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*The* BEGONIAN

# The BEGONIAN

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**EDITORS**—Karen Bartholomew and Chuck Anderson, 826 Santa Rita Ave., Los Altos, CA 94022. 415 948-5345 (evenings).

**ADVERTISING MANAGER**—Pam Mundell, 2324 Connie Dr., Sacramento, CA 95815. 916 925-3647.

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Founded January 1932 by Herbert P. Dyckman

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**TO** stimulate and promote interest in begonias and other shade-loving plants.

**TO** encourage the introduction and development of new types of these plants.

**TO** standardize the nomenclature of begonias.

**TO** gather and publish information in regard to kinds, propagation and culture of begonias and companion plants.

**TO** issue a bulletin which will be mailed to all members of the society.

**TO** bring into friendly contact all who love and grow begonias.

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**THE COVER:** This magnificent specimen of *B. rex* was grown under lights by Corliss Engle of Brookline, Mass., who also photographed it. See Corliss' description of growing under lights on page 66 and Jack Golding's account of the history of *B. rex* on page 70.

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NOTES/ *From the editors*

The legends are many. It was discovered by chance growing in the sheath of an orchid in a floral show-room. It caused immediate near-hysteria among plant collectors clamoring to get one. It was later lost to cultivation and recently rediscovered in the wild.

It is *Begonia rex*, the bold-leaved species that has given rise to countless hybrids which now constitute the group we call rex cultorum. The truth of the legends surrounding *B. rex* and its cultivars may never be confirmed to scholars' satisfaction.

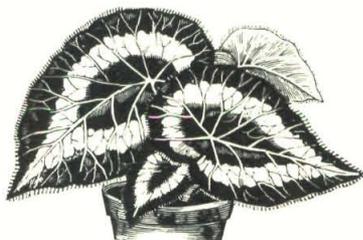
One thing, though, is almost beyond argument—the name “rex” is superbly appropriate. These cultivars with their unmatched color combinations and leaf patterns truly are kings of the begonia world.

So in this issue we offer the collected wisdom of leading rex begonia authorities. It's an issue with a theme—

we call it “The Regal Rexes.”



Elisabeth Sayers, a Santa Clara Valley branch member, is ABS's new membership secretary. President Nate Randall made the appointment in February and directors ratified it on Feb. 18. Elisabeth lives in San



Jose, Calif. She succeeds Kathy Brown.

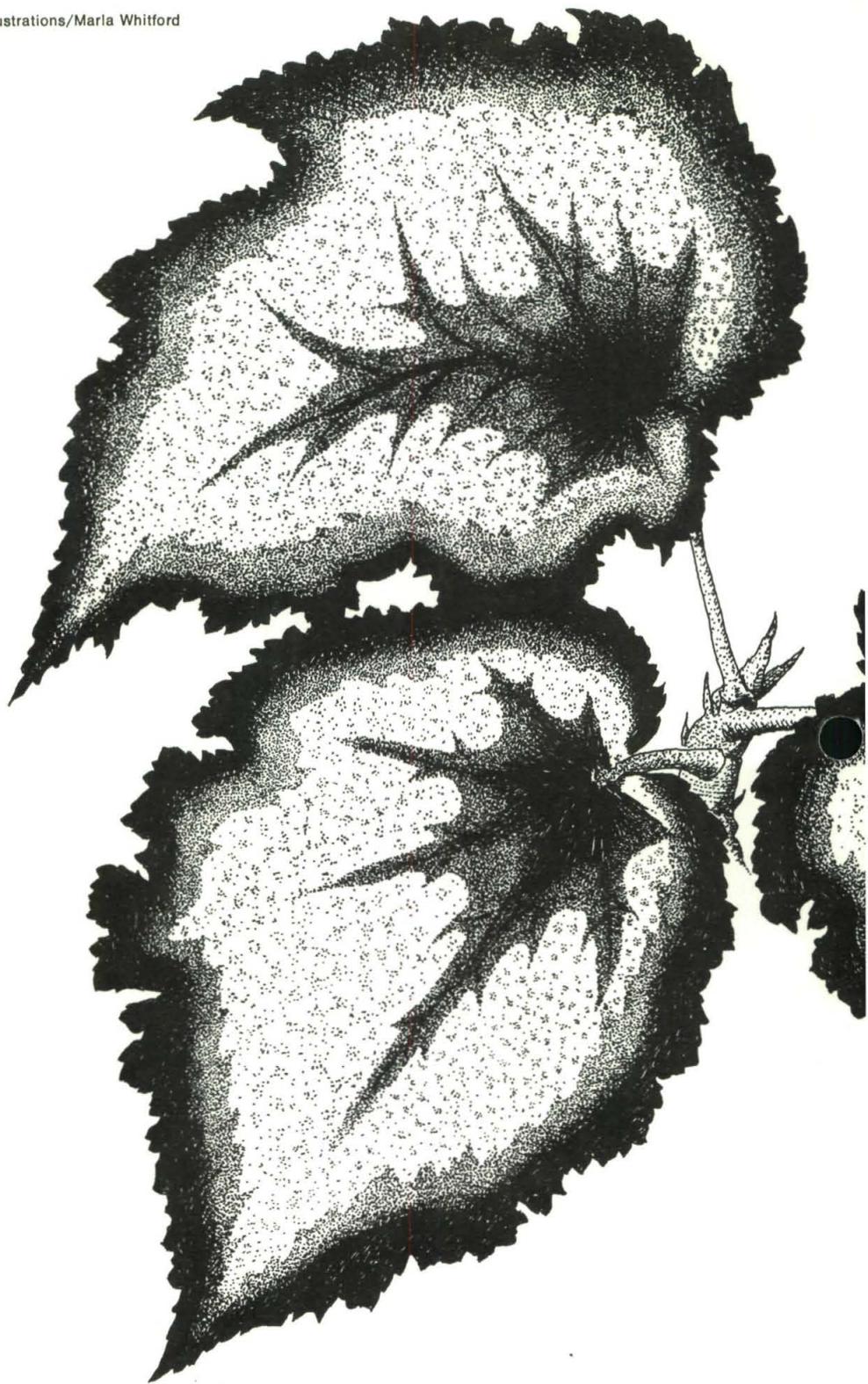
This issue is being sent to several hundred former ABS members who didn't renew when their memberships expired in late 1979. If you're one of them and you dropped out mostly because of irregular or no *Begonian* delivery, please give us another try.

Write to Elisabeth if you want to rejoin—or if you experience *Begonian* delivery problems. Her address is on the inside front cover.



Lack of space and a dearth of questions to answer has prompted us to

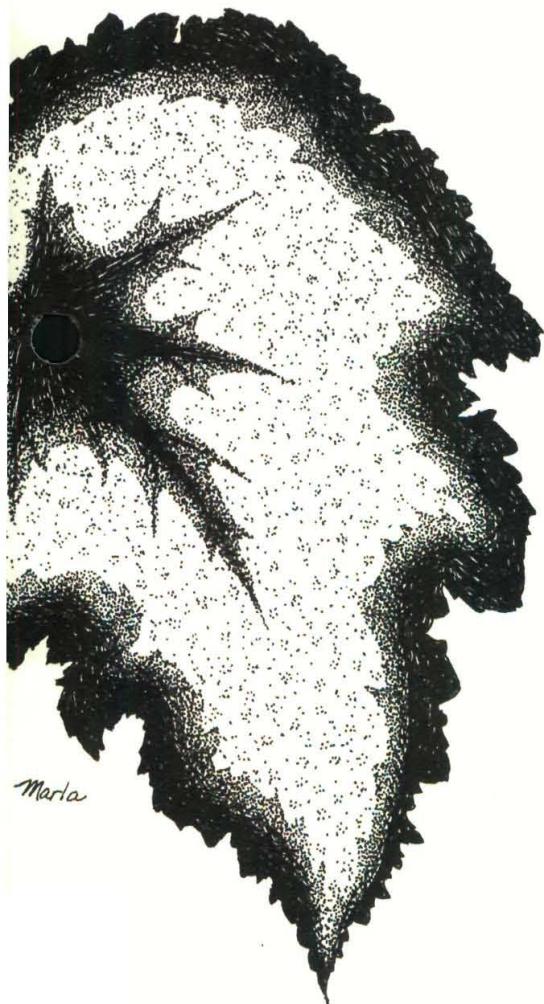
**Please turn to page 65**



# A guide to overcoming the rex dilemma

*Tovah Martin*

**Begonia  
'Eeyore'**



Why do rex begonias cause such a dilemma? Because many growers, both hobbyists and professionals, insist that *B. rex* cultivars cannot be grown in a home; some even claim rexes are difficult greenhouse subjects.

But does the fault lie with the rexes? Perhaps the problem is not with the plant, but rather with information about it.

Rexes are misunderstood begonias. Too often acquired under the guise of easy-care foliage plants, they rapidly expire when afforded only the benign neglect which one allows a philodendron or peperomia. But if you look beyond the beguiling smiles and flashy clothes of the rex, you will discover its true colors.

You would not banish a bougainvillea to some dark, dry corner—neither should rex begonias be grown under such conditions. They are native to a very humid region and, if the grower can provide humidity and good light, rexes will thrive. What follows is a guide for those who have tried and failed with rexes.

Many growers will disagree with me on this point, but I maintain that begonias—particularly rex begonias—dislike plastic. Did you ever notice that the roots of your rexes shy away from the edges of a plastic pot? Pot

---

*Tovah Martin attended Antioch College before going to work at Logee's Greenhouses. She has written for Plants Alive, New York Times, House Plants & Porch Gardens, American Horticulturist, and Horticulture, among others. She is 26 years old. Tovah's article was beautifully illustrated by a co-worker at Logee's, Marla Whitford. Marla studies art and illustrates many of the greenhouse publicity materials.*

that same plant into a clay container and the roots will wrap themselves around the sides.

Dr. Benjamin Herman, whose begonia collection was revitalized by a changeover from plastic to clay, has suggested there might be a substance in the plastic to which the roots object. This should be a subject for further study. My theory is that the roots suffer from a lack of air and drainage in plastic pots.

All begonia roots require abundant air to the root system, which porous clay pots provide. Even when potting a begonia in clay, do not firm the soil heavily—leave it fluffy and light. Begonia roots love to dry out between waterings. Soggy conditions cause the roots to die back continually at the tips. For this reason many rexes look particularly sad during the dark days of winter. The browning of leaf edges, often found in rexes grown in plastic, is symptomatic of overwatering.

Even when growing in clay pots, one should take care not to overwater during the winter. Water the plant only when dry and then give it a good drink. Try to schedule your watering in the morning, especially during winter.

A good soil mix is essential to producing luxuriant rexes. They prefer a very light, well-drained soil. We pot our young plants into this starter mix:

- 3 parts sphagnum moss**
- 1½ part peat moss**
- 1½ part perlite**
- 1 part leaf mold**
- 1 part cow manure**

to each 20-gallon quantity, add:

- 1½ cup lime**
- ½ cup bone meal**
- 4 cups granite dust**

- 1¼ cup gypsum**
- ½ cup seaweed or kelp**

Most of our soil mixes contain hoof and horn meal and blood meal as organic nitrogen sources. The rex soil deletes these as well as providing less organic phosphorus from bone meal. We have found that the lower nitrogen and phosphorus levels help to shorten leaf stems. This is particularly valuable in discouraging rexes from elongating during winter in their search for light.

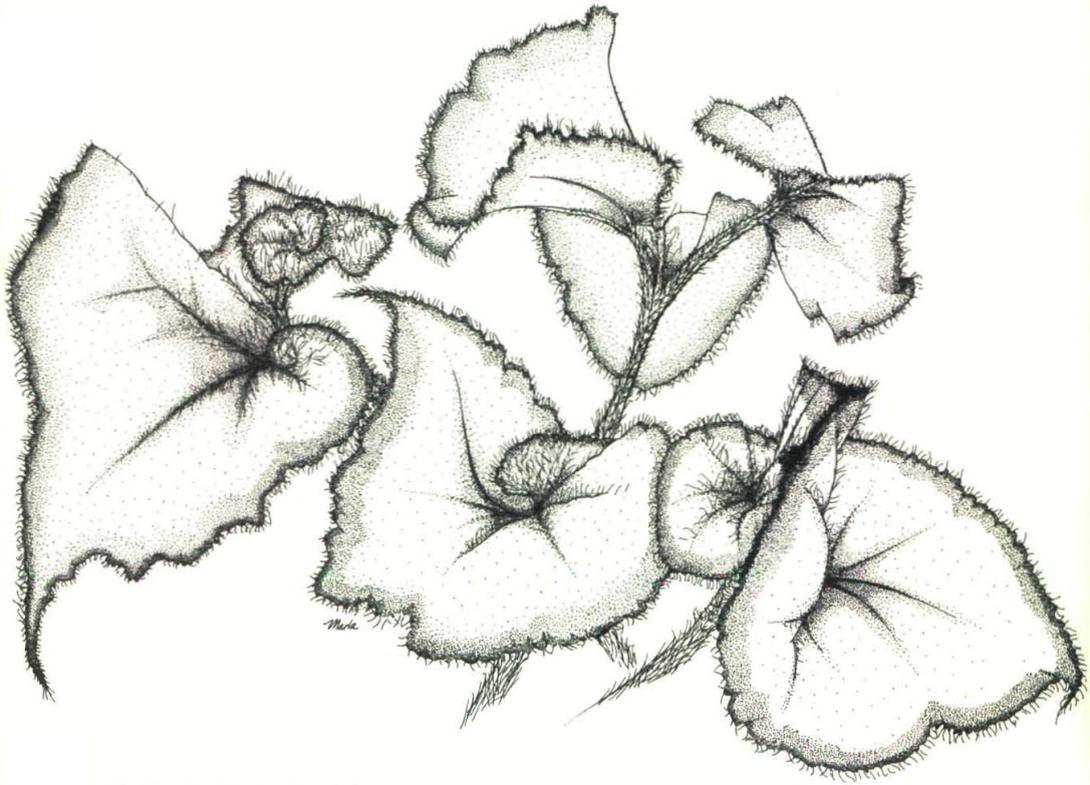
When a rex is ready for a four-inch pot we use the following slightly heavier mix:

- 3 parts peat moss**
  - 1 part cow manure**
  - 1 part leaf mold**
  - 1 part sand**
- to every 20-gallon quantity, add:
- 1 cup lime**
  - ½ cup bone meal**
  - 3 cups granite dust**
  - ½ cup seaweed or kelp**
  - ¼ cup blood meal or hoof and horn meal**
  - 1 cup gypsum**

Never repot in fall. Spring is the best season for repotting a rex, graduating one pot size at a time. Begin cuttings in small clay pots; we use 2¼-inch pots rather than larger containers. Again, this helps to prevent overwatering.

Rexes should be fertilized heavily in the spring when in growth. We use 20-20-20 (any balanced formula will do) and dilute it to one-third strength (quarter strength when growing in a home) every two weeks. Fertilize less frequently in summer and none at all during fall and winter.

Sometimes it is necessary to prune.



**B. 'Comtesse Louise Erdoedy'**

A rhizome which is growing over the side of the pot can be cut or "nipped" in late spring just before the rexes' major growth spurt. An upright rex should be pruned periodically just like a cane-type begonia to induce growth from the base.

For years I labored under the misconception that rexes prefer heavy shade. My rexes, when grown in a heavily shaded greenhouse, grew well but had washed-out markings. I fiddled with fertilizers and changed soil mixes, thinking that these were at fault.

One year we failed to put shading compound over the rex stock until summer. They produced an unprecedented display of color. The truth is that these rexes love light. They can

endure more sun than canes or even semperflorens. Of course, they should be protected from the blazing rays of a midsummer sun, but a good south window will suit their fancy. [*The author's experience is based on a high-humidity summer climate.—Editors*]

If your rex is languishing, perhaps gas fumes are the cause. Rexes are very sensitive to gas—the leaves drop or appear washed out.

There are scads of rex hybrids available—the trick is to choose ones suitable to your growing conditions. In general, the spiralled hybrids are more difficult to grow than those with unspiralled leaves. *B. 'Glory of St. Albans'* and *B. 'Roi de Roses'* are exceptions, being very finicky hybrids. If you yearn for spiralled leaves, yet have

less-than-ideal conditions, try *B.* 'Tornado', *B.* 'Odyssey', or *B.* 'Twisty Spot'; they are vigorous. The hybrids with hairy leaves, such as *B.* 'Princess of Hanover' and *B.* 'Comtesse Louise Erdoedy' are rather difficult to grow in a home; a greenhouse or terrarium would be ideal.

Miniature rexes are often more difficult to grow than their larger counterparts. The tightly clustered leaves form the cozy, dark, damp bed which fungi love. Keep them well sprayed with benomyl and provide good air circulation. A closed terrarium can shelter its occupant from traveling spores.

Dormancy is a problem for most northern growers. All rexes can go dormant if they are exposed to a significant drop in temperature; low light and too much water will aggravate the situation. Since the upright rexes were created by crossing a tuberous begonia (*B. grandis* ssp. *evansiana*) with a rex, they are prone to dormancy. We have found that rejuvenation of the stock every two or three years will help prevent dormancy because a young rhizome has not developed sufficiently to store starch for the winter.

Dormancy can be useful, however. Inducing dormancy on an old, leggy plant will result in a crown of bright, young leaves sprouting from the old rhizome come spring. If a rex goes dormant, water very sparingly and do not fertilize until spring when new growth appears.

Many growers complain of difficulties in propagating rexes from leaf wedges. Leaf wedges produce strong and compact plantlets and are the preferred method of propagation. Patience is necessary here. You probably did not wait long enough for the plant-

lets to sprout.

We find that the plantlets appear no sooner than three months from the striking date and take as long as six months in the winter. Bottom heat during the winter quickens the process somewhat. Place the wedges in clean sand, keep them watered but not soggy, and check for infestations.

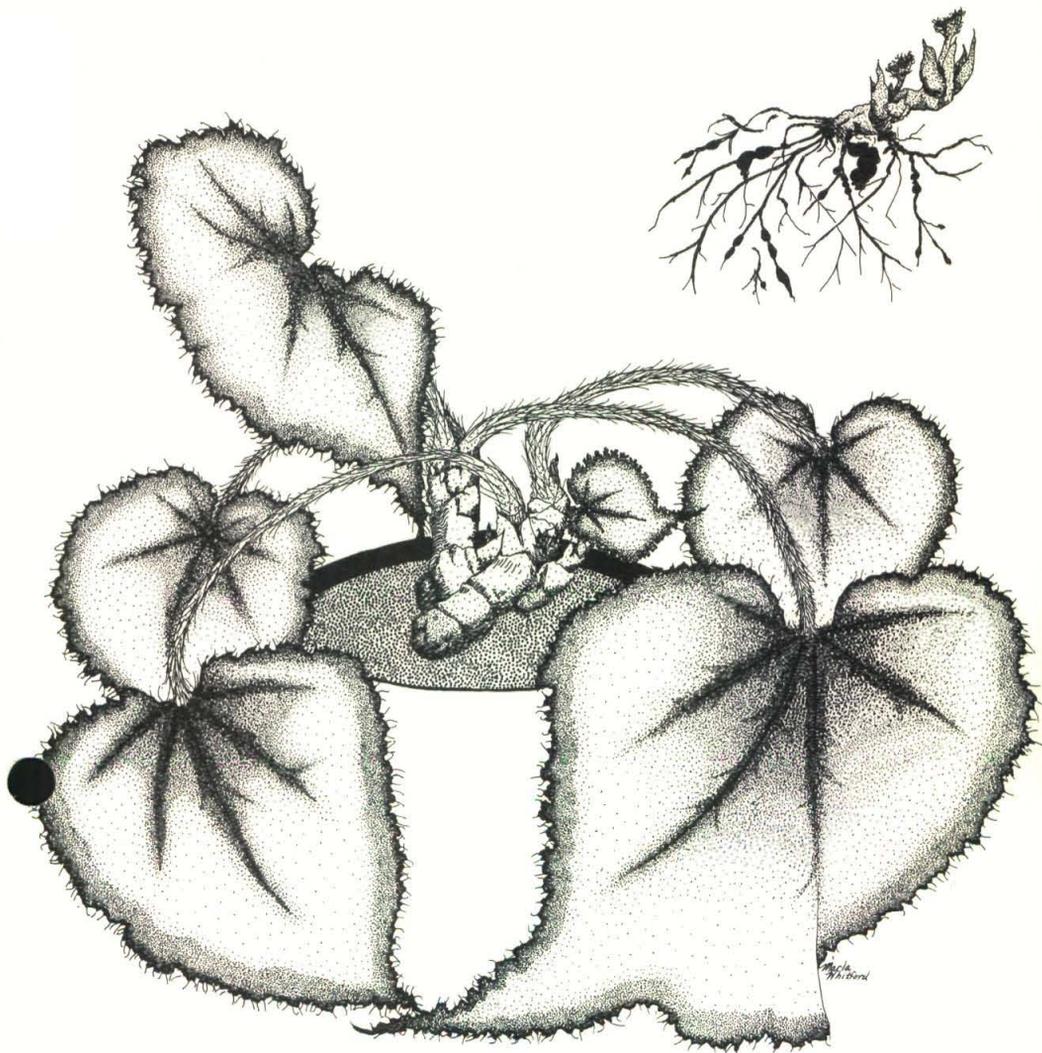
Unfortunately, rexes suffer from their share of insects and diseases. Like all other begonias, both stem and root mealybugs occur. Root-knot nematodes are as common as they are dreaded. Adding to the nematode problem is the fact that most growers do not recognize them until they have infected other stock.

Before any symptoms are apparent in the foliage of a rex, you will note upon checking the root system that tiny swellings are visible in older roots. The nematode itself is microscopic—the swelling is where the pest has stored food; it eventually inhibits the root's ability to take in water.

Frequent examination of the root systems on your plants will aid in preventing the spread of this pest. A strong plant can live for years with nematodes, but eventually the leaves grow pale and finally droop with drought, no matter how heavily the plant is watered.

We know of no cure for nematodes although we are experimenting with kelp. It is best to discard the plant rather than risk spreading the pest. Cuttings or leaf wedges from an infected plant usually will root and will not transmit the nematodes. Sterilize all pots with chlorine bleach between pottings and do not allow root systems to grow into benches.

Rexes are very susceptible to mildew. Growers most often experience



**When *B. 'Mikado'* droops, it's a sign of trouble. Unpotting revealed soil-borne nematodes (inset) had attacked the roots.**

this problem when growing in a damp, still cellar under lights. Fans to provide air circulation and regular spraying with benomyl should prevent the problem.

Check leaf surfaces for the snowy white spores of mildew. Segregate any plant with mildew. We have found that *B. 'Eeyore'* seems to have good resistance to mildew.

As mentioned earlier, keep a watchful eye for botrytis, a fungal infection characterized by circular black spots on the leaf with elevated white spores. Botrytis can also be combated with benomyl. A preventive spraying before a rainy or cloudy period is suggested.

I hope you will give rex begonias a try. They are worth a little extra effort.

# Rex All-Stars: the begonias you picked

Karen Bartholomew

Illustration/Alice Clark

*B.* 'Purple Petticoats', a spiral-leafed rex cultivar fringed in pastel purple, is the runaway favorite rex cultivar of ABS members. Responding to a request in the December *Begonian* to rate their five favorite rexes, 38 members submitted lists, a dozen of them written on the backs of Keno tickets.

Final results showed *B.* 'Purple Petticoats' to be more than twice as popular as its nearest contender. Here are the All-Stars you picked:

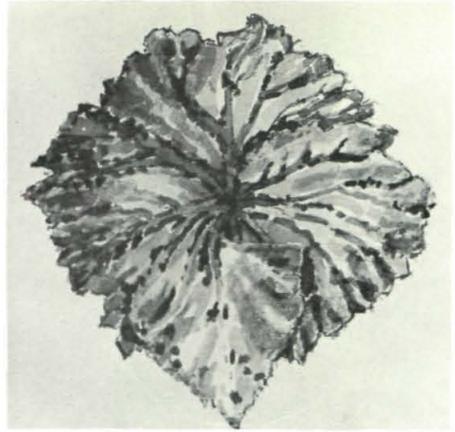
First place—*B.* 'Purple Petticoats', 67 points; second place—*B.* 'Merry Christmas', 27 points; third place—*B.* 'Fireflush', 21 points; fourth place—*B.* 'Woodriff's Tricolor', 20 points; and fifth place—*B.* 'Fireworks', 16 points.

A whopping 2% of the membership responded to the query. The poll had no scientific basis whatsoever, and no audit was conducted.

Early it appeared the poll would be canceled for lack of interest. Only two persons had responded, proving that in December Christmas is more important than begonias. A casual remark to Thelma O'Reilly that the survey was failing prompted more than a dozen votes, many of them gathered by Keith Mautino of the Santa Barbara branch.

Names of 97 rex cultivars were submitted in the voting.

Members of the Sacramento branch, returning from a bus trip to Reno—nonprofit, they reported—found the diversion of voting for favorite rexes lifted their spirits. (Four passengers on the bus had never heard of rex cultivars.) Voting organizer Pam Mundell denied collusion in the voting, but admitted that couples voted jointly. In



***B.* 'Purple Petticoats'**

the tallying, the Keno ballots were counted as 12 single votes to minimize the effect of bloc voting.

Prior to receipt of the Keno ballots, the results were:

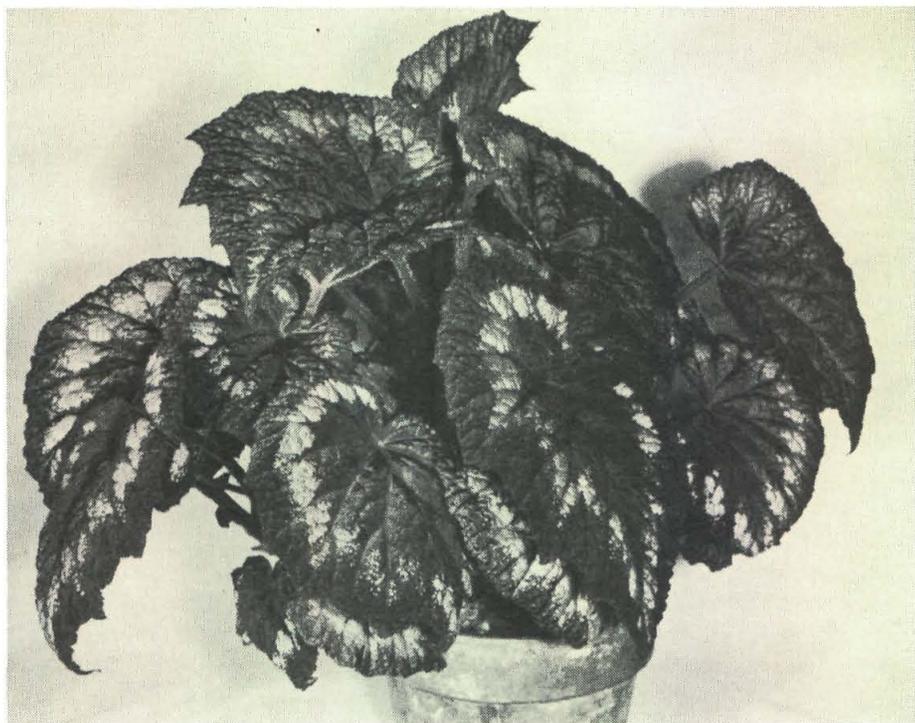
First place—*B.* 'Purple Petticoats', 38 points; second place—*B.* 'Woodriff's Tricolor', 20 points; third place—*B.* 'Merry Christmas', 17 points; fourth place—*B.* 'Fireworks', 16 points; and fifth place—*B.* 'Kitty', 13 points.

Since the total number of persons voting was so small, the Sacramentans were able to push *B.* 'Kitty' out of the running and move *B.* 'Fireflush' from nowhere to third place.

It was not clear from the Keno tickets that the Sacramentans understood the rating was to be in order of preference. The editors assigned five points to the first plant listed, on down to one point for the fifth.

Other high vote-getters were: *B.* 'Peridot', 14 points; *B.* 'Herzog von Sagan', 13 points; *B.* 'Lady Frances Jean', 12 points; *B.* 'Helen Lewis', 12 points; and *B.* 'Curly Fireflush', 12 points.

**Please turn to page 69**



**B. 'Helen Lewis'**

## Some of the all-time great rexes

*Joy Logee Martin*

The first rex begonia I remember in my father's greenhouse was *B. 'Queen of Hanover'*, first listed in 1891. It grew to enormous size with olive-green leaves, a silver band, and was covered with soft white hairs. White flowers appeared in late fall, then the plant would rest, to grow anew in the spring.

Today our rex collection contains more than 135 named varieties.

They were the favorite plants of my brother, Ernest K. Logee. He would go to any length to secure a leaf of a new *B. rex* cultivar. Barter was one of

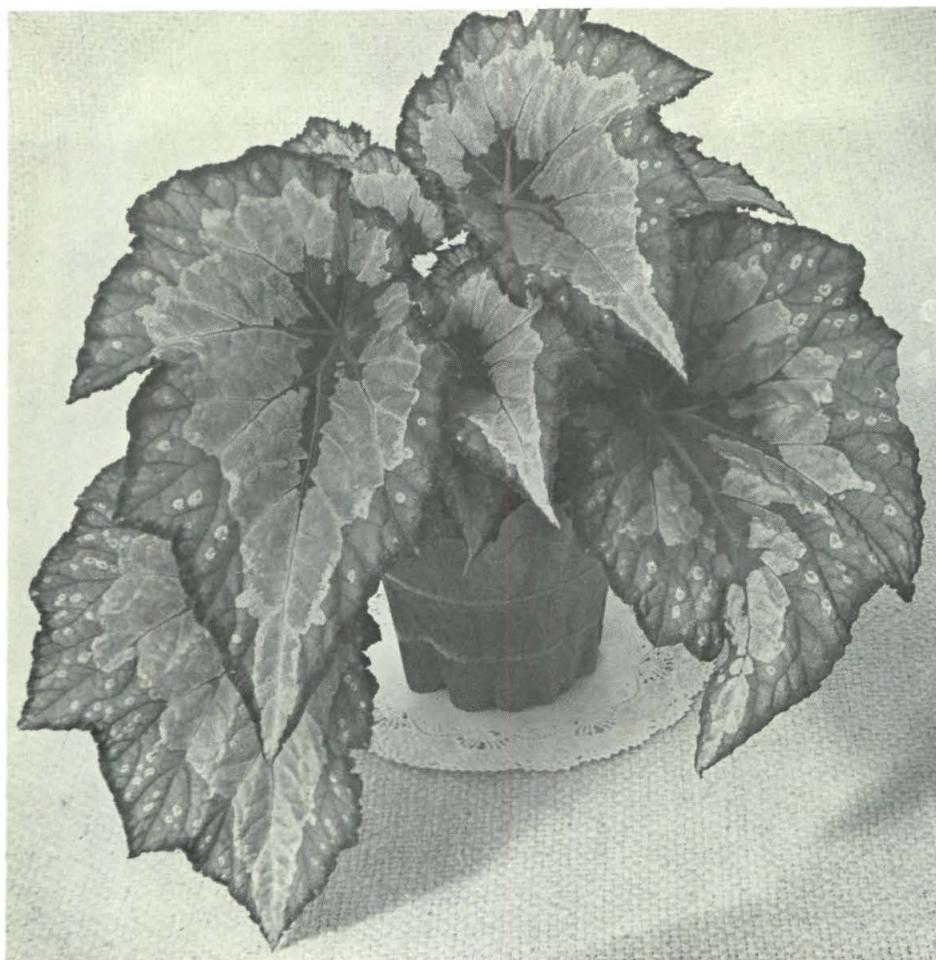
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*Joy Logee Martin operates Logee's Greenhouses, the nation's oldest begonia specialty nursery, at 55 North St., Danielson, CT 06239. Logee's, which started as a florist in 1892, is famed up and down the East Coast for its extensive rex list.*

his favorite methods. We often exhibited at the New England country fairs, and the ladies would bring to him leaves of rex begonias to exchange for other rare plants. In this way our collection grew.

Among the dark-leaved rexes, I think *B. 'Helen Lewis'* is a striking plant. The deep maroon, almost glossy leaves with broad silver bands are a good contrast to grow among the silver-leaved types. *B. 'Peace'* is a strong grower; the large typical silver leaves are often overlaid with a rose pink sheen. *B. 'Cardoza Gardens'* is another strong grower with dark green center and wide silver band overflashed with pink.

My favorite rex among the medium growers is *B. 'Marion Louise'*, a uni-



Photos/Ernest E. Martin

**B. 'Merry Christmas'**

form plant with cut leaves. Center and edge are rich bright green with a wide silver band. This variety is less prone to mildew than some.

Among the spiraled-leaved types, *B. 'Fantasy'* stands out as one of the best. It is a low-growing plant with leaves very curly, basic green with silver dots. Another is *B. 'Curly Fireflush'* with green leaves overlaid with red hairs often so thick as to look like velvet. Center of the leaf has a double curl. Flowers, white with red hairs, appear in large clusters, faintly violet-scented.

*B. 'Green Gold'* is another with dis-

tinct foliage, very ruffled edges of silver green, center band emerald green combined with deep maroon edges and center. A bushy grower, its stems are short and leaves very large.

In the spiral class an outstanding plant is *B. 'Purple Petticoats'*. Leaves are ruffled, veins red on reverse. The leaves are silver overflashed with deep rose with a wide band of pink.

In the class we call upright or branching types, *B. 'Silver Sweet'* is a most beautiful grower. Leaves are all-over silver with center and veins dark red. A strong grower, *B. 'Silver Sweet'*

will tolerate a low temperature of 50-degree nights.

Another fine upright is *B.* 'Bertha McGregor' with deeply lobed leaves of silver on olive green. *B.* 'Alfreana', one of Alfred D. Robinson's rex hybrids, is a beautiful plant with satiny, silver-gray, pointed leaves and dark-slate palmate center. It is one of the loveliest to flower as the light pink blooms hang in clusters above the foliage.

After World War II a number of new rex begonias were imported from Germany. We received them unnamed from the importer and were told we could name them. They were among the most gloriously colored rexes we had ever seen—hence came *B.* 'Merry Christmas', *B.* 'Ember', *B.* 'Can Can', and several others, all had brilliant coloring of rose, red, and silver.

We are indebted to West Coast hybridizer Roy Berry, who gave us one



**B. 'Bertha McGregor'**

of the best miniatures in *B.* 'Red Berry', a lovely all-over wine red, and *B.* 'Annie Robinson', an upright grower of brick rose with a silver band. Among the best in miniatures is *B.* 'Baby Rainbow', hybridized in 1940 by that wizard of begonia growers, Leslie Woodriff.

## More Notes

Continued from page 55

skip Elda Haring's Question Box column this month. Surely you have some questions about begonias or growing them—why not jot them down and mail them to her at P.O. Box 236, Flat Rock, NC 28731?

Meanwhile, you'll be pleased to see that the Seed Fund is back.



A recorection, if you please: When in December we advised you on page 304 to change the label on "H. via P.L." to read "*B.* 'Eddie's Favorite,'" it should have said to change it to *B.* 'Edie's Favorite'.

We were misled. Mea culpa.



There is a magic way to get *The Begonian* days—sometimes weeks—earlier and in a protective envelope:

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—C.A. & K.B.

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# How to succeed with rexes under lights

*Corliss Knapp Engle*

Fluorescent lights don't make growing rexes a lead-pipe cinch, but they certainly are a distinct improvement over windowsill conditions and perhaps even over greenhouse light conditions. Fluorescents provide a bright, cool light, and it is the brightness of the light without the heat of the sun that rexes love. Add to that the narrow temperature range rexes require (neither too hot nor too cold) and their need for high humidity. Both temperature and humidity factors can be designed into an indoor light garden.

The ideal light garden has at least four tubes over a 2-foot-wide growing area. Eight-foot tubes are the most efficient, but they are longer than most spaces permit. Four-foot tubes (40 watts each) do a superb job, and four of these provide a growing area four feet by two feet, a total of eight square feet of growing space with an illumination of 20 watts per square foot. This light garden is as simple as can be—two double-tubed industrial fixtures hanging side-by-side over a waterproof tray.

All begonias do well under a combination of one cool white fluorescent tube to one warm white tube, as this combination gives a balanced spectrum necessary for growth and flowering. They are much less expensive than the specially designed plant growth tubes and are available at most hardware stores.

Rex begonias can be grown at a dis-

tance of 8 to 18 inches from the tubes in a light garden having two cool white and two warm white tubes over a growing area four feet by two feet. Smaller plants should be grown 8 inches from the tubes, whereas mature plants may be grown farther away. Rexes growing at the ends of the tubes may be as close as four inches since there is a dropoff in light intensity at each end of a fluorescent tube. Smaller plants may be propped up on inverted pots to get them closer to the lights.

My rexes thrive under a daylength of 12 hours. An automatic timer turns the lights on at 8 a.m. and off at 8 p.m. During December the 12-hour daylength is reduced to nine hours to simulate the short days of winter and induce rhizomatous begonias to bloom. The day is increased gradually by one hour every six weeks until 12 hours is again reached. Although the rexes slow down their growth a bit, they do well under the shortened day—not to mention the benefit of saving electricity.

Rexes enjoy people temperature, a very narrow range, 65 to 80 degrees. House temperatures are ideal, provided they can be lowered during the heat of the summer months. My rexes grow in a cellar light garden which happily never rises above 85 degrees, even during the extreme heat of New England summers.

Humidity can be increased in the light garden by filling the waterproof tray with any material that keeps the pots out of water and releases moisture into the air. Pebbles, vermiculite, long-grained sphagnum moss all work well. Waterproof trays can be con-

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*Corliss Engle, past president of the Buxton branch, grows nearly all her begonias under lights at 25 Edgehill Rd., Brookline, MA 02146. She is ABS research co-director.*



**B. 'Purple Heart' will display deep color when grown under lights with proper fertilization**

structed with exterior plywood painted with epoxy. Forty percent to 60% humidity is desirable, and keeping the air moving with a small fan will keep the mildew problem down. A room humidifier is also helpful, as well as keeping the doors shut to the room where the light garden is located.

Soil mixes for rexes under lights should be loose and porous. Soilless mixes, a combination of peat moss, perlite and vermiculite, are loose and porous, but I have found that the addition of four quarts of commercial pasteurized potting soil to 14 quarts of soilless mix to be beneficial.

There are no cloudy days under fluorescent lights, and a regular feeding program is required. Many people complain that leaves are bleached from the intensity of fluorescent light

when, in fact, the leaves are bleached from a lack of fertilizer. A high-phosphorus water-soluble fertilizer such as Peter's 15-30-15, given at a rate of one-fourth teaspoon per gallon of tepid water at each watering, is the constant feed system that provides the steady nutrition to match the ideal light conditions. The high-phosphorus fertilizer heightens the leaf color of rexes more than a more balanced fertilizer such as 20-20-20.

The rule for keeping rexes potbound holds under lights. Always pot up only one inch larger than the root ball, using clay pots. The combination of clay pots and being potbound allows the soil to be kept evenly moist but not wet. Since the rexes are growing well 12 months a year with no dormancy, they seem to need repotting a

**Please turn to page 69**



**B. 'Northern Lights'**

Photo/Walter Haring

## Easy to grow: B. 'Northern Lights'

*Elda Haring*

Depending on where they live and their growing conditions, many of our members find rex begonias easy to grow. Others often find them difficult and at times most frustrating.

We are inclined to start out with those having gorgeous colorings such as B. 'Merry Christmas', only to discover to our dismay, after having grown it successfully for months, in winter it loses all its leaves and appears lifeless.

Years ago, as a beginner, I thought the plant had died and disposed of it, not aware at the time that many rexes will go dormant during winter if conditions are not just right.

B. 'Northern Lights', however, I find relatively easy and most dependable. It is rather delicate in appearance but

usually rugged in growth.

The medium-sized non-spiral leaves are silvery with reddish green veinings more pronounced in the center. The stems and veins on the underside of the leaves are red and hairy. When grown in strong light, the entire leaf seems suffused with pink and, where it receives morning sun in winter, the leaves often assume an old rose purplish cast.

One year we lost the heat in our greenhouse when the outdoor temperature was 20 degrees F. Most of my rexes were frozen and did not recover.

B. 'Northern Lights' lost all its leaves but, since the rhizome appeared to be green and not damaged, I placed the pot near the heater in subdued light and kept only very lightly moist. Within a few weeks new leaf buds were showing and by summer the plant was again at the peak of vigorous growth and beauty.

That year it won the Ernest Logee Memorial Cup at the annual show of the Buxton Branch.

B. 'Northern Lights' will grow well

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*Elda Haring, a Begonian author for the past 20 years, was awarded the New York State Federated Garden Club's certificate for excellence in horticultural writing in 1972. Her most recent book, Begonias for Beginners, is selling like hotcakes. This is another in her series on easy-to-grow begonias. Elda lives at P.O. Box 236, Flat Rock, NC 28731.*

under fluorescent lights where the contrast of silver and rose is more pronounced. However, if humidity under lights is low the edges of the leaves may turn brown.

In northern areas *B.* 'Northern Lights' may be grown in an east window of the living area during the dark months of winter but needs shading in spring and summer.

In southern states it is best to grow it in diffused light all year. In winter I find this rex will lose a few leaves, but this is to be expected of almost all rexes.

Young plants grown from leaves or rhizome cuttings in spring and summer will grow through the winter under

lights but growth is slow until spring when rexes usually come out of their resting period.

Careful watering is important because overwatering especially during chilly weather may cause rotting of rhizomes and leaves. Mine is given just enough moisture to prevent wilting during this period and no plant food is applied.

In spring when new growth starts more water is needed and regular fertilization is begun and continued for as long as the plant is in active growth.

*B.* 'Northern Lights' thrives with this treatment, thus I feel it qualifies as an easy-to-grow rex, especially for the inexperienced grower.

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### More All-Stars

Continued from page 62

*B.* 'Fireflush' and *B.* 'Curly Fireflush' obviously are quite popular in Sacramento. Had the gamblers thrown their *B.* 'Curly Fireflush' votes to plain *B.* 'Fireflush', they could have knocked *B.* 'Merry Christmas' out of second place.

It didn't take many votes for a plant to come out a winner. *B.* 'Fireworks', for instance, received only four votes—two first-place (5 points each) and two third-place votes (3 points each). That was sufficient for it to hold on to fifth place, even though the plant apparently is not known in Sacramento.

The editors did not vote, although their two first-place votes could have bumped *B.* 'Helen Lewis', one of their favorites, into the number three spot.

*(A spectacular color photo by Gene Daniels of B. 'Purple Petticoats' adorned the cover of the July 1972 Begonian and an informative article about the plant ran the following month.)*

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### More lights

Continued from page 67

couple times a year. Furthermore, as they mature, the rhizomes grow far above the soil and become woody.

There are fewer breaks in the woody rhizome—with a resultant loss of new shoots and foliage. When this occurs, it is a good idea to knock the plant out of the pot, cutting off the lower part of the root ball as well as some of the side. Repot the rex lower in the same size pot, covering the woody rhizome with moist soil. This causes nodes to break along the woody rhizome under the soil, and eventually you end up with a rex producing much more foliage.

The most recent advance in indoor light gardening is capillary mat watering, and it is extremely successful with rexes. This system reinforces the concept that rexes like to be evenly moist, provided that they are potbound and have a loose soil mix. Also the matting is a humidification system in itself.

So hang your lights, lay down your mat, and grow.

# B. rex—the species that started it all

Jack Golding

*Begonia rex* Putzeys was found sometime before 1856 by J. Simon in Assam on the temperate side of the Himalaya, growing in shady and humid places, preferring crevices in the rocks. He sent it to M. Linden of Brussels with several other begonias from the same region.

Linden recognized its great beauty and potential for hybridizing. He propagated the plant in quantity, selling many at a handsome profit. *B. rex* was crossed with other plants from Assam and the nearby area to produce the first group of cultivars introduced by Linden during the next few years.

The true identity of a species is frequently obscured by the passage of time and by the use of incomplete or incorrect descriptions. To verify the correct identity of a species, it is necessary to seek out the original citation. I find it most interesting to compare the character of a plant described more than 100 years ago with one growing in my garden and to determine that they are the same.

To give you this opportunity, I would like to share with you a translation of the original Latin description of *Begonia rex* prepared by Jules Putzeys, secretary general of the Ministry of Justice and vice president of the Royal Society of Flowers of Brussels, and published in the Belgian maga-

zine *Flore des Serres et des Jardins de l'Europe*, Volume 2 page 141, with two plates 1255-1258, in 1857:

*Begonia rex* J. Putzeys

*Character of the genus*—see above, vol. 3, p. 212; and Klotzsch, *Begoniaceen-Gattungen und Arten*. Berlin, 1885.

*Character of the species*—almost stemless, rhizome short, thick, rooting underneath; leaves large, cordate with unequal sides, base deeply two-lobed, tip acuminate, with sinuate and coarsely dentate margin; above glabrous, dark green and embellished with a circular silvery middle region; below with reddening hairs on the veins; petioles channeled above, barely half longer than the leaf, sparsely white-hairy; peduncle round, glabrous, the length of the petiole, almost erect; cyme few-flowered, twice dichotomous, bracts ovate with acuminate tip, glabrous, rose; flowers large, rose, glabrous.

*Male flowers*: with four sepals [tepals], the outer ones ovate, wider at the base, the inner ones unequally elongated-ovate, narrower below the middle; stamens very numerous, unbellately united at the base of the filaments; anthers longer than the filaments by a half, the lower ones triangular, the tip of the upper ones extremely long, with cells lateral, short, swollen.

*Female flowers*: with five sepals [tepals], the three outer ones half as narrow as those of the male flowers, elongated-ovate, narrower at the base, two inner ones wider than on the male flowers, style, bifid, glabrous, robust, deciduous; stigma short, two-legged, the twisted legs broadly margined, with papillae band twice spirally twisted, lower part continuously encircled; fruit three winged, glabrous, two wings narrow, parallel to the capsule, the other very large turned abruptly downward with rounded tip, seeds very numerous, affixed to the face on both sides of the placentas.

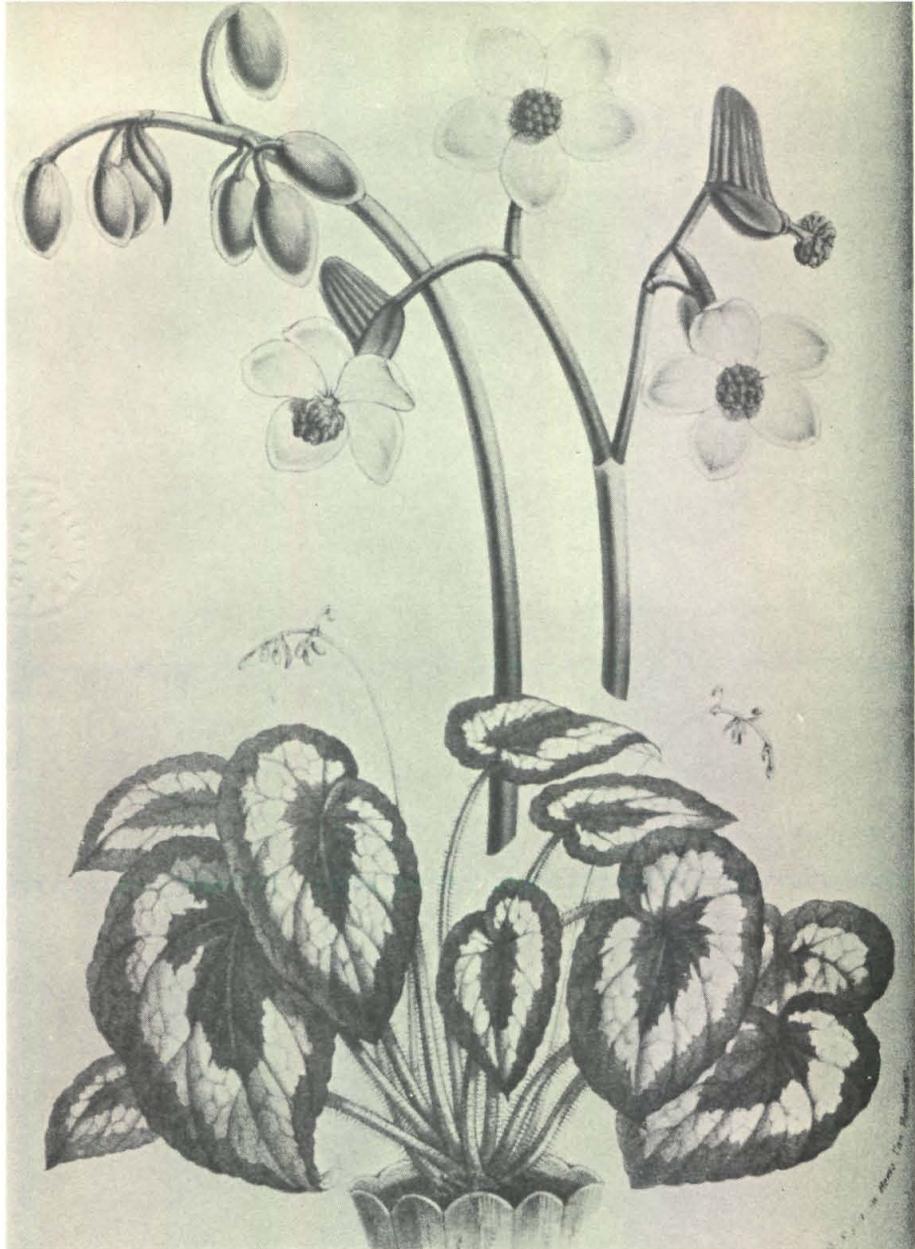
J. Putzeys

Following this, Putzeys gave a more detailed description in French, which was then followed by cultural instructions by Louis van Houtte, editor of *Flore des Serres*. We are most fortunate to have this translation from French by Carrie Karegeannes:

The stalk is thick, fleshy, creeping, subterranean. It puts forth large leaves that are

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*Jack Golding is a guy whose business interferes with his begonia hobby. He was co-chairman of the 1979 ABS convention in New York City. His famous indoor begonia room is at 47 Clinton Ave., Kearny, NJ 07031. Nomenclature co-director Carrie Karegeannes assisted Jack in preparation of this story by translating the original French reference.*



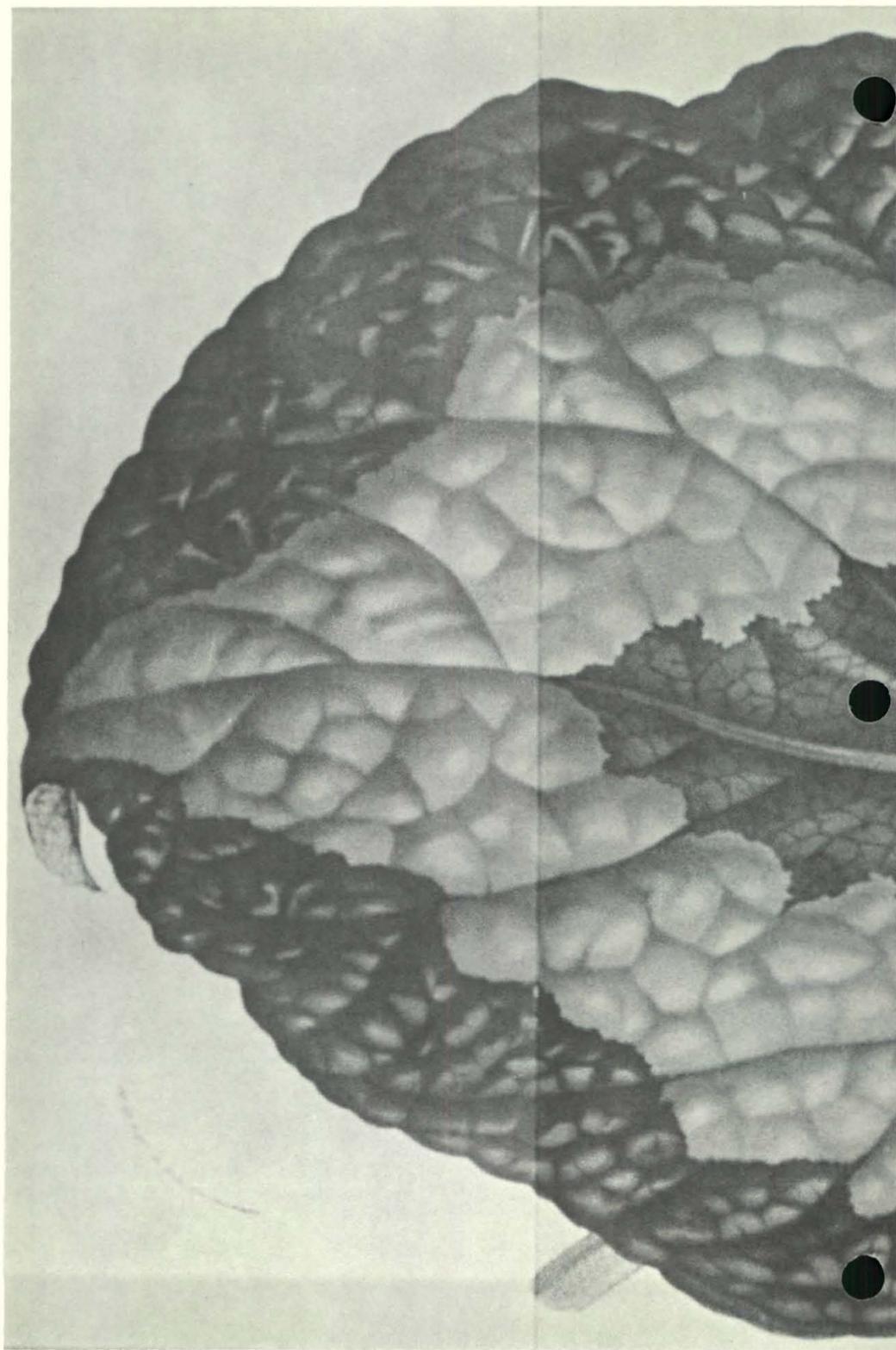
Illustrations/Courtesy California Academy of Sciences

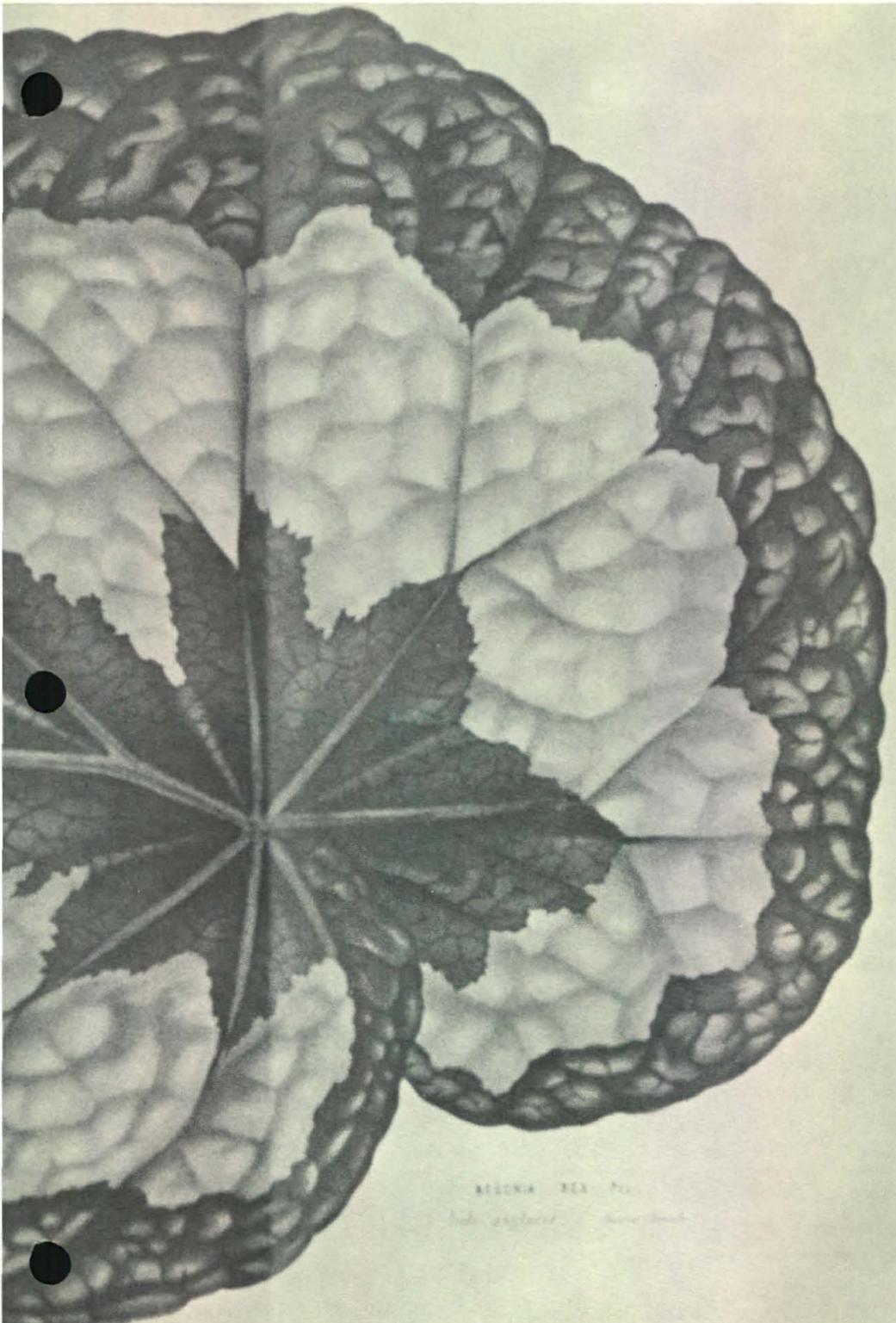
***Begonia rex* Putzeys as first published in *Flore des Serres* in 1857**

unequally cordate, long-acuminate toward the tip, irregularly denticulate, and edged with hairs that are red at the base, white at the tip; the surface is completely glabrous, dark green, with the base of the veins paler; the middle of the leaf offers a large irregular circle of a very brilliant silver-white; underneath the parts corresponding to the white of the surface are pale green and the rest is

reddish green with brick-red veins. The petiole—round, channeled above toward the tip—is 30 cm.; the length of the large side of

**OVERLEAF: *B. rex* leaf illustrated in *Flore des Serres* in 1857**





BECKIA BEA. Pfl.

*Beckia ericoides* (L.) Sauerb.

the leaf is 28 cm.; the small side 21 cm.; the total width 18 cm.

The stipules are cordate, with the tip ending in a long point, glabrous inside, sprinkled with long, woolly, white hairs on the outside.

The inflorescences are numerous and scarcely rise above the foliage of the plant. The peduncle, rather thin, reddish at the base, is round and glabrous; it is subdivided twice at the tip.

The flowers are large, 21 mm. wide, fleshy, of deepest pink color on margins and underneath; the male flowers have 4 sepals [tepals], of which the 2 inner ones are rounded-oval and the 2 outer ones narrower by half [i.e., half as wide], the lower part decreasing in width. The stamens, numbering 60 to 80, are united by their filaments, whose base forms a column about 5 mm. long; the anthers of the lower stamens end in a small, acute point; those of the upper ones have a prolongation on their tips that attains almost the length of the filament.

The female flowers have 5 sepals [tepals], of which the 3 outer ones—elongated-oval, contracted toward the base—are narrower by half than [half as wide as] the same on the male flowers, and the 2 inner ones, on the other hand, are a little larger in the middle than the same parts on the male flower. [I note that the artist drew all female tepals of equal size and shape, despite this description. Only buds are present of the male flowers.—C.K.]

The fruit is almost like that of *B. rubrovenia* Hook., only it is not arranged extending in a straight line from the pedicel, but is extended strongly behind it.

In proportion as the new species has added to the species already so numerous in the family of begonias, one recognizes the more the necessity of subdividing the genus established by Plumier; but at the same time one remains convinced of the unity of this immense group. The characters that, in other families, have an importance and a fixity that have permitted them to serve for establishing genetic divisions seem here to make sport of all the efforts of botanists. Hardly three years ago, Monsieur Klotzsch divided the Begoniaceae into 41 genera and, already, many of the species newly discovered cannot be classified in any of these subdivisions; *B. rex* is of this number. On most reports, it is attached to the subgenus *Platycentrum*, but the peculiar shape of the anthers, which are long-acuminate, while in *Platycentrum* they are obtuse at the tip, ought to remove it from that genus. However, I will refrain from proposing a new division; it will suffice to modify a little the characters on which

M. Klotzsch has established his genus, for the new species could be placed very suitably near *B. xanthina*.

*Begonia rex* has been introduced by Monsieur Linden, who received it from Assam. J. Putzeys

#### CULTURE

We are very sorry to publish so late the plate representing, half life-size, the leaf of *Begonia rex*. We have published our apology and we have promised to sin no more.

According to Monsieur Jules Putzeys, our honorable collaborator, it is to Monsieur J. Linden that befell the good fortune to augment European collections with this marvelous begonia, whose arrival is wholly an event in horticulture. In acquiring numerous examples to put on sale, we have been able to reserve some to make specimen plants, which during the course of the last summer produced on visitors one of those striking effects that charms all, the seller as much as the buyer. The sale has been great; but also it is one those plants "fit for the million," as our colleagues of the proud Albion [England] say.

Keeping its majestic foliage during the winter, it will frequent mansions, will be displayed in the most sumptuous drawing rooms, the same as it will be host in the infinitely small ones; it is happy at less than 50° F. It will adorn hanging baskets by itself; large vases will be filled with it, saving a place at the center for *Dracaena umbraculifera*, *brasiliensis*, *ferrea*, *variegata*, or others; or instead some congeneric semiwoody *Begonia*, such as *B. discolor*, *lapeyrousei*, *saundersii*, *henrici*, *coccineo-nitida*, *miniata-castaneifolia*, whose more beautiful flowers will enhance its handsome foliage, perfecting the ornamentation.

Again, one could very suitably place at the center either *Pandanus utilis*, *amaryllidifolius*, *javanicus* fol. var., *inermis*, or a beautiful fern, such as an *Alsophila radens*, or again a *Curculigo sumatrana*, a *Maranta zebra* or *warszewiczii*. In the spring we will have the pretty *Azalea indica*, which will fill the center well; in summer the parade of *Achimenes*, *Gesneria*, etc., will offer itself in its turn.

The place of *Begonia rex* in good temperate greenhouses and in hothouses is obvious everywhere, although it is not demanding, since, as we just said, it lends itself with such good grace to playing a part with those unfortunate drudges destined to decorate apartments where the air is so dry and the dust so clinging!

During the summer, shade. Much water during the growing period. Repot often—

$\frac{1}{4}$  wood charcoal,  $\frac{3}{8}$  leaf mold,  $\frac{3}{8}$  manure.

The addition of wood charcoal appears to have the property of further darkening the color green and hence of embellishing the foliage.

Monsieur Linden has carried on an excellent business, and it has fully satisfied the purchasers and the retailers quite as much as the amateurs. Propagation is quick, but the market will long continue. We expect it, for we have devoted a whole greenhouse to its offspring, ready to take flight toward all the regions in early spring.

Louis Van Houtte

In 1857 Linden sold a portion of his plants of *B. rex* to Rollisson of Tooting, England, with exclusive rights of distribution in England. He put on sale in 1859 six cultivars derived from *B. rex*.

Plate 11 in E. G. Henderson's *Illustrated Bouquet* (1857-59) was a drawing of one of the specimen plants grown by Rollisson.

W. J. Hooker described and illustrated *B. rex* Putzeys in the *Curtis's Botanical Magazine* 85: pl. 5101

Illustration/Courtesy Department of Special Collections, Stanford University Libraries



*B. rex* as illustrated in *Curtis's Botanical Magazine* in 1859

(1859).

In addition to those developed by Linden and Rollisson, in the next few years there was a proliferation of *B. rex* cultivars from Jacob Makoy and P. Mawet of Liege, Bleu Thibaut and Keteleer of Paris, Crousse of Nancy, Joly of Lyons, Feront, Verschaffelt, Van Houtte, Veitch, and others.

The result was a fantastic array of magnificently beautiful foliage plants at first similar to the original *B. rex* with zones, blotches, or spots on a more or less dark green background.

"The Report of the Variegated Begonias, Grown at Chiswick, 1860" in *The Gardeners' Chronicle* 21: 168-9, 193-4 (1861) described 36 begonias that were classified in three series, in the first group "the upper surface of the leaves wholly silvered not zonate or vittate," the second group "upper surfaces on the leaves marked with distinct colours in a zonate manner" and the third group "upper surfaces of the leaves marked with silvery or other coloured bands or stripes, not zonate."

More than 25 of the cultivars grown there were hybrids of *B. rex*.

Since that time, the hybridizers have continued their work leaving as the legacy of *B. rex* Putzeys, an unending array of colorful, beautiful foliage plants that are compact, upright, procumbent, large, small; with leaves that are entire, lobed, plain or spiraled at the base, glabrous, hairy, smooth, textured, bullate, differently bordered, zoned, marbled, spotted, veined, tinted, shaded, dotted, velvety, iridescent, greens, reds, silvery, bronzed and almost every other color or combination of them.

These many lovely cultivars derived from *Begonia rex* Putzeys show that it is truly the *rex*—the king of *Begonia*.

# Precursors: the early *B. rex* hybrids

Rudolf Ziesenhenn  
and Margaret Ziesenhenn

Many of the so-called *Begonia rex* cultorum we grow today are a mixture of 16 different *Begonia* species; it is quite likely, despite popular belief, that some do not have any true *B. rex* Putz. in their ancestry.

The following list of beautiful-leaved *Begonia* species in cultivation before *Begonia rex* Putz. was introduced in 1856 and used in hybridizing emphasizes this possibility:

□ *Begonia discolor* Ait. (commonly known as *B. grandis* ssp. *evansiana*) was the first *Begonia* species used in hybridizing; it had been introduced into England in 1804.

□ *Begonia xanthina* Hook. and *B. rubro-venia* Hook. were found in Bhutan in 1850 by E. Booth, a plant collector who sent them to Thomas Nuttall in Preston, England. (Francis Hamilton apparently had collected specimens for herbaria of this same *B. rubro-venia* and in 1825 Donald Don had named it *B. hatacoa*, publishing it in his *Prodromus florum nepalensis*.)

□ *Begonia laciniata* Roxb. was collected in 1830 by Dr. Royle in East Bengal and sent to Kew Gardens.

□ *Begonia griffithii* Hook. was introduced in 1853 by Henderson & Sons of London under the name of *B. picta* hort. The name *B. griffithii* was first published in 1857 in *Curtis's Botanical Magazine* on plate 4984. This plant is native to Bhutan.

□ *Begonia robusta* Blume was collected in 1856 in Java; this plant is also called *B. splendida* hort. Rollison.

Finally, *Begonia rex* Putz. was collected by J. Simons in 1856 in Assam and sent to M. J. Linden in Brussels, Belgium. M. Jules Putzeys published the new species in 1857 in *Flore des Serres* Series II, ii, Tables 1255 and 1258.

Subsequent "beautiful-leaved" *Begonia* were:

□ *Begonia amabilis* Lind., *B. argentea* Lind., and *B. victoria* Lind., were sent by J. Simons to Linden in 1858 from the same region in which *B. rex* Putz. was collected.

□ *Begonia bowringiana* Champ was introduced in 1858 from Hong Kong by Colonel Champion who sent seed to Mr. Welford of England. (This plant was assumed to be a variety of *B. laciniata* by Dr. Edgar Imscher in 1939.)

□ *Begonia deliciosa* Lind. was imported in 1880 by Linden from Borneo.

□ *Begonia imperialis* Lem. and its variety *B. smaragdina* Lem. were collected in Mexico by Ghiesbrech and sent to Verschaffelt in 1859.

□ *Begonia diadema* Lind. was collected in Borneo in 1881 and was sent to Linden.

□ *Begonia decora* Stapf was imported in 1892 by Veitch from Pirak, Malay Peninsula.

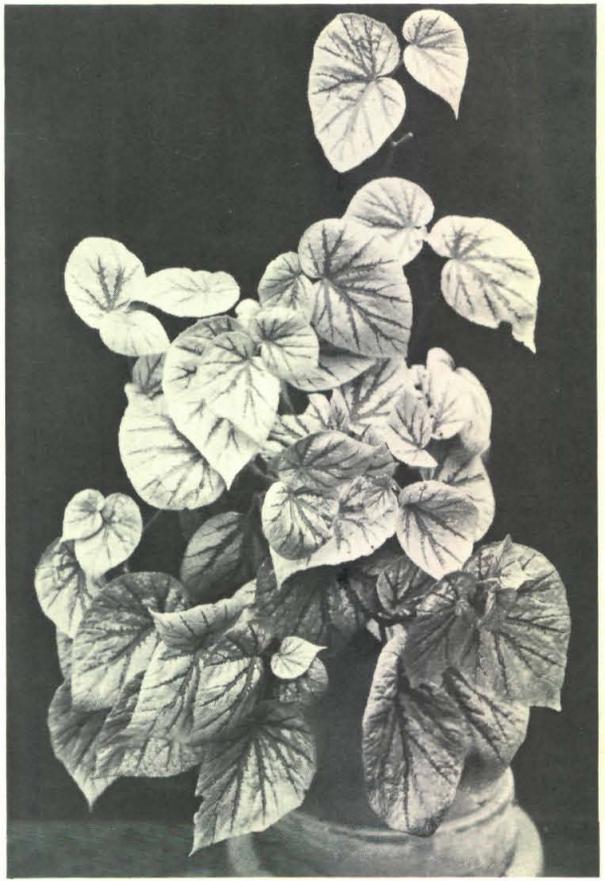
□ *Begonia cathayana* Hemsl. was found in 1904 at Yunnan, China, by Dr. Henry.

These 16 *Begonia* were eventually crossed with *B. rex* Putz. to give rise to the present group *B. rex* cultorum. The sequence of this hybridizing ap-

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Rudolf and Margaret Ziesenhenn have been devoted to each other and to begonias for decades. Rudy is past nomenclature director and Margaret past president of ABS. They operate a begonia nursery at 1130 N. Milpas St., Santa Barbara, CA 93103.

**B. 'Abel Carriere'**



pears to have developed as follows:

In 1853 Mr. Roezl, head gardener for Louis Van Houtte, a Ghent, Belgium, nurseryman, produced a cross of *Begonia xanthina* Hook. and *B. rubro-venia* Hook., the progeny of which were named in 1854 *B. 'Xanthina Atrosanguinia'*, *B. 'Xanthina Gandavensis'*, *B. 'Xanthina Flavescens'*, *B. 'Xanthina Lazuli'*, and *B. 'Xanthina Marmorea.'*

In 1857 *Begonia xanthina* Hook. was crossed with *B. laciniata* in Belgium.

In 1858 A. Verschaffelt crossed *B. griffithii* with *B. 'Xanthina Marmorea'* to give rise to *B. 'Mme. Wagner'*.

In 1858 Rollison crossed *B. rex* with

*B. splendida* (*B. robusta*) to produce *B. 'Grandes'*; in 1861 *B. rex* was used with *B. splendida* by L. de Smet to produce *B. 'Splendidissima'* and *B. 'Inimitibles'*; using the same cross Jacob Makay came up with *Begonia 'Louise Chretien'* in 1879, *'Lucie Closson'* in 1886, and *'Louise Closson'* in 1889.

In 1876 it was announced that Froebel in Zurich, Switzerland, had crossed *B. rex* with *B. imperialis* to produce *B. 'Otto Foster'*. He also produced *B. 'Mironda'* crossing *B. smargadina* Lem. with *B. rex*.

De Bruant, a nurseryman in Potiers, France, began to produce *Begonia rex* and *B. discolor* crosses in 1878 and named some 18 hybrids up to 1880. The ones best known in the United

States are *B.* 'Abel Carriere' produced in 1878 and *B.* 'Ed Pynaerd' in 1880. By 1895 there were some 45 named hybrids of this cross.

De Bruant crossed *Begonia rex* with *B. diadema* in 1885 and obtained *B.* 'Lesoudsi' and *B.* 'Clementine'. De Lyon made the same cross in 1888 and obtained *B.* 'Adrien Schmidt'. By 1895 there were 26 named hybrids of this cross.

There is a vague record of *Begonia deliciosa* Lind. being crossed with *B. rex* and other *B. rex* cultorum plants between 1885 and 1895.

In 1885 *Begonia rex* was crossed with a very early hybrid called *B. subpeltata*, giving rise to the Mallet series, such as *B.* 'Naomi Mallet' (1885), *B.* 'Arthur Mallet' (1886), *B.* 'Madame Hardy' and *B.* 'Madame Leonnet' (which we call *B.* 'Tingley Mallet') in 1889, and *B.* 'Monsieur Hardy', all produced by Lionnet. In about 1860

Veitch produced *B.* 'Margaritacea' using *B. rex* and *B. subpeltata*.

The *Crousse Horticulteur*, a nursery catalog published in Nancy, France, in March 1888, lists 67 *B. rex* varieties. (Interestingly, prices were: "12 variétés pour 9 fr.; 100 *Begonia* à feuillages, sans nomes, pour 40 fr." roughly translated as 12 varieties for 9 francs—about \$1.80; 100 foliage *Begonia*, unnamed, for 40 francs—about \$8.)

In 1891 Sanders crossed *Begonia decora* Stapf. with unidentified *B. rex* forms and produced *B.* 'Gemmata', *B.* 'Conspicua', and *B.* 'Punctatissima'. Others worked with *B. rex* and its forms to cross with *B. decora* and, by 1900, 31 named hybrids of these plants had been produced.

In 1894 Sanders & Co. produced *Begonia* 'Winter Queen' by crossing *B. rex* with *B. socotrana* Hook.

Aside from the plants listed above,

Photos/Alfred D. Robinson Collection



*B.* 'Lesoudsi' on display at Rosecroft Begonia Gardens in San Diego, Calif., probably in 1920s



**B. 'Adrien Schmidt'**

Adolph Van den Heedee lists 218 named rex begonia cultivars in his *Les Begonia*, published in 1903.

*Begonia cathayana* Hemsl. (often called *B. boweringiana* hort.) was used by the firm of Sanders of St. Albans, England, with unnamed rex varieties to produce *B.* 'Our Queen', *B.* 'Mrs. H. J. Moon', and *B.* 'His Majesty', which were shown in the International Exposition at Ghent, Belgium, in April, 1903; another similar cross, *B.* 'Mme. Sanders', was introduced in 1904.

The records of *Begonia* names are usually compiled from catalogs of nursery firms or horticultural magazines. For this reason, we believe a great many more hybrids were produced and even named which were never recorded in literature. Usually only the most attractive plants were named,

the best commercial varieties getting into print.

With the recording of the first crosses, one can understand how the names became confused and misapplied. One prime example of this is in a now-forgotten publication which stated that at a show in London there were many beautiful-leaved begonias on display. In a glass case, locked, was a newly discovered *Begonia rex* Putz, labeled "Rex Begonia."

Many of the viewers are said to have gone away with the name "Rex" fixed in their minds as a varietal name of all the plants on display in the room. Even in this day we see in garden magazines "the rex begonia 'Iron Cross'," which is certainly wrong. This also applies to other fancy-leaved begonias.

# Why it takes a gambler to hybridize rexes

Patrick J. Worley

Hybridizing rex begonias is like a floating crap game. When one crosses two *B. rex* cultivars, the multispecies backgrounds, mostly unknown to the hybridizer, surface in wild and unpredictable ways.

The chromosomes of the parent rexes mix and match, spinning off a spiral here, a ruffle there, a splash of rose or bold crimson, and a myriad of patterns. The genetic dice are rolled and the results can be *B.* 'Glory of St. Albans' or a compost heap in Poughkeepsie.

The history of *B. rex* Putzeys and its early hybrids is a fascinating one beautifully told in Chevalier's book *Les Begonias*. Most of those early hybrids are now lost to cultivation, but a few are with us even today. They formed stepping stones to the *B.* 'Fireworks' and *B.* 'American Beauty' of today. Hybridizing in the *B. rex* cultivar group has become so prolific in so many places that the true identity of most of our cultivars is a mystery.

Into this beautiful muddle comes the hybridizer with his desire to improve—and satisfy his gambling instincts. He wishes to make some sort of order out of the chaos, at least for his own satisfaction. He begins, at first, by sizing up the possibilities. He is surprised by the diversity, but then he starts working on his own line.

*Patrick Worley moved recently to California—one state away from Nevada, where playing craps is legal. Bon vivant Pat helps Michael Kartuz operate Kartuz Greenhouses, now of 1408 Sunset Drive, Vista, CA 92083. Westerners are pleased Pat and Michael spurned eastern snow for the warmth of Southern California. Pat and Michael are pleased their greenhouse heating bill will be lower.*

One way of finding some sort of order in rex hybridizing is to add species begonias into one's breeding program. At least one parent is known and perhaps some interesting traits from the species will be exhibited by the offspring.

When a begonia such as *B. diadema* or *B. deliciosa* is used, as they were early in rex hybridizing, upright form or distinctive leaf shape may be added to the mix.

Sometimes the hybridizing line is narrowed as the result of hybridizing. Early on, the *B. rex* cultivar *B.* 'Eldorado' was crossed with *B. subpeltata* and the results were the beautiful *B.* 'Arthur Mallet', *B.* 'Tingley Mallet', and a few others. *B.* 'Eldorado' is now lost to cultivation and there is no record of the background of the cross. *B. subpeltata* is also lost, and it is not known for certain whether it was a

Photos/Alfred D. Robinson Collection



*B. dregei*



**Begonia  
diadema**

species or an early hybrid. All Mallet hybridizing must be done using second-generation crosses, which are not highly fertile. One wonders what the possibilities would be using some of the modern hybrids with *B. subpeltata* but it is a closed door to the countless possibilities.

*B. dregei* is a semi-tuberous species from Africa that crosses readily with *B. rex* cultivars. It has given us many smaller-leaved cultivars with good, sturdy growth habit. *B.* 'Robin', *B.* 'Thrush', *B.* 'Baby Rainbow', and many other smaller-leaved types have *B. rex* cultorum x *B. dregei* in their background. These hybrids are only weakly fertile.

*B. versicolor* is a delicate beauty which crosses readily with *B. rex* cultorum. Gordon Lepisto used *B. versicolor* to get some beautiful hybrids. *B.* 'Millie Thompson', *B.* 'Joe Bond', *B.* 'Mae Blanton', and *B.* 'Barbara Lepisto' are outstanding ones. *B.* 'Millie Thompson' inherited *B. versicolor*'s delicate nature and grows best in a contained atmosphere.

Tuberous begonias have been crossed with *B. rex* cultorum but the results have been mixed. Most crosses of this type I have done have been too weak to be maintained in cultivation. *B.* 'Bantam Gem' is one of the few examples of a *B. rex* cultivar crossed

with a tuberous begonia. The tuberous parent was, in fact, a hanging type, and the hybrid is a miniature.

*B. socotrana* has always been a siren song to hybridizer Leslie Woodriff. In 1941, he crossed a *B. rex* hybrid with the species *B. socotrana*, from the island of Socotra in the Indian Ocean, and produced the lovely *B.* 'It'. *Begonia* 'It' is still very popular today for its silvery leaves and masses of bright pink flowers almost all year. Once again, *B. rex* cultorum provided the leaves and *B. socotrana* the abundant pink flowers.

Two years ago, when growing *B.* 'It' from leaf wedges, I noticed that one of the plants was much darker and more robust. The undersides of the leaf were much redder and the flowers a deeper pink. The leaf had given rise to a sport.

Sporting is a common way that new cultivars arise without hybridizing. Somehow a cell at the point where the new plant is developing changes and brings forth a plant of substantially different appearance.

The spiral leaf of many of our present day *B. rex* cultivars came from such sports, as did the sport *B.* 'Bow-tique' that has given us many spiral leaves in the New World hybrids.

Some rex cultivars have developed in another way—through vegetative

sporting. A small group of dwarf and miniature begonias, perhaps leaf or seedling sports, whose origin is unknown, simply grow to a point of maturity and stop. These "Peter Pan" or juvenile forms just never grow up. The arrested growth also means that they never bloom and cannot pass on their dwarf characteristics to any offspring. *B.* 'Dewdrop', *B.* 'Wood Nymph', *B.* 'Peridot' and *B.* 'Bantam Gem' are examples of juvenile forms.

Once in growing leaf cuttings of *B.* 'Peridot', one of the plants at the base of the stem grew much more rapidly than the others and finally overshadowed the others. It continued its reckless growth, then stopped short, looking just like *B.* 'Dewdrop'.

I started putting 2 and 2 together and came up with the following theory that seems to me to be quite plausible:

Michael Kartuz first introduced *B.* 'Wood Nymph', which came from a source in the Midwest. At Kartuz Greenhouses, then in Massachusetts, it sported to produce *B.* 'Peridot'. At The Plant Shop in Reseda, Calif., *B.*

'Peridot' sported, producing *B.* 'Exotic Peridot', slightly larger than *B.* 'Peridot'. Again at The Plant Shop, *B.* 'Exotic Peridot' sported to produce *B.* 'Silver Peridot', larger and very similar in appearance to *B.* 'Dewdrop'.

Seemingly all of these juvenile forms emerged from a single unstable juvenile form. Unfortunately, when a plant that is dwarf sports to a larger size, it is seldom propagated as it is considered inferior and consciously or unconsciously culled. The origin of *B.* 'Dewdrop' may never be known.

As new species are hybridized in the rex cultorum group, the range in habit and appearance is enlarged and enhanced.

*B. hatacoa* (*rubro-venia*) made up part of the original rex cultorum group and was crossed extensively with *B. rex* to form the groundwork for some of the very earliest hybrids. *B. hatacoa* is being used extensively again in rex begonia hybridizing, giving interesting leaf form and sturdy leaf texture and substance. Nothing, it seems, is quite new.

Photo/Ernest E. Martin



*Begonia*  
'Dewdrop'

*B. rex* and *B. hatacoa* have a lot more in common than close geographic proximity and the ability to form hybrids readily. These two, along with the other species and forms of the original *B. rex*, were a launching pad that early hybridizers used to create all of the early rex cultivars, some of which still exist.

Among the various species used in early hybridization were *B. annulata*, *B. boweringiana*, *B. cathayana*, *B. cathartii*, *B. decora*, *B. hatacoa*, *B. laciniata*, and *B. xanthina*. Later *B. deliciosa*, *B. diadema*, *B. hemsleyana*, and *B. versicolor* were used. All have the same chromosome number,  $2n=22$ , and belong to the same section in the genus *Begonia*, *Platycentrum*.

All members of this section are interfertile and cross readily. Most share a fairly small geographic range, which made the discovery of all these types nearly simultaneous.

All these facts greased the hybridizing wheels and rex hybridizing moved forward at a brisk pace. In the rex cultorum group, crosses often are less fertile or less vigorous when the geographic distance is greater between the habitats of the rex cultivar and the other species, or the chromosome counts are very disparate.

The chromosome counts in the *Begonia* run roughly from  $2n=16$  to  $2n=156$ . The surprise is that with begonias even of widely different chromosome counts a cross is possible. One would expect, however, to find fewer successful cultivars as the chromosome counts became more widely separated.

I have tested this theory by doing some experimental crosses involving begonias that have very different appearances, but are geographically

close, or fairly close in chromosome count. I have successfully crossed *B. dipetala* and the closely related *B. malabarica*, with various *B. rex* hybrids.

*B. dipetala* is found on the coast of India and *B. malabarica* is found in Sri Lanka (Ceylon), on the coast of India, in the Indian Ocean. The chromosome count of *B. dipetala* is  $2n=30$  and *B. malabarica*  $2n=60$ . Both belong to the section Haagea.

The crosses involving *B. dipetala* were very vigorous and rapid-growing, while those of *B. malabarica* were fewer and slower, flowering after two full years, as opposed to many of the *B. dipetala* crosses, which flowered within the first nine months.

Crosses of greater geographical and chromosomal differences have been done recently. Various rex cultorum hybrids have been crossed with such diverse species as *B. solananthera* ( $2n=56$ ), a trailing species from Brazil; *B. acetosa* ( $2n=38$ ), also from Brazil; and hybrids of *B. bowerae* ( $2n=28$ ), from Mexico. Crosses with other New World species have also been reported.

I am in the process of registering some hybrids of *B. goegoensis* ( $2n=56$ ) with *B. rex* cultorum. I have used *B. rajah* ( $2n=30$ ) for a number of crosses, and the hybrid *B. 'Mumtaz'* (*B. rajah* x *B. goegoensis*) with *B. rex* cultorum. The *B. rajah* crosses were very fertile, as one would expect, but *B. 'Mumtaz'* x *B. rex* cultorum produced only a few seedlings that grew very slowly.

The whole world of begonias is open to the hybridizer, but one must be cautious in releasing new *B. rex* cultorum hybrids in particular. Many thousands of crosses have been done with tens of thousands of combina-

Please turn to page 90

# Unusual rex soil mix that breaks the rules

*Percy Ehrlich*

*Experience keeps a dear school, but fools will learn in no other.—Ben Franklin, Poor Richard's Almanac.*

My involvement with rex begonias began perhaps seven years ago. The previous year I had grown my first begonias from seeds obtained from a mail-order nursery. Everything had gone easily, and my friends had enjoyed receiving the handsome *semperflorens* plants as gifts.

The idea of growing a different type of begonia, distinguished for its beautiful foliage, seemed unexciting. I bought my first package of rex begonia seeds. It was a fateful step.

Years later, having joined the American Begonia Society in an effort to find some solution for unending problems, I was told that rex begonias are finicky plants and should not be undertaken by beginners. By that time, of course, I was no longer a beginner, but had become matured in misery.

Yet despite all my troubles, I am still not convinced that rexes are finicky. If you tried to rear a lion on a diet of pureed vegetables, you might think that lions were finicky. Increasingly I have felt that my troubles with rexes were not the fault of the plants, but were the result of my gross mistreatment of them.

In the beginning, all my plants died of root rot. The plants were overwatered, the soil was too wet, the drainage was too poor. There were repeat-

edly frantic races to propagate cuttings from the dying plants in an effort to keep the variety alive. The cuttings grew for a while, then died of root rot. I tried to follow the advice of experts who grow magnificent rexes, but my problems did not disappear.

Then began a long series of experiments with soils, essentially involving the addition of increasing quantities of perlite to lighten the mix. In time I achieved a breakthrough: my plants no longer died of root rot. Instead they died of drought, because the soil mixes couldn't hold enough moisture in the root zone.

Some of these soil mixes showed remarkable results. When plants were removed from their pots for autopsies, it was evident that the soil mixture had separated into two distinct layers, the upper half of the pot containing nothing but perlite, the lower half containing everything else.

All the roots in the perlite layer had died of drought except for a single thread which extended down to the bottom of the pot and then branched out. At the bottom, this tuft of roots had then rotted away because of excessive wetness. I had achieved a soil mix which could kill a plant from both underwatering and overwatering at the same time.

It was after this that I began testing a wholly different material, which, like perlite, would lighten the soil mixture, but which did not have perlite's tendency to float to the surface. This material was developed for masonry work, as something to add to cement to obtain a lightweight concrete.

In New England it is sold under the trade name "Agreg"—a dark gray, granular material resembling light-

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*Percy Ehrlich, president (and at Christmas, Santa Claus) of the Buxton branch, has taught chemistry at Massachusetts Bay Community College at Wellesley for 15 years. Before that he was a research chemist. Percy lives at 66 Fessenden St., Newtonville, MA 02160.*

weight gravel. Similar products are undoubtedly available in other parts of the country.

Agreg is made from shale (shale being clay deposits which have hardened into rock) by heating and expanding the particles like puffed wheat. It has many advantages as a soil additive, apart from the fact that it does not float. It has considerable porosity, so the individual particles can soak up water and hold it.

In a chemical sense, all clay minerals—Agreg being just one instance—have the ability to soak up nutrient minerals required by plants, and to release these slowly as the plants use them. Clays are nutrient storehouses.

In contrast, if you should use sand to give porosity to a soil mix, the sand would store none of the fertilizer you applied to the plant. Either the plant would consume all of the fertilizer on the spot, or the excess would simply drain away.

With clays, the excess will be held on the surface of the clay particles until it is needed by the plant.

The Agreg particles tend to be somewhat coarser than I would prefer for a soil mix. While it is not necessary to do so, I prefer to remove the coarsest particles by screening the Agreg through a three-eighth-inch wire screen. Even then the Agreg seems to lack enough of the smaller particles; so, to provide better balance, I have added some clay kitty-litter sold in supermarkets. This material—usually a buff color or a light reddish-brown—has properties like those of Agreg, since it too can store minerals.

In typical mixes, I have used six to eight parts of prepared mix such as *Pro-mix* or *Jiffy mix*, four parts of Agreg, two to three parts of clay kitty-litter. The mixtures are used in plastic

pots, without any special drainage material at the bottom. They are very open, and will admit water almost as fast as you can pour it on. They dry out faster than most soil mixes, so that watering must be done more often.

There is no problem with these mixes of having the soil surface feel dry while the soil at the bottom of the pot is still wet—a common complaint when plastic pots are used. Plants are watered when the soil surface becomes dry, commonly with a very weak fertilizer solution containing one-eighth teaspoon (or less) of fertilizer per gallon.

Since I started using such mixes, there has been no more root rot, but I have lost plants from drought in cases where the plants were in very small pots. The soil mix dries so quickly in any event that, with very small pots, drying can easily slip beyond a point of recovery for the plants.

To prevent this, I have been using substantially larger pots for my rexes than are normally recommended; and when this is done, the plants thrive. Essentially, plants go from 2-inch pots to 4-inch pots, then to 6-inch pots, and so on. If there is doubt, I choose the larger pot.

All this is, of course, contrary to accepted practice for begonias as a group, and it may well be unsatisfactory for many or most begonias. The only justification for it is that it works for my rexes.

There is one last point about the use of Agreg. I believe—yet I am not sure—that the use of Agreg in these mixes leads to deeper colors in the foliage than was the case with earlier mixes. This, and many other things about these soil mixes, warrants further experimentation.

## GROWING FROM SEED / *Telling if seed will germinate*

Joy B. Porter

It is inevitable that at some time, when growing from seed, the most desirable variety does not germinate. You cannot understand the reason for the failure, especially when other varieties germinated in same mix under the same conditions of temperature and humidity.

I bought a seven-power lens (10-power would be better), and I am able to differentiate among chaff, immature seed, and plump, viable seed. Some people empty the packet of seed on white paper (with no nap), holding the paper at each end and gently angling the paper so the seeds will roll onto another piece of paper below, leaving chaff, which does not roll.

Neither method is infallible, but

*Joy Porter was left hanging "Tarzan-like" from a window a couple of months ago when she and her ladder parted company. But sprained muscles didn't prevent her from writing about her specialty—growing begonias from seed. She wants to hear about your seed-growing experiences. Write to her at 9 Bayberry Lane, Framingham, MA 01701.*

each at least will give you an idea of the amount of viable seed and put a ceiling on high hopes.

Some seeds, such as those of *B. setulosa*, have a tiny, curved beak which prevents them from rolling readily. The shape of *B. solanathera* seed puts it in that category also.

Another aspect of seed germination is the possible dormancy period of seed from tuberous species. Allied with this question is another: if tuberous species do not make enough growth in one growing season to mature and bloom (and many do not), is it best to keep them in active growth under lights (15-16 hours daily), or let them go dormant, keeping them slightly moist, hoping for new growth when days become longer?

Is it possible that some tuberous species (from seed) must undergo more than one cycle of growth and dormancy before maturity and bloom?

I believe the unidentified Madagascar species listed in the Seed Fund in

**Please turn to page 90**

## Some tips on growing rexes from seed

The great fun in growing rex begonias from seed is in the diversity of the seedlings, perhaps no two alike. This makes sowing thinly more important than ever so you can leave seedlings in the seed pan as long as possible.

They need the protection of the humid atmosphere much longer than most other begonia seedlings. This also allows you to choose for transplanting seedlings big enough for you to make an intelligent selection.

The main points in growing from seed are a sterile, moist, well-drained

medium and a steady temperature between 65 and 75 degrees F.

If you can put seed pans under lights in a closed container, your worries about drying out will be minimal. If water is needed, always bottom-water with tepid water. If your mix contains no fertilizer, use quarter-strength fertilizer when seedlings are four weeks old.

The fun goes on for two or three years as each succeeding leaf may be different for that time.

Can't you hear yourself saying proudly: "Yes, I grew it from seed."

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# SEED FUND / *Easy-to-grow B. leptotricha*

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Linda Miller, director, Clayton M. Kelly Seed Fund

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## SPECIES

- MR 1 — *B. carolineifolia*: Mexico. Graceful species with erect, thick rhizome. Leaves are glossy green, palmately compound. Lovely sprays of pink flowers in winter. . . . . per pkt 1.00
- MR 2 — *B. costello*: Rhizomatous, similar to *B. acetosa*, but leaves are larger and light green on both sides. A sturdy grower with white flowers. . . . . per pkt 1.00
- MR 3 — *B. diadema* Linden: Well-known Indian species which sends up stems 2-3 feet high from an underground rhizome. Leaves lobed, spotted with white. Flowers are pale pink, the male ones fragrant (this is unusual). . . . . per pkt 1.00
- MR 4 — *B. foliosa*: Colombia. Makes a lovely, graceful basket plant with a fern-like appearance. Loveliest of the small-leaved group. Blooms intermittently with white blooms. . . . . per pkt 1.00
- MR 5 — *B. glabra*: Brazil. Scandent species with waxy green leaves somewhat heart-shaped. Makes a most attractive hanging basket. Small white flowers. . . . . per pkt 1.00
- MR 6 — *B. incana*: Mexico. Unusual, thick-stemmed, with scruffy white hairs on green leaves and stems. Flowers white. . . . . per pkt 1.00
- MR 7 — *B. leptotricha*: This is one of the easy growers. Blooms quickly from seed. The undersides of the leaves are covered with brown hairs. Grow on the dry side. Also called "Woolly Bear". . . . . per pkt .50
- MR 8 — *B. megaphylla* A.DC.: A rhizomatous plant with huge leaves (up to 2 feet across when plants are grown in the ground), which are dull bronze green with pointed lobes. Inflorescence on a 2-3-foot stem consisting of hundreds of very small white flowers. Related to *B. barkeri*, which, however, has shiny, entire leaves. . . . . per pkt 1.00
- MR 9 — *B. olsoniae*: Brazil. Compact, shrub-like, leaves to 6 inches, bronze green with yellow veins and red hairs. Flowers white, large. A very special plant to add to your collection. Grows well in a terrarium or under lights. . . . . per pkt. 1.00
- MR 10 — *B. philodendroides*: Mexico. Novelty plant, A must for every collection. Leaves like *Philodendron dubium*, smooth, leathery, deeply lobed. Has large white flowers and underground rhizome. New leaf and flower stems come up through the soil. This plant may go dormant in the winter, so do not overwater. . . . . per pkt 1.00
- MR 11 — *B. tripartita* Irmsch.: Imported from southeastern Africa. Related to *B. suffruticosa* but leaves are even more finely dissected, with one long and two short lips. Very floriferous with white flowers. . . . . per pkt 1.00

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## ROUND ROBINS/ *Save energy while growing begonias*

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*Mabel Corwin*

Jan Clark will be writing this column for a while, beginning with the next issue. I will send all of the robins to her and she will select interesting items to share with you.

This will delay each flight a few days, but the time has come to have help. Keeping all of the flights moving properly is very time consuming. My doctor has given strict orders that I must slow down and take things a little more easily.

Jan lives in Grand Forks, N.D. I do appreciate her help, and I'm sure you will find her columns interesting.

Insulating greenhouses has been discussed in several robins. Everyone is trying to save as much energy as possible.

Erich Steiniger, Ohio, puts a chicken wire fence around the greenhouse and fills the space between the fence and the cement blocks with leaves. He has plastic on the inside of the glass and this year is putting plastic on the outside to make two air spaces.

Priscilla Beck, Connecticut, covered the inside walls of the greenhouse with 2" of newspapers and put a sheet of black plastic over this. She uses bubble plastic on the inside of the glass.

Agnes Hodgson, Pennsylvania, put bales of hay against the cement block foundation around the outside of her greenhouse. When the contractor laid her concrete floor, he put a piece of heavy plastic on the ground, then a

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*Mabel Corwin, round robin director, will send a newly revised flight list and other information about joining a round robin—a packet of letters circulated among begonia lovers—if you write to her at 1119 Loma Vista Way, Vista, CA 92083.*

layer of gravel, and then the concrete. He said this would keep dampness from coming up through the floor.

### **Even moisture**

Kit Jeans, Tennessee, has been experimenting with "quilting foam" on the bottom of her light shelves. This is a foam plastic material that she gets from a local upholsterer. It is a quarter-inch thick.

It acts as capillary matting and spreads the moisture evenly. It is inexpensive, and seems to be working very well. She had been using moist vermiculite, but found that the roots go through the bottom of the pot and into the vermiculite very quickly.

### **Easy cleaning**

Doreen Vander Tuin, California, found an easy way to clean pots. She puts them in a large tub in the back yard and lets them soak overnight in soapy water. Then she takes her water misting nozzle and turns the hose on with full force and rinses the pots. This cleans off the crusted soil.

She then takes the clean pots into the bathroom where they get a hot water soak with bleach to sterilize them. Even though this sounds involved, it takes very little time and is much easier than scrubbing out each pot with a brush.

### **Word from Wisconsin**

Lorraine Simmons, Wisconsin, wrote:

I have *B. nurii* growing in a tall glass container with no lid under my lights. It is blooming with pretty pink blossoms.

I start *B. prismatocarpa* sections in small fish bowls or rose bowls in unmilled sphagnum moss cut a bit finer.

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Joy B. Porter of Framingham, Mass., is new director of the Clayton M. Kelly Seed Fund.

An enthusiastic seed grower, Joy succeeds Linda Miller, who resigned. President Nathan Randall appointed Joy after ABS directors Jan. 21 accepted the resignation.

Linda and ABS business manager Bill Walton each resigned effective March 1, saying that after several years in office it was time for someone new to take over.

### More donations roll in

Numerous contributions to ABS have been received in recent months from branches and individuals and as proceeds from a plant sale conducted at an ABS board meeting.

The sale netted \$107. Other donations: Santa Clara Valley branch, \$75; Rubidoux branch, \$30; Denton branch, C. Helmer Johnson, Potomac branch, and Redondo Area branch (in memory of Joe Taylor), \$25 each; Richard and Risa Young, \$20; Sacramento branch (to the research fund in memory of Dr. Earl Doersch), \$15; Sue H. Hanlein and Keith and Phyllis Mautino (to the research fund in memory of Myrtil Ronto), \$10 each; Connecticut branch and Floyd and Margaret Meddagh (to the convention fund), \$5 each.

### Unusual new plants

ABS is receiving the donation of several *Begonia* species apparently new to cultivation, one—get ready for this—a climbing begonia with 12-inch leaves and orange flowers. A public-spirited member

is organizing a project to grow these species from seed collected in The Philippines, on Taiwan, and on a South Pacific island.

The plants will be offered for sale at the ABS Long Beach, Calif., convention in September and perhaps regional and branch shows. Proceeds will be earmarked for *The Begonian*, in keeping with the wishes of the plants' donor.

### In Memoriam:

#### Doris Dennison

Doris M. Dennison of Natick, Mass., member of the Buxton branch since 1947 and an early innovator in begonia culture, died Dec. 21, 1979.

Doris joined ABS after viewing the 1946 show of the Buxton branch, then known as the New England Branch. She often reported to members her latest experiences with then-new fluorescent light growing, new planting mixes, and fertilizers.

#### Iantha Jenkins

A 28-year member of Elsa Fort branch, Iantha Jenkins, died in December at age 76. Mrs. Jenkins had a small but well-grown begonia collection, branch members report.

#### Myrtis Ronto

Myrtis Ronto, a member of the Santa Barbara branch, has died. Her husband Joe remains a branch member. Branch members said they will miss "her cheerful smile."

#### Lana Schone

Lana (Juliana) Schone, a member of the San Miguel Branch since the early 1950s, died on Christmas 1979.

An excellent grower, Lana often test-grew new cultivars for area hybridizers. One, created by Paul and Margaret Lee, was later registered as *B. 'Lana'*—it is a favorite among Southern California growers of cane-type begonias.

### Board to meet

ABS directors will meet Monday, March 17, at 7:30 p.m. at Fullerton Savings & Loan Association, Anaheim, Calif.

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## More Round robins

Continued from page 88

I use charcoal and/or gravel for a base. I soak the moss, squeeze it out, then insert cuttings or rooted sections. Keep it damp, not soggy.

I cover with plastic wrap and poke two or three tiny holes in it. When it dries out a bit, I water with a mild fertilizer solution. I also use this method for growing *B. 'Buttercup'*.

## Why you'll find ants

Mike Ludwig, California, answered a question regarding ants in pots of ferns:

## More hybridizing gamble

Continued from page 83

tions, but only a very small percentage of these are distinctive enough to be released and named.

One should become familiar with as many *B. rex cultorum* hybrids as possible to avoid releasing lookalike plants. Remember, too, that if a plant is delicate and too large for bubble bowl culture, its chances of survival on the grower's bench are slim.

If it is a begonia, there is no doubt that it is worth growing, but it is up to the hybridizer to provide something new and different that can keep the grower in love with it forever.

## More seed growing

Continued from page 86

December 1978 is one of these. It was listed as rhizomatous, and this may not be too far off the mark, as the tiny, underground growth resembled a hastily assembled sawhorse with two riders on the top.

After a dormancy period of five months, new growth came only at one end, so I have (with tongue in cheek) placed it in the Gallop section, although I did consider "Trot and Canter."

I find drenching with a non-oil spray, malathion, works well. Ants may have a reason to be on the fern. Check for scale and aphids, as ants cultivate them.

The non-oil base sprays are most important to ferns. Begonias and gesneriads also prefer this type of spray. It doesn't burn the plants as easily as the petroleum-based spray. Be careful with systemic sprays, because every time you break off a frond you get some on you.

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## ABS SERVICES

These services are available to all ABS members. For names and addresses of department heads and other officers, see inside front cover.

**AT-LARGE MEMBERS**—Services for members who don't belong to branches are handled by the members-at-large director. Contact him for details. If you are interested in finding a branch or starting one in your area, contact the branch relations director for help.

**THE BEGONIAN**—The monthly journal of the society publishes how-to articles, scientific information, and ABS news. Articles on a member's personal experiences with begonias are welcomed, as are black-and-white photos of begonias and color slides suitable for use on the cover. Contact the editors. Copies of the *Begonian* more than a year old are available from the back issue sales chairman at 75 cents each. A full year is \$6.50 for any year in the 1940s, \$5 for any year from 1950 onward. Back issues less than a year old are ordered from the membership secretary.

**BOOKSTORE**—Books on begonias and related subjects can be purchased mail-order from the bookstore librarian. Contact him for a list of books available. The bookstore also sells reproductions of antique begonia prints.

**JUDGING COURSE**—The judging school director offers a course by mail with which you can learn to become an accredited begonia show judge. Also available are a booklet on point scoring, information

on fuchsia and fern judging, and other requirements to become a judge.

**LIBRARY**—Books about begonias and gardening may be borrowed by mail from the lending library. Contact the librarian for a list of books and the procedure.

**NOMENCLATURE**—The nomenclature department monitors newly published findings on begonia names as well as handling official international registration of new begonia cultivars. Registrations are published in *The Begonian*.

**RESEARCH**—The research department conducts a Grow and Study project in which members experiment with various begonias and compile their findings. The department also has other activities, including the review of requests for ABS backing of outside projects. For details, contact a co-director.

**ROUND ROBINS**—Members exchange information about begonias and their culture through a packet of letters which circulates among a small group of growers. There are dozens of these packets—called flights—on many specialized subjects. To join one or more, contact the round robin director.

**SEED FUND**—The Clayton M. Kelly Seed Fund offers seeds of begonia species and cultivars by mail. New offerings are listed in *The Begonian*.

**SLIDE LIBRARY**—A series of slide shows on begonias and begonia growing can be borrowed by mail for showing at meetings and seminars. New shows are under preparation. Contact the slide librarian for fee information.

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**The Plant Shop's Botanical Gardens,** 18007 Topham, Reseda, CA 91335, (213) 881-4831—Welcome Wed thru Sun, 10 am-6 pm. Progressive catalog, \$2.00, refunded with first order. Poster of 18 species staghorns, \$4.00.

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**Exhibition Manual.** Optional supplement of *The Thompson Begonia Guide* for subscribers and non-subscribers, 100 pages. Price \$4.95, optional binder \$3.50, including packaging and shipping. N.Y. residents add state tax. Thompson, P.O. Drawer PP, Southampton, NY 11968.

**Something for everyone**—begonias, cactus, succulents, tropicals. Wholesale and Retail. No list—No mail order. Harvey's, 611 So. 8th St. Adel, Iowa 50003.

**Begonias. Blue ribbon winners.** Odd, Rare, Unusual. Price list available. Tropical Greenery, formerly Begonia Paradise Gardens, 22140 S.W. 152 Ave., Goulds, FL 33170. (305) 248-5529.

**Winter-blooming begonias:** Inca Princess, Splotches, solananthera, pink African violet begonia, Donald Duck, and gift plant. Six plants prepaid, \$12.00. Price list 35¢. Leslie Woodriff, Fairyland Begonia Garden, 1100 Griffith Rd., McKinleyville, CA 95521.



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