THE SPECIES LILY

The Newsletter of the Species Lily Preservation Group

Affiliated with The North American Lily Society

Lilium philadelphicum

Eastern American Species Edition

Spring, 1998

SLPG GOALS

* Collecting and growing as many species lilies as possible, especially those rare and in danger of extinction.
* Making excess species bulbs available to members.
* Collecting, preserving, planting, growing and distributing species seed.
* Collecting all possible information on each species: its habitat, distribution, cultural needs, etc.
* Disseminating cultural information on each species.
* Assembling a slide and photo record of all species lilies.
* Identifying areas where specific species grow and seeking protection for these areas.

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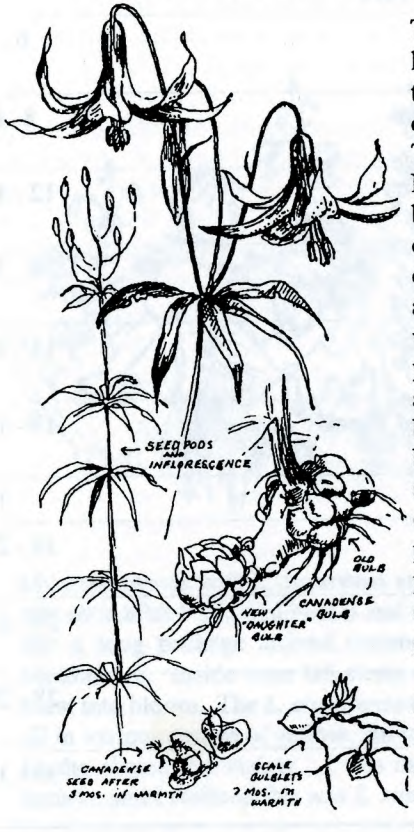
Lilium canadense

William S. Dean, formerly from New York

[Reprinted and slightly edited from an early New England Society newsletter]



The old saying about walking over dollars to pick up dimes might well apply to lily growers — especially lily growers in the northeastern United States. Throughout most of the eastern part of North America, *Lilium canadense* has been growing for centuries, asking no odds from the elements — and of man only to be undisturbed. No lily is better able to cope with our unpredictable weather conditions, taking in stride dry years or flooding, severe spring frosts and deeply frozen soil. The charm and beauty of this lily is undeniable; in the best of company it needs no apology. In spite of these excellent assets, it isn't extensively grown in gardens. It is the purpose of this article to acquaint more people with this fine lily and perhaps offer a slight understanding of how it grows.

Lilium canadense comes in several forms. Here we shall consider only two: *L. canadense* var. *flavum*, native to much of New England, and *L. canadense* var. *rubrum*, or correctly var. *coccineum,* native to scattered areas in New York State and elsewhere. Var. *flavum* varies in color from a soft, light yellow to a definite buff. The leaves are usually more narrow than those of var. *coccineum.* In my garden it has grown to seven feet high and carried sixteen blooms. It usually flowers here in central New York about July 10th - 15th, being approximately two weeks later than var. *coccineum.*

Var. *coccineum* varies from a good, medium red to orange red with considerable yellow. The interior of the flower contains more or less yellow, heavily spotted. The yellow type is also much spotted in the throat of the flower.

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Unspotted forms have been reported, but they are very rarely found. On occasion, a plant producing pinkish flowers may be found; these are far from common. At times the flowers of the red type will fade to a pinkish color, but these can hardly be termed pink flowering plants. I have counted twenty-six buds on a *L. coccineum* plant, approximatley seven feet high. In the garden, twelve to sixteen buds and six feet high is the best I have been able to grow it. With six or eight or less buds, the inflorescence of both types flares gracefully outward from a single point at the top of the stem — much like the stays in an umbrella. As the bud count rises beyond eight (sometimes less), the pedicils branch from the main stem at various points, producing a racemose inflorescence. The leaves of either type may grow in whorls, scattered on the stem, or a combination of both.

Both varieties of *Lilium canadense* desire the same growing conditions. They will live in most soil and under most any condition. The best specimens are found growing in clay loam, slightly acid, and moist to very wet. If there is any secret to growing a Canada Lily, it is water and more water. The bit of good advice on sharp drainage for growing lilies must be discarded in this case. The bulbs have a rather sparse root system and the roots don't run very deep. Without sufficient moisture where the roots can get it, the plants will not do their best. Many wild bulbs are under water for weeks at a time. A few have been seen with bulbs under water at blooming time. Obviously the best planting location is near a stream, pond or bog. However, they will do very well in the ordinary garden with a good mulch and perhaps a little water during dry times. They do pretty well when planted near the drip from a roof, but far enough out so that the drip doesn't fall on the foliage.

In the wild *L. canadense* bulbs are found four or five inches below the soil surface. The bulbs are stoloniferous, a new bulb being produced each year. The old bulb then disintegrates and eventually rots. Under ideal conditions, a large bulb may produce a new large bulb and one or more small ones. Thus a good-sized clump is soon formed. Should the sprouting stem be damaged under or above ground early in the season, there will be no growth. In such case, the bulb can only make a scale bulblet or a very small bulblet on a stolen. This should make a leaf or short stem in the succeeding year. In any event, it will be three or four years before the plant will amount to much. By the same token, a plant that loses much foliage before reaching maturity will produce a smaller bulb and thus a smaller plant and fewer flowers next year. Most damage done to the underground sprouts is done in early spring before the lilies come up. Any walking on the beds or digging should be avoided until they emerge. Digging the bulbs while the plants are blooming usually upsets the status quo, resulting in a smaller plant next season. After the foliage turns yellow or brown in the fall is the time to move the bulbs.

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Most sales pitches have a gimmick, and this one is no exception. Growing in the wild, *L. canadense* isn't troubled by botrytis. However, in gardens it may become infected, especially during rainy, wet periods. It can be serious enough to defoliate the plant, resulting in a much smaller bulb for the next season. *L. canadense* will make no compromise with the virus disease — it is fatal. This does not mean it cannot be grown in a garden having a little virus present. However, one should be prepared to lose an occasional plant. It isn't any great chore to keep a few seedlings coming along as replacements. The bulbs may be planted away from other lilies that may have the virus. It is unnecessary to plant them in a cultivated area. In the wild, they grow as well or better in a tangled mass of vegetation. A weedy corner of the garden or orchard will do nicely.

L. canadense in My Backyard

Janet Vinyard, Massachusetts

As far as hunting the species lilium in our backyards, Roland and I have perfect jobs. Both of us travel extensively throughout this central area of New York state — he with a farm real estate business and I with a home-based hospice. Should you be trailing me any July afternoon, you'd see this nurse screeching to a halt to record the location of a new patch of gracefully pendant *L. canadense*. When free time permits, I'm off and running to monitor the population, variations in color and spotting patterns. I have been known to wrap an isolated stem with a hands off warning label and a

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promised packet of seed to any curious person heeding my plea.

You can imagine my delight when Roland announced he found a road side ditch jam packed with red *L. canadense* the second week in July last year. I hastened to the site, an eager pilgrim, in awe of the mass of lilies but greatly disturbed at the equally lush poison ivy vines protecting the enclave. A hot sultry evening cast miserable light for the photo documentary, but I know the flowers were simply inspiring *L. canadense* var. *coccineum.* However, it was on the circuitous and searching trip home that I discovered my very own three acre treasure trove of *L. canadense* within a mile (as the crow flies) of Roland's find.

The lay of the land of "my'' field is flat and low. It drops into the brush off the roadway by two feet or so. The summer had thus far been dry, and the squish I expected to feel beneath my feet was thankfully absent. I shall be curious to see how the lilies fared through the continued hot, dry summer but wet autumn and winter. If you can imagine two horseshoes side by side with the metal representing the 10-15 foot scrubby swamp elders, you have an idea of the encroachment from the backwoods and the now non-existent hedgerow. Tucked into the taller scrub were the only yellow variants — two small groups of heavily spotted yellow *canadense.* Interspersed throughout the rest of the knee high shrubby growth were *L. canadense* blooming with every combination of red and yellow, red/orange and yellow, pale orange and yellow, heavily spotted to nearly unspotted. I cross pollinated the most vigorous stems and those with interesting spotting patterns. Photos were impossible in the fading light. We returned to the site for further study, but too long after their prime. Photo documentary is on the project list for summer of 1998.

There is a 'FOR SALE' sign on the property, but the lily field is a small portion of the total acreage. It wasn't on my Christmas list and perhaps I can contact the Nature Conservancy and get assistance in preserving this jewel of a natural stand of *L. canadense.*

Seed from this patch has been collected, much of it dispersed (in the same field) and offered through a variety of plant organizations' seed exchanges. The seed sprouts in the manner of delayed hypogeal seed, needing a cool period (60 days in refrigerator) to break the dormancy of the rice-grain sized bulblet formed within the papery seed coat during its first warm, moist planting period. I follow Gene Fox's schedule for germination of delayed hypogeal seed. I find that the greatest losses occur at the time the second season seedlings with true leaves are introduced to the great outdoors and all the hazards of mother nature.

In my experience, *L. canadense* likes wet but not stagnant growing conditions. Mine grow by the house under a cedar tree that has long given me plenty of

mulching material, and the soil is probably fairly acidic. I do not fertilize or spray, and there are no other hybrid lilies growing near these. I do have a monumental *L. paralinum* that seems to thrive in the same growing conditions and was at its prime this past summer. In front of both of these species I grow a third species — *L. szovitzianum*. It is not nestled in the soft friable bed under the cedar tree, so perhaps it is in less acid soil. Sunlight is limited to dawn's cool morning sun and three hours worth of mid-day filtered light. After that, the bed is shaded by the house. This bed receives all the rainfall from the house and is watered during drought. I grow hosta and a variety of species *arisaema* in the same location.

One article that I found very helpful in managing my garden plot of *L. canadense* is the one written by William Holden of Chicago, Illinois for the 1983 *North American Lily Society Yearbook.* (If you'd like a reprint of Bill's article or Gene Fox's germination schedule, I'd be glad to send them for the cost of postage and printing.) I hope you try raising these beauties from seed and that you let me know of your successes and failures.

Lilium philadelphicum in Saskatchewan

Bonnie Lawrence, Saskatchewan

In a good lily year, with abundant spring moisture following a year of adequate to above average rainfall, the gleaming orange-red blossoms of *Lilium philadelphicum* can be found massed in areas around saline wetlands, moist meadows, ditches and open woodlands.

Historical accounts paint a vivid picture of the potential abundance of this plant. In 1859 the Earl of Southesk described an area near Qu'Appelle, Saskatchewan: "Sometimes acres and acres were covered with intermingled masses of the orange lily and the pendulous blue-bell, the whole of them so short of stem that the glory of the flowers combined with the rich greenness of their leaves, and it seemed as if a vast oriental carpet had been thrown upon the ground."(1)

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In1996 favourable conditions produced abundant flowers in many locations in south-central Saskatchewan. Generally increases of two to three times the number from the previous or subsequent year were recorded. The increase was particularly noticeable in an area that had been burned two years previously and spectacular where there had been an early spring grass fire in that year. These observations lead to the question: what factors influence the ability of this most showy of prairie wildflowers to bloom either abundantly or persist as a few scattered individuals ?

Description

There are two varieties of *L. philadelphicum* that occur in the province of Saskatchewan. Var. *andinum*, commonly referred to as the Western Red Wood Lily, occurs throughout the southern two-thirds of the province in moist grassland, open woods and grassy clearings, while var. *philadelphicum*, the Eastern Wood Lily, occurs along the eastern boundary in moist open woods. In addition, hybrids of the two varieties are found throughout the region in moist open woods, clearings and prairie margins. Variety *philadelphicum* tends to have its leaves predominantly arranged as whorls, while var. *andinum* has its leaves scattered down the stem from the terminal whorl. Most populations within the south-central portion of Saskatchewan are var. *andinum* or an intermediate form between var. *andinum* and var. *philadelphicum*.

The flowering season for the more northerly populations found under open woods extends from mid-June to late July, while the grassland populations exhibit a definite peak of flowering in early July. A single stem can bear from one to six (rarely more) up-facing to slightly out-facing bright flowers in an umbel of flowers. Most commonly the flowers are single or double, up-facing soft medium orange-red giving way to a dark yellow throat. The throat area is spotted with many fine or relatively few larger spots of maroon to red-brown. (2) The colour of anthers and pollen matches the spotting; the stigma is very dark and the tepals are clawed at the base. Less common are tepals of deep red and salmon shades. Occasionally the flowers are bright yellow with red streaking and bright red throat spots and red anthers. The clear glowing yellow spotless or *immaculatum* form with bright yellow pollen and pale yellow stigma is the most rare colour variation. It is common to find petal shapes that vary from distinctly pointed to softly rounded.

Plant height is variable; a range from 6 to 24 inches is commonly cited. Our field observations indicate that flowering height is usually just above the level of surrounding vegetation (except in wooded areas). Multi-flowered plants are usually slightly taller with a very robust stem, and they stand out conspicuously as bright coloured flags in the population. Multi-flowered

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plants are common in the moist meadows of the grassland region.

The white bulb is composed of a cluster of single and jointed white scales, each approximately the size of a grain of rice. Each portion of a scale is capable of producing tiny bulblets. Most bulbs are found within two to three inches (5 to 8 cm.) of the soil surface; the larger bulbs (one inch or 2.5 cm. in diameter) are deepest. Contractile roots pull the bulb to the right depth as it matures.

The dark brown seeds mature by late September and germinate epigeally after a short cold treatment (one to two months). Germination is irregular with approximately 7-76% germination within three weeks when sown on the soil surface. A portion of the seeds exhibits delayed (up to eight months) epigeal germination in either dark or light. Hypogeal germination has been noted in the literature (3) but not observed by us. We have found that it takes three growing seasons for plants grown from bulb scales to produce a multi-leaved vegetative stem when planted back into a wild population. We expect these plants to flower in their fourth year. Growth from seed is initially slower, but it would appear to take a similar number of growing seasons.

This plant has proven to be a short-lived garden resident when grown from seed and transplanted out. Gardeners have had better success when transplanting mature bulbs into farm gardens that are close to areas where wild lily populations grow. Mycorrhizal associations have been noted in the literature (4). A lack of successful interspecific breeding between *L. philadelphicum* and other native species has been mentioned in other lily articles (5).

Population Dynamics

For four successive growing seasons we have tagged and measured individual plants in wild populations, carefully noting their position within research plots at several different locations in Saskatchewan. Each year we have tagged new individuals, many "appearing" for the first time as a flowering plant. One explanation is that the bulbs are able to remain dormant. How many successive years can one individual flower? We have observed individuals that flower for four consecutive years, but only about 17% of the flowering lily population does this; some alternate flowering with vegetative forms, others have been observed to "disappear" and then reappear one or two years later. On average 57% of flowering plants reappear the following season as flowering plants and about 21% do not reappear in any form the following year (6). It appears therefore that this plant is able to remain dormant as a mature bulb. We do not yet know for how long the bulb can remain dormant or how often the plant must grow to ensure the survival of the bulb. We do know that the removal of vegetative cover by a spring burn appears to release bulbs to send up a flower shoot. A similar result was noted anecdotally as a result of haying.

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Small mammal populations affect *L. philadelphicum* in several ways. All parts of the lily are edible. The fully-formed mature flower buds or flowers are frequently eaten by small mammals (less commonly by deer or rabbits). The mature green pod is also a target. These animals leave only a piece of stem after their harvesting. In sites with dense grass cover the plants might be chewed down to the ground as they emerge in the spring. In 1997 small mammals extensively visited all of our tagged lily sites. On average 86% of the plants were damaged sometime in the growing season with over 50% chewed before they could flower. Chewed plants are more likely to produce clusters of multiple plants or not to reappear the following year. It is worth noting that the highest percentage of successful seed set was observed at the site that had been burned that spring. By the fall of the year the other plants had not fully recovered. The lack of vegetative cover kept the small mammals out of the lily area and ensured 100% successful pod development and maturation.

In addition, many small mammals gather the edible, friable underground bulbs and in the process distribute bulb scales which produce more plants. One site that was visited in the fall by a pocket gopher (an animal that tunnels underground in search of roots to eat and store) had the highest density of vegetative and flowering plants (eight lilies per meter square) in subsequent years.

The relationship of *L. philadelphicum* to fire, moisture conditions and the small mammals that graze upon it is a dynamic one. Here is a plant adapted to those that would dine upon it — capable of waiting for conditions to bloom in a chorus of glorious colour.

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2. Sullivan, Jim, 1991. "A lily of the Canadian prairies" *The Lily Yearbook of the North American Lily Society*, No. 44: 82-83.

3. Rockwell, F.F., Esther C. Grayson and Jan de Graff, 1961. *The Complete Book of Lilies.* Doubleday and Co. Inc., N.Y.

4. Currah, R. S. and M. van Dyck, 1986. "A survey of some perennial Vascular plant species native to Alberta for occurrence of mycorrhizal fungi." *The Canadian Field Naturalist*, Vol. 100 (3): 330-342.

5. Fox, Eugene, 1993. "Growing to understand Lilium Philadelphicum." *The Lily Yearbook of the North American Lily Society*, 1993. No. 46: 30-34.

6. Lawrence, Bonnie and Anna Leighton, 1996. "Where have all the lilies gone?: a population study." *The Blue Jay* 54(4): 199-205.

Wood Lily
(*Lilium philadelphicum*)
- a North American delight in the Oulu Botanical Garden

Veli-Pekka Pelkonen, Finland

Wood Lily is an exception in the American species group as it belongs to the immediate epigeal type of germination. After the small seeds germinate, the growth continues, unlike that of most American species, without any interrupting dormancy periods. No wonder it is recommended to be propagated by seeds, though the easy start doesn't guarantee any prolonged success with its culture. In the literature Wood Lily is said to be difficult or even short lived in gardens, and thus seed propagation is recommended. It is tempting to make the conclusion that the vegetative growth of this lily is weak, and hence it reproduces strongly by sexual means. Naturally, the concept is not so simple, although there are opposite examples, too, in the genus of *Lilium*, where vegetative reproduction is so strong that the seed production has become scarce.

There are many possible reasons for the misfortune with Wood Lily. It is said to be a lime hater, and it thrives in moist, peaty soil. Maybe this is the clue to the mystery that Wood Lily has flourished in the botanical gardens of Oulu (65°03'N, 25°27'E), Finland since 1987. The seeds were obtained from Golden Rocky Mountain Seed Service, Canada, and it's not clear whether the first seedlings have perished (the current individuals being their offspring), or if the original ones still persist. There is variation in the tiny population, which indicates that it's not a clone (it is vegetatively multiplied), and the number of shoots has remained constant (three to five flowering stems). Last season was very favourable with lots of warmth and sufficient moisture (not too wet, though). The Wood Lily bed was a real delight to one's eye: five

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stems varying from 20-50 cm in height, with relatively large buds compared to the modest size of the whole shoot. The biggest individual carried two flowers. After the opening of the flower buds (starting 7th July), the variations in the flower colour as well as the form of the inflorescence were visible. The colour of the petals was from orange to dark red towards the tips, every flower having a light yellow throat. The base of the "bowl" was open (petals clawed) and covered with more or less abundant spots. At the first glimpse, many Finnish garden enthusiasts were confused by the Pseudolirion flowers and thought them to be small Orange Lilies (*Lilium bulbiferum*) which is an ancient garden plant here. But a closer look at the more narrow petals and the tender stem made the difference obvious. The leaves are said to be whorled in this species (Woodcock & Stearn: *Lilies of the World,* 1950), but in our strain they are scattered. Whether it is form or a variation (*L. philadelphicum* var. *alpinum*?), or a consequence of the nutrients or other cultural conditions, remains unclear.

The soil in the current growing spot is a typical Finnish garden mould with a rather large proportion of composted peat. Thus the reaction of the soil is slightly acidic. The soil keeps moisture, but the excess water runs through and does not form any puddles. In the case of a prolonged drought, extra watering is still needed. According to the literature, moisture is beneficial as long as it's not soaking. Peaty soil is recommended. Usually the growing season in these latitudes is light (practically 24 hours daylight during the midsummer), short, calm and quite moist. But the conditions may fluctuate markedly — some summers being very cool and rainy, others almost tropical (like last summer). The long light period compensates for the short season so that the plants develop and mature faster than in lower latitudes. As far as light is concerned, semi-shade is said to be best for this species. What this means in the 65th latitude has to be considered: it has proved to be true that semi-shade in the Central European climate means full sun in our latitude. And Wood Lily has done really well in full sun in our garden.

During the winter we usually have lots of snow for five to six months, although there is also variation among different years: sometimes the snow cover may disappear completely during exceptionally warm periods during the winter. The temperature minimum may be as low as -30 to -40 C, still mostly from 0 to +5 down to -15 to -20 C. Summer temperatures range from 0-5 (there may be night frosts in the beginning and the end of the season) up to +30 degrees C.

So the conditions that we are able to provide seem to well suit the American Wood Lily, which originates under rather similar climatic conditions as far as temperature and precipitation are concerned, but has quite different light conditions than in its original provenance. It will be interesting to see in the near future how other Northern American species do here. Other potential species

are Panther Lily (*Lilium pardalinum* Kellogg) and Canadian Lily (*Lilium canadense*). These great species will most probably bring new perspective to the Finnish gardens, adding to the assortment of the traditional Orange Lily, Turk's Cap Lily (*Lilium martagon*) and Tiger Lily (*Lilium lancifolium*). Besides, they will bring "new blood" to the breeding of novel, especially hardy lily cultivars for the lily lovers living in demanding climatic conditions.

Tissue culture of lily species is an excellent method for preserving germ plasm and thus helping the conservation of threatened species and genotypes. In my *in vitro* collection there are approximately 50 lily species, 20 fritillary species and a few other liliaceous species of 1-50 different origins of each. The cultures have been started from seeds obtained through various seed exchange programs (NALS, RHS, botanical gardens). The aim is to find new garden plants, to do physiological research and to preserve the given genotypes. I'll be glad to join the Species Lily Preservation Group, hoping that I can give my contribution to the work of preserving Mother Nature's unique pieces of art.

SLPG Meeting

The annual meeting of the Species Lily Preservation Group will be held at 2:45 p.m. on Thursday, July 16, 1998 during the North American Lily Society's 51st International Lily Show at the Sheraton Cavalier Hotel in Saskatoon, Saskatchewan.

In order to continue to provide color in the newsletter, it is proposed that dues be raised from the current US $5.00 to $7.00 (three-year membership $20.00) and from Canadian $7.50 to $9.00 (three-year membership $25.00). Please be prepared to vote on this important issue.

NALS Seminar on Lilium philadelphicum

The Canadian Prairie Lily Society has arranged a special treat as a part of the NALS seminars: Bonnie Lawrence and Anna Leighton will discuss *Lilium philadelphicum.* The two have been studying wild populations of *L. philadelphicum* near Saskatoon since 1993 to investigate the ecology and life history of this species. Bonnie Lawrence is a rural gardener and biologist. Curiosity about the distrubution and abundance of this native lily on the land where her family homesteaded in 1903 initiated the study. Anna Leighton is a plant taxonomist with an interest in wildflower ecology.

Lilium michiganense

Dave Karnstedt, Minnesota

One Sunday, while my son and I were out on one of his practice drives (he's15 and just can't wait!), we drove north out of White Bear Lake on Highway 61 toward Minnesota's famous lake country. It seemed that every few feet south of Forest Lake were clumps of *L. michiganense* blooming on the banks of the roadside ditches. I found that somewhat surprising as my experience has been seeing this lily closer to the early to mid part of the month of July. Even though 'ol dad was keeping a fairly sharp eye on the speed indicator, I was still able to have a few seconds' glance at many of the clumps as we moved along and noted some interesting variation that I really hadn't seen before this.

This lily is normally in bloom around the Twin Cities in early July. I recall a drive to one of the early NSLS/WLS shows in Eau Claire many years ago where, along I94 to Eau Claire, a few plants of *L. michiganense* would appear from time to time. At one point along the way, we encountered a spectacular, solitary stem of this lily bearing at least a dozen, larger than normal blooms of a wonderful, deep red. The stem topped out at over six feet and was growing in a fairly heavy perennial grass cover on the south side of the highway in the roadside ditch. I assume the soil was the usual sandy soil of the area with some humus from the annual grass growth. It was also probably augmented by annual leaf drop from the woodland growing barely fifteen feet away. Since the location was near the gentle bottom of the ditch, the soil was probably

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moderately damp for most of the growing season and kept so by virtue of being shaded by the trees from early afternoon on, in addition to the rather heavy grass overgrowth. Given the grass cover and proximity of the trees, I am certain any excess water in the soil from the occasional summer thunderstorm was quickly absorbed by the mass of other roots and quickly transpired into the warm and humid July days.

Most amazingly — and right at that point — our car seemed to have developed some strange engine problem that required us to pull well over on the shoulder, stop and get out. Of course, at that point, it was an easy choice to move down the gentle incline for a closer look at the lily. After pollinating a few flowers, we returned to the car which (magically!) sprang into life with the merest turn of the key and we were once again moving toward our destination. Oddly, there were few lilies from that point on. Everyone driving this route to Eau Claire that day seemed to have seen that spectacular specimen and, as you might imagine, it was a topic of conversation among those who had. To this day, it remains a vivid memory!

As we drove along on the way to Forest Lake on this warm and humid July morning, it became obvious that the majority of the *L. michiganense* were growing in the roadside ditches along the west side of the road. At first I thought this would have some significance; now I'm not as certain. Irrespective of their location east or west of the road, virtually all the plants seen were growing near the lowest portion of the ditch, i.e., the wettest portion (certainly for a while after each summer thunderstorm). None, of course, were growing in standing water, although (typically) June is our wettest month and the soil holds considerable moisture. In the heat of July and August, it seems likely the heavy grass growth would very quickly transpire any excess water in the soil, keeping it fairly dry during and after blooming to senescence. Too, those plants were growing in a thick cover of quack grass accompanied by any number of other aggressive prairie forbs. I often dig daffodils (from near the edge of my field plantings) that have a quack grass rhizome growing right through the bulb itself; I can well imagine the prison of tough roots those lilies were growing in!

Even though we were moving by at some 60 mph, it was still slow enough to notice that nearly all the lilies on the east side were light orange in color with very little admixture of red. The flowers ranged from one to a stem to three or four. The plants didn't seem to rise much above the seed heads of the associated grasses.

Overall, those bulbs were growing in full sun and in a well-drained soil (probably the typical sandy soil of this region of the state — often fairly wet early in the growing season but quite dry after blooming) that had some humus

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in it from decades of grass growth. Obviously, they were successfully competing with aggressive sorts of plants that would not be seen in a "normal" garden setting. And in hindsight, that must be just what they need to do well (mycorrhizae, perhaps?) — in short, very different conditions than we would be offering them in our "civilized," and weed-free gardens.

On the return trip, the west side of the road presented a very different aspect. This side contains a parallel railroad bed that offers considerably steeper banks to the lilies growing in this locale. I suppose the steepness of the bank means the lilies growing there would have had the heat of the mid-summer sun about their bases cut from early afternoon on. Be that as it may, I still have no idea why the flowers on the west side were overall bigger, redder and more per stem.

There was one patch that had the largest, best-formed and most deeply-colored examples of this species that I have seen. Clearly, they were the equal of the example seen years earlier along the Interstate to Eau Claire. There were several clumps in this grouping and several stems in each clump. Their color was absolutely spectacular — the deepest orange-red I have seen in this lily, a color that shaded to pure red in the outer third of the tepals. We stopped and I got out for a closer look at them. They were growing in a considerably flatter and more open area than where I had just seen most of them growing. It was probably drier as well, as the grass growth was not as vigorous. The foliage on each stem was lush, in several whorls, gray-green and glaucous. It was immediately obvious that the flowers were the largest I have ever seen of this lily, easily three times the size of the others in the area. This grouping was growing in a thick sea of poison ivy that must have provided considerable shade to the soil, in addition to absorbing any excess moisture. Undoubtedly, it was also why these "wild flowers" had not been picked and were still in marvelous full bloom. Even though I find myself fairly sensitive to poison ivy, with a shrug, I carefully waded through and pollinated several blooms. I hoped I could get back to get some seed later that summer.

I have tried growing this lily in a raised bed in my previous suburban garden in a heavier, clay-based soil and was unsuccessful for more than a season or two, and never successful in raising seedlings to blooming size. Based on what I saw, and impossible though it may be for just about all of us to duplicate, this lily seems to require being grown in full sun in a thick cover of aggressive grasses to do well!

Many years ago, Louise Koehler of Owatonna exhibited at the annual NSLS show a hybrid of this lily with *L. canadense*. The flower form was lightly recurved and intermediate between the two species with much of the *canadense*

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spotting pattern and color. Louise graciously sent me a couple of tiny bulbs that fall. Alas, they did not survive into their second season in my quack grass and generally weed free garden, heavily shaded from the afternoon sun.

Farther north in the lake country, one frequently encounters *L. canadense* growing in similar, although more acidic conditions than I think one would typically find with *L. michiganense*. Interestingly, one seems to encounter the one species but not both in the same area. These wonderful lilies are two gems of Minnesota flora that most people miss as they speed by at 70 mph on the "freeways." It's their loss! One needs to search along roadsides where the ditches have not been disturbed for at least thirty years and probably parallel to areas where the lily grew prior to the intrusion of the roadway.

SLPG Goals: Are We Working Toward Them?

The Species Lily Preservation Group has already benefited many of us:

New Friends
Personal Contacts for Seeds, Pollen and Bulbs
A Growing Interest in All Species Preservation

But what have we been doing to meet the goals set forth in our inagural meeting? Let's look at these goals one by one, and as we do so, try to determine strategies which might help us achieve these goals. Then let's contact any of our officers with our suggestions — no matter how "impossible" or "trivial" they may seem to us. We're all in this together!

* **Collecting and growing as many species lilies as possible, especially those rare and in danger of extinction.**

Thanks to the NALS seed exchange and to individual members' donations, our president Ed McRae has been able to plant thousands of species lilies in Oregon where growing conditions are exemplary. While this collection is admirable, we are still in need of many rare species seeds. Do any of us live close to an arboretum which might grow some of these rare species lilies? Do we have contacts with lily growers in other countries who might provide leads to the species' location?

* **Making excess species bulbs available to members.**

Last fall the SLPG was able to offer several bulbs to members. After these

(Continued on page 19)

orders were filled, NALS regional groups were able to obtain the bulbs. We're well on our way to meeting this goal!

* **Collecting, preserving, planting, growing and distributing species seed.**

Although we hope to reach an agreement, our requests to NALS to separate the species seeds from the rest of the seed exchange have so far been unsuccessful. Should we succeed in being able to offer our own seed exchange, we will need a coordinator.

* **Collecting all possible information on each species: its habitat, distribution, cultural needs, etc.**

We have a long way to go toward meeting this goal. If we purchased bulbs from the SLPG last fall, we should contact an SLPG officer with both cultural techniques which worked and those that didn't work. If we grow other species lilies, we should also report our successes and failures.

* **Disseminating cultural information on each species.**

We can't disseminate it until we have it! Let's report!

* **Assembling a slide and photo record of all species lilies.**

Ed McRae will photograph the lilies growing in Oregon this summer. If we have good species photographs, we should contact an SLPG officer.

* **Identifying areas where specific species grow and seeking protection for these areas.**

Except for our donation to help save *L. occidentale*, this is so far another failure for the SLPG! Do we know of specific areas which should be protected? Are any of us familiar with species protection laws? Can we write about certain areas in need of protection?

Each of us can make a difference.

SLPG Dues

Membership dues run from July to July of each year. We do not have complete records for some of you, so if you haven't paid your dues ($5.00 U.S. or $7.50 Canadian) for 1997-1998, please send them to

Maureen Barber, membership chairman
336 Sandlewood Road
Oakville, Ontario
Canada L6L 3R8

Why not join for three years while you're at it?
(See page 14 for a proposed change in dues.)

Where to Find Species Lily Bulbs

AG
Ambergate Gardens
8115 Krey Ave.
Waconia, MN 55387-9616
Voice/Fax (612) 443-2248

AA
Arrowhead Alpines
P.O. Box 857
Fowlerville, MI 48836

AGB
Autumn Glade Botanicals
46857 W. Ann Arbor Trail
Plymouth, MI 48170
Voice (313) 480-4675
Fax (313) 459-2604
www.autumnglade.com

BD
B&D Lilies
P.O. Box 2007
Port Townsend, WA 98368
Voice (360) 385-1738
Fax (360) 385-9996

CB
Cascade Bulb and Seed
P.O. Box 271
Scotts Mills, OR 97375
Voice (503) 873-2218
halinar@open.org

CV
Cascade Valley Farms
P.O. Box 387
Parkdale, OR 97041
Voice (541) 352-7098
Fax (541) 352-7170
www.cascadevalleyfarms.com

CH
Lilies from China
Fax 086-10-62645305
www.bkaichen-hgd.com.cn/

DG
Dutch Gardens
P.O. Box 200
Adelphia, NJ 07710-0200
Voice (800) 818-3861

GBR
Gardens of the Blue Ridge
P.O. Box 10
Pineola, NC 28662

HN
Heronswood Nursery, LTD
7530 NE 288th St.
Kensington, WA 98346
Voice (360) 287-4172
Fax (360) 297-8321
www.

HW
Honeywood Lilies
P.O. Box 68
Parkside, Saskatchewan
Canada S0J 2A0

JA
Jacques Amand, Bulb Specialist
P.O. Box 59001
Potomac, MD 20859
Voice (800) 452-5414
Fax (301) 762-2943

LG
The Lily Garden
P.O. Box 407
La Center, WA 98629
Voice/Fax (360) 263-5580
[Also has others not listed]

LN
The Lily Nook
P.O. Box 846
Neepawa, MG
Canada R0J 1H0 [see below]

LN
The Lily Nook
P.O. Box 657
Rolla, ND 58367
Voice (204) 476-3225
Fax (204) 476-5482
lilynook@mail.techplus.com

PC
Paul Christian, Rare Plants
P.O. Box 468
Wrexham LL13 9X4
England

ML
Maple Leaf Nursery
4236 Greenstone Rd.
Placerville, CA 95667
(916) 626-8371

RB
Robinette Bulb Farm
P.O. Box 1306
Sebastopol, CA 95473

MZ
McClure & Zimmerman
P.O. Box 368
Friesland, WI 53935-0368
Voice (920) 326-4220
Fax (800) 692-5864

RG
Russell Graham, Purveyor of Plants
4030 Eagle Crest Rd., N.W.
Salem, OR 97304
Voice (503) 362-1135

MG
Milaeger's Gardens
4838 Douglas Ave.
Racine, WI 53402-2498
Voice (800) 669-9956
Fax (414) 639-1855

VB
Van Bourgondien Bros.
P.O. Box 1000
Babylon, NY 11702-9004
Voice (800) 622-9997
Fax (516) 669-1228

OH
Old House Gardens
536 Third St.
Ann Arbor, MI 48103-4957
Voice/Fax (313) 995-1486
OHGBulbs@aol.com

VD
Van Dyck's
P.O. Box 430
Brightwaters, NY 11718
Voice (800) 248-2852

PS
Park Seed Co.
1 Parkton Ave.
Greenwood, SC 29647-0001
Voice (800) 845-3369
www.parkseed.com

WB
Wallace and Barr
Staplehurst Rd.
Marden, Kent TN12 9BP
England

PP
Parkland Perennials
P.O. Box 3683
Spruce Grove, Alberta
Canada T7X 3A9
Voice/Fax (403) 963-7303

WG
Wayside Gardens
Hodges, SC 29695-0001
Voice (800) 845-1124

Species	Supplier	Species	Supplier
L. amabile	BD LN	*L. henryi*	AA BD CB CH JA LG LN ML MZ RG VB WB
L. amabile var. *luteum*	BD LN	*L. henryi* var. *citrinum*	BD
L. auratum	LG	*L. kelleyanum*	PC
L. auratum var. *platyphyllum*	BD	*L. lankongense*	HN
L. canadense	WB PC	*L. leichtlinii* var. *maximowiczii*	HN LN
L. canadense var. *coccineum*	BD	*L. leucanthum*	CH JA LG
L. canadense var. *flavum*	BD	*L. leucanthum* var. *centifolium*	BD LN WG
L. candidum	MZ PS WG	*L. longiflorum*	JA
L. carniolicum	PC	*L. lophophorum*	PC
L. carniolicum jankae	AA	*L. mackliniae*	AGB AA
L. cernuum	BD PC	*L. maculatum ssp. dauricum*	PC
L. concolor	AA BD	*L. maritimum*	ML
L. davidii	LN	*L. martagon*	AA AG BD CV JA ML MZ PP VB WB WG
L. davidii var. willmottiae	AA HN	*L. martagon* var. *album*	BD CV JA MZ PP WB WG
L. duchartrei	AGB	*L. michiganense*	WB PC
L. formosanum	HN WG	*L. monadelphum*	AA
L. formosanum var. *pricei*	AA	*L. nanum*	AA CH WB HN PC
L. grayi	PC	*L. nanum* var. *flavidium*	AGB PC

Species	Supplier	Species	Supplier
L. nepalense	AGB WB HN JA PC	*L. speciosum* var. *album*	JA VB
L. oxypetalum	WB PC	*L. speciosum* var. *gloriosoides*	CH
L. oxypetalum var. *insigne*	AGB	*L. speciosum* var. *rubrum*	DG JA LG VB WB WG
L. pardalinum	BD CB ML	*L. speciosum* var. 'Uchida'	PS
L. pardalinum var. *giganteum*	CB RG	*L. stewartianum*	CH
L. parvum	ML	*L. superbum*	AA BD GBR RG
L. pitkinense	ML	*L. szovitsianum*	AA PC
L. pumilum	AA BD CV LG JA LN MZ VB VD WB	*L. tigrinum* var. *flavum*	LN
L. pumilum var. 'Golden Gleam'	BD LN	*L. tigrinum* var. *flore pleno*	HN LN
L. pumilum var. 'Yellow Bunting'	BD	*L. tigrinum* var. *splendens*	DG JA LN VB VD
L. pyrenaicum	AA PC	*L. tsingtauense*	AG HN LN
L. regale	AA BD CH CV JA LG MB PS RG WG	*L. vollmeri*	ML
L. regale var. *album*	JA LN	*L. wallichianum*	WB
L. rubellum	AGB	*L. wigginsii*	ML PC
L. semper-vivoideum	AGB JA	*L. wilsonii*	ML
L. shastense	ML	*L. wilsonii* var. *flavum*	LG

Our Species Bulbs

Edward McRae, Oregon
Species Lily Preservation Group President

The following is an outline of the species lilies growing and those projected to be growing at Lava Nursery, Parkdale, Oregon, in the summer of 1998:

I. Third Year Seedlings

A. Seedlings Originating from Outdoor Beds, Lava Nursery.

These were planted in rows at Lava Nursery in the fall of 1997. Considerable quantities of bulbs are available of all varieties with the exception of *L. browni* var. *australe, L. callosum* var. *luteum* and *L. formosanum* var. *pricei.* Naturally all bulbs listed uner IA and IB will be offered to members of the Species Lily Preservation Group in the fall of 1998. Members' needs will always be satisfied before bulbs are offered to other sources.

L. amabile	* *L. formosanum* var. *pricei*
L. amabile var. *luteum*	*L. lankongense*
* *L. brownii* var. *australe*	*L. leucanthum* var. *centifolium*
* *L. callosum* var. *luteum*	*L. pumilum*
L. cernuum	*L. pumilum* 'Golden Gleam'
L. concolor (early)	*L. pumilum* 'Yellow Bunting'
L. concolor (late)	*L. regale*

B. Seedlings Originating from Greenhouses, Fairdale Nursery and Planted in Rows at Lava Nursery in the spring of 1997.

L. amabile	*L. henryi*
L. auratum var. *platyphyllum*	*L. leucanthum* var. *centifolium*
L. concolor	*L. regale*
L. davidii	*L. speciosum* var. *rubrum*

II. Second Year Seedlings

A. Seedlings of Hypogeal Germinating Species, Planted in Beds at Parkdale in early fall, 1997.

All originated from Fairdale Greenhouses. We anticipate that several of these will be available to members in the fall of 1998. I have long advocated the planting of smaller bulbs of such species (about the size of one's middle finger). Greater success will thus be assured.

L. columbianum	*L. michauxii*
L. humboldtii	*L. washingtonianum*
L. kelleyanum	*L. bulbiferum* var. *croceum*
L. kelloggii	*L. carniolicum*
L. pardalinum	*L. chalcedonicum*
L. parryi	*L. monadelphum*
L. parvum	*L. polyphyllum*
L. pitkinense	*L. pyrenaicum*
L. shastense	*L. martagon*
L. vollmeri	*L. martagon* var. *album*
L. wigginsii	*L. tsingtauense*

B. Seedlings Originating from Shade House, Lava Nursery, and Planted in Rows and Beds in the Fall of 1997.

We hope to offer a few bulbs of the more unusual species from this group to members in the fall. Price will, naturally, be higher, and it will depend on the bulb size attained.

L. amabile	*L. dauricum*
L. amabile var. luteum	*L. duchartrei*
L. cernuum	*L. lankongense*
L. concolor	*L. leichtlinii*
L. concolor var. pulchellum	*L. leichtlinii* var. *maximowiczi*
L. davidii	*L. pumilum*
L. davidii var. willmottiae	*L. pumilum* 'Golden Gleam'

(Group IIB continued on page 24)

(Section B Continued)

L. pumilum 'Yellow Bunting'	*L. henryi* var. *citrinum*
L. taliense (China)	*L. leucanthum* var. *centifolium*
L. wardii	*L. regale*
L. candidum	*L. sargentiae*
L. candidum var. *salonikiae*	*L. alexandrae*
L. formosanum var. *pricei*	*L. auratum* var. *platyphyllum*
L. longiflorum	*L. oxypetalum*
L. wallichianum	*L. primulinum*
L. henryi	

C. Seedlings Originating from the Greenhouse at Fairdale Nursery.

Bulbs are in storage and will be planted at Lava Nursery in spring, 1998.

L. leucanthum var. *centifolium*	*L. auratum* var. *platyphyllum*
L. regale	*L. speciosum* var. *rubrum*
L. alexandrae	*L. rubellum*

D. Hypogeal Seed Sown in Trays, Lava Nursery Shade House, August 1997.

The trays are at present in cold storage.

L. albanicum	*L. ledebourii*
L. martagon	*L. pyrenaicum*
L. martagon var. *album*	*L. hansonii*
L. martagon var. daugava	*L. szovitsianum*
L. martagon var. sanguinae	*L. tsingtauense*
L. pomponium	*L. bulbiferum* var. *croceum*

(Section D continuied on page 27)

(Section D continued)

L. humboldtii	*L. washingtonianum*
L. kelloggii	*L. canadense*
L. maritimum	*L. michiganense*
L. pardalinum	*L. superbum*
L. parryi	*L. auratum*
L. parvum	*L. japonicum*
L. rubescens	*L. speciosum* var. *rubrum*
L. shastense	

President Ed McRae's General Comments

We continue to be convinced that Lava Nursery is an ideal location for growing a wide range of species lilies successfully; results so far have been exceptional. It is fortunate that we have the complete support and cooperation of Jeff and Denise Snyder, the owners of Lava Nursery. They provide land (which is fumigated before planting), equipment, irrigation, weed control, processing facilities and labor. In return they receive 50% of the profit in all sales of species bulbs.

I estimate that the work involved in the program will increase fourfold in 1998. This involves considerable travel and record keeping and can only be done by someone knowledgeable with lily species and varieties. We set aside bulbs of strong, selected forms of several species for seed production in 1998. This work will also increase considerably in 1999.

I was most encouraged by the orders received in the fall of 1997. We actually sold out of all species with the exception of *L. concolor, L. pumilum* and *L. auratum* var. *platyphyllum.* **We strongly encourage all members who purchased bulbs in the fall of 1997 to send a short report on their performance. Information on types of soil and location would be especially appreciated.**

We will release a new collection of species slides to the NALS library after photography is completed in 1998.

Lilium grayi

John Lykkegaard, Denmark

My "Goodnight Book" for some years was Derek Fox's *Growing Lilies.* In this splendid book, there is a wonderful picture of *L.grayi* pictured at Southampton, Massachusetts.

I have been growing and hybridizing lilies since 1982. For the past eight years I have tried to collect as many species I could get from different sources and use these in my hybridizing program.

I prefer to start the species from seed and only seldom start with a species bulb (more about that another time). When you grow species from seed, you have the possibility to select superior species clones. To get seeds from *L.grayi* was not an easy task. I had to join the RHS Lily Group, and from my notes I can see I only have had seeds from this lily twice — in 1993 and 1994. The seeds germinate in late autumn/winter (delayed hypogeal, warm/cold period), but they seem to prefer slightly higher temperatures than *L.pardalinum,*and some even germinated in plastic bags kept around 70 F. As far as I remember the optimum temperature for germination of *L.canadense* and *L.grayi* is 15 C (60 F). The first seed portion was sown in autumn 1993, and nearly all seeds germinated early the following spring. They were grown in a box with acid peat in my greenhouse for two years, and the bulbs (the size of a hen's egg) were then transplanted to an acid part of the area where I grow my species. I usually

(Continued on page 29)

use my greenhouse to speed up the size of species bulbs, and if I am lucky, I can even get some easy species to flower the same year they are sown. The only time I have had flowering *L.philadelphicum* was from seeds sown in February with bulbs flowering in November. I use organic cow manure bought from the local nursery. I have tried nearly everything you can imagine to feed lilies, even parrot manure, and the only thing I dissuade anyone to use is hen's manure — I have only had bad experience with that stuff!

My species are grown in beds encircled by Box hedge, an idea I thought would help for the excess autumn and winter rain we get in Denmark. It was a good idea, and since then I have used this method to drain an area where I grow my species. Even the "wet" species grow in these areas. I have five beds now measuring 18 X 4 feet. The growing media in these beds are different — some are made acid by a lot of peat and some are alkaline using Dolomite limestone. Some beds are partly shaded some of the day, while others get sun from morning until the sun goes down. The first few years I used pine needles to cover the ground, but now I have given it up, as it accelerated the problem with snails and slugs.

I placed the bulbs in the acid, slightly shaded part in one of my beds. The first year I lost 50 % of them (the slug problem!) and the second year only a few were left. The same thing happened to the seeds sown the following year. The first bulb flowered in 1996 and I must admit I was a little bit disappointed. The flower was very small, only a little larger than that of *L.parvum*, as far as I recall. Photos can make every lily look like a million dollars. The following year the buds were destroyed by a late spring frost, but the bulbs still look healthy. I looked at the bulbs here in February 1998, and new shoots will be coming up in a short while. We usually have a dry period in spring when I have to water the area. We are blessed (some do not look at it that way) with enough rain through the summer, but in warm, dry periods the beds are watered daily. Botrytis usually attacks me by the end of August, and as I do not use any chemicals to prevent this, I never expect to have a *L.grayi* with as many flowers as the one shown in Derek Fox`s book. Less can do it, and I have enjoyed growing this species.

In 1996 I made some crosses with *L.grayi* pollen on *L.canadense* and harvested some seeds. They seem to be faster growing than *L.grayi.* This cross has been made by others several times before, but it does not seem to add beauty to any of its parents.

Some Notes on Lilium superbum

Virginia Howie, Massachusetts

My experiences with *L. superbum* are mostly in the distant past. The first one was soon after I'd joined NALS and we'd started our New England group. One day a long package arrived unannounced from Kurt Kopitz, a member in Middleboro. Inside were tall stems of lilies — loaded with buds just about to burst into bloom. The *L. canadense* that grew fairly plentifully about here were all in various shades of yellow, but when these began to open, they appeared to be the choice red variety. I was excited! Later though, the petals began to recurve and I realized this was *L. superbum* which, until then, I'd never seen.

A letter arrived later from Kurt saying he knew a place where there were "thousands" of blooming *superbum* and inviting our members down to see them. Some of us went, of course, and he was not exaggerating — they were as thick as daisies — all sizes and tones of red. They were growing in what appeared to be an old pasture that was rapidly filling up with brush and weed trees. At the top of this low place where they grew tangled in the brush was another neglected field populated by clumps of shorter, sturdier plants — deep red.

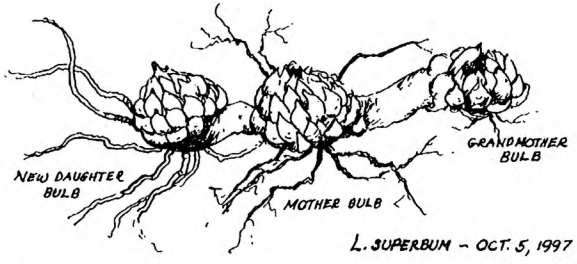
Kurt had permission to "dig all you want" and he promised to bring a few bulbs to our fall auction. I have one of those bulbs still and, 'til this fall, grown in the

(Continued on page 31)

same spot until it multiplied into a very large clump — sending up nine-foot stalks every year — when it wasn't cut down. In its search for more light (trees nearby have grown) it escaped beyond the rail fence into the roadside; mowing machines care little for lilies.

Kurt also collected bags of seed — for the seed exchange and for his friends. Andy Simoni, with greenhouses in Norwood, had some wet fields around his display area and thought that, since *L. canadense* grew well there, it would be a perfect place for *L. superbum*. One afternoon my husband Sam, who kept a plane at Norwood Airport, flew over the empty fields while Andy "planted" a bag of *L. superbum* seed. Unfortunately, we never found a blooming plant. A car sales lot grows there now.

It was necessary to move my large superbum clump this fall as that property was to be sold. With the help of one of my boys, I managed to pry it up — a whole tightly-entwined cluster of healthy-looking bulbs. They were not very deep — perhaps four to six inches — and the soil under them was a yellow-tan, fine silty stuff with a few stones. There was a top layer of leafmold (oak) and I believe that is why the thick stalks had very abundant stem roots.



Another thing surprised me — most of the bulbs had not only new "daughter" bulbs (often two) but, besides the "mother" bulb (showing no signs of deterioration and only a slightly yellower tone and thin wiry roots instead of the thicker whiter new roots) also the "grandmother" bulb, still attached and still wholly complete, but with practically no roots. I've planted one or two of these extended bulbs in pots in the greenhouse — merely covered with sphagnum moss so I can lift them easily to observe. I'm curious to know how long the older bulbs will last — and if any of the scales will generate bulblets.

The rest of the bulbs — except for ones given away — I've planted in a new "Natives" bed. They will probably never grow nine feet tall again, but hopefully they will prosper.

Another thing to note — these lilies, until this summer's drought — always made quantities of seed, even though the only other *L. superbum* I grew was a long distance away. I expect the species is apomictic?