THE SPECIES LILY

The Newsletter of the
Species Lily Preservation Group
Affiliated with The North American Lily Society

The Crystal Lily

Autumn, 2002

SLPG GOALS

* 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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The Lily Chase

Barbara M. Small

In 1960, our family moved to Truckee, California, then a small railroad/logging town in the Central Sierra Nevada, just west of Lake Tahoe. Its 6,000-foot elevation, extensive winter snow cover and many meandering creeks provide perfect places for *Lilium parvum* to grow. During that first summer, I spent almost every day exploring the many back roads in the surrounding mountains, first looking for Quaking Aspen trees — a sure sign that water was close by. Under the trees were often tiny rivulets where I might find that beautiful wild lily along with native Columbine, Lupine, Rein Orchids, ferns and other moisture-loving plants. These treks invariably led me to the areas around Donner Lake, Squaw Valley, Alpine Meadows and the higher areas around Lake Tahoe. Although my husband Richard sometimes fished in the Boca and Stampede Reservoirs, never once did I seriously search this barren, dry area for lilies.

In 1981, we moved to California's Sacramento Valley and my lily hunting changed course. No longer were those lush alpine meadows available at a moment's notice, so I began to look for closer lilies, guided particularly by Rob Livingston and Jerry Kennedy, a friend, neighbor and co-teacher in Truckee who had also moved to a warmer climate in the Sierra Foothills. He credits his love of lilies to a bulb of *Lilium tigrinum* that I had given his wife Janice many years ago. So one day in 1996, Jerry showed me some lovely post cards taken by Karen Callahan, a photographer for the United States Forest Service, and the lily chase was on!

These two cards were labeled respectively *L. washingtonianum* and *L. pardalinum*. The Washington Lily photo was one of the very best shots I had ever seen, but the other lily certainly wasn't *L. pardalinum*. I sent a card to Ed McRae, suggesting that it might be a cross between *L. parvum* and *L. pardalinum* and he agreed. By now I had begun a serious breeding program of West-

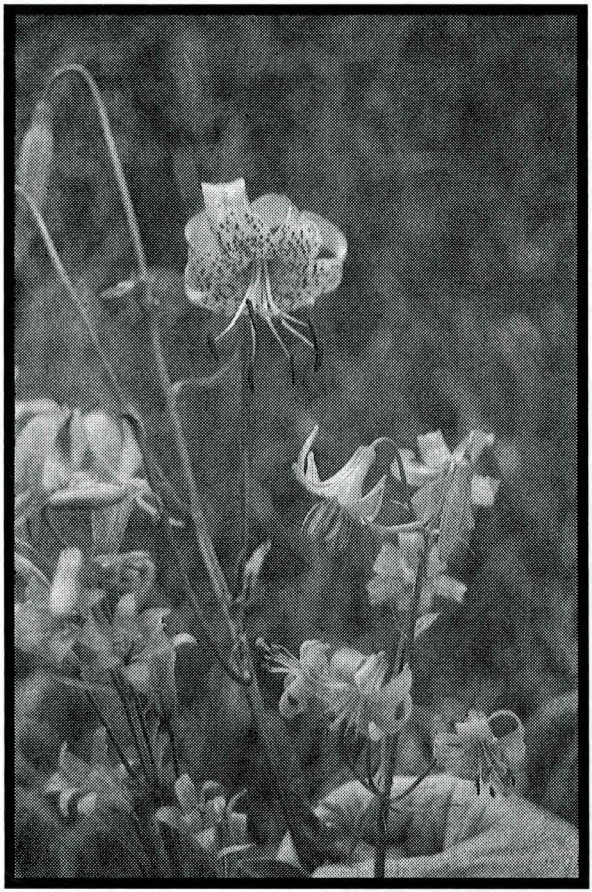
ern American species lilies, attempting, among other goals, to produce plants that would be more adaptable to gardens. I knew that this lily would be a good addition to the gene pool since it was already a hybrid. Jerry offered to contact the photographer and ask for directions to its location, but by the time we got those directions, it was really too late to find the lilies that summer. I was surprised by their location because to get there I would have to go through the sagebrush covered area around Boca and Stampede reservoirs.

During the summer of 1997, my daughter Laura and I made two trips to the area in search of the lily, but to no avail. After leaving the sagebrush, a dirt road took us to a hillside where a small spring-fed stream flowed. Here were the perfect requirements for a wet-land lily; Aspen trees, willows and other moisture-loving plants abounded, all hidden from the main areas by hillsides of sagebrush. In retrospect, I suspect that the buds had been frozen that year and simply didn't bloom, as happened this past summer (2002) to most of the lilies there. The following summer, Laura and I finally located about five plants in heavy undergrowth. We literally had to shove our way through willows and Aspen branches to reach areas of a tiny stream. The lilies were indeed beautiful!

Our daughter Laura, happy to have found the elusive lily.

We took lots of photographs and pollen and then began to look seriously for the parents: *L. parvum* and *L. pardalinum*. They were not to be found! The closest *L. parvum* that I knew was at the west end of Donner Lake (an area

rapidly developing!) and the nearest *L. pardalinum* was many miles away on the other side of 7,239 foot Donner Summit. Even though I now lived about two hours away from the area, I began a serious search for these lilies, this time requesting help from everyone I had known from my Truckee days. Eventually one teacher who lives in Glenshire, a subdivision just east of downtown Truckee, told me about some lilies close to her house. As far as I have been able to discover, these *L. parvum* are the closest parents to the new lily, being approximately 15 miles away as a bird would fly.



Joyce Miller holds cut stems of *L. parvum* (left) and *L. pardalinum* (top) beside the new lily (right).

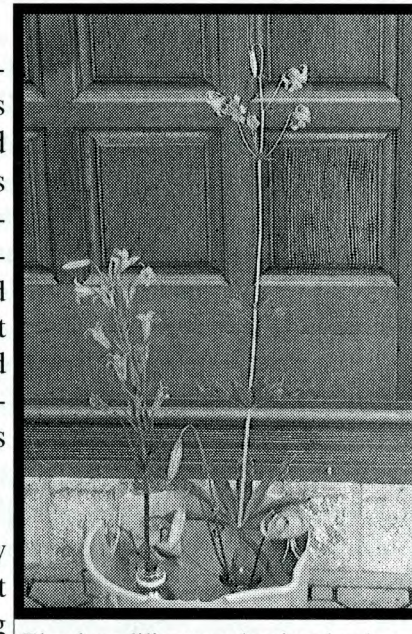
Our daughter Marti and I found a second population the following summer, growing alongside a tiny spring-fed creek which disappears after about 200 yards. Incredibly, all of the plants had been left intact by foraging Mule Deer. In the Crystal Burn area, devastated by a huge forest fire, it was much easier for us to see the lilies and to get to them. It would also be in plain view of any mountain lion, so the Mule Deer might have found the area too danger-

The photograph to the left shows typical downed wood protecting the lilies.

ous for lily grazing. Following the forest fire, the area had been opened up to locals to cut firewood. Under the supervision of the U.S. Forest Service, the firewood gatherers would lop off the branches of the dead trees, leaving them in place for erosion control. The many branches create a sort of barrier to the Mule Deer, so they do not eat the tasty lily buds.

Whether the openness of the terrain or the downed tree limbs protect the lilies, we were glad that so many beautiful plants were untouched. This population was far larger and more diverse than the original one and extended on both sides of the dirt road. With no nearby parents and the discovery of a second population, I began to wonder if this was a new species.

I wanted more information. My friend Joyce Miller and I set out early one day, stopped along Highway 20 to pick a stem of *L. pardalinum*, then traveled on to Alpine Meadows to pick a stem of *L. parvum.* Together we lo-



The three lilies together in a bucket on the front porch. *L. parvum* is on the left, *L. pardalinum* (with a very short stem) is on the bottom right, and the new lily is on the top right.

cated the new lilies and took many pictures of them alongside the two stems we had picked. After a lovely afternoon, we cut a stem of the new lily and headed back to the Sacramento Valley with all three stems safely in the back of my Subaru. I phoned Rob Livingston and told him that I would be going out of town, but that if he wanted to see the new lily I would leave it on the front porch for him.

Rob saw the lilies on the porch and for once he was as excited as I was. That weekend he and John Longaneker traveled to the area for themselves. Over the course of several trips, they located at least four more populations to add to our original two, scouring the east side of the Verdi Range, Dog Valley and the east side of the Bald Mountains In future trips, they plan to search the Diamond Range to the north. Together we made plans to write up the lily as a new species. I showed preliminary pictures to members of the Pacific Northwest Lily Society and later spoke at the Chicago Botanic Garden about West Coast lilies, including the new lily which I had begun calling *L. crystalense* for the nearby Crystal Peak and the Crystal Burn.

Although both of us are very familiar with most Western American species lilies, we're no botanists. Rob had worked for an engineering firm, and I teach music. We knew we needed help!

We contacted Barbara Erter from the University of California Jepson Herbaria in Berkeley, California, who made suggestions about the article and showed us the Jepson extensive collection of dried and pressed Western American species there. We traveled to Chico to take a class in describing wild flowers. We joined the California Botanical Society to receive their publication *Madrono* and to be able to publish in it. Rob purchased the Judith Winson's book *Describing Species — Practical taxonomic procedures for biologists* (1999) and obtained a collecting permit from the United States Forest Service.

The following summer, Rob and I measured and counted the lily

Rob measuring the height of one Crystal Lily. Note the absence of any tall vegetation and the burned pine and Aspen tree stumps

population at the Crystal Burn. Although we surely missed more than we found, we counted 107 lilies. We noted any irregularities (such as one area where the lilies appeared to have been attacked by virus), took lots of pictures and dug up and pressed our first specimen.

That winter, Mark Skinner contacted me inquiring about the new lily. Having completed his doctoral dissertation on Western American species lilies, written the description of the Western American species lilies for the latest edition of the *Jepson Manual* and served as the botanist for the California Native Plant Society, Mark was the perfect person to check the identity of the new lily.

This past summer, Mark traveled from his job on the East Coast to California to visit with his family and to look at the lily. I had been checking the status of the lilies off and on and found that a severe late frost had damaged almost all the buds. Rob and I made a trip to other populations and found that almost all the buds had either been browsed by deer or frozen. We found one lone lily which looked like it would be open for Mark's visit. I made a second scouting trip and found two lilies in the Crystal

Burn which had just begun to open. At least we would have something to show Mark.

Mark and I met at Donner State Park. He filled up his much-used van with gas and we traveled east on Interstate 80. We took the Hirschdale exit; I left my Subaru at Boca Reservoir and we proceeded to the first site in Mark's van. I could only guess what he was thinking as we drove through the dry sagebrush.

The great moment arrived at last, and Mark made his comments very gently. He asked if I thought the lily could be a cross between *L. parvum* and the small-flowered *L. pardalinum* to the north (such as *L. shastense*). Since I had originally suspected this cross, I had to agree. But where were the parents? I told him of the closest *L. parvum,* but neither of us knew where the closest small flowered *L. pardalinum* could be.

Since it was early, we decided to search for more Crystal Lilies. We took a small dirt road which I had not previously explored and found among the Aspen two more lilies. Throughout the afternoon we managed to take a dead-end road and get covered with mud and mosquito bites. We both thought it was the best afternoon in a long time, even without finding more lilies. Mark took me back to my Subaru, saying he would camp out at the lily spot we had found that afternoon. The following day he found more populations and drove off to the north to search for the elusive small-flowered *pardalinum.* He was hooked too!

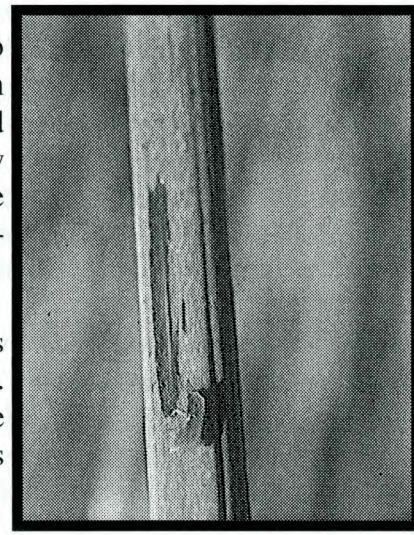
Were we disappointed? Certainly! But Mark considers this a very exciting find and will be writing about it. During our conversations, I asked how long ago this hybrid had been formed. I had been thinking in terms of hundreds of years, but Mark began his answer by discussing evolutionary events thousands of years ago. So this 'new' lily isn't so new after all!

The Crystal Lily

Barbara Small

(Measurements by Rob Livingston and Barbara Small)

The plant itself is less than two meters tall and slightly clonal. Light yellow roots grow only below the bulb, and the rhizomatous bulb itself is made up of small (a maximum of 3.3 centimeters [1 1/4 inches]) narrow scales, usually in two to four segments. The white scales turn slightly yellow as they age. We found the bulb at right in black loam.



The picture above shows the bulb with part of the stem rising from it. Note the three-segmented scale on the right. These tiny scales are easily detached since they are so loosely bound together.

The stems are slightly glaucous — a lovely light green velvet. Rob Livingston scratched the stem at right to show its glaucous nature.

The leaves are most often in three to six whorls, horizontal to ascending with scattered, ascending, linear to lanceolate leaves below. The whorls themselves are 7-16 centimeters [2 3/4 to 6 1/4 inches] long, generally oblanceolate, and the margin is not wavy. The two stems in the left photograph depict the whorls from the Crystal Lily on the left and from *L. pardalinum* on the right. Since our measurements were taken from lilies in the Crystal Burn, those leaves in shadier places may be larger than our figures show.

The flowers have no fragrance to attract pollinators. Rob and I noticed small insects crawling around in some of the flowers, and I saw a large black bumble bee, but Mark Skinner believes the pollinators are most likely butterflies.

The inflorescence is racemose, with as many as 43 flowers! The parent *L. parvum* is most likely responsible for this large number of flowers. Although standard references list 1-25 flowers for *parvum*, I have seen many more than that, especially in the Pole Creek area close to Squaw Valley. The nodding to horizontal

flowers are widely bell-shaped. Perhaps because of this shape, the back ridge stands out more on this lily than on its parents.

The perianth segments are 4-5.5 centimeters [1 1/2 to 2 1/4] long. The tepals are recurved, the outer tepals usually more so than the inner ones.

The flowers bloom from June to August, depending on the weather at their 1800 m (6,000 foot) elevation. Most of the flowers are two-toned, with the inner surface gold to orange and the edges of the tepals a darker orange. Maroon spots cover the inner surface only. When the flower is uniformly yellow to orange, the maroon spots cover the whole surface. The reverse is lighter, shading to green toward the center. The front cover of this newsletter depicts its usual color, while two pictures on the back cover show some exceptions.

The filaments are 2-3 centimeters (about 1 inch) and spreading. The anthers, measured before dehiscing, are 1-2 centimeters (about 1/2 inch) and are light to dark yellow. The pistil is 2.7-3.7 centimeters (about 1 to 1 1/2 inches) long and the ovary is .8-1.6 centimeters (about 1/3 to 2/3 inches) long. The fruit (seed pods) are 2-3.5 centimeters (about 3/4 to 1 1/2 inches) long.

In its natural setting in the mixed conifer forest, the Crystal Lily is usually shaded most of the day by the surrounding yellow pine forest. Associated plants include *Populus tremuloides* (Quaking

The picture above shows the surrounding area with scattered pines and lots of sagebrush.

Aspen) and *Alnus tenuifolia* (White Alder), *Veratrum californicum* (Corn Lily or Skunk Cabbage), *Mimulus guttatus* (Common Mimulus).*Triteleia hyacinthina* (Wild Hyacinth) *Habenaria dilatata* (Rein Orchid), *Salix* (Willow) and various sedges, clover and grasses.

In the Crystal Burn, the Quaking Aspen and White Alders have returned from their roots, but other sun-loving plants have become established: *Penstemon, Achillea millefolium* (Common Yarrow), *Epilobium angustifolium* ssp. *circumvagum* (Fire Weed) and *Cirsium* (Thistle).

Toward the end of the summer, I took Jerry Kennedy, the person who had started it all by showing me the postcards, to see the Crystal Lily.

Lily Species: Autumn 2002

Edward A. McRae

A total of 36 species and varieties was offered to Species Lily Preservation Group members in the fall of 2002. Bulb quality seemed most satisfactory with one exception: the bulbs of *L. bakerianum* var. *delavayi* and *L. parvum* were much smaller than we anticipated.

A big loss is that Fairdale Nursery of Wilsonville, Oregon, will no longer produce lily seedlings in their large greenhouse. We had grown the species with the seedlings of both hybrid trumpet and Oriental lilies, which worked perfectly. We are most grateful to all at Fairdale Nursery for their highly professional help in this respect.

There are many tasks to consider if the species program is to continue. There is much urgency to find another area to grow our seedlings. One solution is to plant them later at Lava Nursery. This would avoid late spring frosts, which can be a problem in some years. We are also looking into other choices where seed can be planted earlier at a lower elevation. We have been reluctant to harvest the bulbs too early. To ensure quality, the majority of species are also dug by hand which works perfectly when smaller numbers are involved. The main harvest at Lava Nursery commences in late September, which is too late if we are to ship bulbs on time.

The pricing of a number of species also needs to be reduced; such species as *L. concolor, L. davidii* and *L. pumilum*, which are easy to grow, do not sell well at the present rate. We should discuss prices of these lilies before the fall of 2003.

It must also be understood that all lilies grown at Lava Nursery originate from seed and are grown in isolation from known virus

carriers. The few clones offered, such as *L. henryi* 'Carlton Yerex' and a clone of *L. henryi* var. *citrinum,* are grown at another farm, a considerable distance apart.

Production of meaningful quantities of seed is another task ahead for us. We continue to select the strongest and most vigorous plants within the population and simply allow those to produce seed from natural pollination. The flowers of all other plants in the population are simply removed. Characteristics such as flower form and color are also considered in those left to produce seed.

Some individual species for 2002 are worthy of discussion. *L. canadense* var. *coccineum* was truly magnificent in the second year, producing an excellent crop of quality bulbs. (All members who ordered should have received a gift of three bulbs.) The strongest plants with the most intense red coloring were left to produce seed. The natural pollinators seem to love this beautiful species — swarms of Swwallowtail butterflies and six hummingbirds were observed in a single day!

The planting was large and we found the bulbs much too tender to dig mechanically, so the entire planting was dug by hand. We found this task a delightful and wonderful exercise! We also found the stolons between the old and new bulb to be tender and snap off easily if not handled carefully. Anyone who has experience with this species can also vouch for how easily the tiny scales can break off. However, the bulbs could be washed carefully without causing damage. The roots are just like string, and one must be careful when they become tied up to other bulbs. We also found that less damage occurs when bulbs are allowed to wilt slightly. I'm convinced that this breathtaking species is best kept moist at all times; certainly they don't seem to mind exposure to full sun. Stems taken to the Pacific Northwest Lily Society symposium this summer drew gasps of admiration.

A large planting of *L. lankongense* showed plants reaching five to

six feet in height, filling the air with their exotic, spicy fragrance. They also attracted every butterfly and hummingbird in the region.

L. sulphureum was grown from seed originating from plants from Chen Yi. The seed was sown in May at Fairdale greenhouse, producing an excellent crop of bulbs even larger than those of the seedling trumpet hybrids grown in the same greenhouse. The seedlings were harvested in mid-December and stored in my garage until mid-February of the following year. They were then placed with all the other species seedlings in the cold room at Lava Nursery. The bulbs were planted in late April when they appeared in excellent condition. The late emergence was puzzling — perhaps four weeks or more later than other trumpet seedlings. Eventually, however, they produced an excellent stand, and the plants were all covered with bulbils by early August. The cream-colored, trumpet-shaped flowers did not open until early October, long after all other lilies had faded. The exotic fragrance was very special. We noted that this species may resent too much moisture late in the season; we will study these plants carefully in 2003 to discover their optimal water requirements.

I crossed *L. sulphureum* with a select clone of Green Magic strain in 2000. This seed produced a small population of seedlings which flowered in their second year in 2002. They all flowered early with approximately 50% of the seedlings producing bulbils.

L. rosthornii is a strong and dependable species and also very late flowering. We have two excellent plantings grown from seed. The cross to *L. henryi* produced only *L. rosthornii*! Perhaps *L. rosthornii* is apomictic.

L. taliense var. *kaichen* is one of my favorite species, and I have found that depth of planting is especially critical to success with this beautiful lily. It resents being too close to the surface where fluctuating soil temperature can cause decay to the bulbs. I have

also been amazed how rapidly the seed ripens — even sooner than that of *L. pumilum* which flowers much earlier. Perhaps this is typical of high elevation species. I carefully tried to cross this species with *L. davidii* in the summer of 2002. Pod stimulation occurred, but we could harvest no fertile seed.

Seed of the lower elevation form of *L. formosanum* was sown three years in succession at the Fairdale greenhouse. Every year this species produces masses of flowering stems by September, which amazes everyone. A planting at Lava Nursery was in full flower in mid-October and actually withstood several frosts with no apparent harm. I find this hard to explain, especially when surrounding species and hybrids have given up the ghost!

L. speciosum var. *gloriosoides* flowered in early October (fortunately before the first frost). This is truly an exotic lily; unfortunately, it is so late in flowering that few would be successful in its cultivation.

Finally, I have been charmed with forms of *L. concolor* and *L. cernuum* originating from seed received from Marina Baranova in St. Petersburg. The larger flowers with rich coloring are especially nice. We look forward to seeing them in 2003.

I wish to express my deep appreciation to Teresa Leap (formerly of Cebeco Lilies), for without her, the beauty of *L. canadense* var. *coccineum* could not have been enjoyed by so many.

Botanical Gardens

On page 23 of this newsletter, you will read information about the University of California Botanical Garden in Berkeley. It would be useful to us all to know about other botanical gardens in the world which grow species lilies. If you know of one fairly near you, please consider writing a brief article about the garden. Our members in the United Kingdom, especially, might write about the extensive collections at Kew and Edinburgh. Please contact the editor.

L. wallichianum at the University of California Botanic Garden

Fred Osborne, formerly of Berkeley, California

(From the September 1984 NALS Quarterly Bulletin)

Nestled in Strawberry Canyon in the Inner Coastal Range in California is the University of California Botanic Garden. The gardens are laid out in a somewhat logical pattern. Plants from different areas of the world have been placed together in their respective plots. There is some overlapping because of unique climatic zones in the canyon. Some plants do better placed outside the area where they would ordinarily be found and are growing well in another. When I became interested in growing lilies some years ago, I discovered *L. wallichianum* growing vigorously next to the lovely bell flower from Chile, *Lapageria rosea.* The area was designated the East Asian Hillside Area.

Nathanial Wallich, who was the superintendent of the Calcutta Botanic Garden, described this lily in 1828 as *L. longiflorum Wall* but later it was renamed *L. wallichianum* in his honor. This trumpet lily comes from Kumaon, Nepal, Bhutan and Assam. The lily had been discovered earlier in 1802 in Nepal by Dr. Francis Buchanan-Hamilton.

As one walks up one of the tidy paths at the U.C. Gardens, the scent from this lily is striking. On a rather steep slope in the East Asian section of the garden, many of these lilies grow with great vigor. When I first came upon these lilies, there lay many old stalks and seed pods from the previous year. I asked one of the garden's attendants if I might have a few of the remaining seeds. My request was granted. These seeds produced sturdy plants that year and the following year, please excuse the expression, "grew like weeds."

Other lilies in this wonderful botanic garden are *L. speciosum, L.*

humboldtii var. *ocellatum* and *L. washingtonianum*. I have attempted growing other species from seed, but have not had the success which I have had with the lovely scented *L. wallichianum*.

More about Fred Osborne's L. wallichianum

Jeff Johnson

I was informed recently that one of our charter members [of the Golden State Lily Society], Fred Osborne of Berkeley, had died. The first time many of us heard of Mr. Osborne was when he wrote a brief article for the September 1984 NSLS Quarterly Bulletin about *L. wallichianum* growing in the University of California Berkeley Botanical Garden. This article followed another, in the December 1983 QB, written by Paul Carter, about his experiences growing the *L. wallichianum* bulbs which he purchased from India where it is a native species. Some of us took note and the next summer made the hike up the hill from the campus to see the lilies in the Botanical Garden.

The plants labeled *L. wallichianum* are attractive and healthy, but from the look of them, you probably wouldn't identify them as *wallichianum*. The flowers don't have the long narrow tube form, flaring sharply out at the mouth, having greenish petal reverses that *wallichianum* is described as having. Both Mr. Carter's article and the background reading on the lily would lead one to believe that this lily often doesn't set much seed. These plants set seed as prolifically as any other trumpet lily. Mr. Osborne grew plants from seeds off these plants. Indeed, in recent years there have been lots of potted lilies in local nurseries labeled *L. wallichianum* said to be grown from seed from the Botanical Garden's lilies. Also, *L. wallichianum* is said to have a stoloniferous stem which wanders underground before sprouting, yet, at the Botanical Garden, it sprouts regularly in at least some of the same places. The site is a steep, well drained hill, exactly the conditions this lily is supposed to like.

Staff at the garden center offered some reasons how these things could be. First, the seeds probably came from open pollinated plants at Kew, and the pollen could have come from anywhere. Second, the seed was sent to Berkeley in 1960. It is reasonable to assume the plants growing there today are not the same plants that were first grown from those original seeds. Stray seeds could drop and grow on this hillside. Third, perhaps the plants at Kew were second or third generation material donated by a collector. Fourth, who knows exactly how variable this species is? Perhaps this lily acts differently in the general conditions and Mediterranean climate of Berkeley, which are quite different from the rainy lower Himalayas where it is a native. Fifth, perhaps the apparent infertility noted is due to a very small or inbred gene pool in the plants available to those writers. After all, it is not a widely grown species.

So, these were the lilies which Mr. Osborne's article brought to our attention. Fortunately, we are not interested in the taxonomical hairsplitting, but can enjoy an attractive lily growing well on a prominent hillside, as Mr. Osborne did. Also fortunately, a landslide a few years ago that wiped out an adjacent area of hillside missed these lilies.

We ... encourage others who may not have visited the Botanical Garden to take a trip up there in lily season. Among the couple dozen species growing there, some are *L. pitkinense* (grown from seed from open-pollinated plants at nearby Tilden Botanical Garden), *brownii, tigrinum* and *pardalinum.* If you ask in the office during regular hours, staff people can tell you what lilies they have and where they are growing.

[Jeff continued by offering seed to interested members. The Botanical Garden staff sent extras to the group.]

[Editor's note: Cathryn Hansen, a member of the Golden State Lily Society, sent me a seedling named *L. wallichianum* several

years ago. It bloomed in April, a slender tube with flaring lips, a pale green reverse and delightful scent. Unfortunately, it bloomed again in November of the same year and then died!]

The U.C. Berkeley Botanical Garden

The garden's website at www.mip.berkeley.edu/garden/ currently lists several more lilies in their extensive collection. Interestingly, they list both *L. formosanum* Wall and *L. wallichianum.*

L. amoenum
L. auratum
L. auratum var. *delavayi*
L. cordatum
L. cordatum var. *glehnii*
L. duchartrei
L. formosanum Wall
L. hansonii
L. henryi
L. humboldtii
L. japnicum
L. kelleyanum
L. kelloggii
L. lancifolium
L. lankongense
L. leucanthum
L. longiflorum
L. maculatum
L. michiganense
L. monadelphum
L. nanum
L. nepalense
L. pardalinum
L. pitkinense
L. philadelphicum
L. regale
L. sargentiae
L. speciosum var. *rubrum*
L. speciosum var. Uchida
L. tenuifolium
L. tsingtauense
L. vollmeri

The garden's lily family (*Liliaceae*) contains 1,193 accessions from all over the world. The garden is open daily from 9:00 to 5:00 except Christmas and the first Tuesday of every month. Admission is $3.00 general, $2.00 for seniors and $1.00 for children under 18. Parking is $.50 per hour. If you go on Thursdays, admission is free! The present director, Ellen Simms, is usually responsive to requests for seed. She may be reached at the U.C. Botanical Garden, 200 Centennial Drive, Berkeley, CA 94720-5045.

L. primulinum

Edward A. McRae

The *L. primulinum* that flowered in their second year at Lava Nursery in 2001 was listed as the form from Vietnam. The seed had been received from Mr. Blumhart in New Zealand and planted in the greenhouse at Fairdale Nursery early in May of 1999. The seedlings were exceptionally strong, producing masses of leaves; they actually competed with trumpet lilies growing nearby! The root systems observed when the seedlings were harvested were also unbelievably abundant and robust.

Following winter storage, the seedlings were planted in rows at Lava Nursery in May of 2000. They were late in emerging, resembling *L. nepalense* in this respect. The seedlings produced small, non-flowering stems in the summer of 2000. The following summer over twenty plants flowered, the first producing three flowers on a stem 18 inches tall. I was thrilled to see my first *L. primulinum* flower. The flowers were three inches in diameter, lime green in color, with intense oxblood coloring in the center. I was so proud I took a friend to see the plant two days later; unfortunately, someone else must have been appreciative of the unique beauty, and all I found was a one-inch stump resulting from a cut with a sharp knife! Heartbreaking! The plants produced purple colored bulbs with good root systems. Plants do resemble *L. nepalense*, but do not have a stoloniferous habit.

A number of large bulbs of *L. primulinum* were received from Chen Yi early in 2000 and were grown in pots at Fairdale greenhouse. The plants all flowered in the summer, averaging three to four feet tall. Most stems carried four to five flowers. The flowers were pendant, lime-green in color, and all had slight, but not intense, purple blotches. An abundance of seed was produced, some of which was sown early in May of 2001. The seedlings show strong growth similar to that of the Vietnam forms.

The bulbs from Chen Yi were planted at Parkdale in May of 2001. They emerged nicely and attained a height of four feet. Unfortunately, they yellowed late in the summers of 2001 and 2002 before blooming. Possibly they received too much water. The bulbs seem fresh and good and I hope they may do better in 2003.

The range of *L. primulinum* varieties provides many forms covering areas of greatly varying climates. The form from Chen Yi is native to the province of Yunnan in China and may be var. *ochraceum*, said to be more frost resistant than other forms. *L. primulinum* has been described as winter hardy in England if it is given a protected sight. Dr. Robert Withers grew *L. primulinum* var. *burmanicum* in Victoria, Australia successfully for several years, using an acid loam with plenty of humus and providing excellent drainage. This variety is also reported to have survived for many years on the Isle of Aran in Scotland, but all forms are likely to require some winter protection.

Several bulbs were shipped to Species Lily Preservation Group members in the fall of 2001 and I welcome reports from anyone growing this species.

L. wardii

Edward A. McRae

The second year planting of this fine species at Lava Nursery can justify it being declared the true champion species for 2001 and again for 2002! Estimates of the number of bulbs ten to twelve centimeters and larger were tripled — the species thus received the Blue Ribbon for excellence!

I received the seed from Neil Jordan in Tasmania. Although I did not see the species growing there, I had found it growing profusely in several parts of Australia and New Zealand in 1996. In

one "paddock" it was growing happily among a sea of grasses and other native plants; conditions seemed quite dry. Kingdom Ward found the species in Tibet at 1500 to 3000 meters elevation so abundant as to scent the area. It is indeed delicately fragrant.

L. wardii has an exceptionally firm bulb, tightly imbricated. The bulbs produced strong basal roots at Lava Nursery. The bulb is especially distinctive, being fawn in color and profusely speckled with red spots. These bulbs are stoloniferous with the purplish stems reaching five feet in height. The leaves are quite broad and dark and the flowers are pendant and rose-pink in color. It is a much stronger pink than that of the better-known *L. lankongense.* The stems were quite late in emerging in that location. Flowering time at Lava Nursery was mid-July, and the plants produced an abundance of offset bulblets at the internodes.

Earl N. Hornback was intensely interested in introducing *L. wardii* to the Asiatic hybrid breeding lines. Despite great efforts in the sixties, we were not successful. Embryo rescue techniques would have helped but were not widely known then. Dr. Chris North's efforts in Scotland have also come to naught. I hope others will be inspired to try.

A meaningful number of bulbs were sent to Species Lily Preservation Group members in the fall of 2001 and about 70 more went out in 2002. I am most anxious to know more regarding the hardiness of this fine species as well as it susceptibility to virus disease if planted in close proximity to known virus carriers. *L. wardii* is indeed a jewel, and I would encourage members to produce seed.

Special Request

These last three articles by our Conservator Ed McRae have asked members to tell about their experiences growing these species. Only by broadening our knowledge of these exquisite plants will we be able to preserve them. PLEASE HELP

L. rosthornii

Edward A. McRae

A considerable number of bulbs labeled *L. henryi* were received from Chen-Yi in early 2000; only one was *L. henryi* and the others were determined to be *L. rosthornii*.

The plants were all grown in pots in the Fairdale greenhouse and all were exceptionally strong. The only resemblance *L. rosthornii* has to *L. henryi* is in the flowers — all other characteristics are different. The plants were far shorter and sturdier than those of *L. henryi* with dark green leaves, six to eight inches long, narrow lanceolate and quite densely placed on the stems. In his book *Lilies of China*, Haw describes *L. rosthornii* as similar to *L. henryi*, but differing in having longer, linear-lanceolate leaves and a long-oblong seed capsule. He also describes the flowers as having heavier, redder spots. I found this description perfectly accurate in the forms sent from Chen-Yi, but the resemblance to *L. henryi* should be toned down!

Following winter storage, the bulbs were planted in outdoor beds at Parkdale. They grew beautifully, producing short, stocky plants of excellent habit. *L. rosthornii* flowered two weeks after *L. henryi*, which was planted nearby. The color intensity of the flowers was much lighter, due perhaps to the high light intensity. I have seen little variation in flower color over the three seasons. Bud count seems exceptionally high.

L. rosthornii produced over twenty flowering-size bulbs with an abundance of bulblets -- certainly the most prolific of all the species from Chen-Yi.

An abundance of seed was produced with the seed being totally different from those of *L. henryi*. They are much smaller and show no resembling characteristics at all. The bulbs also showed distinct variations: the scales were narrow and tightly packed, not

broad as those of *L. henryi.*

The two species were crossed each way with a good quantity of seed from *L. rosthornii* x *L. henryi* being obtained. The seed was planted in the Fairdale greenhouse, harvested in December 2001 and planted at Lava Nursery in the spring of 2002. They bloomed in the summer of 2002, but it is clear that *L. rosthornii* must be apomictic, for the resulting plants were all *L. rosthornii.* For some reason, the reciprocal cross was unsuccessful.

Twelve large bulbs were sold to Species Lily Preservation Group members. We hope budding hybridizers in the group will cross *L. rosthornii* with various trumpet species and hybrids.

Photographs

Front Cover and pages 4-14: Barbara Small

Back Cover
Top Photos by Barbara Small
Variations of the
Crystal Lily at the Crystal Burn

Center Left Photo by Jerry Robertson
L. wardii

Center Right Photo by Edward McRae
L. rosthornii

Bottom Left Photo by Robert Withers
L. primulinum v. *burmanicum* from Thailand

Bottom Right Photo by Edward McRae
L. primulinum from Vietnam