

The Bulb Garden



~Gardening with Bulbs ~

Board of Directors

Jane McGary, President
janemcgary@earthlink.net

Paul Machado, Vice President
Farmerguys@clearwire.net

Pam Slate, Secretary
pameladaz@msn.com

Arnold Trachtenberg, Treasurer
Arnold@nj.rr

Pat Colville, Membership
patrylis@aol.com

Dell Sherk, BX Director
DellS@voicenet.com

Volunteers

PBS list: Mary Sue Ittner, Arnold Trachtenberg, Diane Whitehead

PBS wiki: Mary Sue Ittner, Nhu Nguyen, David Pilling

The Bulb Garden: Marguerite English, editor; Jennifer Hildebrand, co-editor

The PBS Directory: Pat Colville, editor

Publications Distribution: Arnold Trachtenberg

What's Inside...

- > The Cylindrical-Leafed Onions of California, by Nhu Nguyen, p. 2
- > Go Figure! Every Season Brings Surprises, by Robin Hansen, p. 8
- > A Never-Ending Story of Hope and Anticipation, by Marguerite English, p. 8
- > The Useful Bulb Frame (Part 2), by Jane McGary, p. 10

Mad About Moraeas

Bob Werra

Bob's garden is in Ukiah, California in USDA zone nine. He has grown Moraeas for over twenty years. He says "I read The Moraeas of South Africa by Peter Goldblatt when it was first published in 1986. It got me hooked. Growing, admiring and sharing winter-growing Moraeas have been a rewarding hobby for me and I hope they will be for you. I was a philosophy major, so if I can grow them, anyone can." —Ed.

The winter-growing Moraeas of South Africa are an excellent container or bedding plant for temperate or Mediterranean climate zones. Why? They bloom in spring, well before the summer bloomers, and they conserve water. Summer watering is neither necessary nor desirable because they are dormant. Moreover, they are interesting, attractive, and easy to grow. If I can grow them, anyone can!

There are more than 100 varieties of these winter-growing Moraeas. They

are members of the Iridaceae family that grow from corms. Many resemble our garden Irises.

They are divided into fugacious (short-lived), non-fugacious and Peacock groups. The fugacious plants have individual blooms that last less than one day. Don't miss getting into the garden between lunch and supper during their bloom season! The plants compensate

for their ephemeral blooms by putting on a repeat performance every two to six days for a month or longer. They have become my favorites. The non-fugacious types have blooms that last for three to five days, and keep putting out new blooms for two to three weeks.

I have grown 35 Moraeas with some success. Based on beauty, ease of growing, and cormlet and seed production, the following species are good possibilities to try.

Fugacious Moraeas in order of bloom

M. ciliata blooms in early spring and repeats bloom for 1-3 months. It is
(continued to page five)



Moraea papillonacea. Photo by Bob Werra.

The Cylindrical-Leafed Onions of California

Nhu Nguyen

Nhu is currently a graduate student at UC Berkeley, California. He studies symbiotic interactions between plants and mycorrhizal fungi. On the side, he studies phylogenetic relationships of California Allium species. He gardens in a Mediterranean climate and loves to grow native geophytes, but he is also very fond of South African and South American bulbs. — Ed.

Imagine walking along open grassy hills on a sunny day among rocky soils and suddenly you notice in front of you a rocky spot nearly devoid of vegetation. There is something uniquely strange about the area. Immediately apparent is the otherworldly greenish shade of its stones and soil. It is as if someone had dumped noxious chemicals there, killing everything in that spot. Just as your stomach sinks with a feeling of despair over what appears to be yet another site of careless pollution, you notice a green tentacle poking out of the soil. Your curiosity takes over; you approach it for closer examination and discover that the alien green tentacle is indeed that of a plant! Now with your sight attuned, you begin to discover more and more signs of plant life... serpentine life.

The soil is indeed toxic. Its toxicity is a result of an imbalance of magnesium and calcium, along with the presence other heavy metals. Because of this imbalance, many plant species that grow freely



Serpentine Soil. Photo by Nhu Nguyen.

in other parts of the surrounding landscape cannot grow on this substrate. However, no human hands were responsible for this phenomenon. Instead the presence of serpentine is the result of the seismic up-

lift of rocks that were formed in subduction zones near oceans in various localities throughout the world. The most notable examples today exist in Afghanistan, China, Greece, France, Norway, Italy, Cornwall (UK), Quebec (Canada), Cuba, New Caledonia, and in California (US). And the bizarre tentacled plant emerging from Californian serpentine? It is an onion.

About the cylindrical-leafed onions

The California Floristic Province (CFP) occupies a large area from southwest Oregon, south through California and northwest Baja, Mexico. It is home to 5000+ species of plants and some very special geophytes, among them the cylindrical-leafed onions. These onions form a natural taxonomic group classified into Section Sanborniana by Hamilton Traub in 1968 and recently confirmed through DNA phylogenetic analyses. These species are distributed only within the geographic borders of the state of California.

Members of this section are distinguished from the rest by bearing a single cylindrical succulent leaf per bulb, which can range from just a few centimeters to more than 30 centimeters in length. Relative to CFP onions, that's one huge leaf! During the growth season a mature plant's inflorescence will emerge from the bulb by splitting through the base of the leaf and extending upwards. This process can take up to two months in some species. Another very interesting characteristic of this group is that all species are tolerant of serpentine soil and many are endemic to serpentine alone. Many geophytic species of CFP flora can tolerate serpentine, but it is very uncommon that such a large group of species such as these cylindrical-leafed onions have evolved to favor it over other substrates.

Many species belonging to this group are found mostly in mountainous areas where serpentine occurs. In the introduction, I wrote about my experience as I explored the serpentine patches of central California for the first time. The tentacled onion was

(continued next page)

“The California Floristic Province (CFP) ... is home to 5000+ species of plants and some very special geophytes, among them the cylindrical-leafed onions.”

The Cylindrical-Leafed Onions of California (cont'd)

(continued from previous page)

Allium fimbriatum var. *purdyi*, an endemic serpentine species. It produces purple flowers that bloom from late April through July. Another serpentine endemic species, generally less widespread, is *Allium diabolense* (often times misspelled as “diablolense”). It occurs in coastal mountain ranges in central and southern California. The peduncle is short, thus keeping the inflorescence of white flowers with brown stripes near the ground.

Some species of onions in the group are highly restricted in range. A particularly salient example is the

charismatic *Allium shevockii* which occurs only on Spanish Needle Peak in Kern County, southern California. The leaves are often glaucous green; flowers are a deep maroon-red with strongly recurved tepals. *Allium*

sharsmithiae is another small species that is endemic to the Mount Hamilton area east of San Jose, central California. The flowers are a powdery purple; often they bloom only after the leaves have senesced.

The species mentioned above may be restricted in their range, but

healthy populations remain. Currently the only federally-endangered species of all CFP alliums is *Allium munzii*. It was once common in southern California, but the pressures of land development have pushed the species to near extinction. The Santa Rosa Botanical Garden is cultivating this species to be reintroduced into the wild. Several species such as *Allium jepsonii* and *Allium sanbornii*, although no longer on the endangered species list, are still rare and elusive in the wild. Factors such as habitat destruction combined with the fact that these species naturally take many years to mature from seed are of most concern for the survival of these species.



Clockwise from left: *Allium fimbriatum* var. *purdyi*, *Allium shevockii*, and *Allium diabolense*. Photos by Nhu Nguyen.

Cultivation

Surprisingly, bulb enthusiasts worldwide have largely overlooked CFP *Allium* species as ornamentals. It may be due to their diminutive proportion when compared to larger and showier geophytes in the CFP such as *Calochortus* and *Brodiaea*. Then again, perhaps we unwittingly approach all ornamental

alliums with expectations on par with the many bodacious alliums of Europe and Asia, acquired via mail-order bulb catalogues. An altogether separate reason may simply be a collective lack of useful cultivation information and attractive photographs of CFP *Allium* species, as well as limited promotion and availability of the bulbs in the general market.

If we take a fresh look at the amazing diversity of *Allium* species that the CFP has to offer, a surprising variety of shapes, colors and forms can be found. The cylindrical-leafed species are a good example of this. Their small stature makes them attractive candidates for those with limited space as well as among connoisseurs of small geophytes. With

floral colors such as burgundy, rich purple, and white, they are a delight when in bloom.

The following advice is wholly derived from my observations and experi-

ences with the species that I have grown in the oceanic climate of the San Francisco Bay Area, though I've yet to grow all of the CFP *Allium* species.

General cultivation is very similar to that of most other Mediterranean-climate bulbs. As winter growers, they should only be watered

(continued next page)

The Cylindrical-Leafed Onions of California (cont'd)

(continued from previous page)

during the fall, winter and spring. They require excellent drainage. For container culture I employ a mix of 50% inorganic material (such as perlite and/or pumice) combined with 50% organic matter. Serpentine soil is not essential as a component in the media, although I find a top dressing of serpentine rocks quite appealing. Generally I prefer terracotta pots because they allow for gas and moisture exchange while keeping roots cooler than black plastic pots. Adult bulbs prefer full sun exposure.

While I like terracotta pots for bulbs, I prefer to sow seeds in plastic pots, because at these stages seedlings are less tolerant of drying out completely,

“While I like terracotta pots for bulbs, I prefer to sow seeds in plastic pots, because at these stages seedlings are less tolerant of drying out completely, even in summer.”

even in summer. None of the species that I grow requires cold stratification of the seeds. I sow them in October and they wait out through the coldest days of winter before sprouting. Perhaps they require this natural stratification. Seedlings will grow during spring when temperatures warm up to about 60°F (15°C) as highs during the day. They should be protected from full sun during occasional heat waves in spring. I once had some seedlings push the young bulbs

down to the bottom and out of the drainage hole of a 2-inch pot. For this reason I recommend deeper pots for sowing seeds. I have never had an *Allium* seedling refuse to go into dormancy at the end of spring.

As soon as the plants begin to show signs of imminent dormancy, stop watering and allow the pots to dry. Once the medium has dried, relocate the pots out of the sun. During dormancy, I give the pots a sprinkle of water every 2 weeks to keep the dormant bulbs from completely drying out. Come October, I give them a good watering. It usually takes several weeks for the bulbs to respond. I also use a time release fertilizer on adult bulbs and second year seedlings. After two years of growth, they may be re-potted during their dormancy, if necessary.

At right, top to bottom: *Allium sharsmithiae*, *Allium jepsonii*, and *Allium sanbornii*. Photos by Nhu Nguyen.



Mad About Moraeas (cont'd)

(continued from page one)

short and blue, and produces many basal cormlets.

M. macronyx is a short-lived yellow and white irid that forms colonies of plants from basal cormlets. Begins in early spring and repeats bloom for over a month.

M. tricolor bears a short, large, red bloom with yellow and white centers. It is very attractive, but produces few cormlets.



Moraea macronyx. Photo by Bob Werra.

M. papillonaceae is another short one that is very attractive. It has orange and yellow or pink blossoms for two to four weeks.

M. polystachya can reach up to 24 inches tall. It blooms early, late, or not at all depending on its mood! It is nicknamed the

“shower of flowers.” This year one repeated bloom for three months. It is a good seed producer.

M. bipartitae Grows to twelve inches tall with branching lavender blossoms. It is another good seed producer.



Moraea tricolor. Photo by Bob Werra.

M. vegata is short with khaki colored blossoms. It's interesting but not spectacular. It is self-pollinating and produces many seeds.

M. fugax has attractive medium-large blue, white or yellow blooms that repeat for two to three weeks. It grows six to eight inches tall. Seed production is fair.

M. serpentina is four to six inches tall. It is very attractive with large white and yellow blossoms and interesting twisted leaves. It blooms in late spring and repeats for up to two months in a sandy mix.

M. polyanthus blooms during the evening with many medium-blue blossoms. It is a branched plant, growing twelve to eighteen inches tall. It is not spectacular, but blooms when others are finished. It is a great seed producer.



Moraea serpentina. Photo by Bob Werra.

Non-Fugacious Moraeas in order of bloom-time

M. atropunctata has good-sized white blossoms with large black or blue spots on the petals. It grows six to eight inches tall and is a fair seed producer.

M. tripetala grows from underground stolons to produce masses of plants and many corms and seeds. It grows twelve to eighteen inches tall with shiny lavender iris-like blossoms.



Moraea tripetala. Photo by Bob Werra.

M. bellendini is 12 to 24 inches tall. It has attractive yellow and green flowers and is a good seed producer.

M. lurida does better in moist, coastal climates. The bloom color is variable, from yellow to ma-

roon. It grows from eight to ten inches tall.

Non-Fugacious “Peacock Moraeas”

M. loubseri blooms in early spring. It has interesting purple blossoms with black, fuzzy centers. It is not easy, but is a fair seed producer.

(continued to page six)

Mad About *Moraeas* (cont'd)

(continued from page five)

M. aristata has white flowers with iridescent blue centers. It reaches eight to twelve inches. Seed production is poor, but it is vigorously stoloniflorous. It also prefers the moister coastal climate to my dry valley.

M. calcicola grows eight to twelve inches tall with large bluish blossoms that have a black center. It is a fair seed producer.

M. gigandra is another eight to twelve inch plant. It has very large bluish-lavender flowers with black and blue iridescent centers. It's a fair seed producer.

M. tulbaghensis has large light orange blooms with variable blue, green or brown iridescent centers. It is stoloniferous and grows eight to twelve inches tall. It is a good seed producer.

M. villosa is considered the queen of the peacocks. It grows eight to twelve inches tall. It has large blooms in many colors and shades and displays many different colored iridescent centers. It is stoloniferous and is another good seed producer.

Corm and Seed Sources

There are a number of sources for these special corms and seeds. Check the following:

- www.telosrarebulbs.com, USA
 - www.thebulbman.com, USA
 - www.bulbargence.com, France
 - www.b-and-t-world-seeds.com, South Africa
 - www.silverhillseeds.co.za, South Africa (seeds)
 - Gordon Summerfield, S. Africa, summerfields@telkonea.net (seeds & corms)
 - www.capeseedandbulb.com, S. Africa (corms)
 - www.Africanbulbs.com, S. Africa
- Moraea seeds are also available for members of



organizations including the North American Rock Garden Society, The Alpine Garden Society, the Indigenous Bulb Society of South Africa (www.safricanbulbs.org.za). They, like PBS members, are primarily avid, knowledgeable amateurs who love the South African flowers. They publish a monthly e-mail newsletter and a quarterly bulletin and sponsor an annual seed sale. The Great Lakes Bulb Society web site maintains a comprehensive list of bulb and seed sources.

Moraea Culture is not Difficult

The sources listed in the previous section are happy to share their growing methods. Most experts recommend a soil mix made up of 1/3 compost or commercial mix, 1/3 perlite (minus the dust) and 1/3 granite grit. I can't obtain granite, so I use very course sand instead. I have tried various mixes in the past and most have provided similar results. The most important factor is that the mix is well-drained and lean.

Bob recommends using bamboo hoops and double frost cloth to protect *Moraeas*.



Most growers recommend a slow release fertilizer once a year or using a quarter to half strength liquid fertilizer every three weeks during growing season. Some recommend a little potassium sulfate toward the end of the growing season. Containerized plants may need extra water if rains are sporadic. Most growers recommend eight-inch containers. I do use

these for the taller *Moraea* but use six inch containers for the shorter ones.

Hard frost protection is advisable, particularly during the first two winter months (December and January here) when plants are small. I use hoops... p/c or bamboo strung with c-g outdoor clear Christmas lights. I cover this with double frost cloth at night.

Most *Moraeas* do better in partial shade. Although the corms like to bake in the summer, too much heat harms them. In our one hundred deg F + summer temperatures, I cover them with partial shade

(continued to page ten)

Facing page, clockwise from top left: *Moraea vegeta*, *M. atropunctata*, *M. bellendini*, *M. calcicola*, *M. villosa*, *M. tulbaghensis*, *M. fugax*, *M. loubseri*. Photos by Bob Werra.

Mad About Moraeas (cont'd)



Go Figure! Every Season Brings Surprises

Robin Hansen

Robin gardens in North Bend, Oregon just east of the Pacific Ocean on a property sheltered by dunes and conifers (slightly colder and hotter than USDA zone 9). She grows and sells Cyclamen and a few other Oregon native plants. To ask questions or request her plant list, send an E-mail to robin@hansennursery.com.
— Ed.

Have you ever planted something and been astonished a few weeks or seasons later to discover that it's three times the size your plant books say it should be? Or perhaps you've seen local natives struggle in your own garden, only to thrive in a nearby wild space in seemingly identical conditions?

Consider my garden — it's not the most hospitable of places. The "soil" is old dune, or weathered sand, if you prefer. There are patches of loam or "loamy sand" or "sandy loam" but not many. The best soil,

where the neighbor says the raspberries thrived in utter delight, has been covered for the last three years by a 20 x 48-foot poly house. The garden where the perennials, trees, and shrubs grow has poor soil; it is often exposed to 20 to 30 mph gusts from June-August and gets full sun. And, we've had no rain this summer. A tenth of an inch does not count!

So, given those circumstances, why is my *Aster chilensis* four feet tall, when in many places around me they are growing in the same sand yet only reaching 6 to 18 inches? A few feet away, the *Helonium autumnale* is four and a half feet tall, not three feet. Then there is the cistus of prostrate habit planted in a small narrow west-facing bed with concrete walls under the eaves of my house. In one year it has spread more than three feet in diameter. Next to it is our native *Potentilla fruticosa*, which after three years remains a foot tall, but never fails to bloom. The *Sidalcea malviflora*, com-

pletely prostrate, bloomed for at least six weeks this summer, with only the most sporadic of watering.

On the sheltered north side of the house, receiving hot (relatively speaking, you understand) afternoon sun, my native maidenhair fern is lush and green a few inches from the house wall, while the *Dicentra formosa* and the *Maianthemum dilatatum* in the same bed are shriveling and brown, and *Aster divaricatus* is flopping and flowering just as it should.

As much as I'm astonished by this stunning behavior, I gain much satisfaction from such surprises. I think that we garden because we know how much plants change from day to day and season to season, and we look forward with such anticipation to the pleasure (and dread) of all the many changes we observe every time we work and walk in our gardens. For most of us, it is a never-ending story, told over and over with the details tumbled and tossed anew each time.

A Never-Ending Story of Hope and Anticipation

As many of you know, Marguerite English has decided to step down as co-editor. We thank her so much for her service! She is planning to put that free time to good use — by writing a column for our members. Marguerite gardens in Descanso, CA and is looking forward to sharing the ups and downs of her garden with PBS members.
— Ed.

Fall is the best and worst of the gardening season here in my mountain garden. Over the years I have selected many plants to provide fall bloom. It can be lovely to see the penstemons, salvias, sedums, helianthus and the last of the roses all blooming together in my American-cottage style garden. This part of my property has a ledge of rock four inches down, so most of my plantings are in raised beds. There are a few trees and shrubs on the outskirts of the garden that try to change colors, but typically there is a BIG wind (40-50

mph) or two in late fall that blows the leaves down into the valley below! Then, suddenly, all the plants are beaten to the ground and my daily walk through the garden is less appealing. I take a bit of time here and



there to cut back and deadhead the perennials and to plant new selections of narcissus and a few summer-blooming bulbs.

But now it's time to move my

activities back into the plant room/greenhouse. I drag the two citrus trees and several pelargoniums inside for winter protection. Then it's time to replant the tender bulbs that I stored away after they went dormant last

spring. The lachenalias and Oxalis go front and center on the benches. I talk a bit to the Romuleas and tell them that if they don't do better this year, they are going out the door. They bloomed very poorly this last season. I have a few iris and native plant seeds in the packets. They are going in the outside veggie bed to see if they will do better than when I start them in containers.

Soon it will be time to clear one bench at the front for my traditional Christmas village. The lights are strung in the windows from last year. As you see, my 'never-ending story' is not quite the same as Robin's, but, like her, my heart is filled with anticipation for the next season's garden changes.

Board of Directors Meeting, August 2009

Although this quarter's board meeting was quick and efficient, we took care of some important business and we have a positive report to share.

You've no doubt noticed the rise in postal rates on BX packages. Dell has found a way to cut costs with a new package supply vendor, and the bank balance remains steady.

We have reached 160 members, and we want to continue to grow. We have just made it easier to join PBS (and to renew your membership!) through the addition of an automatic PayPal button on our membership webpage (<http://www.pacificbulbsociety.org/membership.html>). If you know someone interested in joining, encourage them to do so now – we are still giving new members a \$5 coupon for use on their first BX purchase.

The archive of past BX offerings is being updated. If anyone has time and is willing to proofread offerings from BX 100 through BX 200, please contact Pamela Slate at pslate22@yahoo.com

As you've read on the opposite page, this is Marguerite English's last issue as co-editor. We will miss her guidance very much, but we're also pleased to report that Jane Merryman has agreed to step in and assist us. Thanks, Marguerite, for your significant contributions over the years as a "Founding Mother" of PBS. Thanks to Jane, too, for lending your editorial talents to PBS!

As part of an effort to allow members to meet and share experiences in person, President Jane McGary has been looking into possible botanizing trips for PBS members near the Oregon-California border. It seemed to board members that a long weekend would be best for participants, but nothing has been decided. Jane plans to investigate further and get back to all of us with a proposal. Jane welcomes suggestions at janemcgary@earthlink.net – if there's a place in this region that you've been longing to visit, here's a chance to socialize with fellow PBS members at your dream locale!

The board takes this opportunity to thank Nhu Nguyen for his numerous contributions to the Wiki and David Pilling for adding the improved search function and the Bulb of the Day feature. We all appreciate your fine work!

Hope you are all enjoying the bounties from a fine BX season,
Pamela Slate, Secretary



As we enjoy this change of seasons in our gardens, please continue to think of the BX! Donations are always welcome.

Donations of CLEAN, clearly labeled seeds or bulbs/corms should be sent to Dell Sherk, 6832 Phillips Mill Rd., New Hope, PA, 18938, USA. Contact Dell with any questions: dells@voicenet.com.

(Colchicum 'Autumn Herald', photo by Arnold Trachtenberg)

Treasurer's Report

BALANCE 4/1/09 \$ 24,074.88

INCOME

U.S. Members	\$ 780.00
Overseas Members	\$ 275.00
Contributions	\$ 35.00
BX Receipts	\$ 957.36
TOTAL INCOME	\$ 2,047.36

EXPENSES

BX/SX Expense	\$ (684.69)
Board Conference Call	\$ (120.79)
Total Publications	\$ (1,460.00)
Postage	\$ (587.32)
Misc. PayPal Expenses	\$ (295.91)
Secretary Expense	\$ (20.32)

TOTAL EXPENSES	\$ (3,169.03)
Investment results	\$ 22.57
Subtotal	\$ 22,975.78

BALANCE 6/30/09 \$ 22,975.78



~Gardening with Bulbs~

It's time to renew !

We appreciate your support—we would hate to lose you!

Renewing is easy. You can renew **ONLINE** (\$20 U.S., \$25 international) via PayPal. Just use the button on our membership page,

<http://www.pacificbulbsociety.org/membership.html>.

Be sure to contact Patty (patrylis@aol.com) if any of your contact information has changed.

You can also mail in your renewal. Please direct it to Patty Colville, 1555 Washburn Road, Pasadena, CA 91105.

Questions? Call Patty at (323) 254-9831. If any of your contact information has changed, please update it on this form, cut it out, and send it in with your payment.

Name: _____
Address: _____
Telephone: _____
Email: _____

Thanks again for your continued support of the Pacific Bulb Society!

The Useful Bulb Frame, Part 2

Jane McGary

This article is a reprint from a much earlier volume of The Bulb Garden. Jane introduced us to bulb frames in volume 8, issue 3; here she begins with a discussion of frame design.—Ed.

Frame designs

My frames have bases made of railroad ties; the pressure-treated lumber I tried warped and had to be replaced. Railroad ties are fairly easy to place—even one person can handle them with a tool that looks like a huge pair of ice tongs—and contrary to some people's belief, the preservatives used in them are not harmful to plants. Good bases can also be made of mortared concrete block or poured concrete, though these are harder to remove later and offer less insulation.

Before the base is laid, put down a barrier against invasion. Hardware cloth keeps out the moles and rodents, but not stoloniferous weeds or invasive bulbs. I prefer woven nursery groundcloth, a heavy-duty plastic material that lasts about ten years if exposed to sunlight and indefinitely where covered. Available in widths up to 12' from commercial greenhouse suppliers, it deters both weeds and burrowers.

Some of my frames have a drainage layer of 1 1/2" round rock, but I'm not sure this is really necessary. I fill them to a depth of 16" with plain coarse sand, a local product that contains a lot of large rock particles. This is known as the "plunge material."

I filled the first frames with different soil mixtures intended to suit specific bulbs, but the collection soon became so large that I could not keep the species properly separated and identified. Now I grow all plants in clay pots or plastic mesh containers of the type sold for aquatic plants. Both permit the movement of moisture from the plunge sand into the planting soil, making it unnecessary to water manually dur-

ing much of the growing season; in most years, enough moisture rises from below by capillary action. The pots are also easy to pull and take to plant shows and talks.

If you use clay pots, be sure to buy Italian-made ones, which are much more durable than Mexican terra cotta. Having a nursery license allows me to buy the pots wholesale from the importer. I use sizes from 4" (for a few seedlings or one or two crocuses) up to 10" (for the largest iris, narcissus, and fritillaria that can be accommodated in the frame). If you prefer mesh pots, get those with mesh bottoms as well as sides (Finofil is my preferred brand). Some have solid bottoms and do not drain adequately, though you could bore holes in them. Although the mesh pots are UV-stabilized plastic, the exposed edges become rather brittle after several years, so handle them carefully when repotting. Both kinds of pots are plunged (sunk) almost to the rim in the sand, which is easiest to do when the sand is moist.

The superstructure of the frame is usually a shed or A-frame design. I prefer the double-sided A-frame style which allows access to a wider area. (A frame with a big "footprint" will hold heat better.) Also, this style permits cross-ventilation even in very wet weather if you raise both sides slightly. My newest frame is an A-frame with permanently open 4-inch vents at the bottom on both sides, but I cover the plants with microfoam if the temperature is predicted to drop much below freezing and nail cedar siding over the windward vents if a freezing east wind arrives.

Four of my frames have permanently attached lights (as the covers are called) and one has removable lights. I grow less sensitive plants in the latter, covering only in the most severe weather. The oldest frames have flat acrylic glazing, which is very expensive and hard to work with (they were

(continued next page)

Mad About *Moraees* (cont'd)

(continued from page six)

cloth using the same frame to cover the bed. I don't lift my bulbs in summer. I do try to change the mix every four years. If I miss, the plants don't seem to mind.

I line bulb beds with 1/2" hardware cloth to protect against rodents. I also cover the tops of beds and containers with plastic 1/2" hardware cloth or aviary wire.

Growing *Moraees* from Seed

Most growers recommend planting and watering in early fall (September, or so). In frosty areas, my mentor, Stan Arwig, waited until January so the plants sprouted after the hard frosts were over.

I plant my seeds under Grow-lights that are only on during the day-

time. Native diurnal temperature fluctuations could be duplicated in an unheated room. Attention to adequate watering is necessary.

Seed mixes range from course sand to purchased seed starter mix with sand, and regular potting soil covered with 1/2 inch of grit or course sand. Cover the seed with another very thin layer in a 4-6 inch container. Most growers keep the seedlings in the container for two years before planting out the small corms. I have trouble finding these tiny corms, so I wait until they are growing well in winter, then I transfer the seedlings to their permanent home.

Using seeds alleviates the problem of transferring Southern Hemisphere *Moraees* to the opposite season

Northern Hemisphere. I don't give up on seeds or transferred corms for at least two years. Switching adult corms requires a dormancy period. It helps to put them in containers and set them aside for a couple of months. I put them into vermiculite until fall (or when sprouts show), then plant and water them. These are best placed in semi-shade.

I pollinate with camel-hair artist brushes with moderate success. Experts use better methods.

The Moraees of South Africa by Peter Goldblatt, published in 1986, is the bible for these *Moraees*. It has detailed descriptions, locations, soil types and more, along with 100 beautiful watercolors and line drawings. It is reasonably priced and is available at Alibris.com, or Silverhill.

The Useful Bulb Frame, Part 2 (cont'd)

(continued from previous page)

made by a greenhouse builder); it can shatter if something falls or blows into it. The removable lights are fiberglass, which doesn't have good transparency. The newest frame has corrugated polycarbonate (Lexan) lights, which offers the best combination of light weight, ease of construction, and transparency; it is as expensive as acrylic/plexiglas® but can be cut with shears or a box knife and is practically unbreakable. One problem with it is that it's difficult to clean tree pollen off it; if your frames are around big trees, I recommend plexiglas®, acrylic, or tempered glass. Any type of greenhouse glazing can be used.

Ready-made frame covers with aluminum supports cost about \$150 for a narrow 4' section and they do not offer much height. "Access" frames, imported from England, are higher, but I'm told they don't stand up well to high winds and snow loads.

My old frames have a clever support system that works with pressure screws set in custom-made metal brackets, but as the brackets became corroded, I changed the system to props. The newest one has support poles of galvanized metal conduit. Simple and foolproof, it will never drop on anybody's head. Various kinds of props, such as boards cut in a sawtooth pattern, support lights at a series of different heights. I get just two heights out of my system: all the way up, for viewing and best light, and halfway up ("head-banging height") so that the rain drains off to the outside rather than toward the middle.

Annual cycle

Bulbs are arranged according to water and temperature requirements. Frame 1 holds those that need a dry summer and maximal warmth; frame 2, moderate summer water and maximal warmth; 3 and 4, somewhat moisture-tolerant plants needing little cold protection; and 5 is pretty miscellaneous by now. The frames run east to west lengthwise, so plants that appreciate some shade can be placed against the south side, where the rise of the base shades them for a few inches. Were I to grow shade-requiring bulbs, I could shade the entire north side of one frame by hanging shade cloth from the center ridge inside; this should be good for lily, erythronium, and peony seedlings. February-May and September-November are peak flowering months, but there is something in bloom every day. When daytime temperatures drop, usually about the first of October, I water almost all the plants thoroughly, repeating this once or twice during the month. After that, I rarely hand-water until mid-spring because cool temperatures and rising groundwater keep the plunge and pots just moist enough. I water plants in active growth and stop when the foliage begins to look like it's about to "go over" – it becomes less glossy before the color actually changes. If the weather is hot and sunny, it is best to water in the early morning. Always leave the frames wide open after watering so the foliage will dry out quickly.

Older books written in England often mention that bulbs need "a good baking" in summer. This is not good advice for us on the Pacific coast; most of our natives grow quite deep in the soil where conditions are cool and there is a little residual moisture during summer. In almost all western American regions (except perhaps the fog belts), summer temperatures are high enough to "ripen" most bulbs without pulling the pots and plac-

ing them in hot spots. Simply stop watering and protect the bulbs from the uncommon summer rain.

Fertilizing is extremely important when bulbs are grown in pots. I prefer soluble liquid feeding with a tank mixing system. I fertilize everything once in fall and three times in spring with soluble low-nitrogen fertilizer ("Blossom Booster" or "Root and Bloom" formulas) mixed at half the recommended strength. Bone meal can attract digging cats, dogs, coyotes, or raccoons.

During growth, remove dead flowers (retaining the ovaries to get seed) and diseased foliage; weed (frames catch every weed seed around); and police for pests. Look out for *Botrytis* infection in warmer climates or where plants are too crowded. I have to bait slugs at most times of year. For aphids, I apply a systemic insecticide in granular form to the soil; it is very effective and does not hurt the foliage or flowers. Deer mice are particularly destructive to crocuses, so having traps and poison bait out is a good idea. I cover all the crocuses with wire or heavy vinyl mesh. Towhees can be trapped in mousetraps baited with sunflower seeds. I have had no trouble from chipmunks and squirrels because my frames are far from any large trees, though rabbits were a problem this year.

In mid-July, I start the year's biggest task, repotting. I repot half of my collection of small species each year, but annual repotting may work best for very large bulbs. Even if you are fertilizing them, the bulbs still respond magnificently to entirely new soil, perhaps because they need trace minerals that commercial fertilizer doesn't provide. I mix my own potting soil from unwashed sand, ground horticultural pumice, and leafmold from the woods, in an approximate 2:1:1 ratio. If I want to add lime, I use the "prilled" slow-release lime sold for use on lawns. I use this mixture for almost everything I grow, except for a few extreme desert species which receive no compost.

Alpine growers debate the necessity to crock pots; most do not. However, I put a few pieces of lava rock in the bottom of my clay pots because bulbs that "pull" themselves deeply into the soil (like *Calochortus* and *Erythronium*) can pull themselves right into the drain hole and plug it, resulting in death at worst, and at best a smashed pot when you have to extract them.

Visitors sometimes chastise me for growing "perfectly hardy" plants in the bulb frame, but I have my reasons. Rainy-season flowers are more enjoyable when not flattened and soggy. Our variable, open winters often coax bulbs into bloom and then whack them with unpredictably-timed cold snaps. Finally, many bulbs and seeds are so expensive that it seems foolish to expose the few one can afford to the predation and climate hazards of the open garden. I feel an obligation to the collectors to grow and preserve the wild-collected seeds I often buy.

For many plants, the bulb frame is only a temporary home or a "backup." Here young seedlings can build up strength for a few years in optimal conditions, clearly identified and isolated. Newly acquired bulbs enjoy a recovery period before facing the garden, and diseased stock can be identified and treated or destroyed. When I repot the bulbs in summer, I remove the surplus for my sale list. Those that don't get sold now go into the garden, and I'm hoping to learn more about their limits of tolerance. If they can't hack it, I'll have a reserve of the species in the frames.

Gardening with Bulbs



Moraea gigandra. Photo by Bob Werra.
Bob's article, "Mad About Moraeas," begins on page 1.

Inside This Edition:

Mad About Moraeas By Bob Werra	1
The Cylindrical-Leafed Onions of California By Nhu Nguyen	2
Go Figure! Every Season Brings Surprises By Robin Hansen	8
The Useful Bulb Frame (Part 2) By Jane McGary	10

The Bulb Garden © 2009

The Bulb Garden is the newsletter of the Pacific Bulb Society (PBS). It is published about the third week of each quarter (unless articles are not submitted) and is available to PBS members. This newsletter provides gardening or bulb related articles, news of interest to members, and announcements of the PBS organization.

Editor: Marguerite English, meenglis@cts.com; Co-Editor: Jennifer Hildebrand

Visit us online! www.pacificbulbsociety.org

Pat Colville – Memberships
1555 Washburn Road
Pasadena, CA., 91105

www.pacificbulbsociety.org