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The race
to save
endangered
begonia
habitats
June 1981
the BEGONIAN

The BEGONIAN

Publication of the American Begonia Society

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AMERICAN BEGONIA SOCIETY

Founded January 1932 by Herbert P. Dyckman

Aims and purposes

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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INSIDE/ *June 1981*

THE COVER: The prominent flower of *B. ferruginea* and its horned fruit were found by botanist W. Scott Hoover and photographed by him in its native habitat above Toledo in Colombia. It and innumerable begonias and other tropical plants are endangered because of massive destruction of the rain forests. See Scott's accounts on pages 132 and 135.

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NOTES/ *From the editors*

This month's cover story, in which Scott Hoover calls our attention to massive destruction of the tropical rain forests, is alarming—as it should be.

Most begonia species have come from the tropics, so if the rain forests disappear, countless begonias yet undiscovered will disappear. It's a matter that requires fast action: Clear-cutting of forests is happening so swiftly that in less than 20 years the rain forests will be gone, one informed expert estimates.

America's scientific community is taking steps to bring out many plant species before they are eliminated; the horticultural community, which has much at stake, should be joining in.

Scott makes a series of suggestions in his article beginning on page 132.

□

We inaugurate this month two new features in *The Begonian*.

"Begonia Briefs" consists of short items about begonia research, notes on nomenclature, and similar subjects. Members and non-members alike may contribute short manuscripts.

We hope in this way to publish more news about what botanists and other scientists are doing with begonias.

"Forum" is a place where members may express opinions on ABS and begonia-related subjects. We will look most favorably on typewritten manuscripts of approximately the length of this month's submission by Kit Jeans.

"Begonia Briefs" is on page 144, "Forum" on page 146. —**C.A. & K.B.**

July 1 is the deadline for submission of nominations for ABS' three major awards this year. Nominations received by the awards committee after that date will not be counted.

The awards are the Herbert P. Dyckman award for extraordinary service to ABS, the Eva Kenworthy Gray award for literary achievement, and the Alfred D. Robinson medal for an outstanding begonia cultivar.

To be eligible for the Robinson medal, a begonia must have been in cultivation for at least 5 but no more than 10 years and the hybridizer must be an ABS member. For details, see page 124 in the May *Begonian*.

Endangered begonia habitats–can we help?

W. Scott Hoover

An important new task faces ABS members — advanced growers and newcomers alike — as well as the rest of the horticultural community.

In the last several years, increasing numbers of books and articles have described the threat of extinction for countless species of plants and animals living in the world's tropical rain forests. These habitats support approximately 60-75 percent of all species of plants and animals in the world, and fewer than one-sixth of them have been described and named taxonomically.

The serious problem is not that more species have to be described, because they eventually would receive attention, but that they may never exist again due to the destruction of the habitats in which the organisms live. Holden[1] reports that a rain forest area the size of Massachusetts is being destroyed every month by poor agricultural practices, timber harvesting, and fuelwood gathering.

An eaxmple of a location where many endangered plant species are found is the Caribbean islands, where most habitats contain endemic species —ones found nowhere else.[2] But species are endangered all over the world today. Campbell[3] describes vividly the destruction occurring in the Amazon. I observed extensive damage in every country my wife and I visited on our 1979-80 expedition to Latin America.

tropical rain forest, a habitat of *B. killipiana*, El Ramal in Colombia

Botanist W. Scott Hoover has made several plant collecting expeditions to Latin America. He lives at 718 Henderson Rd. Williamstown, MA 01267.

Photos/W. Scott Hoover

Apricot yellow flower is on a horned-fruit *Begonia* species found at Buenaventura, Colombia

Now is when horticultural societies like ABS become important. For decades—in some cases a century or more —plant societies have promoted development of ornamental cultivars. Large societies and some small ones—ABS among them—support research by scientists working with specific plant groups.

Since many of the endangered species come from rain forest areas where begonias abound, it seems a new responsibility is in store for ABS and other plant societies: helping conserve endangered species.

Obviously, the governments in the countries where tropical rain forests are found ultimately are responsible for preservation of their environments, but unfortunately many are not aware of the self-destruction implied by unmanaged timber and agricultural practices. Americans and western Europeans are recognizing the need for conservation, so it becomes our responsibility to do what we can. If we wait for tropical governments to wake up, it simply may be too late.

The responsibility facing such horticultural organizations as ours is a

challenge. Success will benefit the human race. Destruction of tropical forests could have worldwide implications because of the reduction of water vapor and creation of a nutrient imbalance in the discharge of rivers, which affects fishing.

A perfect example of this, pointed out by Gentry and Lopez-Parodi,[4] concerns deforestation and increased flooding of the upper Amazon. A large area of Amazonian Peru has been subjected to clear-cutting forest practices, which create problems in water runoff and thus increase the level of the river.

Participation of a horticultural society could be of tremendous value by supporting botanical collecting of species of interest to the society, as well as other plant collecting. This involves trained people penetrating remaining undisturbed rain forests and carrying out the collection of pressed specimens. Specimens would be distributed to various herbaria, allowing botanists to describe and identify species.

Holden states: "In addition to research on tropical ecosystems the committee emphasizes the need to accelerate biological inventories, collect specimens, set up gardens, zoos, and seed banks to preserve the fast-diminishing tropical gene pool, and increase by four or five times the number of tropical experts in the world . . . who now number about 1,500." The committee to which he refers is one set up by the National Research Council to investigate the status of endangered species in the tropical rain forest.

Interest shown by the scientific community in preserving the tropical rain forest is recorded in several recent articles and papers, including those by Raven[5], Deane[6], Carter[7], and White[8], who speaks of the environment in a global context.

The contribution that horticultural societies can make certainly is not the only way to deal with this problem, but would help. Since my interest is in *Begonia,* my concern is in protecting begonias and working with ABS. Here are some suggestions:

☐ Funds should be directed to basic exploration and research of undisturbed tropical rain forests where *Begonia* is known to occur.

☐ Anyone involved in basic exploration or field work should collect pressed specimens of *Begonia* as well as other flowering plant species if possible.

☐ Extensive photography of habitats, plants, and flowers should be undertaken as part of any exploration and field work, even by a tourist visiting a wild population.

☐ The collection of seed material of *Begonia* and other plants should be arranged for export.

☐ New seeds should be distributed to expert growers. Once these experts have mature plants, the subsequent generations of seed should be distributed to other hobbyists.

☐ Recruit additional ABS members to increase revenue, and ask members who can afford it to double or triple their annual dues to help finance con-

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***B. trispathulata's* white flowers appear above plane of leaves at Trujillo, Venezuela**

The Hoover expedition to Latin America

W. Scott Hoover

In early November 1979 my wife and I began an intensive *Begonia* collecting expedition to several Latin American countries. Four months later, we had traveled about 60,000 miles. The countries we worked included Mexico, Guatemala, Venezuela, Colombia, Ecuador, Peru, and Jamaica.

This expedition was scientific and horticultural, as were my previous trips. My research has focused on a unique adaptation in the plant world, the stomata of *Begonia*. The stomata are specialized cellular structures on the leaves of plants that regulate the inflow of carbon dioxide and the outflow of water vapor. The unique property of these cellular structures in many species of *Begonia* is their organization into groups or clusters.

The job I have set out for myself is to establish if there is any pattern in these structures that can be correlated with environmental factors, such as elevation, habitat, or light. To investigate the various hypotheses, it was necessary to sample individuals in populations.

The manner in which we carried out the sampling of the stomata in *Begonia* was with a simple technique involving fingernail polish. Painting clear fingernail polish on the lower surface of a leaf results in an impression of the cellular structures. These peels subsequently are studied under a microscope, and thus provide the basis for investigation of the variation of the stomata.

Certain species of *Begonia* were chosen to sample thoroughly. These species include *Begonia heracleifolia*, *B. nelumbiifolia*, *B. stigmosa*, and *B. urtica* and were chosen for the relative frequency of their being collected in the wild, their wide geographic distri-

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These orange-red flowers belong to *B. killipiana*, whose habitat is illustrated on page 132

Table 1. Summary of 1979-80 expedition to Latin America

Approximate number of *Begonia* herbarium collections and duplicates (Mexico, Guatemala, Venezuela)	150
Number of species encountered and sampled	92
Number of populations sampled	210
Approximate number of epidermal peels obtained	3,500
Number of *Begonia* photographs (closeups, plants, habitats)	450
Number of general photographs (landscape and cultural)	1,500
Approximate number of seed packages exported for ABS	63
Number of cuttings exported for ABS	18
Approximate number of new species introduced (survival rate unknown)	27

Lots of names, but it's B. oxyloba

J. Doorenbos

At the Colonial Congress held in Berlin in 1885, the European powers delimited their "spheres of interest" in Africa. By the end of the century, these "spheres" had become regular colonies. A favorable side effect of this development was a growing interest in the largely unexplored flora of these territories.

Unfortunately, the botanists describing these riches usually confined their studies to the area occupied by their own country; what was being done at the other side of the border was often ignored. As a consequence, species occurring over a wide range often got as many names as there were colonizing countries in the area; if the species concerned was variable, the number could even be greater. The begonia we are about to discuss offers a good example of the resulting proliferation of names.

The species was discovered in Angola by Friedrich Welwitsch, an Austrian botanist who became Portuguese and traveled extensively in Africa in 1851-61. He called it *Begonia oxyloba*, but this remained a name on a herbarium label until 1871 when J. D. Hooker published it in his treatise on *Begonia* in Oliver's *Flora of Africa*. In this species Hooker also included specimens collected in 1866 by Gustav Mann on Fernando Po and in Cameroun.

Cameroun later came under German rule. Plants collected there by Preuss were identified in 1895 as *B.*

Dr. Jan Doorenbos directs the extensive Begonia *collection at Agricultural University, P.O. Box 30, 6700 AA, Wageningen, The Netherlands, where he is professor of horticulture.*

Photo/Reyer Jansen

***Begonia oxyloba* Hook.f.**

oxyloba by Warburg, who was the first to place this species in the section Mezierea. He subsequently changed his mind, however.

In 1900 he refers Preuss' specimens to a new species, *B. lehmbachii* (imported by Lehmbach from Cameroun), which he puts into a new section Exalobegonia, together with another new species, *B. heddei* (imported by Hedde from Usumbara). The new species are closely related, as Warburg himself noted, adding that *B. lehmbachii* is very near to *B. oxyloba*. Why he erects a new section for them instead of putting them in Mezierea does not become clear, as he neither describes the new section nor states which other species it was supposed to include.

What is more amazing, however, is that not only this new section but also the two species in it, which had been fully described both in German and in Latin and pictured in beautiful colored plates (the plants were flowering at Berlin at the time), are completely ignored by another German, E. Gilg, who in a paper of 1904 describes no less than four related plants: *B. petrophila, B. kummeriae* (both from Usumbara), *B. conraui* (from Cameroun) and *B. togoensis* (from Togo).

Gilg puts them all in the section Mezierea and states that *B. conraui* is close to *B. oxyloba*. In 1904, *B. kummeriae* was flowering at Berlin, where it had been imported by the famous botanist A. Engler.

The next to give a specific name to a begonia of this group was the Belgian botanist E. de Wildeman who published his *B. seretii* from Congo (now Zaire) in 1907. Finally in 1912 the Frenchman A. Chevalier added *B. sassandrensis,* based on specimens which he had collected himself in Ivory Coast and French Guinea.

Both authors state that their plant is related to *B. oxyloba,* but Chevalier does not cite De Wildeman and neither cites the German authors. If De Wildeman had put his picture of *B. seretii* next to the colored picture of Warburg's *B. heddei* he would have seen that the plants are strikingly similar.

There is little to add, except that Irmscher was the first to suggest in 1926 that all plants mentioned are synonymous and belong to one variable species, although according to notes on herbarium sheets he later seems to have considered separating *B. kummeriae* as a distinct variety, possibly on account of its entire leaves.

The present material of *Begonia oxyloba* was brought from Moçambique by P. Schafer and provided to our collection by Dr. J. J. de Wilde in 1979. It is a plant that sends up succulent unbranched stems with internodes of 2-4 cm and up to 60 cm (2 ft.) high from an underground rhizome. The petioles are 10-12 cm long and bear leaf blades that are very asymmetrical, broadly ovate, acute, up to 17 cm long and 13 cm broad with 5-7 broadly triangular lobes. The plants look glabrous and shiny but upon closer examination are found to have short scattered hairs, especially on the upper surface of the leaves. The short inflorescences are borne in the axils of the leaves, the largest having 7 flowers, 3 male and 4 female, each with 2 white or pale pink tepals. The fruits have the shape of small green cucumbers, about 3 cm long and 0.8 cm broad, which open lengthwise when ripe.

Begonia oxyloba has been reported from almost all Middle African countries from Guinea to Tanzania, and possibly from Madagascar. It is very variable, as witnessed by the fact that Warburg divided his material over three species, while Gilg distinguished even five. Stem length ranges from 30 cm to 2 m (6 ft.), long stems being supported by the surrounding vegetation. The leaves are smooth or hairy, palmately lobed or entire. The fruit also appears to be variable; its shape has been used to distinguish separate species. It is never winged, however.

We have found the species easy to grow but of no particular beauty. We have already started to distribute seed so that those who wish can judge for themselves.

B. oxyloba has a few close relatives, as the section Mezierea to which it belongs is a small one. On continental Africa there are only *B. adolfii-frederici* Engl. (which is quite different and may not belong to Mezierea at all) and *B. pycnocaulis* Irmsch., both in Tanzania. *B. pycnocaulis* is very close to *B. oxyloba* and may have to be included in it. Farther east one finds *B. cladocarpa* Baker on Madagascar, *B. comorensis* Warb. on the Comores and *B. seychellensis* Hemsl. on the Seychelles. The latter species which is

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Beautiful Leaved Plants: a magnificent book

Lynda Goldsmith

***Beautiful Leaved Plants*, by Frances Perry. David R. Godine, Publisher, 306 Dartmouth St., Boston, MA 02116, $17.95.**

This book of 64 color plates is based on two books published during the era of the Victorian conservatory. The book's chief value perhaps lies not in its horticultural interest but in the importance in in the history of printing of its two predecessors, *Beautiful Leaved Plants* (1861) and *New and Rare Beautiful-leaved Plants* (1870).

The firm of Benjamin Fawcett made the wood engravings and developed a color printing process to produce the color plates for these and other enormously popular illustrated books. This new book, printed in Great Britain, provides a brief section on Fawcett, as well as an introduction to general horticulture as applied to foliage plants, including specific recipes for soil mixes used widely in Britain.

Frances Perry also provides the page of text opposite each full-page plate. The genus *Begonia* is represented by three plates—only *Caladium* and *Calathea* have more.

The illustration of *B. rex* is very beautiful and lifelike, the greens glowing and rich. The other begonias illustrated may excite some curiosity, for both are *B. rex* cultivars that may or may not still be in cultivation: 'Grandis' and 'Nebulosa.' The latter is particularly outstanding, with large areas of silver on a background of dark green. The leaf margin and veins are red, and scattered between the silvery areas are tiny white dots, each one sporting a red hair.

Although we might wish the whole book were devoted to our favorite genus, many of us in fact grow a wide variety of foliage plants and would benefit from the growing hints scattered throughout the text as well as thrill to the beautiful illustrations.

Lynda Goldsmith, ABS branch relations director, lives at RFD 2, Fairfax, VT 05454.

More B. oxyloba

Continued from page 137

cultivated, is in many respects similar to *B. oxyloba*, but more shrubby in habit.

Here we should also mention the type species of the section, *Begonia salaziensis* Warb., based on *Mezierea salaziensis*, published by C. Gaudichaud-Beaupré, probably in 1841, in a rare work that I have not seen. The original publication consisted only of a plate, which shows a plant differing from the previous species in various respects, a.o. in having 4 tepals. There is no description, nor does Gaudichaud indicate where this plant had been found, but it is generally accepted that it is from the isle of Mauritius.

If so, it is probably the same as *Begonia mascariensis* published by Bojer in a catalog of the botanic garden of Mauritius of 1839 (which I have not seen, either). The letter is probably a *nomen nudum*, a name not accompanied by a picture or a description and therefore not valid, otherwise the epithet *mascariensis* would take priority over *salaziensis*. The new Flora of Mauritius should enlighten us about these matters. Unfortunately it has not yet reached the Begoniaceae—always one of the last families to be tackled!

In West Africa the section Mezierea appears to be represented only by *B. oxyloba*. Two large species from the isle of San Tomé, *B. baccata* Hook.f. and the related but probably distinct *B. crateris* Exell, have sometimes been put into Mezierea, but it seems improbable that this classification can be upheld. I hope to return to these interesting plants, both now grown at Wageningen, in a later article.

How to help your begonias survive summer

David Atkinson

Getting all of your begonias through a hot, dry summer in good condition can be a real challenge. Here are a few suggestions:

A small greenhouse will heat up quickly when the sun hits it. Several vents will keep the temperature down in the spring. A fan during summer will blow the hot air out and pull cooler air in.

An evaporative cooler, with cool water dripping down its sides, is very efficient at lowering the temperature, circulating air, and adding moisture to the air.

If you have a heavy-duty fan, you can make your own evaporative cooling system. The fan should be positioned to exhaust the air. Aspen pads are hung on the side of greenhouse opposite the fan. Water is circulated by a small pump. The water then drips down through the aspen pads and returns to a small tank where the pump is located.

Begonias, being shade-loving plants, must be protected from bright sunlight. Shadecloth of about 55 to 80 percent shade will keep the sun from burning tender leaves. Shade cloth may be placed over the top of the greenhouse or fastened up over plants inside the greenhouse. The shade fabric should cover the top, south, and west sides. (The north side need not be covered.)

Wooden slats may be used instead of shadecloth. Slats should be placed lengthwise, north and south. This provides shade that moves as the sun moves during the day. Shadecloth and wooden lath will last many years.

Liquid shading compounds are available that can be sprayed or painted over glass, fiberglass, or plastic. Some shade compounds are applied in spring and by winter have weathered away enough that no cleaning is needed to admit light in winter. We use one called Vari-Shade, which shades when wet and turns clear in rain to let light through.

If additional shade is needed during the middle of the summer, cheesecloth can be hung inside over plants. Rex Cultorum begonias will need this extra shade from spring to fall.

Water walks daily during summer to increase humidity. On hottest days, spraying mist over plants will lower the temperature a few degrees and add humidity.

With these steps plants should make it through summer in top condition.

David Atkinson operates Atkinson's Greenhouse at Rt. 2, Morrilton, AR 72110.

QUESTION BOX/ *Dolomite lime and soil test kits*

Elda Haring

Question: I have used dolomite lime in soil mixes for African violets but never for begonias. Some of my begonias including *B.* 'Cleopatra' have gone downhill this year. Do you use lime in your soil mixes for begonias and do you find the home test kits on the market very accurate? How long does it take for dolomite to leach out

Send questions about begonia growing to Elda Haring, P.O. Box 236, Flat Rock, NC 28731. She'll mail you her reply promptly.

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ROUND ROBINS/ *pH and your potting mix*

Mary Harbaugh

Begonia growers are searching constantly for clues to solve their growing problems and many robin members are looking to their growing media for the answer.

Charlotte Kuhnle, Oregon, decided after reading a great deal about various soil mixtures and the way some peat moss sharply reduces the pH levels in soilless mixes to try an experiment. "My usual mix is equal parts of perlite, vermiculite and sphagnum peat, with added limestone. The rexes are grown in pure Oregon moss and love it."

A friend mentioned that she always adds some soil to her mix. Charlotte then carefully screened some of her compost and added it to her soilless mix in equal proportions. After three months she says that she can see the difference in those plants potted in the new mix. "They appear to have more substance and are better looking generally."

Problems with pH

Mike Ludwig of California started investigating after having leaf burn problems, even on other plants. When he had to mix up a new batch of soil, he opened a new bag of peat—it was his usual brand, but this bag was death to his plants.

He had always tested his mix when he used anything new in case the pH was different. After checking everything dying from what he thought was overwatering or cold, he found they all had the same new mix. So he tested the peat and found that, even after adding four times the usual amount of dolomite lime, he could barely raise the pH to 5. They were being burned by the too-acid soil mix.

Light makes difference

A couple of robin members have discovered what a difference lighting can have on leaf coloration. Joan Conklin, South Dakota, moved her *B.* 'Chumash' and *B.* 'Universe' from artificial to window light and both developed lovely mottled coloring. They had previously been a solid dull red under the artificial lighting.

Mary Jo Brashear, Washington, keeps a few good rexes on a bottom shelf in her greenhouse. About a month ago the lights above that shelf burned out and she decided she could do without them. The plants are now doing better than ever. The leaves are not bleached out and the temperatures are cooler so the soil stays more evenly moist.

As a result, she has placed a triple layer of cheesecloth over boxes that little seedlings are in and it seems to be helping them.

Too much sun?

Chris Giordano, New York, solved the problem of too much sun in her greenhouse by putting up nylon mesh cloth and it has worked well.

Some recycling tips

Some helpful hints for recycling household materials:

Mildred Swyka, Delaware, has found a great use for plastic berry boxes. "I line them with a sheet of tissues, put in by rooting medium, and put the box in a zip lock bag—a mini greenhouse."

Information about joining a robin—a packet of letters circulated among begonia lovers—is available from Mary Harbaugh, round robin director. Write to her at W2899 Homewood Ave., Shawano, WI 54166.

Nancy Dunn, Michigan, uses a green blanket in the trays in her light garden to keep up the humidity. To clean it all she has to do is throw it in the washing machine.

May Kendall, California, likes to use an old shaving brush to clean felted leaves of her begonias.

Sudden decline syndrome

Some members have wondered why seemingly healthy plants suddenly go into decline, drop leaves, and die. Mabel Corwin, California, offered these comments:

"Sometimes, especially in terrariums where the plants have been in the same mix for a year or two—that is the reason. As the peat moss disintegrates, it becomes mere acid and the mix is not the same as it was in the beginning. Some people water their plants once in a while with a solution of dolomite lime (1 tablespoon per gallon of water). This helps to correct acidity."

She takes plants in stress out of the terrarium, shakes the mix off and replants in fresh mix. "Sometimes I take the plant apart and make several small plants. If the plant isn't dead, I can usually save part of it. I think it is a good idea to lift a terrarium plant and put it in fresh mix about once a year."

Watch out for cedar

Norman and Donna Bakewell of Canada caution against using cedar sawdust as a soil amendment or mulch since cedar is toxic to plants.

Well, well—water!

Ardis Hartwig, California, was noticing that her plants were developing severe tip burn and suspected her water. She uses well water and lives near the coast. Scott Hoover, Massachusetts, indeed thought that her water may be high in sodium. He commented that with well water so near the coast there is sometimes salt infiltration as the water table drops. He suggested using a solar water still instead.

Oily sand

Eleanor Hollis, California, says that she will not incorporate any of the native sand into her mix as the sand particles are coated with oil and resist water. She thinks the oil may have come from natural sources.

More on plastic vs. clay

Some more thoughts on plastic vs. clay pots from Bill Reed, Washington: "It doesn't matter too much up to four-inch size. As the pots get larger, they also geet deeper and begonias, being shallow rooted, have an affinity for good oxygen exchange and spreading roots. If plastic is used, care must be taken not to overpot or overwater and, if possible, use a shallow pot in the larger sizes."

Pots inside pots

Dottie Lillestrand, Minnesota, has a collection of small ceramic pots which are clay colored on the outside and glazed white on the inside. They look like miniature bushel baskets. She has them in the bay window of the kitchen with a north exposure.

She puts an inch or two of long-fiber sphagnum moss in the bottom and moistens well. She puts plants which are planted in clay pots on the damp moss. The original idea was to raise the smaller pots to the level of the decorative ones, but she finds this also gives her plants some extra humidity.

They need tall terrariums

Arlene Waynick, South Carolina, found that *B. bartonea* needs a tall terrarium, for it grows tall and is reluctant to branch. *B. exotica* is another tall terrarium subject. Its bowl must be kept in a warm, draft-free location.

NEW CULTIVARS/ *Official international registrations*

Carrie Karegeannes and Thelma O'Reilly, nomenclature co-directors

In the citations of cultivar parents, the female (seed) parent is listed first.

Begonia 'Smoky Topaz'

No. 822—*Begonia* unnamed seedling x 'Inglewood' 'Smoky Topaz'

Rhizomatous. Lobed, 3½" x 5-6" leaves, mottled in greens and browns with a smoky overlay, are glabrous with ciliate margins and have 5 to 6 veins. Petioles are hairy; stipules chartaceous. White to pale pink flowers, borne in cymes on 6" to 10" peduncles in midwinter, are about 1" across, with 2 male and 2 female tepals. Capsules are green dotted with pink. The elongated star leaf "with smoky overlay changing to rich chocolate when grown in subdued light" distinguish this new cultivar. Growth is compact. The seed parent originated in cultivation in Australia. *B.* 'Smoky Topaz' was originated in 1977 by Kit Jeans, Route 1, New Johnsonville, TN 37134; first bloomed in 1979; first distributed in 1978. Tested by Gloria Quinn, 234 Tallant Dr., Houston, TX. Registered April 1, 1980.

Begonia 'Theseus'

No. 823—*Begonia* 'Snow Queen' x unnamed *B. rex* cultivar 'Theseus'

Rex Cultorum group; rhizomatous. Large (8" x 10"), scarlet to green, spiraled leaves are puckered and ciliate with 5-6 veins. Petioles are hairy; stipules red, chartaceous. Pale pink, 1-1½" flowers, borne in a cyme on a 10" to 12" peduncle in winter, are of typical *B. rex* form, with 4 male and 5 female tepals. Rhizome and stems are also red. Originated in 1977 by Kit Jeans (address above); first bloomed in 1979; first distributed in 1980. Tested by Pat Maley, 1471 E. Madison, El Cajon, CA 91604. Registered April 1, 1980.

Begonia 'Downwind'

No. 824—*Begonia* 'Inglewood' x 'Inglewood' 'Downwind'

Rhizomatous. Apple-green, 5" x 3", deeply lobed (cleft) star leaves are succulent, glabrous except for ciliate margins, and 5-veined. Petioles are white-hairy; stipules, chartaceous. Pink, 2-tepaled, 1" flowers, borne in forked cymes on 10-12" peduncles, rise above the foliage in winter. The thick, succulent leaves on petioles twisting and turning in all directions distinguish the cultivar. Originated by Kit Jeans (address above) in 1978; first bloomed in 1979; first distributed in 1980. Tested by Helen Wilson, Downwind, 11001 Glen Road, Potomac, MD 20854. Registered July 22, 1980.

Begonia 'Irish Coffee'

No. 825—*Begonia* 'Inglewood' x 'Helene Jaros' 'Irish Coffee'

Rhizomatous with creeping rhizome. Copper-coffee-colored, 4" x 3", cleft, elongated star leaves are succulent, 5-veined, glabrous except for ciliate margins. Petioles are hairy and red-dotted; stipules, chartaceous. Pink, 2-tepaled, 1" flowers with red-speckled ovaries on females are borne above the foliage in winter in forked cymes on 10"-12" peduncles. The succulent, twisting copper leaves make the cultivar easily recognizable. Originated by Kit Jeans (address above) in 1978; first bloomed in 1979; first distributed in 1980. Tested by Elaine Ross, 2113 Walker Drive, Westlake, LA 70669. Registered July 22, 1980.

Begonia 'Smoke Rings'

No. 826—*Begonia* 'Inglewood' x unknown 'Smoke Rings'

Rhizomatous. Apple-green, 5" x 3" leaves with smoky, ciliate margins and

Applications to register Begonia *cultivars may be obtained from Thelma O'Reilly, 10942 Sunray Place, La Mesa, CA 92041. Each must be typed or printed in ink. A $2 check or money order payable to the American Begonia Society must accompany each completed application. Photos, drawings, and/or dried specimens to accompany applications are encouraged. ABS is the International Registration Authority for* Begonia *cultivar names.*

smoky flecks on the 6 veins are obliquely ovate, angulate, acuminate, and succulent with a quilted appearance, on a compact plant. Petioles are hairy; stipules, chartaceous. Pink, 2-tepaled, 1″ flowers with red-flecked ovaries are carried in forked cymes on 10″-12″ peduncles in the spring. Originated by Kit Jeans (address above) in 1978; first bloomed in 1980; first distributed in 1980. Tested by Thelma O' Reilly, 10942 Sunray Place, La Mesa, CA 92041. Registered July 22, 1980.

***Begonia* 'Tennessee Waltz'**

No. 827—*Begonia* unknown by unknown 'Tennessee Waltz'

Rhizomatous. Obliquely broad-ovate, angulate, 3″ x 2″ leaves of rich velvety bronze-copper turn dark with age. They are succulent, ciliate, 6-veined, and abundant on a compact plant. Petioles are red-speckled and minutely hairy; stipules, chartaceous. Pink, 2-tepaled, 1″ flowers with red-speckled ovaries are borne in forked cymes on 10″-12″ peduncles in winter. Originated by Kit Jeans (address above) in 1978; first bloomed in 1979; first distributed in 1980. Tested by Barbara Rogers, 1200 Christmas Tree Lane, Pearce, AZ 85625. Registered July 22, 1980.

More rain forests

Continued from page 134

servation activities. (Other associations do this.)

I hope we members of ABS can begin a plan for helping to preserve the plants we love by incorporating these recommendations into a program for endangered species preservation. The destruction of the tropical rain forests is becoming critical.

We must remember that all the begonias we grow can be traced to wild *Begonia* species introduced from the wild. If the natural habitats where begonias grow are destroyed, there will be no more new species. Ever.

1. Holden, C. 1980. Rainforests Vanishing. *Science* 208:378.
2. Howard, R. A. 1977. Conservation and the Endangered Species of Plants in the Caribbean Islands. *In Extinction is Forever.* The New York Botanical Garden. Bronx, N.Y.
3. Campbell, R. 1977. A Timely Reprieve or a Death Sentence for the Amazon. *Smithsonian.* October. pp. 100-110.
4. Gentry, A. H. and J. Lopez-Parodi. 1980. Deforestation and Increased Flooding of the Upper Amazon. *Science* 210: 1354-1356.
5. Raven, P. H. 1976. The Destruction of the Tropics. *Frontiers* 40(4): 22-23.
6. Deane, B. 1980. A Race Against Time. *Horticulture.* October. pp. 31-37.
7. Carter, L. J. 1960. Marriage of Conservation and Development. *Science* 207: 1326-1329.
8. White, G. F. 1980. Environment. *Science* 209: 183-190.

More plant expedition

Continued from page 135

bution, and the known occurrence of stomatal clusters. Numerous other species were sampled besides these, as Table 1 indicates. Table 1 summarizes the accomplishments of this expedition.

The other reason for carrying out this expedition was to introduce new horticultural material for ABS. The specific species I wanted to introduce were members of the section Casparya, which include some of the most beautiful I have ever seen. Their brilliant scarlet red or orange flowers have received limited cultivation. ABS and several individual members funded this expedition to collect seeds of these plants. For an account of the collection of *B. ferruginea,* refer to the paper I wrote for *The Begonian* (45: 74-77). The photographs included in this article and the accompanying one are all species within Casparya.

SEED FUND/ *B. thelmae plus unidentified species*

Joy Porter, director, Clayton M. Kelly Seed Fund

JN 1 — *B.* species U060: native to Costa Rica.....per pkt 1.00
JU 2 — New form of *B. angularis* superior to that now in cultivation; from Peru. Cane-like, tall, with greenish-white flowers.....per pkt 1.00
JU 3 — *B.* species U057 from Wawoi River, Papua New Guinea. Seed collected in wild. Has not been tested for germination.....per pkt 1.00
JU 4 — *B. thelmae* from Brazil. Creeping, with small, velvety oval leaves with light green along the veins. Intermittant bloomer with tiny white flowers. Needs high humidity. See cover stories in May *Begonian*. Fresh seed. .....per pkt 1.00
JU 5 — *B. manicata* 'Aureo-maculata': Ascending rhizome. The glossy, 3″ by 5″ round-ovate leaves with thin red margin are showy with blotches of cream, yellow, and sometimes pink. Small pale pink flowers in spring. See picture on page 90, April 1981 *Begonian*. Since this is a mutant of a green-leaved species, I cannot predict the ratio of seedlings with variegated leaves—or even if any will show this trait.....per pkt 1.00
JU 6 — *B. crispula*: 1950, Brazil. Rhizomatous with bright green, rounded leaves, whose rugose texture put plant in the distinctive foliage class. Needs careful watering and terrarium culture. Supply limited.....per pkt 1.00

Send orders to Joy Porter, 9 Bayberry Lane, Framingham, MA 01701. Include self-addressed, stamped envelope or add 40 cents for padded, hand-cancelled package. Massachusetts residents add 5% sales tax. Checks and money orders should be made payable to: Clayton M. Kelly Seed Fund. Foreign orders: U.S. funds only and add $1.20 for postage.

BEGONIA BRIEFS/ *Two botanical papers on stomata*

Two papers on *Begonia* stomata have been submitted to the Botanical Society of America by botanist W. Scott Hoover, an ABS member and author of the tropical rain forest article on page 132 of this issue.

The papers are abstracted below.

1. *Ecological Response of Stomata and Stomatal Clusters in Mexican Species of* Begonia

The stomata of many species of *Begonia* are unusual in that they are organized in clusters; very few other genera within the plant kingdom exhibit this characteristic. Epidermal peels were obtained from two Mexican species, *B. heracleifolia* Cham. & Schlec. and *B. nelumbiifolia* Cham. & Schlec. For the populations analyzed thus far, both species show a similar environmental trend in the size of the stomatal clusters, with larger clusters occuring in moist habitats. *B. nelumbiifolia* also displays a lower overall density of individual stomata in moist habitats, but *B. heracleifolia* shows no clear trend. Conversely, *B. heracleifolia* shows a decrease in guard cell length toward moister habitats, whereas *B. nelumbiifolia* shows no trend in this trait. Distinct differences have been found between terrestrial and epiphytic members of a population of *B. heracleifolia* in Chiapas.

2. *Stomatal Variation along an Elevational Gradient in* Begonia nelumbiifolia *Cham. & Schlec.*

A large population of *Begonia nelumbiifolia* was observed along a mountain highway in Estado Hidalgo, Mexico. Epidermal peels were collected from five stations at elevations of 1100, 1000, 850, 720, and 430 meters. Peels were obtained from basal, middle, and apical portions of young, middle-aged, and old leaves

Please turn to page 145

Ann Shuflin won best in show with *B.* 'Green Jewel' and Charles Jaros garnered the sweepstakes award with 30 blue ribbons at the Miami Branch annual show April 11-12 at Fairchild Tropical Gardens.

The show consisted of 320 entries, and Palm Beaches Branch erected an educational exhibit. Seminars were staged during the show, with a slide program and commentary on begonia classification running continuously.

Joy Logee Martin of Danielson, Conn., proprietor of Logee's Greenhouses, was a special guest. Show chairman was Rosemond Meriwether.

Awards—china handpainted with begonias by Cristina Llanos—went to:

Ann Shuflin, best in show, *B.* 'Green Jewel'; Iris Brackman, best in show nonmember, *B.* 'Peace'; Laura Smith, best in show commercial, *B. angularis*; Wendy Smith, best in show junior, *B.* 'Carmelita'; Ann Fergis, best miniature, *B. foliosa*; Anne Fergis, best cane-like, *B.* 'Tom Ment', Edythe Ropeik, best shrub-like *B. venosa*; Doris Ross, best semperflorens, *B.* 'Charm'; Luis and Abbie Perez, best rhizomatous, *B.* 'Chumash'; Tropical Greenery, best rex Cultorum, unnamed *B. rex* cultivar; Charles Jaros, best trailing-scandent, *B. solananthera*; Anne Fergis, best tuberous, *B. suffruiticosa*; Anne Fergis, best hanging basket, *B.* 'Magdalene Madsen'; Ray Weakley, best novel method of growing, *B.* 'Black Velvet' in a rock; Paul Lowe, best Paul Lowe hybrid, *B.* 'Helene Jaros'; Georgia Humphries, best cane-like potted, *B.* 'Rhapsody'; Edythe Ropeik, best rhizomatous basket, *B. herbacea;* Laura Smith, best hanging basket commercial, *B. cubensis.*

—Charles J. Jaros

San Gabriel Show July 11-12

San Gabriel Valley Branch of ABS will stage its annual begonia and shade plant show July 11-12 at the Los Angeles State and County Arboretum, 301 N. Baldwin Ave., Arcadia, Calif.

Rare and unusual begonias will be sold. Hours are 1 to 4 p.m. Saturday and 9 a.m. to 4:30 p.m. Sunday. Admission is included in the arboretum entry fee—$1 for adults, 50 cents for students and seniors.

More Question box

Continued from page 139

in potting mixes? Do you recommend using agricultural lime in potting mixes?

Answer: We always use dolomite in our mixes to counteract the acidity of peat moss which we use along with packaged topsoil, builder's sand, and bonemeal or Mag Amp, a slow-release fertilizer.

Dolomite not only sweetens the soil but contains calcium and magnesium. Most begonias grow well at 6.5 to 7 pH. We have used the Sudbury soil test kit for years and find it to coincide with laboratory tests.

Agricultural lime may be used but it does leach out quickly. Some bags of agricultural lime show they contain both calcium and magnesium; others do not. Dolomite, being very slow-acting, lasts much longer in a potting mix.

More Begonia briefs

Continued from page 144

from three individuals at each station. *Begonia* is one of the few plant genera known to have species whose stomata are arranged in clusters; *B. nelumbiifolia* is such a species. The size of stomatal clusters in this species tends to decrease with increasing elevation. The number of individual stomata per mm^2 also tends to decrease with increasing elevation. The greatest stomatal density, the highest frequency of large clusters, and the broadest distribution of guard cell lengths occurs at 720 meters.

FORUM/ *The two-way street of society membership*

Kit Jeans

The other day a lament came in the mail from a customer of mine. Did I have the address for the membership chairman of the ABS? She had wanted to join, but her request for membership was returned marked "addressee unknown."

This is the sort of thing that officers of our society and others have nightmares about—how to reach all the people out there and, once having reached them, make sure *they* can reach the society. It's not easy. This is a big country. Membership chairmen change; headquarters move around.

And along with everybody else, plant societies are caught in the inflation squeeze. When I decided to join ABS, there was no problem. I looked in *Horticulture* magazine and there, listed in the classified ads, was the society's membership address, its aims and its offerings. At that far-off time, it probably cost the ABS $5 a month for such ads. I won't even bother to tell you what they'd cost now.

Inflation is a dirty word we're all sick of. What to do? How can we make it easy for people to find us? (If you've any ideas along this line, I know a couple of editors who would be delighted to hear them . . .)

But let's say that you're persistent and you do find the society. Your hometown is 45 miles east of Lake Winniethepooh and its population numbers 445 souls, counting the two inmates of the county jail.

Most of these good people wouldn't know a begonia from a rubber boot. But you do. And all of a sudden, you're in touch with all kinds of people who have the same inclinations. Things are looking up. You're not an orphan any more.

You have turned to the society for information, friendship, and a desire to grow plants which just aren't available at the local five-and-dime. You don't care a fig for politics, who heads which committee or which plant collector steps in a hole in the jungles of Colombia and is never seen again. Just so you get your monthly magazine, the round robins you belong to don't take a donkey's lifetime to make the rounds, your Seed Fund seed germinates, and the plants you've ordered successfully run the gauntlet of the U.S. Postal Service—then you're happy.

As for the rest of it, you've got troubles enough of your own. If this is a fairly accurate picture of you, you're in good company. This is the state of 90 percent of all plant society members.

Luckily, there are always those few who enjoy making the society work, have the time for it and willingly shoulder the responsibilities that you all out there in East Owl can't manage. No need to feel guilty. You pay your dues—right?

However . . . plant societies are people. And people, as the song goes, need people. The more members the society has, the better. But you know that. What you may not know is that this is where you can make a valuable contribution to your society. Somewhere out there in East Owl is a closet begoniac or a grower who doesn't know a begonia from a rubber boot, but would like to. They're not interested in politics either, but they do like plants.

Find him/her/them. Introduce them to the society. We need them just as they need us. You know, if each member of the American Begonia Society persuaded just one other person to join this year, we'd be in tall cotton . . . er, begonias. And you know what that means? More money for the *Begonian,* more projects, more workers, more ideas, more ads, no hike in dues.

Kit Jeans of Rt. 1, Box 319, New Johnsonville, TN 37134, is ABS awards committee chairman and proprietor of The Gift Horse Greenhouse. Forum is open for opinions on ABS and the begonia world.

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.

BEGONIAN BACK ISSUES—Individual copies of The Begonian more than a year old are available from the back issue sales chairman (75 cents). A full year is $6.50 for any year in the 1940s. $5 for any year from 1950 through 1979. Back issues less than a year old are ordered from the membership secretary for $1 each.

BOOKSTORE—Books on begonias and related subjects can be purchased mail-order from the bookstore manager. Contact him for a list of books available. Include a stamped, self-addressed envelope. The bookstore also sells reproductions of antique begonia prints.

JUDGING DEPARTMENT—The judging department offers a course by mail with which you can learn to become an accredited begonia show judge $8. Also available are a booklet on point scoring $1.25, information on fuchsia and fern judging, and other requirements to become a judge. Add $1 postage and handling to all orders and 6% tax for California residents.

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. Include a stamped self-addressed No. 10 envelope.

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.

QUESTION BOX—Send begonia-growing questions to veteran collector Elda Haring, P.O. Box 236, Flat Rock, NC 28731. You'll get a prompt answer and Elda will use questions of general interest in her **Begonian** column.

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 the 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. Donations of seed are encouraged. Please contact the Seed Fund Director.

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.

SPEAKERS BUREAU—The speakers bureau maintains a directory of speakers on begonias and related subjects. Contact the director.

BEGONIAN MINI-ADS

Mini-ads are $1 per line per insertion with a minimum of $4. A line is about 38 characters including punctuation and spaces. Payment must accompany order. Send to Pam Mundell, advertising manager, 2324 Connie Dr., Sacramento, CA 95815.

Begonias. Episcias. African violets. Cuttings only. Catalog $1. Kit Jeans, the Gift Horse Greenhouse, Rt. 1, New Johnsonville, TN 37134.

Hundreds of begonias. Send for descriptive catalog. $1. Millie Thompson, P.O. Drawer PP, Southampton, NY 11968.

Begonias—violets—episcias. Cuttings only. List 50¢. Springtime Gardens, 2212 Hickory, Sulphur, LA 70663.

Violets - Begonias - Episcias
Cuttings only. Send 35¢ for list.
Wilson's Greenhouse, Route 1
Box 165-4 Ozark, MO 65721

African violets, begonias, gesneriads, terrarium and dish garden minis, cuttings only. Windowsill Gardens, Box 943, Center Moriches, NY 11934. List 35¢.

Rare & unusual Begonias, including new Lowe hybrids. Rooted & unrooted cuttings. No shipments to Calif. Price list 50¢ Paul Lowe, 1544 West Rd., Lake Park, FL 33403.

New catalog — begonias, gesneriads, violets, cacti & succulents and more. Semi-annual supplements sent. Send $1.50 to Robert B. Hamm & Assoc., 2951 Elliott, Wichita Falls, TX 76308.

Begonia and lily catalog—35¢. Leslie & Winkey Woodriff, Fairyland Begonia and Lily Garden, 1100-B Griffith Rd., McKinleyville, CA 95521. Visitors welcome.

Begonias: Over 100 rhiz., rex, canes. List 45¢. 20 different only 15.95 pp. Semps 50¢, doubles 65¢, also violets, ferns, cactus. Atkinson's GH, Rt. 2, Morrilton, AR 72110.

Begonias, gesneriads, tropical vines and more. Southeast shipping only. Send 35¢ or two stamps for list. Reasonable and guaranteed. Christopher's Garden, 13450 Innerarity Pt. Rd., Pensacola, FL 32507.

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