston in Ottawa who has created more hybrid lilies than any one else, and is the *Grande Dame* of the lily world, grows her *regale* lilies and hybrids in front of a wall covered with scarlet climbing roses, a stunning combination.

*L. Brownii* blooms contemporaneously with *regale*. The lily has a white trumpet and grows on stems three feet high and so far at Foxden has carried two flowers. They open a greenish yellow inside and fade to white. The backs of the petals are quite dark in the bud and gradually fade to look as if someone had colored them lightly with brown crayons.

The second week in July when the phloxes are showing color, when *Veronica longifolia* is a great clump of violet spires and the petunias are ramping in spaces left vacant by the tulips, the *testaceum* open their creamy peach-colored reflexed blossoms. As they sway on their long gray-green stems, they waft a delicate scent through the garden. At the same time, *cernuum* opens its pinkish-lavender nodding flowers, if it has decided to remain in the garden. It is an uncertain lily, but dainty, with its fine linear leaves and of a low stature and unusual color.

The third week in July, the *tigrinum* are in flower. Since they are somewhat coarse, and with their pinkish-orange flowers do not fit into the summer picture where phloxes in tones of bluish-red predominate, it is safer to plant them in the portions of the garden verging on the wild. They look handsome with *hemerocallis*, and with the tall *Campanula Rapunculus*, *Trachelium*, and *Grosecckii*. Tall veronicas look well with them too. *Tigrinum* var. *splendens* is a week later, *tigrinum* var. *Fortunei* is a week earlier than the type. *Tigrinum flore pleno* is double and, to my taste, a double lily is a monstrosity, but that is merely a personal opinion. The bulbils in the axils of the leaves drop off and form new colonies of plants. This is very nice when the mother plant of *L. tigrinum* is clean and healthy, but, unfortunately, the *tigrinums* often carry the mosaic and are a source of infection without themselves being injured by it. In other words this lily is the typhoid Mary of the group. After the big plants have been rogued out, babies keep springing up from the bulbils, so it is not easy to secure a clean strain unless one can be certain the older sick ones have been entirely destroyed before starting in with a new lot.

*Callosum* is an odd lily. The stem is too tall for the small red flowers. However, since it comes the end of July when the other small lilies have long since set their fat upstanding seed pods, it is welcome. Besides, it is readily raised from seeds and its scarlet note is attractive near buddleias and *Artemisia lactiflora*.

By the end of July, the first *Henryii* begins to flower. The tall brownish green stems clothed with lustrous leaves have been conspicuous all spring. When *Henryii* is planted in a congenial situation it looks almost like a shrub, for numerous shoots form from the base, each carrying a long spike of nodding yellow flowers. The yellow is "Ochraceous Orange" and a lovely shade. The flowers have bright green nectar furrows and quantities of raised papillae on the lower portion of the segments. The heavy stems may have





*Lilium szovitzianum.*





*Walter B. Wilder*

*Regale hybrid.*





E. L. Crandall

*Lilium Sargentiae.*

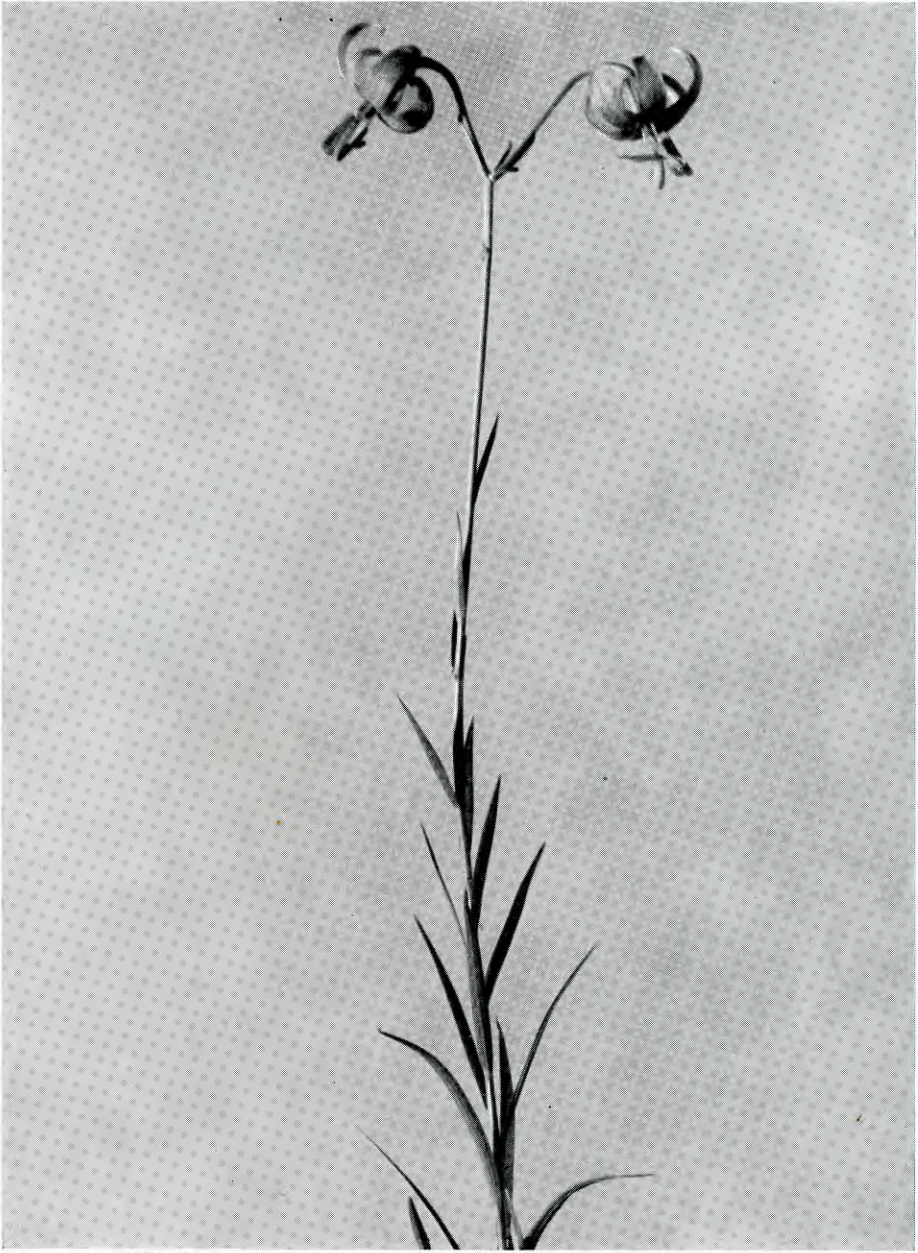




Walter B. Wilder

*Lilium Brozonii.*





*Margaret deM. Brown*

*Lilium callosum.*





*Lilium testaceum.*





*Silvia Saunders*

*Lilium auratum.*





*Silvia Saunders*

*Lilium speciosum rubrum.*





*Lilian A. Guernsey*

*Lilium leucanthemum var. chloraster.*



to be staked. Our *Henryii* lilies grow in with *Aconitum Wilsonii*. The lilies remain in flower until the second week in August.

They meet *auratum* which by then is shedding its glory upon the scene. *Auratum* is the most dramatic and effective of lilies. The flowers are saucer-shaped and white and down the center of each segment is a gold or a reddish line, according to the variety. They measure six and a half inches across. On the lower portion of the segment are reddish or green papillae. The flowers last a long while, the lower ones opening first. The stems grow to be eight feet high and carry as many as twenty flowers. Unfortunately, this lily is very subject to mosaic and grows slowly from seed. But, it is so magnificent that it is worth a good deal of trouble to secure it. I had one bulb which flowered for four years, then it stopped for a year, and now new stems are rising from it again. The fragrance is so overpowering it should rightly be called a "smell," but those who like it think it stimulating and disturbing. *Auratum* standing next to a hemlock hedge, with the fluffy soft green foliage of spring perennials, now no longer in flower, at their feet, are a sight to stir enthusiasm for lilies in even the most reluctant gardener.

*Speciosum rubrum* begins to flower in mid-August and continues into September. Once a clean strain has been secured, the bulbs increase and have to be divided every four years or so. The stems grow four feet high and carry eight blooms or more. The flowers are very open and, according to the variety, are either all white, or white more or less darkly flushed with rose. They have quantities of high white papillae tipped red near the base of the segments and a prominent green nectar furrow. *Speciosum* smells delicately and is a rarely beautiful lily.

*Lilium leucanthemum* var. *chloraster* often called *centifolium* is a very tall tubular white lily which, the year I grew it in a pot, flowered in October. It is easily raised from seeds. It grows in the south of England and ought to be fine for gardens south of Philadelphia, since it is not hardy in the north.

*Philippinense formosanum* is another tubular white lily which flowers late. I have grown them by the dozens. It is not one of the best looking white lilies, but since it flowers late is welcome in gardens, smells deliciously like *speciosum*, and is quite hardy.

*Duchartrei* has been admired and is a white lily heavily spotted with maroon, a small plant not growing much over fifteen inches high. It is difficult and I had it once but lost it during the Winter.

All these lilies, with few exceptions, are possibilities for the amateur with a minimum amount of common sense. Other gardeners may find lilies have been omitted which they have found equally simple. But, this is a record of the lilies as they have been grown at Foxden for the past fifteen years. No other group has as many beautiful members as the true lilies, and from my own experience, I can say that to conquer these temperamental flowers, and induce them to settle down in the garden, and flower year after year, gives one a most pleasing sense of achievement.



## Work of the Lily Committee of the Garden Club of Virginia

The Lily Committee of the Garden Club of Virginia was developed from the New Plant Material Committee. This latter committee, as its name implies, is devoted to the introduction and study of little-known or used plants, and the first concerted action towards a study of the genus *Lilium* in the Garden Club of Virginia was inaugurated within the committee.

There had long been a feeling among a few that lilies had suffered undeserved neglect in the mid-South . . . a neglect largely due to the generally prevalent opinion that the climate was unfavorable to lily culture. But closely following the revival of popular interest in England, and influenced by the findings of the Lily Committee of the Royal Horticultural Society, a small group of enthusiasts were devoting considerable attention to experimenting with various varieties in their gardens.

The Garden Club of Virginia, like all the Garden Federations throughout the country, is a body of independent "Sovereign States," loosely bound together, each of which has individual interests and aims, to say nothing of independent opinions and wills. It follows, naturally, that participation in all projects is voluntary; and those familiar with the psychology of outwardly-united, though in reality independent groups, must realize that to popularize and establish any new enterprise is a matter of "touch and go."

So, in the case of the lily, it took several years of constant and steady pressure before the final result was achieved, and with the backing of an enthusiastic president, a Lily Test Committee had become an accomplished fact. But once formed, with the Rose and Narcissus Test Committees as models, the way has been easy.

The set-up for the work is simple, and is divided into two sections . . . that of the Central Committee, and the work with the clubs. The Central Committee of five, including the chairman, directs the policies, decides on the yearly work, and organizes the flower shows. The Garden Club of Virginia finances a small trial garden, grown under the care of the chairman. From the results of this garden are selected the varieties for further trial the following year by the members of the Committee; and from their experience is chosen a group for experiment among the member clubs the following year. This gives two years of observation of the behavior of the varieties finally chosen for general trial.

Each club entering the trials purchases the same collection, placing it under the care of a chairman for lilies in that club, who sends in a report as to its behavior. The Chairman of the Test Committee negotiates for the purchase and delivery of these collections, but each club pays for its own collection, through the Test Committee Chairman. Individual members have the privilege of purchasing the complete collection, without change, at the wholesale rate offered for the clubs.

The first annual collection was chosen for a succession of bloom over a wide period, not for any particular study of species nor their varieties. It was simply aimed at touching the high spots of the hardiest varieties, and



as a general introduction to the family of scale-bulb lilies. It was comprised of 17 varieties, five bulbs of each. Nineteen more varieties were planted by each of the five members of the Test Committee, while the Chairman grew an additional collection as the nucleus for the Committee trials the following year.

Thirty-eight of these general club collections were planted throughout Virginia, under widely differing climatic and soil conditions, while the growing interest was shown by a number of independent collections, varying in size and varieties, purchased through the Committee Chairman.

Thus the first step was accomplished, of actually placing lilies, other than just *tigrinum*, *regale* and *candidum*, under the observation of the Garden Clubs and their respective communities.

From the beginning, and in the effort to gradually establish disease-free bulbs, the growing of lilies from seeds has been stressed. To encourage and develop an interest in this, the Committee sorted out and distributed as gifts, several hundred packages of fresh, home-grown seeds, not only to member clubs of the Garden Club of Virginia, but to non-member clubs who were interested. This was made possible by generous donations of seeds from members of the American Horticultural Society, as well as from a few of the Western growers.

A collection of over eighty slides has been assembled, eleven of cultural methods, the remaining showing lilies that have been grown in Virginia and a few of newly-hybridized varieties that are likely to succeed.

In sending out the bulbs and seeds to the clubs, the Committee compiled a little elementary primer, with practical suggestions as to soil, drainage, and general culture of bulbs and seeds. The question of disease was ignored, as it was felt that the clubs should first learn the flowers themselves . . . so few knew even of the existence of the great number of species with their varieties and hybrids, and to start out with a discouraging note might kill an interest before it was awakened.

Realizing that the strongest argument would be the lilies themselves, every energy has been bent towards staging the annual Lily Shows . . . no matter how small. Since, in the first two years of the existence of the Test Committee, there were not enough bulbs actually grown in Virginia for an independent show devoted entirely to lilies, it was necessary to obtain the co-operation of some garden club at whose late spring show a separate section could be devoted to scale-bulb lilies. The Committee was most fortunate in securing the enthusiastic and interested backing of the Rappahannock Valley Garden Club, at Fredericksburg, and in the generous space given them, during the past two years, it has been possible, not only to prove the case to the "Doubting Thomases," but to awaken a truly amazing and widespread interest in lily-growing.

Best of all, the demand is now universal for an independent lily show, with general flowers classes added only in so far as they are accessory to the scale-bulb lilies.

Part of the amazing success of this small venture has been due to the live co-operation of the American Horticultural Society, which has placed every possible educational facility at the disposal of the Lily Test Committee of the Garden Club of Virginia.



# Lilies From Seed and Scales in a Virginia Garden

ESTHER AYER MILLNER

Of all the phases of lily culture one of the most fascinating is the raising of new bulbs from seed and scales. Before undertaking it perhaps one should already have learned "to labor and to wait." Fortunately though these virtues are not so difficult in a path strewn with so much interest, so many surprises and so many delights.

The greatest surprise of the past year was having seed of *auratum*, *speciosum* and *japonicum*, which normally require two years to show any growth above ground, germinate and send up leaves in a month's time. The seed was bought the last of August from a mid-summer catalogue, advertising fresh seed of these and many other lilies. The seed was sown immediately in a cold frame, about one inch deep, watered in thoroughly and the frame covered over with thin burlap. September was exceedingly hot and dry. Nevertheless, by the first week in October there was a thick stand of second leaves from the *speciosum* seed, a thin row of the *japonicum* and a few scattered *auratum*. After wintering under a glass cloth cover over the frame, they reappeared in April this spring. The *speciosum* are making a strong growth equal to the quicker growing lilies. The *japonicum* and *auratum* are little and slow.

A further experiment with some of these slow growing seeds, including *monadelphum*, *Parryi* and *Washingtonianum*, was made by sowing them in an open frame late in December. They were frozen several times and those that were heaved to the surface in the spring had swelled and looked ready to germinate, but, contrary to the experiences of another writer, no sign of germination has appeared above ground up to early summer.

Excellent germination of the "easy" or quicker growing lilies has been had by sowing in frames any time from early fall to earliest spring. (Cold frames are used to afford protection from early and late frosts.) September sowings come up in October. *L. longiflorum* retains its leaves over the winter with cellophane protection. Late fall sowings appear from early February on, just when, depending on the warmth of the weather and the location of the frame. Freezing does not seem in the least injurious to any of the lily seeds.

February sowing of these "easy" seeds in deep flats in the house have been very successful and made interesting winter window gardening. The flats are set outdoors after the danger of frost is over, and left undisturbed until October. The bulbs are larger than from the spring sowings in the frames.

The important considerations in sowing lily seed in this section seem to be the following: fairly thick sowing of the seed in good deep soil made friable with woods' earth, sowings in the cooler months of the year, daily weeding after the seeds are up, fairly dry soil in the early stages of growth, and protection with lath frame covers from the hot summer suns.



The following varieties have come up mostly within a month when sown in cold frames in the early fall or spring, or in the house in the winter:

*Amabile*, *centifolium*, *concolor*, Crow Hybrids, *Davidii*, *dauricum*, *elegans*, Golden Gleam, *formosanum*, *Henryi*, *longiflorum*, *Leichtlinii* var. *Maximowiczii*, *neilgherrense*, *princeps*, Pride of Charlotte, Shelburne Hybrid, *regale*, *Sargentiae*, *tenuifolium*, *Willmottiae*, *umbellatum* and various hybrids.

Occasionally, however, some lots of these seeds require longer to germinate. This spring, bought seed of *dauricum* did not put up its green loops for two months. Seed of my own *formosanum*, which was ripened during the late fall and early winter, in the house, were sown in March and did not appear until June. Incidentally, most of the seed pods of this pure white late variety contained something over 1,000 seeds each.

So anxious have I been to have fertile seed of my own lilies that I hand pollinate the best specimens of all varieties two or three times a day from the time they open. This spring in addition to the lilies that regularly seed, the seed pods on two out of five *testaceum*, on several *Madonnas*, and all the *Maxwills* gradually turned upward after the sepals fell and are now increasing in size.

For several years now I have taken up the baby bulbs from seed sown any time within the year, early in October, and lined them out about three inches deep in slightly raised beds of leaf mold, loam, peat moss and bone-meal. Before setting I put a good layer of either coarse sand or sifted coal ashes on top of the bed. As the trenches are open this dry material falls in and surrounds the little bulbs. At the advent of freezing weather the bed is covered over completely with a two or three inch blanket of leaves. This is gradually removed in the spring.

The first bloom from your own lilies, even though the stems are very short and the bloom of miniature size, is one of the long remembered rewards of gardening. *L. longiflorum*, *formosanum*, *tenuifolium*, Golden Gleam, *cernuum*, *Roezlii*, and *concolor* have all shown some bloom the second year, while the regal lilies and their hybrids have not bloomed until the third year from sowing. The lovely yellow California lily, *Parryi*, one of those slow to appear from seed and which class of lilies usually requires five to six years to bloom, has bloomed for me the third year. It has been a best grower during this very wet spring and early summer.

Raising lilies from scales is not only as interesting as from seed, but has the advantage of producing in a few weeks or months larger and stronger bulbs than can generally be grown from seed in a year's time. And they require much less care and attention than the more tender and delicate seedlings.

Just when to scale bulbs so that the increase is sure evidently requires experimenting in the different sections of the country. Dr. David Griffiths in his experiments at Bellingham, Washington, found that scaling of lilies in that region was best done when they were at the height of their bloom. Early fall or early spring have worked best in my garden. Scales set in the summer, as in the state of Washington, form bulbs, but they do not grow well and are very subject to rot during the hot weather.

In early November, 1936, I scaled *Madonna*, *testaceum* and *speciosum*



*album* bulbs, setting the scales about two inches deep in a cold frame filled with light dry loam. Rain seeped in so that the bed needed raking several times a day during sunny weather to keep the soil relatively dry during the callusing period. Conditions were evidently right for the scales remained firm and healthy (no rot) and all developed strong bulbs. By January the Madonna and *testaceum* all had good sized bulblets attached to the scales, but only one or two on each. Only about half the *speciosum album* scales had made bulbs. These were the ones in the sunniest part of the frame. Those that showed no sign of bulbs in January seemed to lie dormant until April. By June they were teeming with bulbs and stout roots.

Scales from *L. umbellatum*, variety Golden Fleece, I tried in covered boxes containing peat moss and sand, in the cooler parts of the house. They developed bulbs all during the winter. The first lot came in six weeks when the scales showed two to five tiny bulbs, and scales with bulbs attached were planted in deep flats of soil. Most of the rest showed some rot. These were cleaned up and from week to week more and more of them showed bulbs. Some rotted away entirely. Leaves appeared from these scales from mid-March to mid-May, with finally about half as many green tops as there were bulbs. If these run true to form, next year these bulbs will put up stems six to nine inches tall. The following year the stems will be more than twice as tall and there will be flowers. Madonna lilies are full grown from these scale bulblets in four years.

Some scale bulblets put up leaves the first season they develop and some do not. Of the lilies I have scaled *Brownii*, *umbellatum* and Madonna put up leaves the first spring. *Testaceum* and *speciosum* do not show any leaves until the second spring.

If gardeners could be persuaded to raise their lilies from seed, and to scale their most vigorous lilies that do not seed, the ogre of disease might be slain and distinction added to their gardens by the arresting beauty of these lilies.

#### PICTURES FOR BEGINNERS

On the four pages that follow are diagrammatic drawings that touch on some of the elementary things that readers will find in books, which may not be illustrated in detail. It is not suggested that they will cover all the possible variants that may occur within the genus, but they do touch upon the main features that the beginner may well learn first. Types of bulbs are shown on page 58, natural and artificial increase on page 59, typical flower shapes on page 60 and types of inflorescence on page 61.

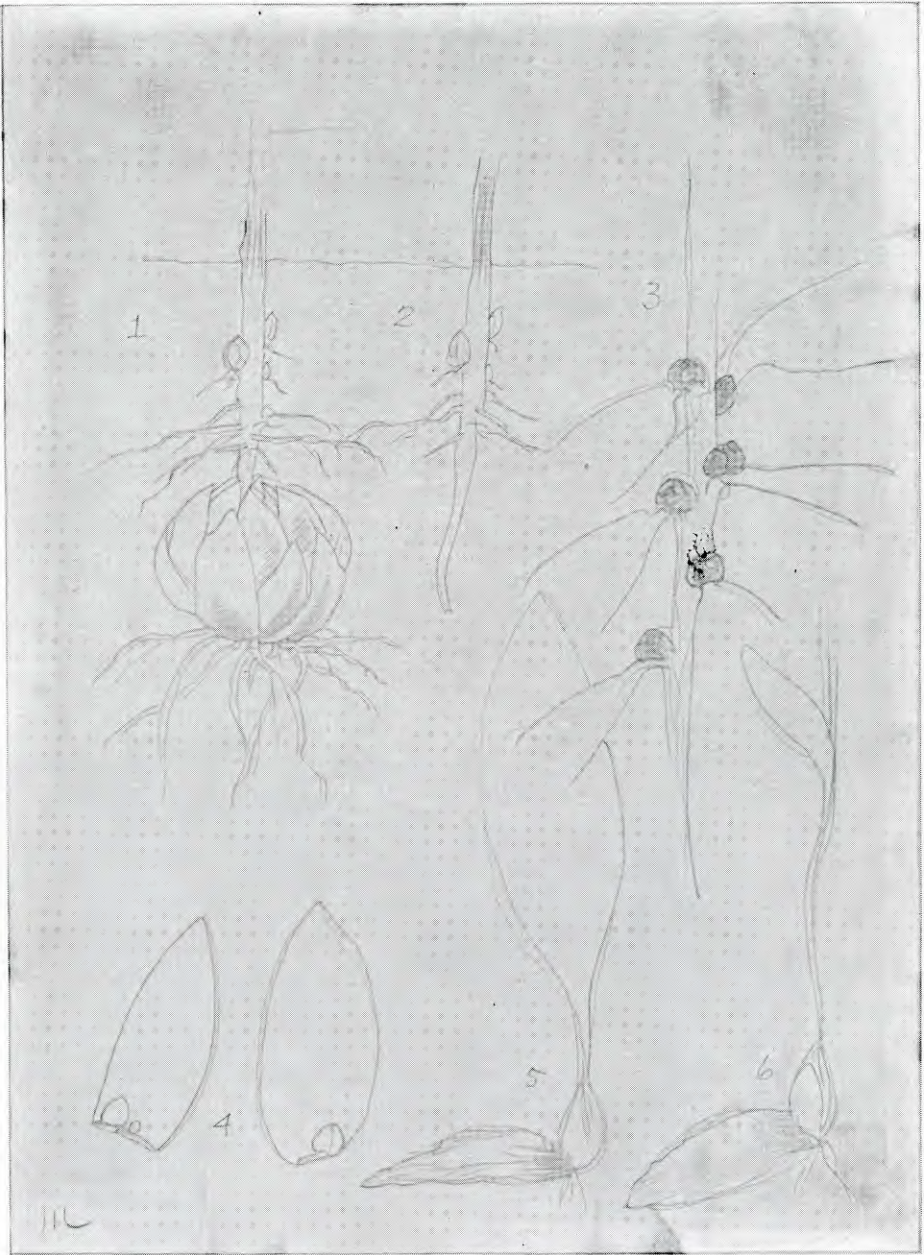




*Types of Bulbs.*

1. Ordinary bulb showing remains of last year's flower stalk. 2. Section same showing diagrammatic structure. 3. Stoloniferous bulb showing lateral stolon and new bulb. 4. Rhizomatous bulb showing four years' growth, the youngest portion on the left, the oldest on the right.

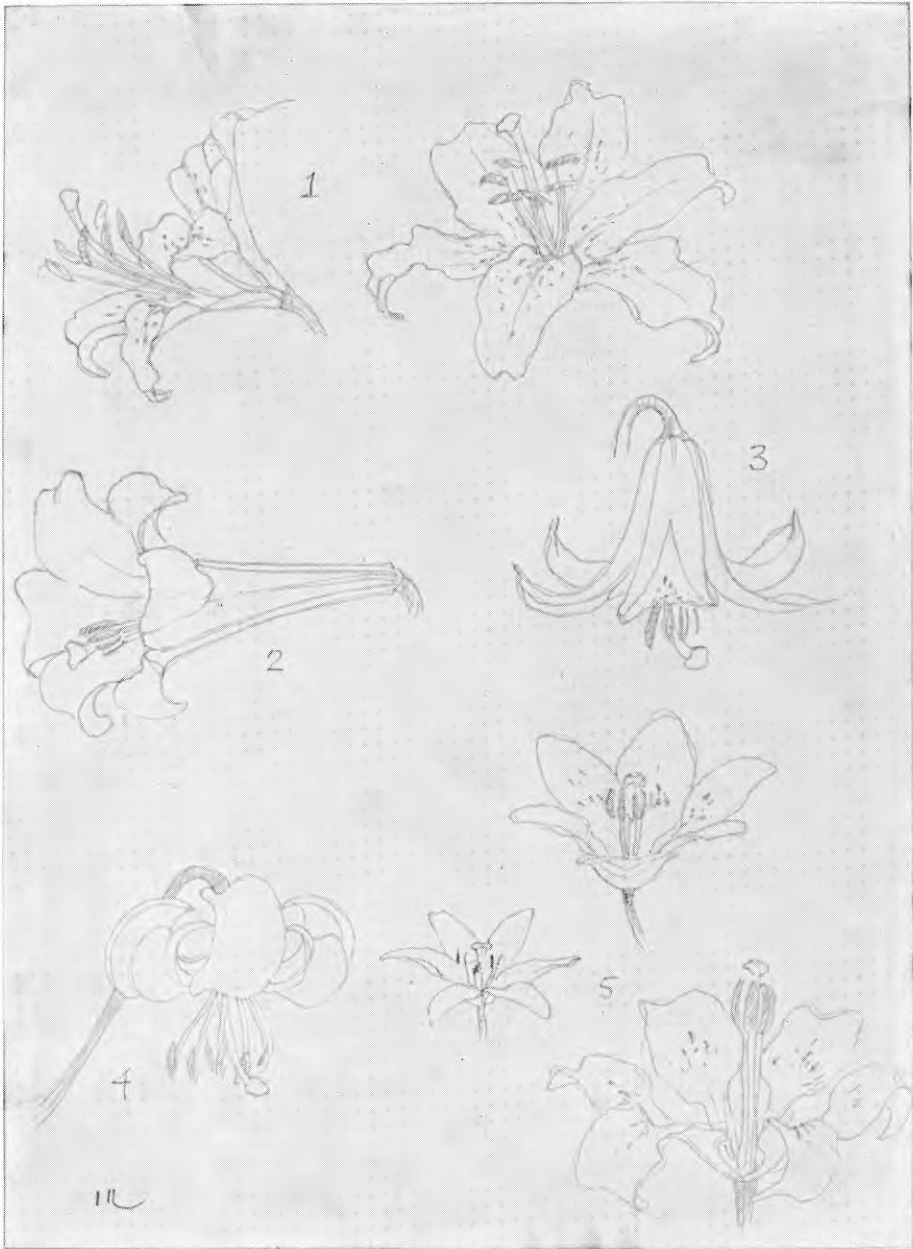




*Propagation.*

1. Bulb in position below soil, showing basal roots from bottom of bulb, stem roots from base of flower stalk, bulblets forming on base of flower stalk. 3. Bulbils in axils of leaves. 4. Bulbs forming at base of bulb scales that have been propagated. 5. The same later, when the bulb scale has been used by the developing new bulb.





*Types of Flowers.*

1. Profile and front view of *Lilium auratum*, sole member of the Archelirion Section. 2. Typical trumpet lily, Eulirion Section. 3. *Lilium canadense*, Pseudo-martagon Section. 4. Typical Martagon. 5. Three types of erect lilies, Isolirion Section.





*Types of Inflorescence.*

1. The umbellate grouping of *L. dauricum*. 2. The simple raceme of *L. longiflorum*. 3. The panicle of *L. speciosum*.



# Successes and Failures With Lilies

EDWIN C. POWELL

My interest in and experience with lilies dates back more than 20 years. During this period I have grown, or attempted to grow, more than 60 species and varieties from purchased bulbs and seed. The failures have been many; the successes relatively few. For a dozen years I had a half-acre garden a mile north of Washington, D. C. It had a northeastern exposure and the soil was Chester loam ranging from rather light and sandy to moderately heavy. My present garden, 6½ miles farther "up country," to which the lilies were moved 2 years ago, is on the same type of soil.

Possibly my most notable success has been with the Formosa lily, a hardy form of the Philippine lily. A small packet of seed was obtained from an English lily specialist in 1925 and from it I brought four plants to flower the next year. They grew from 4 to 7 feet in height and persisted for 5 or 6 years. I have raised several hundred plants from seed and find them as easy to grow and as reliable as the commoner garden flowers and vegetables. I rate it as one of the best half dozen lilies for this section of the country. They begin to bloom in early July and a bed of a hundred or more 2- or 3-year-old seedlings will continue to produce flowers until October or November. The bulbs are small to medium in size and I plant them 5 or 6 inches deep. As the seed germinates quickly it should be planted in early spring.

The regal has given almost as much satisfaction as the Formosa. My start with it was from a packet of seed sown in the open ground in early January 1924. As the bulbs have been moved from time to time I have no record of how long they persist, but a few that have not been disturbed for more than 6 years have thrived and increased by division.

The old tiger lily, common and gaudy, is one of the best and an especial favorite because of its dependability. Several years ago I brought back a handful of bulbils from some plants that had grown for years in the garden of my former home in Massachusetts, and from these and their progeny I have grown many plants. They root so readily in the cultivated soil of the flower borders that I frequently have to treat them as weeds. *Lilium tigrinum* has been the hardiest, healthiest, and longest lived of any lily that I have grown.

I have grown several varieties of *umbellatum*, including Golden Fleece, Grandiflorum, Incomparabilis, Orange King, Splendidum, and Vermillion Brilliant, and numerous crosses of them from seed. They are hardy and comparatively long-lived, and produce many stem bulbs—so many that they should be removed yearly. Thunberg's lily resembles the *umbellatum* but is shorter in stature and blooms earlier. Alice Wilson was short-lived; Sanguineum lived 5 or 6 years; Mahony somewhat longer. *Wallacei* belongs in the same group but is taller, later to bloom, and the flowers are spaced along the stem. I grew it from seed and have had it for several





*Lilium formosanum.*



years. *Dauricum* from five Holland-grown bulbs made a fine show the year after planting, then seemingly disappeared. A year later I dug into the row and took up 75 tiny bulbs, but I never could get more than 2 or 3 to flowering size—they split up every year or two and disappeared 4 years later.

The Easter lily (*longiflorum*) is very satisfactory once one has learned how to handle it. If undisturbed it is likely to start growth in the fall and winter-kill. I dig it in September, remove the numerous stem bulbs, and replant in November. The record-breaking winter of 1935-36, when the ground froze to a depth of 2 feet and remained frozen for 6 weeks, was too much for it and the bulbs perished. It is as easily grown from seed as the regal or Formosa and blooms the second year.

The four varieties of *speciosum*, *roseum*, *rubrum*, *rubrum magnificum*, and *rubrum melpomene*, have been satisfactory and reliable, but have increased very slowly. They grow equally well in full sun or light shade, are long-lived, need to be planted deep, and left undisturbed. They produce a few (sometimes none) stem bulbs that should be removed in the fall and replanted. I have grown them from seed but the leaves do not appear above ground until the second year and it requires 3 or 4 years to bring them into bloom. The white variety has proved to be delicate and short-lived.

Henry's lily, the yellow *speciosum* so-called, does wonderfully well under the right conditions. Two neighbors have grown it 6 to 8 feet high and with 25 or more flowers on a stem. I have seldom had more than a dozen flowers on a 4-foot stem. It may be grown from seed to blooming size in three years.

The native *superbum* or Turksap lily should certainly be included in any collection in the eastern United States. It is variable in color, markings, height, and floriferousness. One plant this year was 6 feet high, deep orange-red in color, and produced 40 buds and flowers. Another as tall had 14 flowers open one day. It thrives best in a sandy loam or alluvial soil with abundant moisture, and persists for many years if grown in a suitable place.

The Canada or Meadow lily may well head the secondary group of desirable lilies. As beautiful as any of those mentioned above they have not stayed long in my garden. Most of my experience with the Meadow lily has been with bulbs collected in New England meadows. Some have persisted for 5 years. I now have more than a hundred 2-year-old seedlings for which I have great hopes.

*Candidum*, commonly known as the Madonna or Ascension lily, is very satisfactory with some growers; a failure with many. I have some bulbs 6 years that have been scaled twice and moved three times, yet they bloom well each year. A lighter neutral soil seems to suit them. *Testaceum* is in the same class but has not persisted for more than 4 years.

A bulb of *Humboldtii*, growing under a large black walnut tree, produced a 7-foot stem yearly for 5 years before it quit. *Pardilinum* gave fine flowers for 3 or 4 years. The stem is weak to carry the large head of flowers. I hope to try it again in moister soil such as suits *superbum* and *canadense*.





*Lilium canadense.*



I have grown three lots of *philadelphicum* but with indifferent success, although it has remained for 3 years. *Hansonii* has likewise been unsatisfactory, probably because of an unsuitable location. A neighbor who grows it in moist soil in semi-shade has splendid success with it. *Auratum*, the most gorgeous of the lily family, has seldom lived over the third year or bloomed more than once.

Sulphurgale, a cross between *sulphureum* and *regale*, seems comparable with *regale* in every way and, as I have it, differs only in having less yellow in the throat and less wine color on the outside. Being a hybrid the seedlings vary considerably, but all are good.

The daintiest of all lilies, *tenuifolium*, seldom lives to flower the second time, but it is so easily and quickly grown from seed that it is worth while raising a batch every year or two. Golden Gleam appears to be much like it except in color and height.

I have a fine lot of 3-year-old seedling *callosum* bulbs that have flowered twice. They are small and dainty and produce from two to five bright-colored flowers on a 2-foot stalk. Most of them bloom in July; others in August and September.

Success with purchased bulbs depends largely on the condition of the bulbs when received. If freshly dug and with the roots alive and healthy they give good results if replanted in congenial soil and surroundings. Imported bulbs that have been out of the ground for weeks or months generally have no live roots and require a year or more to become established; many are unable to survive such treatment. The raising of lilies from seed offers the best chance to obtain healthy dependable bulbs, and in quantities that the average gardener could not afford otherwise.

Maryland.



# A Yellow *Lilium Superbum* and a Few Other *Liliums*

MARY G. HENRY

In July, 1934, the writer did some plant collecting near home.

One of these days was spent investigating colonies of *Lilium superbum*. Having sighted a clump of these lilies from a train window, some of which bore flowers of a deeper than usual shade of red, the writer motored, a few days later, to a point where a road crossed the railroad track not far from where the lilies grew, and walked along the track until the desired flowers were reached.

They were growing in grass in an open meadow. The soil was a lean, sandy clay that, although rather dry at this time, mid-July, was evidently moist early in the year.

An occasional *Spirea tomentosa*, *Eupatorium purpureum*, and *Asclepias pulchra* grew among the lilies, which for the most part were rather low growing, few plants reaching higher than three feet. Most of them bore one or two, rarely three, flowers.

The bulbs were shallow growing, some of them being covered by not more than an inch of soil, although most of them were two or three inches below the surface.

There is usually, it seems to me, surprisingly little variation in the brilliant tones of orange vermilion that this lily ordinarily wears.

I dug up a few bulbs that bore extra highly colored flowers, brought them home and planted them in the dark, rich with humus, natural soil in Gladwyne, in a situation where only the afternoon sun reaches them. They are near the edge of a woods, and their brightly colored flowers appear like bits of flame in front of the dark, shadowy greens. These lilies are now settled happily in their new home and are about twice their original height, and bear more flowers than they did in their native lair.

*Lilium superbum* is indeed all its name denotes, and this fact coupled with ease of growth and a hardy, healthy constitution, make it probably the most valuable of all lilies for this part of the world.

A desire came in 1936, to return to the meadow home of these lilies that I had visited two years previously, and so a hot July day found me packing my pet spade, a couple of buckets, and a jug of water in a car preparatory to spending a day lily hunting.

After reaching the meadow, a careful search brought forth nothing of particular interest, so I decided to go a bit farther afield.

In a short time a large meadow lay before me and at the far end was an unmistakable red gleam, covering so big an area it was hard at first to believe my eyes, for this was surely the largest mass collection of *Lilium superbum* I had ever seen.

The meadow was low lying like the other and was surrounded by a dense growth of greenbrier, blackberry bushes, etc. Had there been no lilies ahead, going through the briers might have caused discomfort, but with such a goal



in view, the scratches went unnoticed. In a few minutes I was in the midst of one of the most splendid floral displays it was ever my privilege to see. There were hundreds and hundreds of the showy orange vermilion lilies, newly opened, waving and dancing in the breeze. The beauty of a freshly opened lily, its utter perfection of form and the wonderful, but indescribable texture of its perianth segments were here presented in myriads, in all their glory.

No man planted garden this, and so far these brilliant, sparkling acres, beautiful almost past belief, have, for some miraculous reason, never been despoiled. It came to my mind forcefully, as it always does when I see one of Nature's gorgeous gardens, that every man-made garden looks pale and puny in comparison.

Like lightning and with keen pleasure my eyes surveyed the lilies, the distant closely massed ones first. Again and again, in a sort of daze and quite rooted to the spot I was standing on, my eyes roamed along the distant boundaries of the great mass of red, when, suddenly, to my utter amazement, only a few feet away I perceived one of the most startlingly beautiful flowers I ever saw in my life, a pure golden yellow variety of *Lilium superbum*!

No need to look farther, for in that moment Nature had just given me one of her precious gifts.

The flower was of splendid texture with a surface almost like fine panne velvet. The yellow matched with Ridgway was Light Cadmium, an even tint with no shading whatsoever on the lovely blossom, and without a single spot or blemish to mar its pristine beauty. Only the little green star was in the very heart of the flower.

There were a few more lilies of exactly the same clear, spotless tone of yellow. There were, however, no flowers of intermediate shades.

These lilies were all between  $2\frac{1}{2}$ - $3\frac{1}{2}$  ft. tall, and were growing in the same sort of sandy clay as those I found in 1934. On much of the ground the grass and other plants grew in such scanty fashion, that sun reached every inch of the stems of many of the lilies, from dawn until dark.

Like the others, these bulbs, too, were all near the surface of the soil, some of them, indeed, were scarcely covered while the deepest one I dug was not more than 3 inches underground.

I spent an hour or two walking around, to and fro, in fact I could scarcely tear myself away from this enchanting meadow.

On the way home I hardly took my eyes from the lovely yellow lilies, dug with neat balls, that rode home with me in the car. Surely my lucky star shone very brightly that night.

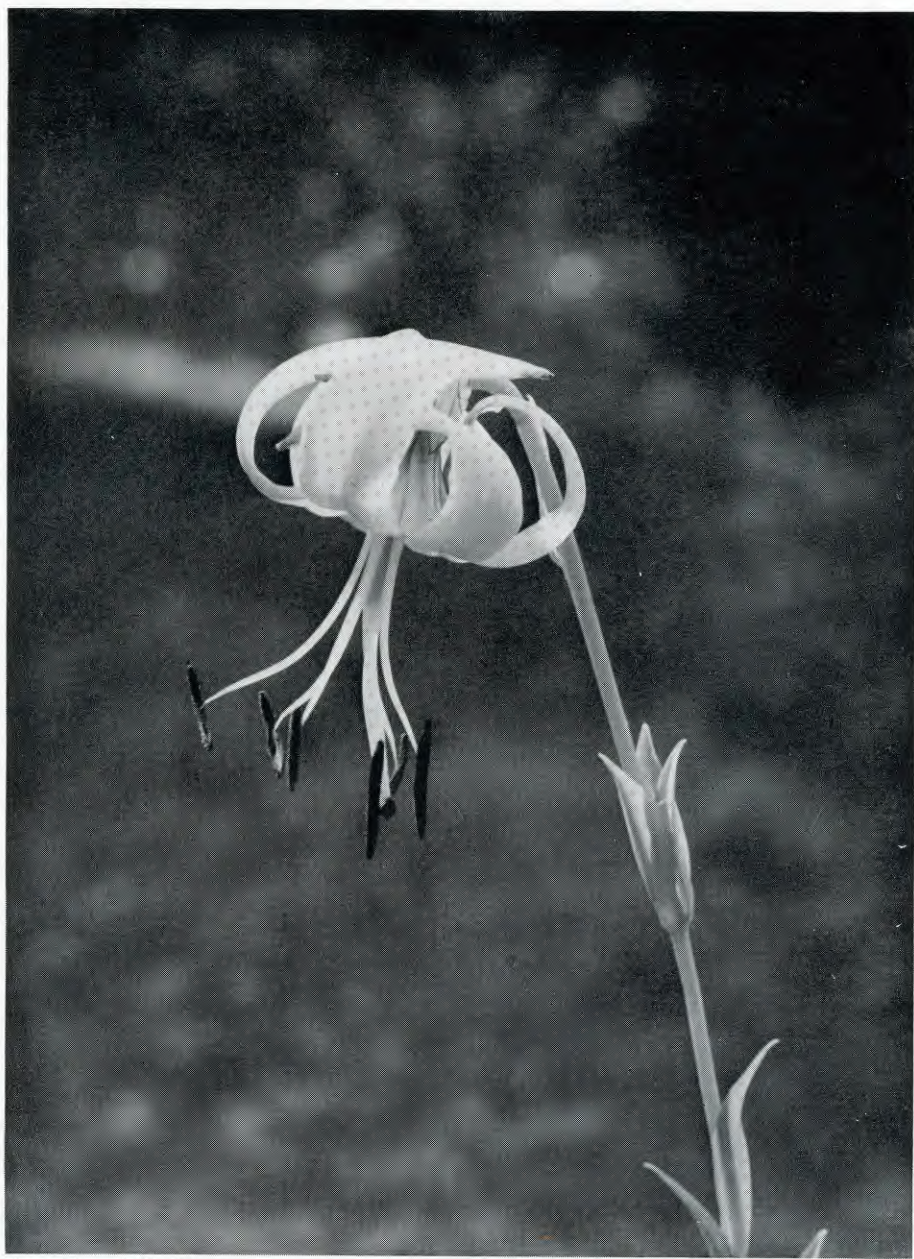
### LILIUM PHILADELPHICUM

*Lilium philadelphicum*, the form that grows wild near Philadelphia, is an exceptionally fine form of this lily and one that I have not seen elsewhere.

It seems strange that its blooming season is later, July 18th, than its sister, *Lilium philadelphicum andinum* of northern British Columbia, which was in full bloom on July 3rd last year.

The color of these lilies is an amazingly dark rich red, matched with





*Josephine deN. Henry*

*Mrs. Henry's yellow variety of Lilium superbum.*



Ridgway, they are solid Ox-blood Red, even in the throat and on the claws, with no yellow anywhere on the flower. The usual dark spots make the coloring even richer.

On a dry hilly meadow, in grass, the stems of *Lilium philadelphicum* were 12-13 inches tall and bore 2-3 flowers each, but when they strayed into the shade of trees they grew about 18-20 inches high and produced one flower apiece.

*Quercus marilandica* grew in the nearby forests, and *Asclepias verticillata*, *Viola sagittata* and *Angelica villosa* grew in company with the lilies in the open.

### LILIUM PHILADELPHICUM ANDINUM

The summer of 1935 found me, for the fourth season, collecting plants in northern British Columbia.

After leaving the Peace River, a horseback ride of about 1,000 miles, northward and westward across the Rocky Mountains, took me to McDame Creek, whence I travelled south by boat to Telegraph Creek and Wrangel, Alaska.

The beauty and profusion of the flowers in this magnificent country were almost past belief, but one of the finest floral sights I saw all summer was on July 3rd, just before I started my long trip. On a promontory bordering a high plateau above the Peace River, *Lilium philadelphicum andinum* grew so thickly one could not step among them without trampling some. It seemed as though their gleaming red flowers, all upturned to the sky, were reaching for and had succeeded in catching the brilliant radiance of the sun.

Lilies are so lavish with their beauty. They wear such gorgeous shades of color. Never can I forget that splendid patch of vermilion. It gives one a feeling of exhilaration of tremendous joy, to see them growing thus, unmolested by human hands, in their native home.

Just below, the landscape seemed to roll away, almost, from beneath my feet as I stood among the lilies on the edge of the promontory, and the mighty Peace River could be seen as it rapidly wended its way through its high shelving banks.

The rocks and stones in northern British Columbia are mostly of limestone, and such lime loving plants as *Malvastrum coccineum* and *Lithospermum incisum* grew on a gravel bank nearby. *Populus tremuloides* was plentiful and roses grew around the lilies.

The lilies grew about 15 inches tall. Several of the blossoms had 8 perianth segments which gave a square appearance to the flower. Almost all of the lilies were a fine, pure vermilion changing to yellow with dark spots in the throat. Some few, however, had throats of a solid, very dark maroon, and one of the lilies was a clear rose color.

The bulbs grew about one to two inches below the surface of the soil which was a fine dark humus.

These lilies thrive in extremes, for the temperature along this part of the Peace River falls to more than 50 degrees below zero, Fahrenheit, every winter, sometimes for weeks at a time, and a summer temperature of 80 degrees or even 90 degrees above zero at mid-day is common.





Josephine deN. Henry

*One of Nature's precious gifts, the yellow superbum.*

#### LILIUM OCHRACEUM

*Lilium ochraceum* is a most outstandingly beautiful and unusual lily. Having once seen it in bloom, few persons with a fondness for lilies would willingly do without it.



The coloring of this fine lily is a combination of two colors that are rarely seen in the "make up" of a flower, for the external portions and the reflexed parts of the large flowers are a pale yellowish green, and the throat and perianth segments are heavily stained a dark toned chocolate maroon. Fragrance adds to the flower's attraction. It is an August bloomer.

*Lilium ochraceum* is said to come from southwestern China, Siam and Upper Burma.

It is a stem rooting lily, and therefore the bulb needs to be planted deeply, and according to authorities it usually grows 2-4 ft. tall.

*Lilium nepalense* is a relative which resembles it closely, and with which it is frequently confused.

In our part of the world *Lilium ochraceum* is considered a tender plant, "a purely greenhouse subject."

Gardening, however, is a game of chance, and a sporty one, too, that is not always played according to Hoyle, and while rules, regulations and directions are usually safe to go by, there are many exceptions and these exceptions provide the plant lover with the thrills that add so much to the joy of gardening.

In 1928 two bulbs of *Lilium ochraceum* came into my possession. These were planted by the writer in a 10 in. pot, in a mixture of sand and leaf mould with a little dark, rich native loam dug into it.

They were put in a pot for two reasons, to protect them from mice and moles, which are very plentiful in Gladwyne, and also because they could be brought indoors in winter, if desired.

The pot was sunk on a gentle slope where a moderate amount of moisture reached it from a small stream about 30 ft. away. This stream usually dries up during the latter part of July, and through August and September.

Tall ash trees give overhead shade and very little sun ever reaches this spot while the leaves are on the trees.

My tiny greenhouse was so full that year, I decided to leave the pot containing the lily bulbs out of doors during the winter, but added a covering of about 6 inches of leaves.

No winter ever passes without taking its toll of deaths. Only one growth emerged from the soil the following spring. That first year *Lilium ochraceum* made a good stout stem but did not produce a flower, but since then it has bloomed every year.

Since 1928 I have repotted the bulb twice.

In 1935 *Lilium ochraceum* produced three flowers on a stem 5 ft. 6 in. tall. This season, as pictured, this noble lily stood 7 ft. 4½ in.!

After that first winter *Lilium ochraceum* has remained out of doors without any covering whatsoever.

During the winter 1933-1934 there was nearly a week, here in Gladwyne, when the temperature was around 16 degrees F. below zero, with one drop to 20 degrees below.

During 1934-1935 there was a cold spell when the temperature went to 16 degrees below, and the winter of 1936 the thermometer fell to 12 below. These past three winters were the coldest in my recollection.

All lilies are beautiful, and lilies these days are more popular and more





*Josephine deN. Henry*

*Lilium philadelphicum, growing near Philadelphia.*

highly esteemed than ever before. I believe that there are no "uglies" in the genus. But for grace of form, for bold beauty of coloring, and for sweet fragrance, too, *Lilium ochraceum* must stand near the top.

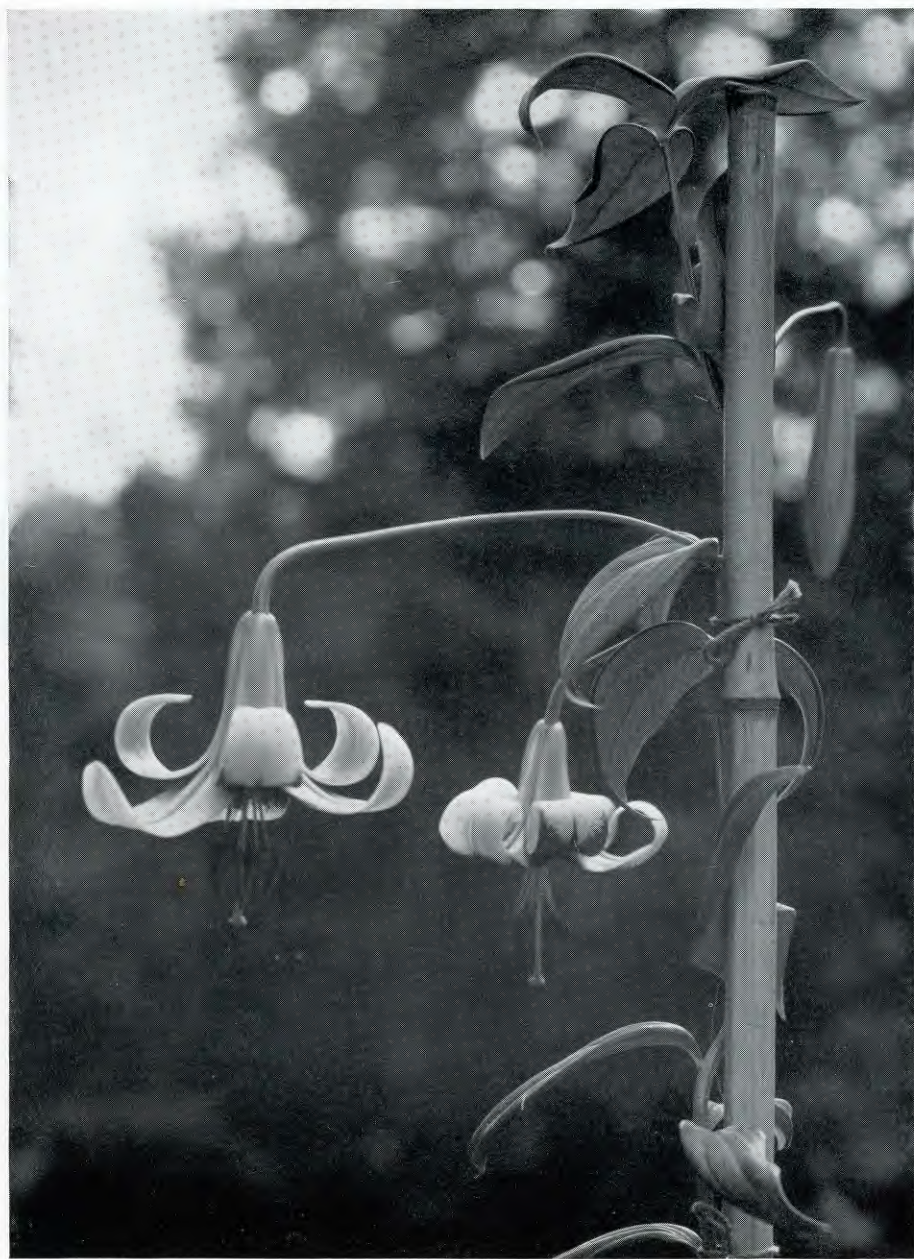




*Josephine deN. Henry*

*Lilium ochraceum* at Gladwyne, 7 feet 4 inches high.





Josephine deN. Henry

*Lilium ochraceum* at Gladwyne.





*A sister plant of Barry's "T. A. Havemeyer." It combines the good features of both parents, *Lilium sulphureum* and *L. Henryi*.*

## Hybrid Lilies

FORMAN T. McLEAN

After long and conservative treatment in the hands of both gardeners and florists, the lilies are now being hybridized. In the last dozen years several new types have been produced, and more are coming every season now. It is perhaps a good time to take stock, and see whither we are trending in this new venture.

First, what is there to be accomplished by all of this activity? The lilies in gardens and in commerce are fine flowers as they are; large, fragrant, varied in color and form, stately and graceful plants. Of course, there are those who would have new forms merely for the sake of novelty. But this seems scarcely reason enough for an extensive campaign of hybridizing. More dependable pink trumpet lilies than *L. japonicum* and *rubellum* are desired. Larger and more attractive reds, and different and clearer colors in the upright *umbellatum* might also prove advantageous. Extending the season of popular forms, as has been done with the regal lily through its late blooming hybrids, Creelman, *princeps*, *sulphurgale*, etc., is also worth while. Outward-facing lilies, neither drooping like the Martagons and trumpets, nor stiffly



upright like the cup lilies, are also sought by the British and Canadians. Progress has been made effectively in extending the season of the regal type of lily particularly. The *princeps* hybrids—Geo. W. Creelman, *sargale*, Pride of Charlotte and Crows hybrids—add two or three weeks to the regal season. *Sulphurgale* goes a bit further in the same direction. All of these hybrids so closely resemble good forms of regal lily to be confused with them. New first-generation crosses with *L. sulphureum* and with *L. centifolium* are yielding more cream-colored forms. But this whole regal hybrid group may be fairly judged as essentially conservative, aiming at small, gradual changes, not violent ones.

Essentially similar in their conservative treatment and results are the Martagon hybrids. The Backhouse hybrids between *L. Martagon* and *L. Hansonii* forms are vari-colored Martagons. There is room for further selection here, to make the most of their color range, from cream to deep purple. Likewise, the *Willmottiae*, *Davidii*, and *tigrinum* hybrids all resemble more robust and vigorous orange-red Willmott lilies, worth while because of their lusty growth, but offering little really new. The hybrids introducing *dauricum*, *umbellatum*, and *croceum* admixtures to this complex make for greater diversity. Preston and Skinner in Canada, and Stook in England have done the most here. Dr. Preston's Lillian Cummings, Grace Marshall and Lila McCann all have outward-facing flowers of brilliant coloring. *Crovidii* from England is a good speckled orange of similar form. Skinner's *Scottiae*, because of the large flowers, heavier substance, and stouter growth, and its two shades of color—orange and deep red—is almost in a class by itself.

The Bellingham hybrids, between the Panther lily (*pardalinum*), Humboldt, and Parry lilies, and similar hybrids of English origin, partake too much of the traits of the first two species to be really outstanding, and they appear to have most of the drawbacks of the parent species, making them difficult to establish in Central and Eastern United States. The natural hybrid, *L. pardalinum giganteum*, the Sunset lily, with its red-tipped Panther lily blooms, is perhaps the best of this whole tribe, though many of the other varieties of the Panther lily are worth while to grow. The addition of the Parry lily to the hybrid mixture seems to have reduced rather than improved the adaptability of this hybrid race for garden use with us. These seem better in England than here.

Some of the older hybrids among lilies are thoroughly good garden plants. The *umbellatum* and *elegans* groups, of Europe and Japan, are particularly so. The first of these were evolved by the Hollanders a century and half ago, when they regarded most of the Eurasian upright cup lilies—*L. croceum*, *bulbiferum*, *dauricum*, and *elegans*—as all one variable species. The different forms were indiscriminately intercrossed, yielding wide variations. There is a rumor that the Japanese *elegans* hybrids have intermixture with *L. concolor*, the star lily, though the Japanese hybridizer, K. Wada, seems to oppose this idea in general, and perhaps he is right. There is about enough variability among the forms of *L. dauricum* to account for most of the *elegans* forms. That the star lily yields good hybrids with other upright lilies is obvious enough and worth while, for those favoring slender, graceful miniatures.

The only other successful old hybrid lily, the Nankeen lily, is a distinct departure from the conservative hybrid groups, such as the hybrids within



the trumpet, the Martagon, and the upright cup lily tribes, each within its own tribe. The lovely Nankeen lily, *L. testaceum*, is not a conservative hybrid, as it goes beyond the tribal boundary, uniting the white trumpet-flowered Madonna lily with the strongly recurved Scarlet Martagon (*L. chalcedonicum*). The happy result of this wide outcross has met with the approval of gardeners for decades, without apparently inspiring many gardeners to emulate this type of lily crossing. The few attempts in this direction have been inspiring, if not always enduring in results. The Kew hybrid, *kewense*, a cross between *L. leucanthemum* and *L. Henryi*, was a beautiful and prolific wide-open creamy-colored lily, but short-lived. Debras' *aurelianense*, a cross between *Sargentiae* and *Henryi*, is apparently similarly fine, though not widely disseminated yet. The newest of this type of lily is Tom Barry's "T. A. Havemeyer" (Fig. 1), which is evidently a cross between *L. sulphureum* and *Henryi*, though not reported as such. The flowers are large, wide open Nankeen yellow in the center, fading to cream at the tips, pleasantly fragrant, and just informal enough in shape to make it attractive.

These radical outcrosses, combining the characters of the different main tribes of lilies together, are still exceptional, not to say rare. Both conservative and radical crosses have their merits. Perhaps the more rational procedure is to first improve the races of lilies by conservative crossing, with selection for vigor and adaptability, then to use these selected hybrids for more violent outcrosses, into which the hybrids appear to enter more readily than do the species.

Less emphasis has been placed on improving the vigor and disease-resistance in lily hybrids than seems needful. Perhaps disease has been overstressed in recent years, with the rapid increase in knowledge about mosaic, bulb rots and botrytis. If it is still true a good dusting of the bulbs before planting, and a handful of sand to surround each planted bulb will help to alleviate a lot of disease troubles—and liberal spraying or dusting with fungicides cures botrytis quite satisfactorily. But the average gardener would welcome more lilies of such sturdy habits as regal, Henry, tiger, and the *umbellatum* tribe. A regular program, combining the good traits of these with other members of the lily family is being pushed forward here. It is too early to predict results from this, though early indications are encouraging, and the variety of crosses possible to make is truly surprising.

Boyce Thompson Institute  
for Plant Research, Inc.



# Do We Consider the Lily?

VIOLET NILES WALKER

The scale-bulb lily, or *lilium*, has long been a subject of horticultural interest, but its use among amateurs in America has been negligible until very recent years, when the introduction, chiefly by way of England, of the many new species and varieties from Eastern Asia and Western America awakened the average gardener to the beauty and value of the lily family.

With this awakening has come a demand for information as to varieties and habits, for in spite of the great age of the lily there has been, in the past, a remarkable dearth of popular literature devoted to its culture, especially in America, where, except for one or two books, the bulk of the publications has been in scattered magazine articles.

This may account for the widespread, almost universal mistake made by amateurs of erroneously classing the scale-bulb lilies with many plant families which, while going by the name of lily, not only have no connection with the true *liliums*, but differ radically from them in every characteristic. There is a long list of these, that will probably continue to be called "lilies" in popular usage, and perhaps the only way possible of clearing up the existing confusion is to definitely give the scale-bulb lily its proper name of "*lilium*."

The water-lily, which is a *Nymphaea*, will always be a lily to its admirers. The lily-of-the-valley, or *Convallaria*, will never yield its right to the title. Then we have the day lily, or *Hemerocallis*, often called a tiger-lily as well; two so-called Guernsey lilies . . . the one, *Hosta* not even a bulbous plant, the other, *Nerine sarniensis*; the Ginger lily, or *Hedychium*; the blackberry lily, properly *Belemcanda*, to say nothing of the many members of the amaryllis family contesting for the name of lily.

A brief and very elementary word as to the a-b-c's of the structure and character of *liliums* will show how they differ from the onion form of bulb, and may be of some assistance to those who are just becoming interested in growing them.

The true scale-bulb lily has a bulb composed of up-turned loosely-overlapping scales, of varying sizes and shapes (according to the variety) attached to a small, more or less permanent main stem. This stem produces the roots, new scales, and the bud for the coming year, and the real function of the scales is to gather and store starch to nourish the stem until root growth has developed.

These scale bulbs are different in every way from the narcissus or other onion-like forms, and from the nature of their construction demand better care, not only in planting, but in all handling and shipping. The scales of narcissi, for example, are thin and tightly over-lapped. They are covered by old membranous skins which protect the bulb, and keep it alive for a long time, and for this reason, we are able to ship narcissus or amaryllis bulbs in a seemingly dry state, without danger to the next year's bloom.



But the scale-bulb lily, with its loose formation, and with no protective covering, is exposed to injury from drying, from excessive moisture, or from careless handling, and unless the greatest care is shown, the life of the whole plant is threatened.

The next radical difference lies in the behavior of the root systems. The roots of those bulbs having the membranous tunic (commonly called *tunicated bulbs*) die out entirely during the dormant period, and the bulb presents few complications in handling. Narcissi, dug at the proper time will live, when dug and stored, for a long period. But the root systems of lily species are radically different, and even yet are not thoroughly understood. Beyond the knowledge of their capriciousness when disturbed if not fully dormant, there is much yet to be learned. We do know, however, that they resent injury to their roots, as well as to the bulbs, and we are also learning that some species have very short dormant periods.

The leafy flowering stem, with no basal leaves (except in one or two species) is the main dependence of the bulbs for their store of food, so that too severe cutting of the stalk, or damage to the leaves, will weaken the bulb, often preventing any bloom the following year (certainly reducing it), and will eventually destroy the plant.

The flowers are borne at the top of the stem, in the axils of the leaves, sometimes in whorls, sometimes singly, and alternating up the stem, the lowest blooming first. The shape and carriage of the flower determines the classification of lilies, that is, whether the flowers are upturned cups, borne in a cluster around the top of the stalk; or pendulous, from short stems and curving back like a Turk's cap; or trumpet-shaped, standing out more or less horizontally from the main stalk.

With even a most cursory study of these most obvious differences, it can be seen why there is little excuse for confusing the scale-bulb lilies with the many so-called lilies in garden use. And while very often it is carelessness on the part of many who miscall their flowers, still, we do not excuse such mistakes as terming a gladiolus a canna, or a poppy a rose, so why countenance or condone a practice that reflects, not only on the flowers, but on the intelligence of the gardeners as well.



# Lily Experiences in an Indiana Garden

LAURA J. PAXTON

In nearly all cases, my lilies have been grown in the perennial borders, along the middle of the border, where they have tall perennials as a background and those of lower growth to shade the ground around them.

The soil is yellow clay, modified by years of cultivation to a rich loam. When the borders were first made, some twenty years ago, they were dug out to the depth of one and a half to two feet, seldom more, and the clay either removed entirely and replaced by good soil from the vegetable garden or mixed with manure, sifted coal ashes, sand, wood-ashes or whatever suitable materials were at hand. As the place is tile-drained, no additional drainage was provided in the borders, except as particular cases, as time went on, seemed to require it. Of late years, manure has been replaced by rotted leaves, used either as a top-dressing or spaded in when alterations were being made; peat-moss, lime, bone-meal and commercial fertilizers used as required.

The garden lies in the shadow of the house and large trees after noon; it is sheltered on the north by a building and a trellis with vines. There are shrub-borders at east and west and occasional low shrubs and a small tree on the south, so that it has no really exposed positions, and only a small part of it gets the sun all day. The rest receives full sun in the morning and shifting light and shade during the afternoon.

In these conditions, *Lilium longiflorum formosum*, *L. regale*, *L. pardalinum*, *L. tigrinum*, *L. tenuifolium* and *L. candidum* seem to have become permanent residents; others have lasted a short time; still others have failed entirely.

The oldest inhabitant is *L. longiflorum formosum*, bought in 1915, which has gone on ever since, looking after itself, responding to good care and liberal treatment with added blooms, but putting up with neglect and poor conditions when it must. Perfectly hardy with only the usual winter-covering of leaves, it is almost certain to bloom anywhere except in deep shade. Undoubtedly it prefers a light soil, rich in leaf-mold, but can get along without it. Increase is rapid by means of small bulbs around the underground stem, which soon grow to blooming size. It also seeds freely, when permitted, the seed germinating readily when spring-sown. It blooms about the second week in June, or just after the Regal lilies. Mine seldom have more than three blooms to a stalk.

*L. regale* grows for me in rich, deep soil in morning sun, but I have seen it doing equally well in full sun, in stiff, dry soil; the stalks here, however, being shorter and the blooms smaller than mine, which grow four feet tall or more, and bear very large and truly regal blossoms, five to eight to a stalk. Increase by bulb-division is comparatively slow. Starting in 1916 with two bulbs, I now have about two dozen blooming bulbs, some of which seem ready to be divided again. I have also two crops of spring-sown seedlings coming on. The blooming season is early June, a few days after the Madonna lilies have finished.



*L. candidum* was added in 1916. Planted just under the surface, in a stiff soil that bakes hard in summer, and in one of my sunniest spots, it sustains its reputation for capriciousness by doing sometimes well and sometimes ill. While some bulbs die unaccountably each year, others increase so that the number remains about the same, but not all the bulbs bloom each year.

Yet in many gardens here, and in neighboring towns, the Madonna lily can be seen growing and blooming to perfection, year after year, in sun or shade, the only trouble, so I am told, being to dispose of the annual increase. Late May usually finds this lily in bloom. I have known it to set seed without hand-fertilization, but I have never known any of its seed to germinate.

*L. pardalinum*, presented to me in 1922, grows easily in sun or half-shade, in light or heavy soil. Its dislike of disturbance combined with its manner of sending out its roots to some distance, and in all directions from the parent clump, make it hard to deal with in a border with other plants, on whose territory it constantly encroaches. My best clump grows in damp, heavy soil on the north side of a high fence, where the ground is always shaded and the blooms reach up into the sunlight. It blooms the first part of July.

Its variety, *L. pardalinum* <sup>*giganteum*</sup> ~~*magnificum*~~, or Sunset lily, planted in 1933 in full sun, 12 inches deep, in gritty loam and leafmold with drainage of cinders and small stones, has not come up to my expectations. Another bulb, in a richer soil but shadier location, is perhaps a trifle better, but neither seems any great improvement over *pardalinum*, and they are certainly less vigorous. I may be too hasty in my judgment, but they are certainly not improving from year to year. They bloom at practically the same time as *L. pardalinum*.

In July and early August the tiger-lily—*T. tigrinum Fortunei*—makes a beautiful effect growing against tall shrubs at the east end of the garden. The bulbs are planted ten inches deep, perhaps more, in moist, heavy soil rich in leaf-mold, with some peat-moss added. They grow five feet high and bear twenty or more blooms to a stalk. Five bulbs, planted in 1927, have increased to three dozen or more, and every year I pull out the little bulbils which have fallen to the ground and taken root.

In view of the way they flourish now, it is interesting to note that previous plantings in the same place were total failures, the bulbs never coming up. The soil was then much nearer the original clay in texture, and as it proved, unsuitable for tulips and iris also; coal ashes and mortar-rubble were spaded in to break it up, and also to raise the surface an inch or two. This, with frequent applications of leaf-mold and wood ashes, seems to have overcome the difficulty.

In planting *L. tenuifolium* in 1931, more careful preparations were made than usual. The spot selected was dug out to the depth of one foot, several inches of cinders and gravel put in for drainage, then a thick layer of old powdery manure, covered with a mixture of good soil, sand and leafmold in about equal parts, on which was an inch of sand to cushion the bulbs, set five inches deep and covered with black loam. The situation is in full sun. This planting has been very successful. Most of the original bulbs are still living, and several grown from seed have been added. They grow three feet tall



and bear many blooms, about the middle of May, this being the first lily to bloom in my garden.

To this list of successful lilies, I believe *L. philippinense* can, in time, be added. Mine were raised from seed, sown in February, 1934, in a small seed-pan in a sunny window. Germination was excellent and the seedlings grew in a gritty nursery-bed, north of the fence. By fall they were a foot tall, but none had bloomed. Having been told that this lily was not hardy in Indianapolis, and wishing to be sure of at least part of my crop, I potted up some of the largest and put them for the winter in a frost-proof frame. They came through unharmed, but so did those in the nursery-bed. I set out the potted ones in a sunny spot, between peonies, where they came into bloom at different times in late June, July and early August. Those in the nursery did not bloom until September. In November permanent quarters were prepared for them between peonies and low shrubs at the edge of a shrub-border, north of the house, where they get shifting sun and shadow all day, and the protection of tall shrubs on the north and west. They were given ample drainage, plenty of leafmold with a sprinkling of bone-meal below, and the bulbs set about eight inches deep, on sand. No further protection than the usual mulch of leaves was given them during the winter, but they survived not only the unusual severity of the winter, but the repeated freezing temperatures that alternated with mild weather in spring, and then the intense heat and prolonged drought of summer. It is true that only one bulb bloomed, in late August, but I think this is hardly surprising, and that this lily has earned the description of "hardy."

The lilies that have grown fairly well for a time and then disappeared are: *L. speciosum rubrum*, which grew and bloomed for a year or two in light rich soil in half-shade, but was so obviously diseased I destroyed the whole of it.

One pod of seed from another stock of this was sown in an open seed bed, as soon as ripe, in the autumn, and germinated rather poorly the next spring. At the beginning of their third year the seedlings were wiped out by uncontrollable circumstances.

*L. Henryi* flourished for a number of years in heavy soil at the edge of shrubs, but was moved from there to a drier and less open position among perennials, where it also did well until the repeated freezing of last spring destroyed the shoots. The bulb had increased during the six or seven years I had it from one to five. It bloomed in early August.

*L. sulphureum* was planted in 1934 with great care, 12 inches deep between peonies, in full sun. The ground was prepared very much as for *L. tenuifolium*, but with deeper drainage, plenty of leafmold and grit, and with a pipe to provide water under the bulbs. It appeared so very late in the spring that I had given it up and one was destroyed by the spade; the other bulb grew nicely and bloomed in mid-July. The creamy yellow trumpets would have profited, I thought, by a little protection from the scorching sun. Several little bulbils had formed by autumn, which I planted in a cold frame; and some survived the winter cold, but none, I think, the summer's heat. Nor did the parent bulb survive the summer, the stem rotting off suddenly below ground.



Of two bulbs of *L. Shukshan* planted in 1934, one in stiff, dry clay in full sun, the other in gritty loam in half-shade, only the one in clay reappeared this year, but it soon disappeared. Both bloomed the first year.

*L. Martagon album*, planted in 1934 six inches deep in sandy loam with leafmold, in half-shade, bloomed once and ripened seed. Following this, I moved the bulb and it has made no sign since then. Whether dead or dormant, time will show. Nothing I had read about this lily prepared me to find it so small—not so tall as the coral lily and with fewer blooms. It blooms at the same time. Efforts to grow the martagon lilies from seed have not succeeded.

Two bulbs of *L. columbianum Ingrami* planted in 1934 in a bed under a high-branching oak tree, in soil composed of peat-moss, rotted oak leaves, loam and grit, with drainage of gravel, bloomed nicely, ripened seed, died down and have never reappeared.

Another bulb, planted in similar soil but in a less open position, with an inverted flower-pot to rest on, died without blooming.

In 1934 *L. testaceum*, planted three inches deep in a well-drained sunny spot in well-prepared, deep soil, flowered beautifully, ripened seed, (from hand fertilization), died down and never reappeared. This was at least an improvement over my first attempt to grow this lily, in 1914, when I planted the bulbs nine inches deep, in shade. "Both lilies are dead" is the only later reference to them in my garden note-book.

One of several small bulbs of *L. cernuum* planted in 1935 in light, rich gravelly soil survived, and bloomed in June, just as the regal lilies were passing. It came nicely through the summer, but more time is needed to judge its success or failure.

Now to set down my failures and tell just where and how they died.

*L. pomponium*, planted in full sun in the same soil as *L. candidum*, grew two inches, and died.

*L. Hansonii* has been tried in various soils and locations but thrives in none of them. Repeated late freezing last spring finished off the last of them.

*L. elegans* planted in full sun, failed to come up, for unknown reasons. This lily is usually easy in local gardens. As this was in 1921, insufficient drainage may have been the trouble.

*L. Grayi* and *L. carolinianum*, set out in May, 1933, in the same soil as *L. Columbianum* died a lingering death. One bulb of *L. Grayi*, the year after planting sent up a vigorous stalk with a plump bud on it, and then when on the point of opening, withered away and died over night.

In 1934 I secured bulbs of the western lilies *L. Humboldtii magnificum*, *L. Parryii* and *L. Washingtonianum*, the valley type. Great care was taken to provide suitable locations and congenial conditions for them, where they would get the right amount of sun and shade and be protected from winter damp and summer heat, but all to no avail. I never really hoped to succeed with the difficult *L. Parryii*, but I gave it a peaty soil in a shady spot with good drainage and an inverted pot to rest on, and a pipe to supply moisture from below. It did not come up.

*L. Humboldtii* in stiff rather dry soil, well drained, in morning sun, made a weak growth the first year and then gave up.



*L. Washingtonianum* I tried in three different locations, with careful attention to drainage everywhere, but in different aspects and soils. It succeeded nowhere and the last surviving bulb was killed this summer, I think by the heat.

Also a failure have been repeated attempts to secure germination of the seed of the Backhouse lily, and other hybrids requiring a germinating period of more than three or four months. In this connection, may I add that one of the worst enemies to lily seeds here is the sow-bug, which I have known to devour almost an entire planting in twenty-four hours. Snarol is an effective protection to seeds and young seedlings.

I should add also that except in two or three cases my lilies have been planted in the fall.

My experience leads to the conclusion that drainage is of great importance, that ripening seed is fatal to some lilies, and that to grow many kinds of lilies successfully in a small garden requires a much greater knowledge of diseases and their treatment than I possess at present.



*Dr. A. B. Stout, N. Y. Botanical Garden*

*The Lily Pilgrimage at Boyce Thompson Institute.*

## Lily Field Day

On July second, the Lily Committee of the American Horticultural Society held its first field day with the local arrangements under the care of Dr. A. B. Stout of the New York Botanical Garden, assisted by Dr. Horsford Abel and Dr. E. H. Ihmle.



The group assembled at the New York Botanical Garden with members and guests from most of the Eastern Atlantic States and such distant places as Ottawa, Canada, in the person of Miss Preston, and Dropmore, Manitoba, in the person of Mr. Skinner. Here Dr. Stout explained his work with lilies and showed his plots filled with various clones of *Lilium tigrinum* and some of the allied species. He was able to show also some of the alarming results of difficulties resulting from mosaics and bulb rots.

From the garden, the company motored to the Boyce Thompson Institute of Plant Research at Yonkers. Here a number of research projects are being conducted with lilies and Mr. Ihmle works on a special Lily Research Fellowship. Dr. Eltora Schroeder has been carrying on projects related to seed storage and germination. She exhibited in the greenhouse the numerous flats of seedlings showing the results of her experiments. She pointed out that germination of the so-called two year group of lilies could be hastened by sowing the seeds as early as possible in the autumn and keeping the flats in the greenhouse during the winter. This made possible the immediate formation of bulbs. The flats are then plunged out-of-doors for six weeks to two months under winter cold. In the spring leaves appear and the growth of roots and bulbs continues.

Studies of seed storage, chiefly with seed of *L. regale*, showed that seeds germinated best after storage in a low humidity and a temperature of about 36 degrees Fahrenheit.

Under the direction of Dr. McLean lily breeding work is being carried on at the Institute. In the greenhouse *Lilium formosanum* was being used. In the out-of-doors plots Dr. McLean showed his work with crossing *L. elegans*, *L. tigrinum*, *L. Henryi* and *L. regale*. These four species were chosen, the first two because of their ability to develop into good plants in spite of infection with mosaic and the second two because of their comparative immunity to infection. It is thought that hybridizing with these species may produce strains of lilies capable of resisting the effects of infection. Dr. McLean reported that pollen taken directly from mosaic infected plants may transmit the disease to a healthy plant through the pistil if applied at once. If, however, the pollen is dried for a few days the mosaic will not be transmitted. He also said that pollen can be kept in a viable condition if stored in a cool dry place.

Another problem under investigation is the cytological and other aspects of the maternal inheritance of the *L. regale*. This lily when crossed with other species will set seed but all of the seedlings show predominantly the characteristics of *regale*. They are hoping that by crossing *L. regale* for several generations true hybrids may be obtained.

Mr. Ihmle is working principally on the control of lily diseases, especially on mosaic and some of the serious bulb rots. He is growing lilies under cloth tents to exclude the aphids which are the carriers of the mosaic virus. Fine healthy plants are being grown in the four tents and they are taller than plants grown out-of-doors. Among the species in bloom July 2 were *L. regale*, *pardlinum*, *Humboldtii*, *Grayi*, *Willmottiae*, and others. In one of the tents there were species infected with mosaic.

After having inspected the tents the group assembled under the shade of nearby trees for a brief discussion of the control of mosaic and other diseases.



Messrs. Ihmle, Skinner, Slate, Dr. Abel, Dr. Brierly, and Mrs. Fox took part. It was said that although the mosaic is a serious problem, healthy lilies are being cultivated in spite of it and that if certain rules were followed there was no reason why health could not be maintained in the lilies grown in gardens. Three culturally important suggestions were made. The first was to grow lilies from seed and keep these plants away from all other plants which might be infected. Another suggestion was to spray the lilies in order to control the aphids and a third was to remove all diseased plants from the garden, rogue them out and burn them as soon as disease was seen.

The group then motored to an Inn near White Plains and lunched on a terrace overlooking the river. During lunch Dr. McDaniels, Chairman of the Lily Committee, asked Miss Isabella Preston, of the Ottawa Experimental Farm, to rise and receive the applause due her as one of the foremost breeders of lilies. Mr. Skinner was also recognized for his origination of the lilies Maxwell and Scottiae.

After lunch the company visited the garden of Dr. Horsford Abel in White Plains. To see hybrids of *regale* six and seven feet high, some with over twenty blossoms atop their sturdy stems and growing by the hundreds, was an encouraging sight for the lily enthusiasts. Dr. Abel grows his lilies in long beds in a garden facing North. He prepares his soil with great amounts of fertilizer and after the plants are in, waters constantly from an overhead sprinkler system. He grows principally the trumpet lilies and has some fine seedlings of the *Princeps* group of hybrids. All his lilies were healthy specimens and stood erect without any staking. Some of his plants to be used for breeding and known to be infected with mosaic are enclosed in tents.

From Dr. Abel's garden the group motored up the Parkway to Foxden, near Peekskill. Here the lilies are grown with shrubs and perennials and form part of the herbaceous planting. *Regale* lilies bordered a long alley lined with dogwoods and other shrubs and were in bloom in all the whiteness of their gorgeous trumpets. In the little lily garden hedged with clipped hemlock there were plants of *L. Martagon*, the Backhouse hybrids, *L. Willmottiae* and *L. amabile*, *L. candidum* and *L. pardalinum*. There was also one very tall *L. Satgentiae* free of mosaic. Tea was served, after which the group disbanded.

HELEN M. FOX, *Secretary*,  
Lily Committee.

## Second Annual Lily Show Garden Club of Virginia

The second annual Lily Show of the Garden Club of Virginia was staged in Fredericksburg, Va., June 16th and 17th, 1938.

The Show was held in conjunction with the early summer flower show of the Rappahannock Valley Garden Club and with the cooperation of the Dolly Madison Garden Club and the Lily Committee of the American Horticultural Society. There was a marked advance over the show of the pre-



vious year, not only in its staging but in the quality and number of the entries, while many special exhibits afforded opportunity to study lily varieties, their methods of culture and the diseases to which they are subject.

Judges for the Lily Show were: Dr. L. H. MacDaniels, Chairman of the Lily Committee of the American Horticultural Society; Mrs. Mortimer Fox, Secretary of the same Committee; Mrs. A. Stuart Robertson, of the Dolly Madison Garden Club; Mrs. Louis Dobie, Garden Club of Norfolk, and Mrs. Lewis Bosher, of the Tuckahoe Garden Club of Richmond.

The medal offered by the A.H.S. in Class 1, for flowers from bulbs raised by the exhibitor from seeds, scales or bulbs, was won by Mrs. William R. Massie. The Eleanor Truax Harris Cup, for the most outstanding lily exhibit, went to Mrs. C. O'Connor Goolrick; while the Mrs. Louis N. Dibrell Cup for arrangements went to Mrs. Gari Melchers. Mrs. William R. Massie won the sweepstakes with Mrs. Robert A. Chermiside a close second.

These were the only prizes offered, but ribbons were awarded in all classes wherever the judges considered the entries worthy.

It was of special interest to note that only eight member clubs of the Garden Club of Virginia exhibited in Class 2, "Club Collections from 1937 Collection, one stalk of each variety." This was due to the unusually early season, which was at least two weeks earlier than has been known in many years, and the lilies which would have been in full bloom through the majority of the clubs had finished. The blue ribbon in this class was won by the Alexandria Garden Club with specimens of *Lilium* Kulshan, *pardalinum giganteum*, *Davidii*, *concolor* and *cernuum*.

In the class for the Easter lily type the regals predominated, but one superb specimen of George C. Creelman was shown. The class for the up-turned cup type was poorly filled, due again to seasonal influence.

The best filled of the specimen classes was the martagon or Turk's Cap type—with many specimens of *Lilium Davidii*, *Hansonii*, *cernuum*, *Willmotiae*, *testaceum*, Shuksan, Kulshan, Star of Oregon, *pardalinum giganteum*, and *concolor*.

There were four arrangements classes, all well filled. In fact, except in the ten special niches where lilies in similar containers were shown individually against a gold background, the Show was somewhat overcrowded—a most encouraging promise for future shows, since the lily work of the Garden Club of Virginia is still in its infancy.

The special educational exhibits and the non-competitive displays of lilies were outstanding features of the Show.

There was a small display of lily seedlings, and an exhibit by the Lily Test Committee of the G. C. of Va. of flowers grown by the members of the Committee. These included *Lilium dauricum*, *cernuum*, *testaceum*, *Humboldtii*, Maxwill, *canadense*, *Parryi*, Shuksan, Kulshan, Douglas Ingram, and Star of Oregon.

There was a display of large photographs of lily varieties as well as of cultural methods, by the A.H.S.

The action of disease was illustrated by photographs given by Dr. L. M. Massey, of the New York State College of Agriculture, Cornell Univer-



sity, and by live specimens showing disease shown by Dr. MacDaniels.

Dr. George L. Slate, of the New York Agricultural Experiment Station, a member of the Lily Committee of the A.H.S., sent a display of *Lilium tenuifolium* and *umbellatum*.

The display staged by Mrs. Mortimer Fox was of unusual interest and beauty, affording not only an opportunity to study the earlier blooming lilies that had finished in this locality, but showing a rarely beautiful *dauricum* seedling of her own hybridizing. In her collection were: *Lilium tenuifolium*, *concolor*, *Grayi*, Golden Gleam, *croceum*, *Martagon*, *amabile*, *monodelphum Szovitzianum*, *dauricum*, *longiflorum*, *pyrenaicum*, *regale*, and one of the Backhouse hybrids.

The general flower section of the Show, sponsored by the R.V.G.C. as its early summer show was of unusual beauty and interest. A fine collection of new hybrid hemerocallis, entered by the Nansemond River Garden Club, was one of the most interesting features and contained such varieties as Wolof, Dr. Stout's red seedling, *fulva rosea*, Peach Blow, Robin Red Breast, Kwanso, Viscountess Byng, Goldeni, J. S. Gaynor, Ophir, Sunny West, Sir Michael Foster, Dauntless and E. A. Bowles.

Even though the delphinium season was well past its prime, there were fine specimens exhibited and many well executed arrangements especially in the class of shaded arrangements from blue to purple. In the class for shaded arrangements from yellow through orange, one of the most distinctive in the Show was entered by Mrs. J. S. Grasty, of Charlottesville. Tawny day lilies with *Koelreuteria* blooms, blended with brown cattails, purple barberry and sprays of copper beach, set off by a dull pottery crock, formed a choice and unusual picture.

## Short Pieces and Comment

*L. Brownii* (see page 46)

*L. Brownii* is an exquisite lily and has the unusual quality of changing its color within a few hours after it opens. At first the outside of the perianth is brown and the inside a sulphur yellow but as the shadows lengthen towards evening, the sulphur becomes white and the brown on the back merges into a more purplish tone and acquires a slight reddish tinge.

The trumpet flowers are a bit heavy for the stalk which has to be supported when they are open. The dark color on the back emphasizes the whiteness of the inside and the stems and leaves are in good proportion to the graceful funnel shapes of the flowers. *L. Brownii* arrives a little before the height of the lily season in the garden but it does not drop its segments until after *regale*, *Humboldtii*, *pardalinum*, the Backhouse hybrids, *superbum*, *japonicum*, *Willmottiae* and some of the *dauricum*, *testaceum* and *cernuum* have shown good color in their buds or even opened their first flowers. With them come many charming campanulas, perfect companions to the lilies, with their small bells in tones of blue. When the mulleins in cream and pale



yellow stand to one side of the *L. Brownii* and the low Chinese delphiniums in white, blue and violet grow in front of them, and if this combination could be placed in front of a wall over which a pale pink rose Evangeline is hanging its single blossoms, the picture would be quite perfect.

There has been much ink expended over the correct naming of *L. Brownii*. The first of its kind to be brought to Europe was called *L. Brownii* F. E. Brown and was later found wild in Hong Kong and the mountains near Canton and in Kwangsi. This lily was at one time called *L. Brownii odorum*. *L. Brownii* is a variety of the type which through becoming entangled in botanical red tape has been given the varietal name and called *L. Brownii* var. *Colchesteri* a lily native throughout China. The var. *Colchesteri* has been grown from seed at Kew while the lily here described, namely *L. Brownii* F. E. Brown is thought to be a hybrid between *L. Brownii* var. *Colchesteri* and *L. formosanum* and has never been known to set seed.

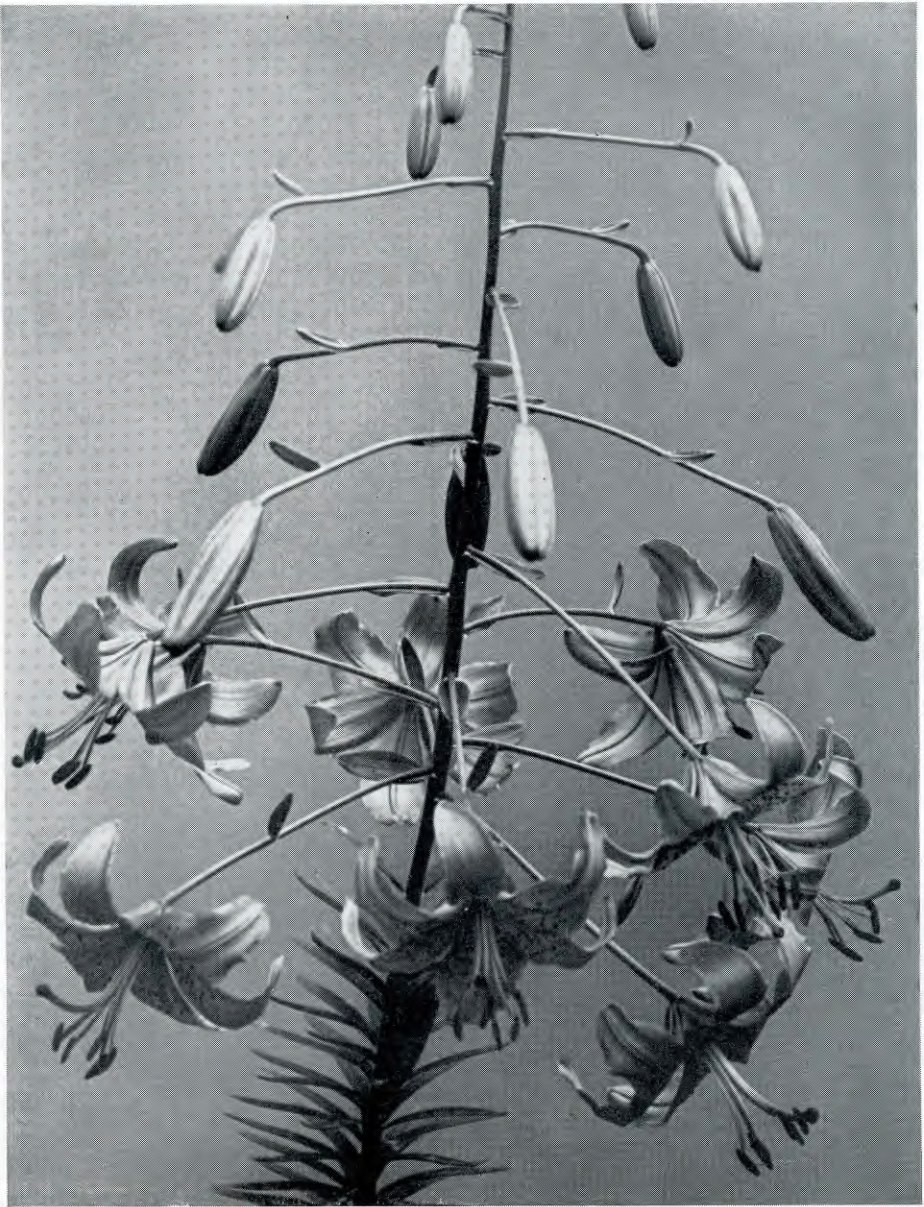
*L. Brownii* is hardier than the var. *Colchesteri*. I grew the latter and lost it the first winter. I used to lose *L. Brownii* too, but have kept two batches alive for the last three years, one growing in partial shade and the other in the sun. The lily is subject to botrytis and should be sprayed ever so often to control the disease. According to English writers it requires partial shade, a well drained situation and soil of light loam intermixed with well decayed flaky leaf mold; conditions agreeable to all lilies here as well as in England.

The bulb of *L. Brownii* is flat on top and has loosely imbricated scales. It is a cream color overcast with yellow-brown and shaded faintly with pinkish magenta, and is  $1\frac{1}{2}$  inches high and 3 inches across. The scales are constricted half way up their height.

The stalks have grown to three feet with me and to four at Kew. Two to three shoots have come up from a single bulb. The stem is blue-green, round, and with sparse brown lines on it.

The leaves are numerous, the lower ones are shorter and then grow larger and stay that way all the way up the stem. They curve from the stem in an arc. There is a dark mark on the stem above where the leaf joins it. The leaves are linear, pointed at the apex, and straight across the base, the longest is  $5\frac{3}{4}$  inches long and  $\frac{5}{8}$  inch across at the widest point which is the centre. They are smooth and shiny both above and below. Under the flowers the leaves form a whorl. The often solitary flowers are borne at the tip of the stem and when there are several they form an umbel, also at the tip of the stem. They are of a thick waxy texture and form a narrower funnel than *regale* and only spread a little and turn sideways. The funnel is 5 inches long and  $4\frac{1}{2}$  inches across at the mouth. The difference between the three outer segments and the three inner ones is more marked than in most lilies and the effect produced is as if two flowers were put one inside the other each composed of three petals. The outer segments are narrower and more revolute than the inner ones and are shaded brown on the back, heavier at the centre and as if drawn on by a crayon which has left the sides white. On the back three inner segments are brown only on the raised mid-rib and pale green on either side of it. The filaments are pale green, the anthers brown, filled with dark reddish-orange pollen, and the stamens are shorter than





Walter B. Wilder

× *Lilium Scottiae*.



the pistil which is pale green. The purple brown on the outside of the three outer segments shows through on the inner surface. Inside at the base of the funnel is a greenish nectar furrow. The flowers smell similar to the *regale* but with a stronger undertone of beer, or something which might more elegantly be termed fermentation.

I have never succeeded in getting this lily to set seed to any pollen I have tried on it, but have gotten a cross by using *Brownii* pollen on *regale* and on a *regale* hybrid. I think but am not positive that this parentage was that of *princeps*. The cross between *Brownii* and *regale* has not flowered yet, but it came through the winter out of doors last year and has much broader leaves than *regale*.

H. M. Fox.

× *Lilium Scottiae* (see page 91)

Why are gardeners overcome with an irresistible desire to hybridize the lilies? It seems strange that no sooner do they grow a fine stand of these tall, frequently fragrant and always exquisite flowers than they begin to transfer the pollen from one species onto the stigma of another, and so engage in "gilding the lily." Some of the hybrids are handsome, but sometimes they seem a bit top-heavy, such as the ones resulting from crosses between *regale* and *sargentiae*, which produced *sargale*, *princeps*, etc., and the crosses between *regale* and *L. leucanthum* resulting in *L. centigale* and *regale* with *L. myriophyllum* var. *superbum* which gave birth to *L. sulphurgale*. Although to my taste there is no cross extant which is superior to the species and varieties we already have, yet in spite of my convictions I too, along with all the other growers, engage in playing God as far as the lilies are concerned.

× *L. Scottiae* received the Award of Merit of the Royal Horticultural Society in 1932, which is a sort of Victoria Cross for flowers and indicates that the ones so honored must have distinction of one kind or another. × *L. Scottiae*, with its sturdy leafy stem, raceme of large flowers like those of an *umbellatum* only facing sideways, are striking and handsome. The parents are *L. Willmottiae* and *L. dauricum* var. Mahogany. The *L. dauricum* var. Mahogany is a rich mahogany crimson. The cross was made by F. L. Skinner of Canada. Constable in his catalogue of 1937 reports a red form.

The × *L. Scottiae* I grew came in late Autumn and was planted in a pot and transferred to the garden in April. By the end of June it began to flower and continued to bloom for about three weeks. The stem was eighteen inches high but since this was the first year in the garden and it was moved so close to its flowering time, a stem typical of the lily, which is reported as being 24 inches or 30 inches high, may be expected next year. The stem is very hairy and like a *dauricum* was covered thickly with leaves and the inflorescence was a raceme 12 inches high.

The leaves rise up a little away from the stem but their general movement is straight out and they make the stem look prickly for they are so numerous and are pointed at their apices. They are dark green, "Cerro Green" according to Ridgway, lanceolate,  $2\frac{1}{4}$  inches long and  $\frac{1}{4}$  inch across at the centre, pointed at the apex and straight across at the base. They are covered with fine hairs invisible without a microscope, except along the margins





Walter B. Wilder

*Lilium michiganense.*



where they can be seen by the eye unaided. The flower stalks branch out at right angles to the main stem but the weight of the flowers bends them down so that the stems actually slant toward the ground. There were twenty flowers this year. They resemble their parent, *L. dauricum*, except that their cups are shallower. The longest flower at the base of the raceme is  $4\frac{1}{2}$  inches long and the shortest is  $1\frac{1}{4}$  inches. Each floral stem is subtended by a wide leafy bract and there is another bract on the stem half way down. Where the bract starts out from the stem there is a fluff of tomentum. The flowers measure  $3\frac{3}{8}$  inches across and the sepals overlap at the base to one-fourth their original length and then turn out and are revolute. They are orange spotted with oval spots colored dark brown. The orange is "Salmon Orange" in Ridgway. The pistil is longer than the stamens, the ovary short, slender and green and the style orange shading to red. The stigma is brown. The ovary is  $\frac{9}{16}$  inch long and the style  $1\frac{5}{8}$  inches long. The anthers are brown and the filaments pinkish shading to red are  $1\frac{3}{4}$  inches long.

H. M. Fox.

### *L. Michiganese*

*L. Michiganese* is native to Missouri, Minnesota and Wisconsin, and grows in rocky woods. It looks like an intermediary form between *candense* and *superbum* but is a distinct species. A note I found on a specimen in Gray Herbarium and which I quoted in my book, said: "It differs from *L. canadense* of the Atlantic and New England states by recurved, mainly reddish, perianth lobes; it is readily told from *L. superbum* by its oblong short anthers and inflorescence." *L. superbum* can always be identified by its double triangle of glistening green, the nectar furrow at the base of the perianth. *L. canadense* has bell-shaped flowers, whereas the flowers of *L. michiganese* are nodding and their segments overlap for about one-third of their length and then are so revolute that the tips almost meet at the stem on the back of the flower.

*L. Michiganese* is an exceedingly graceful lily and the size of the leaves is well proportioned to the size of the flowers and the height of the stem. In my garden this past summer it flowered June twentieth and looked like a miniature of *L. superbum*, and not like *L. canadense*.

The bulb is a branching rhizome with clusters of scales like those of *L. canadense* and *L. superbum*.

The stem is blue-green, glaucous and with a bloom on it, and for me grew 22 inches high but elsewhere it rose to 32 inches. On my lily the leaves were arranged in six whorls and one whorl subtended the inflorescence which was an umbel growing at the top of the stem. The leaves are pointed at the apex, straight across the base,  $2\frac{3}{4}$  inches long and  $\frac{1}{2}$  inch across at the centre which is the widest part. Their margins are roughened like those of *L. canadense*. The flower stems rise straight up from the main stem and are  $5\frac{1}{4}$  inches long and each has a leaf bract. The flowers are reddish-yellow on the back. The wide open blossom measures 2 inches across but is wider before the segments have rolled all the way back. Inside the flowers the segments are green at the base, not the double green triangle of the *L. superbum*, however. After the green base the segments become yellow and for the last



third of their length and including the tip, they are red, a red with a tinge of blue in it, but not magenta. All the surface of the segments except the green base is heavily freckled with red round spots. These are less red in the tips. At the very tip of the segments is a bit of tomentum. The stamens are the same length as the pistil which curves out as the flower ages. The filaments are pale yellow, the anthers red-brown and the style is pale yellow tinged brown.

H. M. Fox.

*L. rubellum*

*L. rubellum* has proven itself to be a temperamental lily for me so this year in order to get the better of its moods I grew it in a pot. I carried the pot over the winter in a pit, below the frost line where other half hardy plants are wintered on our place. It flowered charmingly in the shade under the summer house, and its pale pink blossoms harmonized beautifully with the blue of its container. Later two of the flowers set seed pods. *L. rubellum* is undoubtedly one of the daintiest of the lilies and if only it were possible to grow drifts of it in the garden with a foreground of purple violas and a background of a deutzia or a white rose bush such as Madame Plantier, nothing could be more delightful. But visions such as this, at least in my garden, are just pleasant day dreams.

The bulb is  $1\frac{1}{2}$  inches high and  $1\frac{1}{2}$  inches across, and the scales are articulated. In my pot the flower stalks grew to ten inches but elsewhere the lily grows 15 inches high. The stem is green with perpendicular brown lines on it and is naked for three inches and then clothed with linear-lanceolate leaves having slender points at apex and base. The leaf is widest below the center and has fine short hairs along the margins and is smooth above while on the under surface are tiny hairs. The under surface is shiny and the veins are raised on it. The leaves feel smooth to the touch.

The flowers are born singly or two at the tip of the stem, and are not symmetrical. The effect is faintly suggested of the flower's being two-lipped. For the three upper segments, consisting of one inner and two outer are smaller than the three lower ones composed of two inner and one outer segment. The flowers measure  $2\frac{5}{8}$  inches across at the mouth and the longest segment is  $2\frac{1}{2}$  inches long. Here they were pink washed over white, but at another time when they were grown in the sun they were a deeper color, a shell pink inside and on the outside a still deeper pink and tinged with hazel. The base of the segments are washed a little with brown green and inside they are tinged with yellow, along the nectary furrow near the base, evidently as a guide to the insects.

H. M. Fox.

*From Connecticut*

Some time ago you asked for comments on the growing of lilies so I am sending along the following observation for what it is worth, though I am not sure that it proves anything! For several years I had admired a few plants of *Lilium Henryi* which my neighbor had growing in a most unpromising situation. They were planted beside the south wall of the house where



they were exposed to the full force of the sun's rays for almost the entire day. There was no ground cover of any kind, in fact no other plants at all growing with them. Even the weeds were pulled up. No mulch of any kind was applied either in winter or summer and they were never given any water, even during protracted droughts when lawns shriveled up and died. Yet they grew to a height of four or five feet and had as many as six blossoms. The color lasted quite well too. Last summer it was necessary to move the bulbs so they were given to me. Upon lifting them I discovered that the bulbs were planted just below the surface of the soil and what stem roots they had were spread out on the surface of the ground. They were growing in about six inches of good black earth under which was a deep layer of coal ashes. As the plants were in flower at the time I made no attempt to examine the bulbs, but growing with them was a single plant of *L. auratum* and I did examine this bulb and found it to be of good size and in perfect condition. He gave me four bulbs but says that originally only one was planted. He thinks that the others are self sown seedlings and I am inclined to think he may be right. The bulb of *L. auratum* had flowered last year for the first time but had been planted some years before. I replanted them in what should be a much more suitable environment and am waiting to see how much better results I shall have.

LUCILLE WIEDMANN.

#### *From California*

Here is an answer to the request that all members of THE NATIONAL HORTICULTURAL SOCIETY interested in growing lilies write to you. I have a fair variety in my garden. Regal lilies are growing very well, also *candidum*. In one place they are about 7 feet tall. I also have *longiflorum*, *umbellatum*. There are three good clumps of what I believe to be *pardalinum*. One blooming bulb and 2 seeding bulbs of *Henryii*. Two *auratum* bulbs that have done well for 2 years. One matured a large pod of seed last year and seems weak this spring but I hope to have a good lot of seedlings. They haven't come up yet. I experimented and gave half of them a freezing treatment in the refrigerator. I did that with all the lily seed I planted this spring. I planted *columbianum*, *superbum*, *Martagon*, *tenuifolium*, *formosanum* and some that I used *pardalinum* for seed parent, regal for pollen. Five or six of the frozen seeds have come up. Two martagon seeds have just come up, one frozen and one unfrozen. The *tenuifolium* seemed to be unaffected by freezing but most of the seedlings were eaten off at the ground by slugs. I have had no success so far with *tenuifolium*. I had one Golden Gleam that bloomed last year but didn't come up this year. We had an unusually wet winter, 20 inches of rain. That may be the reason. Many lilies were lost in a Sacramento garden that I know of.

I have been successful with *Lilium formosanum*. I have 8 bulbs that bloomed the second fall from seed and show great promise for this fall. I have a large number of seedlings in my cold frame. Freezing seemed to make no difference in the way they came up. Both came up well. I have a few *tigrinum* but they are not doing very well where I have them now.



I hope to try more and hope that my seedling lilies will grow up successfully and I will have more to report some other time.

ANDREA AMES.

### *Candidum Lilies and Botrytis*

Botrytis appeared on my lilies in the fall of 1934. I dusted them with Bordeaux then and again in the spring, but had no blossoms in 1935. I dug more than sixty bulbs, washed them well, removed all diseased parts and rubbed them with sulphur; but none of this helped.

Then I read *Consider the Lilies*, by W. E. Marshall. "Clean beds and burn old leaves. Dust early in morning while dew is still on plants with Copper Lime Dust. Repeat frequently. Give subsequent light dustings at two or three week intervals."

Eleven bloomed, June, 1936.

Ten bloomed in 1937, better and larger than in 1936, and came up beautifully in the fall (1937). These were dusted twice. I dusted very early in 1938, after cutting off every old leaf.

Thirteen are going to bloom, and there are several others which promise to do so next year. No sign of Botrytis.

Is this due to treatment or to dry weather?

Marshall says, "*Candidum Speciosum Peregrinum* is free of any disease."

LUCY LYNE SLAUGHTER.

### *From North Carolina—Lilium formosanum*

The lily in the picture was started from seed about 1933. It flowered first in my nursery bed at Blue Ridge Summit, Pennsylvania, in September, 1935. I moved it here when I sold my place, early in the spring, though after growth had started. It was planted in a nursery here where it bloomed again though not very well. It was then moved into the present place, a newly made bed. This spring (1938) I was amazed to find it living, so I gave it mild manure water several times. At the time of photographing it stood ten feet eight inches tall and had a sturdy offset at its feet.

VIRGINIA S. CREIGHTON.

Biltmore.

### *Lilies in Books—Passing Comment*

Certain books are more or less within the reach of all of us: some are to be found only in the larger libraries; some when found are entirely out of date in the light of current information.

All authors of horticultural lily books are faced with more or less the same field and no special blame can be attached if their offerings fall into one more or less familiar pattern. When one considers also the necessities imposed by publishers, the uniformity of the new development is not to be wondered at.

The comments that follow are of no more value than to call to attention various books that may be had today and some of their points that seem most valuable to this reader.



Several of our publishing firms have series of small handbooks on popular topics in which apparently there is no intention of going beyond the stage of outlining what the plant looks like, how it may be grown and what difficulties may beset the amateur in his pursuit of the particular plant.

*Lilies* by H. S. Adams, published by McBride, Nast & Co., New York, in 1913, seems to be the oldest of this type. It does very well what it set out to do, but so much has happened in the lily world that it is more or less outmoded.

*Lilies and Their Culture—North America* by William N. Craig, the Florists' Publishing Company, Chicago (1928), is probably the second with a somewhat more ambitious presentation and a picking up of the information in between.

*Garden Lilies* by Isabella Preston, the Orange Judd Publishing Co., Inc., New York (1929), follows the same pattern and covers about the same field.

*Lilies in the Garden* by I. George Quint is Doubleday Doran's offering at one dollar (1936). It has very little to offer that has not already been offered elsewhere.

The only larger book written for this same audience in America is "*Garden Cinderellas*" by Helen M. Fox. It was published by The Macmillan Company in 1928. Some of the extra size is due to the pleasant informal style of the writing, some to the chapters that give the historical and literary associations of the lily in the lives of people, as well as the inclusion of some data on culture and disease that had not been available before.

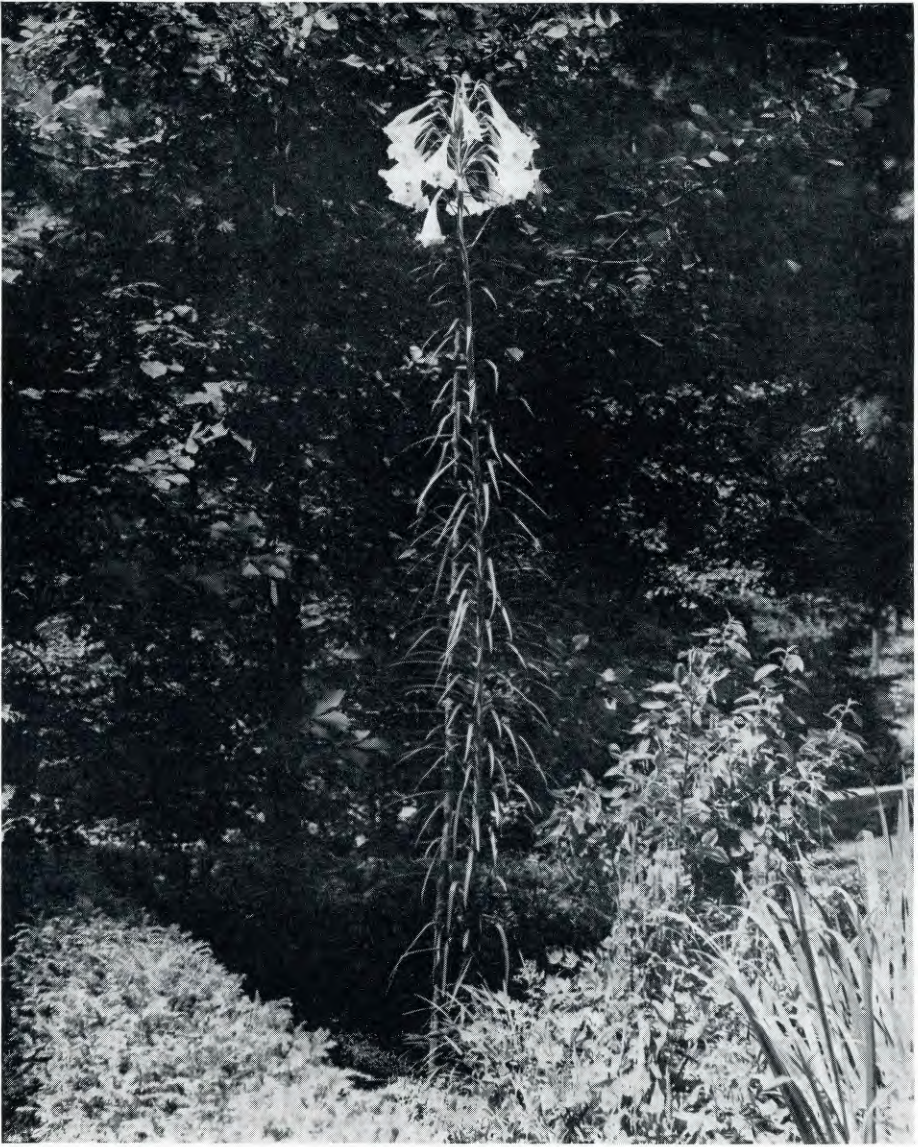
The most valuable things for the gardener-reader are the pages in which the various lilies are discussed with their many personal comments on the recorded data and on personal experience.

Although this recorder's reading of German goes haltingly, Alexander Steffen's "*Unsere Garten-lilien*," Verlag der Gartenschönheit, Berlin (1929), is such a pleasant book and has such a delightful photographic illustrations, that he is tempted to add it here. It covers much the same ground that all such books must cover. The final chapter, "*Lilien durch der Jahrtausende*," gives a pleasant history of lilies in the arts and literature of the past. Some of the illustrations represent old and well known paintings, some quite unfamiliar scenes. Some of the verses are quaint and some seem halting, but whether this is due to their own feet or the writer's lame translation may be guessed here.

*Lilies, Their Culture and Management* by H. Drysdale Woodcock and J. Coutts; published in London (1935) by Country Life, Ltd., and in New York by Charles Scribner's Sons. This is probably the most complete handbook for the amateur. It covers briefly and clearly all the cultural matters that must be covered for any plant, with discussions of uses in gardens and of propagation. The pages on "Insect Pests and Diseases" are the least informative portion of the book. The great body of the work which is a sort of encyclopedia of lilies, both species and clones, is the portion over which the reader will dwell with most avid pleasure. The illustrations are many and beautiful.

The Lily Year-books published by the Royal Horticultural Society of Great Britain, a series beginning in 1932, make perhaps the most notable





*Lilium philippinense*, 4 years old, 10 feet 8 inches high.



contribution to lily literature for our period. They<sup>1</sup> gather up not only the news and opinions of the day but reach back into the accumulated stores of the past.

The present reviewer has no intention of writing a review but merely of calling attention to some of the articles that would make excellent reading for the lily grower, wherever he might live.

1932. Although there are many articles in this issue that will be of value, two might be chosen above all their fellows. "The Place of Lilies in the Garden" by Dr. F. Stoker discusses with horticultural interest for the home gardener the place lilies may have in gardens where they must take a place with many other sorts of plants and yet be dominant in their several positions and seasons. Since it is not a landscape architect's article and since there are many evidences of the writer's skill and fertile imagination, the most capacious gardener should be pleased.

Next perhaps, this reader would choose Mr. G. M. Taylor's paper, "Lilies from Seed." Some may argue that it does not contain much that might not have been discussed elsewhere. This may be true, but any writer who has to cover a field with general instructions finds it inevitable that he should cover again the paths of many of his predecessors.

Major Stern's article on "Chinese Lilies" and Mr. Wallace's on "Hybrid Lilies" are fine and lead one on to reading all that remains.

1933. This issue, published the year of the Lily Conference, is the largest issue of the series and contains more that would concern the grower, wherever he might happen to live, than any of the others.

Two articles, upon which this reader fell with alacrity, are Doctor Stoker's long paper, "The Environment of Lilies in Nature," which is made up of two portions, first a general discussion which is packed with data and then a tabulation in which the species are discussed in alphabetical order according to the areas of origin, America, Asia and Europe; and "A Survey of Lily Soils" by Sir A. Daniel Hall and Dr. M. A. Tincker. This article is compressed into scientific tabulations that may appear difficult for the amateur reader, but need not be so.

"The Detection and Control of Lily Diseases" by Mr. A. D. Cotton, "Hybridization of Lilies" by Miss Isabella Preston, and "Vegetative Propagation of the Lily" by the late Dr. David Griffiths all demand attention.

1934. This issue has more data for the scientist than the gardener, although there is almost no paper addressed to a scientific group that does not have information for the gardener, if he will read with care.

Dr. A. M. Vollmer of San Francisco contributes the leading article, "The Californian Lilies in Cultivation." Doctor Stoker adds to his contributions, "Gleanings and Siftings," which should not be passed over lightly or hastily. Sir Daniel Hall, Dr. K. Mather, Mrs. E. Richardson Sansome and L. La Cour, combine to present "The Chromosomes of *Lilium*."

1935. The most solid contribution of this issue is Doctor Stoker's "A List of Lily Names and Synonyms" in the preparation of which he acknowl-

---

<sup>1</sup>The present day reader should be able to obtain most of these by addressing The Secretary, The Royal Horticultural Society, Vincent Square, Westminster, S. W. 1, London, England. The price is 5 s. for paper cover and 6 s. for cloth and boards.



edges a most distinguished group of assistants. This, of course, is alphabetical and includes all possible names, those of good standing in black face type, those of synonyms in italics—all have citations to first publication. Horticultural clones and hybrids do not appear in the index line, but are included under the proper heads.

Mr. Carl Purdy contributes a long paper on "Western American Lilies" and Mr. T. Hay has a rather brief, not all-inclusive, but pleasantly written paper, "Some Lily Literature."

1936. This issue contains communications from lily growers in many parts of the British Empire as well as from several specialists nearer headquarters. The one contribution of great permanent value, saving the task for others, is "A Lily Bibliography" compiled by Mons. l'Abbé Souillet, with the assistance of numerous correspondents. The bibliography includes not only books but periodical references.

1937. Here again is an issue with many shorter articles of value giving comment and opinions from many amateurs variously skilled and variously located. The real body of the work is claimed jointly by Fritillarias and Nomocharis, not lilies, but their next of kin.

No word has been said through all the notes of the excellent illustrations that appear in each issue, forming eventually a mass of data that will inform the grower not only of the visual aspects of the many species and forms, of the way lilies grow in gardens and in the wild, but also of the appearance of various propagation practices and of certain clinical symptoms that gardeners must know as well.

#### *Lily Projects in Governmental Research*

Quoted by permission from the mimeographed publication,\* compiled by Dr. D. Victor Lumsden, U. S. Horticultural Field Station, Beltsville, Md.

### LILIUM

#### *Illinois*

Univ. of Illinois, Urbana.

J. H. Hanley.

Miscellaneous bulbs. To study the effects of heat and cold treatments on the forcing of lily, etc. Measurements are being made on changes in aerobic and anaerobic respiration; free, bound and metabolic water, and on influences of said treatments on activity of respiratory enzymes.

#### *Maryland*

U. S. Horticultural Station, Beltsville, Md.

Freeman Weiss.

Tolerance of certain groups of bulbs (Amaryllidaceae and Iridaceae) to mercury-containing disinfectants, and the intolerance of others (Liliaceae) have been shown.

S. L. Emsweller, Philip Brierley, D. Victor Lumsden and F. L. Mulford.

\*From *Current Floricultural Research*, 1937-1938.



Lily, tulip, chrysanthemum, rose. To study the effect of temperature and chemicals on the induction of polyploidy in these plants.

Easter lilies were subjected to high temperature just following fertilization. Seedlings are now being grown and will be checked cytologically.

Philip Brierley.

Easter lily. Effect of preplanting cool storage on performance of Easter lilies under glass.

Two seasons' data completed, to be published about 1939 as a three-year study.

S. L. Emsweller, Philip Brierley.

Easter lily. Cytology of present commercial stocks of Easter lily, and of seedling progenies. Effects of heat on meiosis.

Philip Brierley.

Easter lily. Prevalence and significance of virus diseases in Easter lilies. Some data on prevalence. Little progress on significance of virus types thus far.

D. Victor Lumsden.

Lily. To determine improved and new means of propagating lilies vegetatively.

#### Illinois

J. H. Hanley, Univ. of Illinois, Urbana.

*Lilium tenuifolium*. To develop strains of *L. tenuifolium* that will be suitable for greenhouse forcing. Too great variability in the species as it now exists.

Twenty strains isolated. Will bloom winter of 1938-39.

#### Louisiana

Univ. of Louisiana (U. S. Dept. Agr., Bur. Pl. Ind. coop.)

Fred D. Cochran, S. L. Emsweller, Philip Brierley.

Easter lily. To study virus diseases, to determine the merits of the Creole lily in forcing, to work out more satisfactory methods of production, and to investigate the possibility of expanding into new areas.

Seedling lilies interplanted with Creole; various methods of planting and protection from cold; temperatures for storing and date of planting for forcing; effect of debudding, cutting flowers, and flowering on yield of bulbs, and on forcing.

#### Massachusetts

Mass. Agricultural Experiment Station, Waltham.

Harold E. White.

Lily. Effect of temperature on forcing of lilies (*Lilium longiflorum giganteum*).

It has been found that lilies may be forced into bloom in a period of 10 to 15 weeks by placing the potted bulbs immediately into a growing temperature of 60 degrees F. at night. Lilies rooted at a tem-



perature of 60 degrees when compared with those rooted at temperatures of 50 to 55 degrees were much better and more evenly rooted, and flowered sooner than those rooted at the cooler temperatures. Lilies rooted quite readily at temperatures as high as 80 degrees F. Lilies in bud and grown at the various warm temperatures (60 to 70 degrees) and then shifted to temperatures of 50 to 55 degrees did not show any tendency to produce split buds or were in no way affected by such changes in temperature.

#### New York

Cornell University, Ithaca.

Kenneth Post.

Lily. Causes of bud splitting.

E. P. Imle, C. E. F. Guterman.

Lily. Study of etiology, epiphytology and control of mosaic, *Penicillium* rot, bud and flower splitting, *Fusarium* bulb rot and other diseases; largely of garden lilies.

Calcium hypochlorite gives good control of *Penicillium* rot in storage and transit.

O'Leary, Keith and Guterman.

*Penicillium* rot of lily bulbs and control by calcium hypochlorite. Boyce Thompson Inst. Contr. 8:361-374. 1937.

New York Botanical Garden, New York.

A. B. Stout.

Lily. Studies of sterilities and fertility, experimental and cytological.

Hybridization, studies of mosaic disease.

#### Ohio

Ohio State University, Columbus.

G. H. Poesch.

Lily. Additional light on *Lilium longiflorum giganteum*. Hasten the flowering. High intensities (20-30 ft. candles), 6 hours each day, are necessary. Should be started in warm temperature 4 to 6 weeks before crop is wanted.

Alex Laurie.

Lily. Use of phosphorus to reduce length of stem.

Phosphorus induces shortness of stem.

#### Oregon

Oregon Agr. Exp. Sta., Corvallis (U. S. Dept. Agr., Bur. Pl. Ind. coop).

Frank P. McWhorter.

Lily. To determine distribution of viruses, the economic importance, how they may be recognized, and how stocks may be freed from virus infection. That lily viruses belong to the tulip virus group. That at least three may be distinguished.

A latent virus of lily. Science 86: 179. 1937.



*The last pictures.* (See pages 105, 106, 107, 109, 110, 111.)

*abescens*  
The three American species, *Lilium rubellum*, *L. maritimum*, *L. Kelloggii*, are not often found in Eastern gardens and their pictures are included here more to show the types of their flowers than as a record of their once having flowered here. The first has delicately rose-tinted white flowers, the second almost the coloring of *L. parvum* (see page 29), and the third flowers white almost entirely washed over with a faint lilac pink, deepened in tone by the numerous lilac dots.

The three oriental lilies are tender to the most severe cold but are worth experiment since Mrs. Henry has shown (see page 74) that *L. ochraceum* is not so tender as one might think. All three are distinguished by the most delicate and subtle perfumes. *L. Bakerianum* has a white ground flushed and dotted with rich purple.

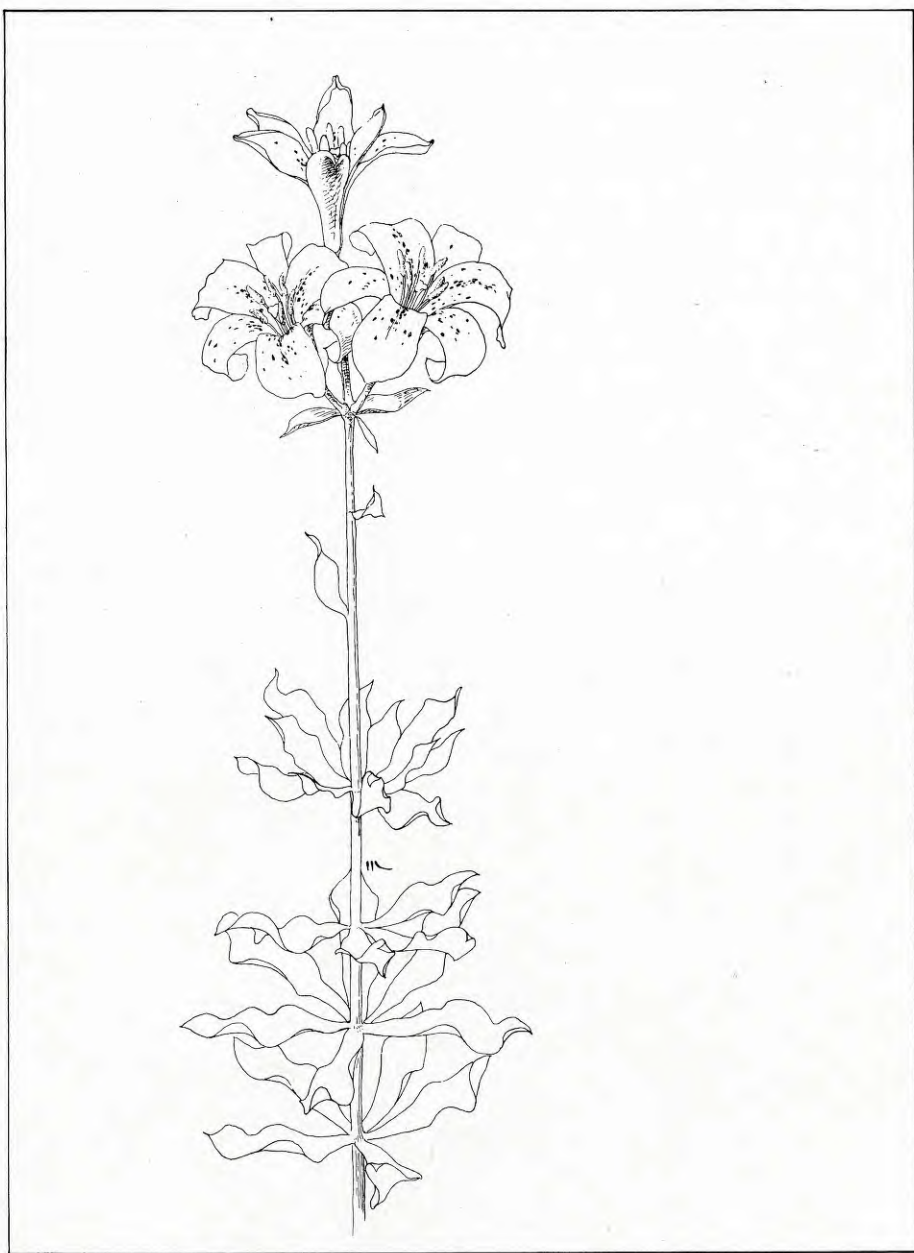
*L. ochraceum* and *L. nepalense* have been often confused in gardens and in literature, so they are shown face to face to bring out the conspicuous differences in stamens and pistil, the different carriage and form of the petals and flowers.

## LIST OF LILIES INDEXED FROM 1938 CATALOGUES

NAMES ARE TAKEN AS GIVEN, WITH NO ATTEMPTS AT  
CORRECTIONS OF SPELLING OR TAXONOMY

- |  |  |
|--|--|
| amabile 6, 7, 8, 9, 16                   | cernuum 4, (as tenuifolium cernuum     |
| amabile luteum 8, 16                     | 6,) 8, 9, 12, 16                       |
| auratum 1, 3, 4, 9, 12, 15               | chalcedonicum 4, 6, 9, 11, 12, 15, 16  |
| auratum pictum 15                        | columbianum 6, 7, 9, 14, 16            |
| auratum platyphyllum 2, 4, 6, 8, 12,     | columbianum Ingrami 8, 9, 16           |
| 15, 16                                   | concolor 6, 7, 8, 9, 11, 15, 16        |
| auratum tricolor 16                      | cordatum 8, 16                         |
| Bakerianum 16                            | cordifolium 9                          |
| Batemanniae 4, 6, 11, 12, 15, 16         | croceum 4, 6, 7, 9, 12, 15, 16         |
| Bloomerianum (Humboldtii var.            | Crow's Hybrids 16                      |
| Bloomerianum) 14, 16                     | davidii 6, 9                           |
| Bolanderi 6, 8, 14, 16                   | davuricum 6, 7, 8, 9, 16               |
| Brocade 9                                | davuricum Batemanniae 8, 16            |
| Brownii 2, 6, 8, 11, 15, 16              | davuricum luteum 8, 16                 |
| Brownii colchesteri 8, 16                | Douglas Ingram 7, 9, 16                |
| bulbiferum 7, 9, 16                      | elegans 9                              |
| callosum 8, 9                            | elegans, Alice Wilson, 4, 6, 8, 9, 12, |
| camschatkense 11                         | 16                                     |
| canadense 2, 4, 6, 7, 8, 9, 15, 16       | elegans atropurpureum 16               |
| canadense flavum 1, 12, 15               | elegans, atrosangineum 4, 8, 12, 15,   |
| canadense rubrum 12                      | 16                                     |
| candidum 1, 3, 4, 5, 6, 7, 8, 9, 11, 12, | elegans aureum 8, 16                   |
| 16                                       | elegans aureum nigromaculata 6         |
| carolinianum 4, 15, 16                   | elegans bicolor 6                      |





*Lilium rubescens.*





*Lilium maritimum.*





*Lilium Kelloggii.*



- elegans biligulatum* 6  
*elegans double* 9, 16  
*elegans incomparable* 8, 16  
*elegans Kikak* 6  
*elegans Kinbusen (maculatum)* 16  
*elegans Leonard Joerg* 12, 13  
*elegans Mahony* 6, 8  
*elegans, Orange Hirtellus* 16  
*elegans Orange Queen* 15  
*elegans Quilp* 12, 13  
*elegans Red Improved* 8, 16  
*elegans sanguineum* 6  
*elegans semi-plena* 16  
*giganteum* 1  
*giganteum himalaicum* 2, 7, 8, 9, 15, 16  
*Grayi* 4, 7, 8, 9, 12, 15, 16  
*Hansonii* 1, 2, 4, 5, 6, 8, 9, 12, 15, 16  
*Henryi* 1, 2, 3, 4, 6, 7, 8, 9, 12, 15, 16  
*Humboldtii* 6, 7, 9, 16  
*Humboldtii magnificum* 4, 7, 8, 9, 15, 16  
*japonicum (Krameri)* 1, 4, 6, 8, 12, 15, 16  
*Kelloggii* 6, 8, 9, 14, 16  
*Kelloggii hybrids* 9  
*Kulshan* 7, 9, 16  
*Leichtlini* 15  
*Lillian Cummings* 16  
*longiflorum* 9, 16  
*longiflorum albo-marginatum* 8, 16  
*longiflorum americanus* 10  
*(longiflorum) Erabu* 3, 10, 12  
*longiflorum Floridi "Superbell"*  
*Brand* 3  
*longiflorum formosum* 1, 5 as (*Erabu*), 10, 12, 16  
*(longiflorum) giganteum* 3, 5, 10, 12, 16  
*(longiflorum) Harrisii* 1, 3, 5, 10, 12  
*longiflorum nobile* 16  
*maritimum* 8, 14, 16  
*martagon* 4, 5, 6, 7, 8, 9, 12, 15  
*martagon album* 6, 7, 9, 15, 16  
*martagon cattaniae* 9, 16  
*Maximowiczii* 7, 9, 16  
*Maxwill* 5, 16  
*medeoloides* 8, 16  
*monadelphum* 11  
*Mrs. R. O. Backhouse* 16  
*nobilissima* 16  
*occidentale* 7, 8, 14, 16  
*ochraceum* 16  
*pardalinum* 2, 4, 6, 7, 9, 12, 14, 16  
*pardalinum californicum* 15  
*pardalinum Giant Red* 7  
*pardalinum giganteum* 2, 4, 9, 12, 14, 16  
*pardalinum "Orange Glow"* 14  
*pardalinum pallidiflorum* 3  
*pardalinum "Yuba"* 14  
*Parryi* 7, 8, 9, 14, 16  
*Parryi var. Kessleri* 9  
*parviflorum (pardalinum minor)* 14  
*parvum* 7, 9, 14, 16  
*parvum luteum* 14  
*philadelphicum* 4, 8, 15, 16  
*philippinense formosana* 1, 2, 4, 5, 6, 7, 8, 9, 12, 15  
*philippinense Price's var.* 7, 8, 16  
*philippinense Wilsons var.* 7, 8, 16  
*pomponium* 6, 9, 11, 16  
*Princeps, G. C. Creelman* 16  
*Princeps, Shelburne Hybrid* 16  
*pyrenaicum* 7, 9, 16  
*pyrenaicum aureum* 15  
*pyrenaicum luteum* 11  
*Regale* 1, 2, 4, 5, 6, 7, 8, 9, 12, 15, 16  
*Roetzli* 7, 8, 9, 16  
*Roetzlii crimson* 14  
*Roetzlii yellow* 14  
*rubellum* 4, 6, 8, 9, 12, 15, 16  
*rubescens* 6, 14, 16  
*Sacajawca* 7, 9, 16  
*Sargale* 7  
*Sargentiae* 9, 15, 16  
*Shuksan* 5, 7, 8, 9, 16  
*speciosum album* 1, 2, 4, 6, 8, 12, 15, 16  
*speciosum erectum* 16  
*speciosum Kratzeri album* 10  
*speciosum magnificum* 1, 4, 5, 6, 12, 15  
*speciosum Melpomene* 1, 6, 10, 12, 16  
*speciosum rubrum* 16 or *roseum* 16  
*1, 2, 7, 8, 9, 10, 12, 15, 16*  
*Star of Oregon* 7, 16  
*sulphureum* 2, 4, 7, 8, 9, 12, 16





*Lilian A. Guernsey*

*Lilium Bakerianum.*

[See page 104]





*Lilian A. Guernsey*

*Lilium ochraceum.*

[See pages 74, 75, 104]





*Lilian A. Guernsey*

*Lilium nepalense.*

[See page 104]



- Sulphur-gale hybrids 9  
 Sunset (Chinooki) (pard. giganteum) 5, 8, 9  
 superbum 2, 4, 6, 7, 8, 9, 12, 15, 16  
 sutchuenense (Davidi) 11  
 Szovitziana 7, 16  
 tenuifolium 1, 2, 4, 6, 7, 8, 9, 12, 15, 16  
 tenuifolium, Goldfinch 5  
 tenuifolium Golden Gleam 4, 6, 8, 12, 13, 15, 16  
 tenuifolium Red Star 5, 16  
 testaceum 2, 4, 6, 7, 8, 9, 12, 15, 16  
 tigrimax 16  
 tigrinum 4, 9  
 tigrinum fl. pl 2, 4, 6, 8, 9, 12, 15, 16  
 tigrinum Fortunei 7  
 tigrinum Malmo Strain 16  
 tigrinum splendens 1, 2, 5, 6, 8, 12, 15, 16  
 umbellatum Apricot 9, 15  
 umbellatum Darkest of All 16  
 umbellatum erectum 9, 16  
 umbellatum Golden Fleece 4, 9, 12, 15, 16  
 umbellatum grandiflorum 2, 5, 6, 7, 8, 9, 12, 15  
 umbellatum grandiflorum 4, 8  
 umbellatum Horsmani 9  
 umbellatum Incomparabile 9  
 umbellatum Invincible 9  
 umbellatum Mahogany 9, 15  
 umbellatum multiflorum 9  
 umbellatum Orange Brilliant 16  
 umbellatum Orange King  
 umbellatum Refulgens 7  
 umbellatum Sappho 16  
 umbellatum splendidum 9  
 umbellatum Thalia 9  
 umbellatum Vermilion Brilliant 6, 9, 16  
 Wallacei 6, 9  
 Wardii 16  
 Washingtonianum 2, 4, 6, 8, 9, 15  
 Washingtonianum minor 14  
 Washingtonianum purpureum 7, 14, 16  
 Willmottiae 2, 6, 7, 8, 9, 12, 15, 16  
 Willmottiae unicolor 9, 16

## KEY TO CATALOGUES CONSULTED

1. Thos. J. Gray Co., 16 So. Market St., Boston, Mass.
2. Conley's Blossom Farm, 1759 Franklin Boulevard, Eugene, Oregon.
3. Walter J. Guille, Inc., Hicksville, Long Island, New York.
4. Stumpp & Walter Co., 132-138 Church St., New York City.
5. W. E. Marshall & Co., Inc., 150 W. 23rd St., New York, N. Y.
6. H. A. Hyde Co., Watsonville, California.
7. C. L. Shride, Vashon, Washington.
8. Julia Clark, Canby, Oregon.
9. The Lily Gardens, Bellevue, Washington. (34 varieties—seeds)
10. Wm. M. Hunt & Co., Inc., 115 W. 45th St., New York, N. Y.
11. John Dirkmart Co., 220 Fifth Ave., New York, N. Y. (importer)
12. Hosea Waterer, 714 Chestnut St., Philadelphia, Pa.
13. Max Schling, Inc., 618 Madison Ave., New York, N. Y.
14. Carl Purdy, Ukiah, California.
15. Wayside Gardens, Mentor, Ohio.
16. Edgar L. Kline, Kilcare, Oswego, Oregon.



# The American Horticultural Society

---

## OFFICERS

*President*, Mr. B. Y. Morrison, Washington, D. C.

*First Vice-President*, Mrs. Charles Walcott, Washington, D. C.

*Second Vice-President*, Mrs. Fairfax Harrison, Belvoir, Virginia.

*Secretary*, Miss Anne Sweeney, Washington, D. C.

*Treasurer*, Mr. Henry Parsons Erwin, Washington, D. C.

## DIRECTORS

### *Terms Expiring in 1939*

Mrs. Robert Woods Bliss, Washington, D. C.

Mrs. Mortimer J. Fox, Peekskill, N. Y.

Dr. J. Horace McFarland, Harrisburg, Pa.

Mrs. Chester Welles, Washington, D. C.

Mrs. William Holland Wilmer, Washington, D. C.

### *Terms Expiring in 1940*

Mrs. Walter Douglas, Mexico, D. F.

Mrs. J. Norman Henry, Gladwyne, Pa.

Mrs. Clement S. Houghton, Chestnut Hill, Mass.

Mr. Alfred Maclay, Tallahassee, Fla.

Mrs. Arthur Hoyt Scott, Media, Pa.

## THE LILY COMMITTEE

Prof. L. H. MacDaniels, *Chairman*  
422 Chestnut St., Ithaca, N. Y.

Mrs. Mortimer J. Fox, *Secretary*  
Foxden, Peekskill, N. Y.

Mrs. Zur W. Craine, Norwich, N. Y.

Mr. Montague Free, Brooklyn, N. Y.

Mrs. J. Norman Henry, Gladwyne, Pa.

Dr. L. E. Longley, St. Paul, Minn.

Dr. L. M. Massey, Ithaca, N. Y.

Dr. J. Horace McFarland, Harrisburg, Pa.

Dr. Forman McLean, Yonkers, N. Y.

Mr. B. Y. Morrison, Washington, D. C.

Mrs. Lewis Parsons, Villa Nova, Pa.

Mr. Edwin C. Powell, Rockville, Md.

Miss Isabella Preston, Ottawa, Canada.

Mr. Carl Purdy, Ukiah, Calif.

Miss Merle Rasmussen, Oshkosh, Wis.

Mr. George Slate, Geneva, N. Y.

Dr. A. B. Stout, Bronx Park, New York, N. Y.

Mrs. Joseph Walker, Woodberry Forest, Va.



# The American Horticultural Society

**I**NVITES to membership all persons who are interested in the development of a great national society that shall serve as an ever growing center for the dissemination of the common knowledge of the members. There is no requirement for membership other than this and no reward beyond a share in the development of the organization.

For its members the society publishes *THE NATIONAL HORTICULTURAL MAGAZINE*, at the present time a quarterly of increasing importance among the horticultural publications of the day and destined to fill an even larger role as the society grows. It is published during the months of January, April, July and October and is written by and for members. Under the present organization of the society with special committees appointed for the furthering of special plant projects the members will receive advance material on narcissus, tulips, lilies, rock garden plants, conifers, nuts, and rhododendrons. Membership in the society, therefore, brings one the advantages of membership in many societies. In addition to these special projects, the usual garden subjects are covered and particular attention is paid to new or little known plants that are not commonly described elsewhere.

The American Horticultural Society invites not only personal memberships but affiliations with horticultural societies and clubs. To such it offers some special inducements in memberships. Memberships are by the calendar year.

The Annual Meeting of the Society is held in Washington, D. C., and members are invited to attend the special lectures that are given at that time. These are announced to the membership at the time of balloting.

The annual dues are three dollars the year, payable in advance: life membership is one hundred dollars; inquiry as to affiliation should be addressed to the Secretary, 821 Washington Loan and Trust Building, Washington, D. C.



