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Editor: Chet Blackburn, 720 Millertown Road, Auburn, California 95603.
Telephone and Fax: 530-885-0201, E-mail: blackburn@neworld.net

Editorial Advisory Board: David H. Benzing, Gregory K. Brown, Pamela Koide, Thomas U. Lineham, Jr., Harry E. Luther, Robert W. Read, Walter Till.

Cover photographs. Front: *Tillandsia cretacea*, about 65 cm tall, flowering at Marie Selby Botanical Gardens. Text begins on page 150. Photograph by Vern Sawyer. **Back**: A beautiful display of bromeliads at the home of Bill Soerries in Georgia. Photograph by Bill Soerries.

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Please address all membership and subscription correspondence to Membership Secretary Carolyn Schoenau, P.O. Box 12981, Gainesville, FL 32604. Telephone 352-372-6589. E-mail: bsi@nersp.nerdc.ufl.edu

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Cultivar Corner

Chet Blackburn

When I first acquired a specimen of *Neoregelia* 'Empress Variegata' (figure 1) from Bill Baker of California Gardens, I had some doubt as to whether Bill had the correct label on the plant. As a young offset, the plant's form is not that of a typical *Neoregelia*. In fact, with it's narrow, arching foliage it looked more like an *Aechmea* than a *Neoregelia*, but a *Neoregelia* it did turn out to be. This is one of my favorite bromeliads. Many bromeliads displaying red foliage markings tend to lose that color during the darker days of winter, but not this one. It stands out in a greenhouse at any time, but particularly so in the winter when many other bromeliad colors have faded while waiting the return of brighter light and longer days. This is a variegated form of *Neoregelia* 'Empress', a cultivar of unknown parentage that was part of Mulford Foster's collection. It probably appeared sometime during the seventies. The variegated form was developed in the Bert Foster greenhouses in 1979.

Another plant bearing colorful foliage is *Billbergia* 'Ralph Graham French', (figure 2) a cultivar of *Billbergia vittata*. It develops purplish-black leaves in bright light with silver crossbanding and a hot-pink clear margin. The inflorescence has the brilliant red bracts, rose sepals, and rich blue petals typical of the species. The plant was registered in 1992 by Kathy French, who named it in honor of her father.

Two John Arden hybrids are also pictured. One is a bigeneric, × *Vrieslandsia* 'Cascading Flame' (figure 3) which is a cross between *Vriesea* 'Redtail' and *Tillandsia ampla*. It features a large many-leafed rosette with green tapering leaves that are mottled in red. The pendant inflorescence is large in relation to the plant. The plant was registered in 1996.

In the same year, Mr. Arden registered *Vriesea* 'Aztec Gold' (figure 4), a hybrid between *Vriesea triligulata* and *Vriesea* 'Brentwood' (Dusty). The two-foot inflorescence consisting of a purple scape and yellow bracts and flowers emerges from a rosette 1.5 feet in diameter. As with many of the Arden hybrids, the foliage is bicolored. The upper surfaces of the leaves are green and the lower surface maroon.

Auburn, California

Photograph by Bill Soerries

Figure 1. *Neoregelia* 'Empress Variegata'

Photograph by Kathy French

Figure 2. *Billbergia* 'Ralph Graham French'

Photograph by Pamela Koide

Figure 3.
× *Vrieslandsia* 'Cascading Flame'

Figure 4.
Vriesea 'Aztec Gold'

Photograph by Pamela Koide

Introducing: *Tillandsia cretacea*

Harry E. Luther

Tillandsia cretacea L.B.Smith (cover photograph) is both a spectacular ornamental and a very interesting species from an ecological and ethnobotanical standpoint. It has one of the northernmost distributions of any large tillandsia: into subtropical Sonora and Chihuahua states in Mexico.

The earliest mention of this species seems to be by Howard Scott Gentry (1942) who collected the plant in 1935. This collection (*Gentry 2032* at F) was originally misdetermined as *Tillandsia inflata* Mez, a name later changed, for nomenclatural reasons, to *T. mooreana* L.B.Smith. Gentry's plant was described as a lithophyte growing along the Río Mayo in the Sierra Charuco of Sonora.

This taxon was next encountered in Chihuahua in 1957. Based on this collection (*Knobloch 564* at US) the new species *Tillandsia cretacea* was described by Lyman B. Smith in 1974.

In 1977, in the final installment of the South Bay Bromeliad Associates Bulletin, published as "Tales Of Spencer," Ralph Spencer (1977) writes about *T. cretacea* (as *T. mooreana*), a species he had been unsuccessful in locating in habitat but had seen in cultivation.

A few years later, the ethnobotanical collector Robert Bye, Jr. (1979) reported *T. cretacea* (again as *T. mooreana*) to be "a companion plant of peyote" and "Harming the bromeliad is considered to be very dangerous". His voucher specimens (*Bye 2966, 6093* and *7096* at HUH) were gathered from 1972 to 1975 in the Barranca de Batopilas in the state of Chihuahua. Notes on two of the herbarium specimens state that the plant is "companion of peyote and the devil" (*6093*) and "touching the plant will cause one to go crazy" and "induces visions of many colors" (*7096*). This writer is still awaiting the colors portion.

The pictured plant was collected as a small seedling in 1993 from a steep-walled barranca north of Alamos, Sonora, Mexico, quite near to the much earlier Gentry collecting site. Flowering occurred five years later. The cultivated plant is only about 1/2 the size of the wild plants in habitat. I would guess that the plant might prefer cooler and drier conditions than those prevailing in Florida. At any rate, the inflorescence is spectacular and long lasting.

Although *Tillandsia cretacea* is quite uncommon in cultivation, artificially propagated plants are available from at least one California nursery.

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Spencer R. W. 1977. *Tales of Spencer*. South Bay Bromeliad Associates, California.

Book Review

Jason R. Grant

Botanica. The illustrated A-Z of over 10,000 garden plants and how to grow them. Turner, R.J. Jr. & E. Wasson. 1997. Random House Australia Pty. Ltd. 1007 pages, hard cover, 30 cm, ISBN 0 09 1836158. Order from: Random House Australia Pty. Ltd., 20 Alfred Street, Milsons Point, NSW, Australia 2061, tel. 612 9954 9966, fax 612 9954 9008.

This book is one to rival Graf's Tropica or Exotica. This book (with an accompanying CD ROM for the computer) contains, as the title suggests, thousands of photos. In contrast to Graf's books, there are descriptions for each genus, and then again for each species illustrated. The brief descriptions are of the plant's morphology, their native habitat, how to grow them, and in which zone(s) they may be grown.

The book has editorial consultants from Australia, New Zealand, the United Kingdom, and the United States. Therefore, the range of plants covered in the book is well-covered geographically, as well as in all types of gardens, temperate to tropical. In the case of bromeliads there are entries for *Abromeitiella (Deuterocohnia)*, *Acanthostachys*, *Aechmea*, *Ananas*, *Billbergia*, *Bromelia*, *Canistrum*, *Catopsis*, *Cryptanthus*, *Dyckia*, *Fascicularia*, *Guzmania*, *Neoregelia*, *Nidularium*, *Orthophytum*, *Pitcairnia*, *Portea*, *Puya*, *Quesnelia*, *Tillandsia*, *Vriesea*, and *Wittrockia*.

This is one of those great books to have sitting around to page through every once in a while. Strange plants from different parts of the world are illustrated, as well as species common in your own area. There really isn't anything significant about the bromeliad photos or descriptions, but the inclusion of so many species for a book covering plants from all over the world is surprising. If you are only looking for bromeliads then this isn't for you. But if you want a good general book similar to Graf's books with a large number of species with descriptions, then this is to be recommended.

Fontaine-Andre 30, Neuchatel 2000, Switzerland

Tillandsia Samaipatensis

Lee Moore **Photograph by the Author**

On a recent trip to Bolivia (August 98), we found a species of *Tillandsia* of particular note. Before leaving for Santa Cruz, I had called Harry Luther, Director of the Bromeliad Identification Center at Marie Selby Botanical Gardens, to ask if there is anything in particular that we should look for after describing the areas we intended to explore. He told me to be on the lookout for a large yellow-branched *Tillandsia* that was recently named for the Department of Samaipata with a town of the same name.

On the first day of our journey traveling the southern road from Santa Cruz toward Cochabamba it turned out to be the first plant that we found. We were lucky that they all happened to be in full inflorescence and were easy to identify from his description. Thank God for "Ole Harry," he knows just about everything about bromeliads.

Only a few kilometers before the town of Samaipata, we spotted large plants of *Tillandsia samaipatensis* growing on the canyon walls with spectacular bright butter-yellow branched inflorescences. Growing to a height of about 1.5 mtrs, the inflorescence grows upright like a towering Ponderosa Pine until it gradually leans over under its own weight at maturity. The area where they are found is about 1800 mtrs. MSL and is arid most of the year. The plants were growing lithophytically or in the loose dirt among Cacti and Agaves.

Figure 5. *Tillandsia samaipatensis* growing on steep cliffs in Bolivia

This species appears to be endemic to this one area. They only occurred sporadically over a few kilometers and were not seen again throughout the rest of the trip even though we were passing through the same mountains. Collecting a few specimens proved to be difficult because most of them were growing on the steep canyon walls across the river from the road. They were mostly unattainable, so I imagine that they will remain there undisturbed for some time to come. They also appear to be monocarpic; meaning that they do not pup and grow only from seed after maturing, dying and finishing their cycle by spreading their seed like *T. fendleri.* There were some small hair-like plantlets at the base of some of the plants I collected, but I could not ascertain whether they were hair pups or simply seedlings produced by seeds lodging at the base. Maturation from seed could possibly require a decade. This observation was made from noting many plants with dried inflorescences from previous years that were still lush and green with no pups showing. Still others had dried and tumbled down the hillsides.

My first thoughts in finding this plant was that its color and form of inflorescence could be of great importance in introducing new blood for future hybrids which are becoming more spectacular each year among the commercial growers.

From Cochabamba we returned to Santa Cruz via the northern road. On the other side of the mountains we found many other species of *Guzmania* and *Vriesia* of spectacular color and form of inflorescence but these were in very high altitude and will be the subject of a future article on another trip.

There was one species of *Vriesia* (probably *Vriesea maxoniana*) of note which I found at a lower altitude, hence a warmer area. I found only one cluster with a dried inflorescence and a few pups that were just coming into bud. The dried inflorescence showed that it was a single 'feather' of unknown color. At the time of writing this article, it appears that the color is going to be a bright yellow.

Bolivia is a wonderful country in which to travel. Accommodations are excellent and the food fantastic. Even in the "boonies" in roadside restaurants, we had Rainbow Trout or river fish and a choice of venison or other jungle animals such as the Paca or Agouti, which is the most delicious meat you could imagine. The river catfish is even better than the trout. Of course, you can get chicken or tough beef but who wants that stuff when those other juicy things are available? The excellent food in Bolivia was one of the highlights of this trip that everyone commented on.

Every summer I organize 3-4 trips with groups of no more than 7 adventurous explorers to accompany me on expeditions to Peru, Ecuador, Bolivia

and sometimes Nicaragua[1]. I would like to acknowledge my fellow members on this Bolivian adventure who, as a group, made this one of the more enjoyable trips.

Jim Thompson, the only 'rookie' on the trip (now a veteran) is the Floriculturist for Disney's Animal Kingdom in Orlando. Many of the Aroids and Bromeliads found on this trip will be integrated into the Animal Kingdom. Jack "Juanito" Percival of San Diego was the life of the trip. Even if we would not have found any plants at all, we had "Juanito". Then there was Jack Dammann of the Virgin Islands, an old timer from my 'Bullis Expedition 1992' (see the Jan-Feb 1994 issue of the Journal of The Bromeliad Society). Mary Jean Poetz of St. Louis and Bill Janetos from a little one-horse town in New Hampshire have been charter members of my expeditions every year for the last decade.

As noted previously, I organize expeditions every summer to explore and search for new and exciting tropical plants. We all have a great time and have lots of fun and always find lots of interesting plants. The plants that we collect are non-CITES and I take care of any necessary permits.

Everyone asks me if it is safe to travel in 'those countries'. My response is that the only dangerous part of the journey is passing through Miami...be very careful there!

Miami, Florida

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[1] For details contact Lee Moore, P.O. Box 560822, Miami, Florida or by phone at 305-274-3980.

Gift Memberships Available

Carolyn Schoenau

Why not give a membership in the Bromeliad Society International to someone for ***Christmas, birthdays,*** or just because you like them enough to improve their knowledge of bromeliads. Consider giving one to a botanical garden, a library or your bromeliad society, billed per your instructions. Renewals can be billed to you if you so specify. Donors are acknowledged in the Journal and in a welcome letter to the recipient.

Photographing Bromeliads

John Catlan

I'm well, Genny's well, Spud the dog is well, all's well here at Jacob's Well. Maurie Kellett rings me the other day and tells me how much he loves my photos. He thinks they're just great and would I do an article an photography? A little flattery goes a long way. At least he had the decency to fill the gap between the flattery and the sting with a lot of brom talk and he had me agreeing before I'd really considered it. A true artist is Maurie.

The main problem I have with a lot of photographs of plants is that the photo does not flatter the plant. Photos of food flatter the food. Photos of clothes flatter the clothes. Then there is the angle used in photographing models, then there is the make up, then there's the lighting, then there are the accessories. We value big, little is not the preferred choice. When taking photographs, size is not relevant but proportions are. A photo can give you the impression that an object is large or small.

Barney, a friend who was once photographing snakes, used this to his advantage. It was not necessary to take photos of a two-meter snake, a snake of a meter was much easier to handle, and providing that the shot was set up correctly no one knew the difference. Barney would convert the corner of his lounge room to the great outdoors, setting out small logs, small rocks, small tufts of grass, small dried leaves and to this was added a very adequate lighting set up.

During summer there would be numerous households wanting snakes removed. The snake would be collected and transported in an Esky containing a couple of freezer blocks wrapped up in a towel, then the Esky lined with towels. By the time he got home the snake's metabolism would have slowed down until it would enter a state similar to hibernation.

You had to get in close so that the snake dominated the photo. This made the snake look large. One approach would be to use a lens that put you way back and the snake would still fill the frame, but that was no good. The snake had to take a striking stance and/or focus it's attention on the camera; it gave the series of photos something extra. You had to check to make sure everything was right camera-wise, then the hibernating snake would be artistically arranged. Then it was lights, camera, action! You were in a countdown situation. The lights were warming up the snake. The warmer the snake, the more aggravated it became. The art was in getting the photos, then getting the snake back into the lettuce crisper of the fridge for a fast cool down before the venom started dripping from the camera lens. Then you could start another session.

It was just a very unfortunate set of timing and circumstance that at lunch time, Barney had just popped the snake back into the lettuce crisper when Mrs. Barney decided a salad would be nice for lunch. When Mrs. Barney went to get out the lettuce she was confronted with a very aggressive snake, who five seconds ago was sunning himself under the lights. She chucked a number ten wobbly of all times together with a touch of the vapors.

USING BACKGROUND

Background is important to any group of plants but must not detract from the subject. Barney preferred a natural background that was out of focus. If the subject was in sharp focus and dominated the area framed, the eye did not stray, and in a series of photos he used the same style of background. The background became boring and the subject would hold the eye's interest. For example, when shooting a series of different bottlebrush flowers he used the blue of the sky to very good effect.

You may choose a colored background but stay away from reds, yellows and oranges. They kill the subject because they are too overpowering. My choice is black, and over the years the background in the photos will remain constant. If I change over to taking slides, when they are shown in a darkened room the subject should leap out at you from the screen.

EXPOSURE COMPENSATION

You may find a small exposure compensation dial near the film rewinder (at least that's where it has been on the cameras that I have used). When using print film you can set it on zero position and leave it there because of the exposure latitude of print film. The lab will be able to compensate for some of the variations in the scenes you photograph. If you are using slide film, which has no exposure latitude, it is essential to understand how the exposure compensation control can help.

If your subject has a dark background, you should give a - 1 or - 2 setting to get the correct exposure of the subject. If you photograph a scene such as a person against a white wall the meter will 'see' a very bright subject and give a short exposure. The wall will appear normal and the person will be dark against it. In a situation like this a -1 or -2 will produce a wall which is whiter than white and it will give a much better exposure for the person. You will learn from experience what compensation to give. A lot depends on the area of background in relation to the area of the subject. I have seen this problem many times when plants have been photographed using the walls of a white plastic or glass house as a background. The plant has shown up dark and the detail indistinct against the white background. What should happen when you give it a +1 or +2 is that

the plants appear normal with good detail depth of color but the white will appear much brighter.

The human brain, takes what the eye sees and adjusts and simplifies it. The photographer has to learn to override the brain and see what is actually there and not what the brain decides we want to see.

COMMENTS ON LIGHT

Artificial light will give different color casts to photos. Our eyes do see this color and will get a glimpse of this when we first step into a room or turn a light on but our brain rapidly makes adjustments until every thing appears normal. You will notice the same thing when driving at night. When you first drive some road systems they appear to be an odd color but within a few moments our brain adjusts everything back to being closer to normal. If you grow neoregelias and have a big interest in them you will notice that artificial light will often kill their color.

Sunlight in the early morning is bluish/cold (minimum dust in the air) and in late afternoon reddish/warm (increased dust content) which is different to the light during the day but our brain adjusts and we see it as a constant color. I found this difference very difficult to notice. If you grow neos and observe them closely you will notice the color in the morning and afternoon is far better than in the middle of the day. That is because morning, bluish/cold and afternoon, reddish/warm (reflecting off the plants) enhances the color of your plants. Because of your interest in neos you will notice the color change and if you check out the way the sunlight appears at the various color phases of your neos (through the day) you may begin to see the variations in sunlight.

Way back before I was born; builders of churches oriented their predominantly blue stained glass windows to catch the morning light (bluish/cold) and their predominantly red stained glass windows to catch the afternoon light (reddish/warm) and this enhanced their color. This light is light quality.

Lack of light will give you long green strappy leaves lacking in color, but if there is too much light, the leaves will be shorter on compact plants but the color will be bleached out of foliage. Strong light in the case of spotted plants will turn the outer leaves all red and leave only the center with spots. In plants like *Neoregelia* 'Bob and Grace' and *Neoregelia* 'Lambert's Pride', the green/white banding is restricted to the center leaves and is burnt to red in the outer leaves. The color of the bracteate leaves is affected when the plant flowers and can be enhanced by correct light; too low will reduce it and too high a light will bleach the color out before it should fade. This light is light intensity.

The brain only lets you see what you want to see or expect to see. The rest is edited out by the brain, so when you take photographs of your own plants you have to be careful to clean and check plants and pots very carefully. For some unknown reason when you photograph other people's plants the imperfections are much more noticeable than your own. I am not making this up, it is a fact, and photography has the ability to ram this home on occasion.

This is the reason I get skeptical about the general public criticizing a judge's decision, especially a person who has entered plants in the same show. When they say they are totally impartial, I believe them, but I know there is a case for saying they can't see the blemishes for the plant. Before you photograph plants look at each leaf, look in every nook and cranny, look at total appearance, look, look and then look some more.

Think like a judge and go through each point of the plant. However, you are not judging a plant, you are looking for hidden imperfections and highlighting the good aspects.

When I was about eight years old I became aware of a framed piece of embroidery hanging on Grandma Baker's lounge room wall. By the time I was eighteen I finally knew what it meant.

"There are none so blind as those who will not see."

When I started taking photographs, it was a humiliating experience to realize that the boundaries these simple words encompassed was far greater than I was aware of. One of the biggies of photography is to look at a plant/scene/object and actually see what is there. If you cannot teach yourself to see what you are looking at, how can you photograph it in a manner that flatters? The ability to see what you are looking at comes in lots of very small steps.

REASONS FOR NOT USING OUTDOOR LIGHTING

Outdoors light contrasts and is transitory; it either seems to be raining, blowing a gale, blowing plants over or ruffling the backing screen, or be excessively hot producing gallons of sweat on the view finder, or misting it over in winter. The most important reason is that all this mucking about is time consuming so in the end I opted for using the second bedroom and turned it into a place for taking photos.

We need to be aware of shadows/light contrast. The human eye to brain system can distinguish far more variations in shadows than film can capture. You have to realize that once a shadow gets past a certain density in relation to the bright portions of the subject, they will appear as black and there goes the detail.

That is the advantage of fill in flash. When you are photographing plants in full sunlight, the fill in flash will reduce the contrast (shadows) from harsh sunlight. Some people prefer to photograph plants in the shade as this reduces the contrasts. The T.T.L. (through the lens) metering system will cut off the flash at the moment the correct exposure has been reached. You may have to adjust the aperture (f stop) to get a shutter speed that will be long enough, and if your camera does not have T.T.L. it becomes much more complicated and you will have to make several tests to get it right.

REASONS TO USE AN INDOOR SETUP

For one thing, it is much more relaxing and gives you plenty of time to study the plant and to study the picture through the viewfinder. Stop and think about what you are doing. Record all the details for future reference or you will not learn by either your failures or successes. Otherwise, you will occasionally produce some magnificent photos and you will be asking yourself why you can't produce them all the time.

When you relax you can go through a mental checklist and try and imagine what the photo will look like. The more aggravated you become the less control your brain will have in making decisions.

FILM PROCESSING

I decided to get my films processed at Kodak one-hour processing because it is cheaper and I spend less time running around. They do a pretty good job and if they do stuff it up they will reprint it. Then, when and if you begin to take good photos you may change to a specialist lab. You may have the impression that one hour labs do a lot of manipulation of your photos but as far as I can tell from looking around, I believe they just print and that's it. They do manipulate your exposure problems. It would appear that on occasions some lab technician does forget to set a dial at the correct mark.

Brooks Atkinson, in *Once around the sun*, said, "The virtue of the camera is not the power it has to transform the photographer into an artist, but the impulse it gives him to keep on looking - and looking".

Jacob's Well, Victoria, Australia

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A new *Aechmea* from Amazonian Ecuador

Harry E. Luther

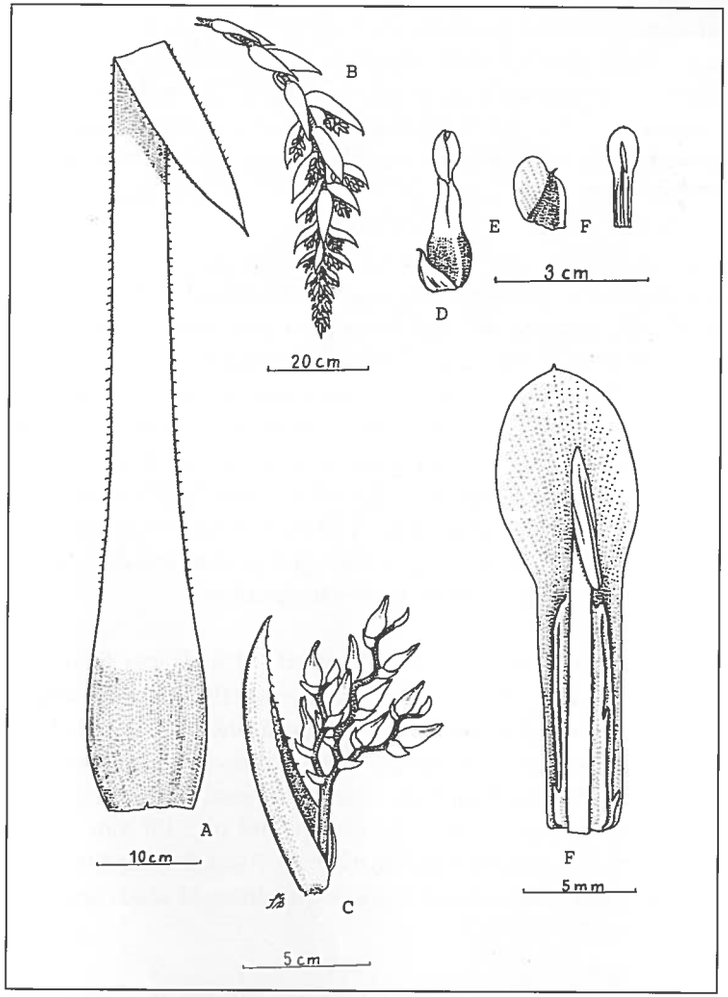
Finding large AND beautiful new bromeliads becomes increasingly more difficult as time goes by and unexplored forests shrink and disappear. The following new species of *Aechmea* is an especially interesting addition to the flora of Ecuador.

***Aechmea patriciae* Luther, sp. nov.** (Figure 6)
A *A. williamsii* (L,B. Smith)L.B.Smith & Spencer cui affinis sed inflorescentia tripinnata, rhachi geniculata et petalis brevioribus differt.

Type. Ecuador. Pastaza: vic. of the resort Kapawi, 300-400 m elev., epiphytic with *Aechmea lonqifolia* and *A. chantinii*, grown from seed collected Nov. 1995, flowered in cultivation 3 June 1999, *Patricia Bullis s.n.* (Holotype:QCNE; Isotype:SEL).

Plant an epiphyte. **Leaves** rosulate, 25 to 30 in number, spreading, 85–95 cm long, coriaceous, green. **Leaf sheaths** elliptic, entire, somewhat nerved, 15–20 × 8–12 cm, dark castaneous especially adaxially, very densely dark; punctate lepidote. **Leaf blades** ligulate, acute, pungent, 5–7 cm wide, variably serrate with dark 2–5 mm long spines, appressed pale punctate lepidote especially abaxially. **Scape** arcuate, 25–35 × 1 cm, fugaciously white floccose, reddish. **Scape bracts** elliptic, acute pungent; 8–12 × 3–4 cm, variably serrate, appressed pale lepidote, rose to light pink. **Inflorescence** declinate tripinnate, 30–40 × 12–18 cm. **Primary bracts** elliptic, acute, variably serrate, rose, the lowest like the upper scape bracts and exceeding the branches; the upper becoming gradually smaller and much shorter than the branches. **Primary branches** with a slender flattened 1–4 cm long peduncle. **Secondary bracts** broadly elliptic, apiculate, like the floral bracts. **Secondary branches** 2–5 cm long, distichously 3-to 8-flowered, the geniculate rachis quadrangular. **Floral bracts** broadly elliptic, rounded and apiculate, 7–9 mm long, nerved, pale lepidote, pink. **Flowers** sessile, opening during the day, spreading at 30 to 45 from the axis at anthesis. **Sepals** free, very asymmetrical with a broad wing, mucronate 11–14 mm long, thin coriaceous, nerved, sparsely pale lepidote, very pale pink. **Corolla** erect, spreading only at the apex. **Petals** free, oblanceolate, broadly acute and apiculate, 20 × 3–4 mm, lavender-blue, each with a pair of 11–14"mm long longitudinal ridges; the ridges each with one or more small, acute appendages at 3–5 mm above the base. **Ovary** ellipsoid, ca. l. cm long, pale green to white.

Aechmea patriciae differs from the related *A. williamsii,* also from western Amazonia, by having a tripinnate (vs. bipinnate) inflorescence with the branch rachis geniculate (vs. nearly straight) and shorter (20 vs. 26 mm long) petals. In addition, this new species has a declinate inflorescence, a feature not otherwise found in the "former *Streptocalyx*".



Drawing by Stig Dalstrom

Aechmea patriciae Luther: A, leaf; B, inflorescence; C, primary bract and branch; D, floral bract and flower; E, sepal; F, petal and stamen.

The name honors the collector Patricia Bullis of Princeton, Florida who grows many ornamental bromeliads in her nursery.

Marie Selby Botanical Gardens, Sarasota, Florida

Werauhia sanguinolenta 'Rubra', a Wonderful Garden Subject

George Stamatis **Photographs by the Author**

I first read about this stunning plant in the Tropiflora *Cargo Report*. Being fond of tropical foliage plants, I always look out for something with unique foliage. The description of it sounded really good; strongly colored foliage, large sized plant, fast growing, and so on. I decided to import some bromeliads and ordered some of the seedlings of this species as they were advertised at the time. That was about 4 years ago.

Looking at the plants now, I am amazed. They have developed beautifully and quickly, and I am surprised at their rapid growth! I planted them into pots until they outgrew the pots (it did not take long). I then planted them out in the garden with all the other bromeliads. I put them in full sun, three in a hot rocky area and the other three in a more moist location. In the full sun and warm humid air they all developed into superb specimens with deep purple leaves in huge rosettes of a meter wide with long broad leaves. They have proven to be very hardy and vigorous. I fertilize them lightly every 2 weeks with an orchid fertilizer. As for watering, I seldom water them as the rainfall is usually sufficient. They are growing in the open ground and do not mind having their roots in soil. They basically look after themselves.

In January 1998, the first one flowered. It took less than 3 years from seedling to flower! The inflorescence is not colorful, but still interesting and adds to the boldness of the plant; a very tall multi-branched spike of plain green. The plant's main attraction is its foliage. The blooms opened from the late night hours until the early hours of sunrise. They were pale purple and white in color and smelled like a musty room. I would go out at 5:00 a.m. and find bees buzzing around the inflorescence pollinating it. I was hoping that it would self-pollinate, which it did. It produced copious quantities of seeds and the seedlings are growing very well.

The remaining five specimens flowered during the following season, a year after the first one bloomed. They are very stately plants when in bloom with their inflorescences reaching over a meter in height. They unfortunately produce only one pup from the center which re-occupies the spot where the mother plant was before, but the abundance of seedlings will make up for that.

If you live in a suitably warm and humid climate and can obtain this species, do so without delay. It is one of the best landscape bromeliads I have ever grown.

Scottburgh, South Africa.

Figure 7. A group of three *Werauhia sanguinolenta* 'rubra' planted out in an open sunny area among stones and other bromeliads.

Figure 8. The first one to flower. The inflorescence twisted like a snake as it developed, and then eventually straightened.

Contributions to the BSI

We would like to thank the following individuals and organizations for contributions made recently to the BSI, the *Bromeliad Journal* color fund, the Mulford B. Foster Bromeliad Identification Center, gift subscriptions, or for declining reimbursement for expenses incurred on behalf of the BSI.

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Golden Triangle Bromeliad Society
Greater New Orleans Brom. Society
(in memory of George Anderson)

Checks or international money orders should be made payable to the Bromeliad Society International. They may be mailed to Membership Secretary Carolyn Schoenau, P.O. Box 12981, Gainesville, FL 32604, Treasurer Clyde Jackson, 21 Sherwood, Dayton TX 77535 or to editor Chet Blackburn, 720 Millertown Rd., Auburn, CA 95603

Bromeliads in the Singapore Botanical Gardens

Len Colgan **Photographs by the Author**

On the day preceding a university mathematics conference, I took the opportunity to visit the Singapore Botanic Gardens, mainly because I had prior information that a major bromeliad collection had been acquired in recent years and was now on display. There were many large pink/red albo-marginated ananas and various dyckias growing in the open, but these clearly had been there for years. I was directed towards the northern section containing The National Orchid Garden, the largest orchid showcase in the world. Before paying the $2 entrance fee, I inquired about bromeliads. The authoritative person supplying information denied any knowledge of such plants, stating that this vast enclosure contained only orchids. Unperturbed, I entered.

The fact that one entire corner of this orchid garden had been set aside for the Yuen-Peng McNeice Bromeliad Collection, unbeknown to those at the entrance, is of concern. The first sight of bromeliads was a scene of flowering pitcairneas, *Aechmea blanchetiana*, *Aechmea nudicaulis* 'albo-marginata', *Aechmea distichantha*, and various puyas and dyckias, offset by a number of colorful neoregelias. Further inwards in a shaded area, growing amongst orchids, were many superbly grown *Vriesea saundersii* × *bituminosa*, mounted neoregelias, flowering guzmanias and various hanging tillandsias.

Next was a somewhat brighter section with more large ananas, puyas, cryptbergias and defoliated tree trunks adorned with numerous smaller red neoregelias. Sufficient light filtered through to enable a few photographs to be taken, despite overcast conditions. Sadly, the bulk of the collection was a final disappointment. It was housed inside a large shadehouse that did not appear to get sufficient light or air-circulation. Inside was a sign that said:

> "HISTORY OF THE COLLECTION: Through the generous sponsorship of Lady Yuen-Peng McNeice, this unique collection of bromeliads on display was acquired from Shelldance Nursery in the United States in 1994. This collection consists of 23 genera, 320 species and about 520 taxa (cultivars, varieties and hybrids)."

Presumably Michael Rothenberg made a deal to sell most, if not all, of his nursery stock, including distinctive Yamamoto hybrid neoregelias, to enable this display to be set up in Singapore. A lot of time and effort is still being spent to care for this collection, but with the public pouring through it is not easy to keep the large shadehouse devoted solely to bromeliads in peak viewing condition. While I was there, plants in flower included neoregelias, canmeas, guzmanias, softer aechmeas and cryptanthus. Labels have been misplaced. For

example, a *Catopsis* was labeled "*Vriesea corcovadensis*" and a *Cryptanthus* Pink Starlite was labeled "*Neoregelia* × 'Polka Dot Junction'". Many tillandsias were tied to hanging cord, which goes against my principles of ensuring they are securely mounted. By displaying neoregelias on cut-down tree branches, the staff clearly have knowledge of growing conditions, but the lack of sufficient light overall will never allow these plants to reach the same aesthetic beauty of those growing outside. In addition, the conditions made photography here pointless without a flash. But, next time you are in Singapore, the collection is worth a visit, irrespective of your appreciation of the predominant orchid display.

Warradale, South Australia, Australia

The Shelldance collection sold to Singapore Botanical Gardens was a varied one. The original stock consisted primarily of the bromeliad inventory from California Jungle Gardens, purchased when that nursery ceased existence. California Jungle Gardens had been owned by David Barry, Jr., a former BSI President and one of its founders. Later Shelldance also purchased the inventory of the Rod McClellan Orchid firm, which had been acquired from Plaza Nursery of Buena Park, California when it ceased operation. That nursery had been owned by bromeliad pioneer Kelsey Williams. The Shelldance collection was further augmented with extensive importation of bromeliads and with some of the fine hybrids from Hawaiian hybridizer Howard Yamamoto. At one time, the Shelldance collection was one of the finest in the country, but had deteriorated somewhat in the years prior to the sale Singapore Gardens. CHB

Figure 9. Pitcairnias, *Aechmea blanchetiana*, and various neoregelias growing outdoors.

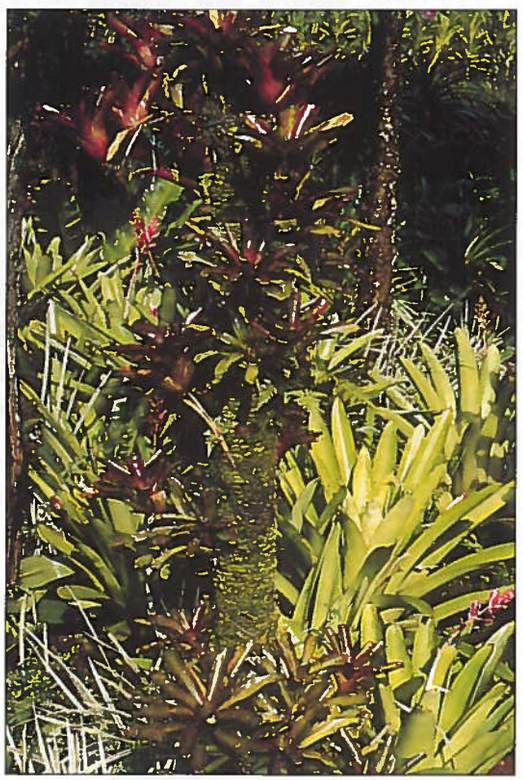

Figure 10. Neoregelias and *Aechmea distichantha*.

Rediscovering *Aechmea triticina* Mez

Bruno Rezende Silva[2] & Elton M. C. Leme[3]

Aechmea triticina was described in 1892 by Karl Mez, based on material collected by A. Glaziou with no reference to date, at the locality of Palmeiras, Rio de Janeiro State. The holotype is presently located at the Herbarium of the Botanischer Garten und Botanisches Museum Berlin-Dahlem, Germany. Since the original description, practically nothing has been added to the knowledge about the species.

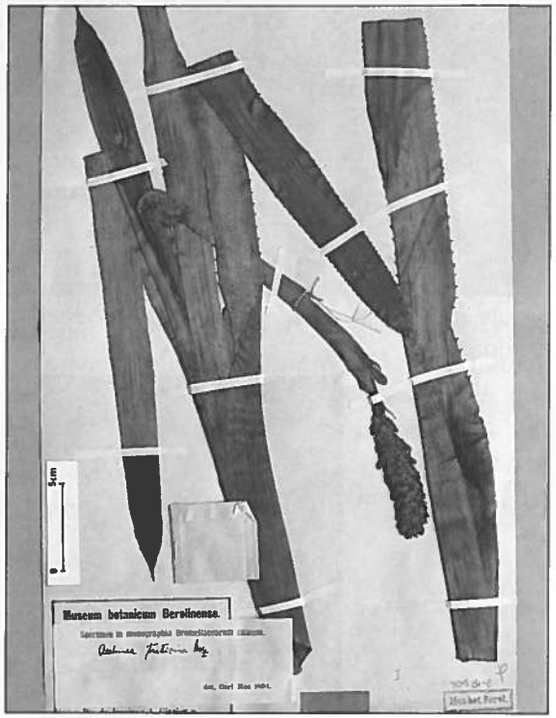

Figure 11. Holotype of *Aechmea triticina* deposited in Berlin-Dahlem Herbarium.

Smith (1955) associated *A. triticina* with the species complex headed by *A. pineliana* (Brong. ex Planch) Baker, which was maintained in Smith & Downs (1979). This conception naturally became prevailing, as can be exemplified by the illustrations of *A. triticina* presented by Baensch & Baensch (1994), with clear resemblance to *A. pineliana*.

During the revision of subgenera Pothuava – to which *A. triticina* belongs –, Wendt (1997) did not deviate from the conceptual line initiated by Smith (1955) and Smith & Downs (1979), explicitly associating this taxon to *A. pineliana*. As a consequence, new synonyms were incorporated into *A. triticina*, which reveals thinking compatible with the adopted conception of the species.

Only recently populations were discovered from collections carried out at the probable region of the type locality with characteristics that fit precisely into the protologue of *A. triticina*. On the other hand, the new specimens made it possible to ascertain that the conceptual line followed by Smith (1955), Smith & Downs (1979) and Wendt (1997), based essentially on the analysis of dried specimens, deviated strongly from the original concept of the species outlined at the end of last century by Karl Mez.

[2] Graduate student in biology at the Federal University of Rio de Janeiro (UFRJ) and apprentice at the Department of Botany of Museu Nacional (UFRJ).

[3] Herbarium Bradeanum – e-mail: me@tj-tj.gov.br

Aechmea triticina Mez, in *Martius Fl. bras. 3* (3): 369. 1892.

Synonym: *Pothuava triticina* (Mez) L. B. Sm. & W. J. Kress, *Phytologia 66* (1): 75. 1989.

Type. Brazil, Rio de Janeiro: Palmeiras, *A. Glaziou 8985*. (Holotype:B).

Material examined: Brazil, Rio de Janeiro, Paulo de Frontin, Sacra Família do Tinguá, Quinta de Santa Matilde, 25 Mar. 1998, *B. R. Silva 9*, cult *E. Leme 4435* (R, HB); 10 June 1998, *B. R. Silva 66* (R).

Plant epiphytic, propagating by basal stout shoots, flowering ca. 90 cm high. **Leaves** 20 to 25, chartaceous, exceeding the inflorescence, forming a crateriform rosette. **Sheaths** narrowly oblong-elliptic, 10–15 × 3–5.5 cm, pale castaneous adaxially, greenish abaxially, densely brown-lepidote on both sides, nerved. **Blades** sublinear-lanceolate, acuminate, ending in a long pungent spine ca. 1 cm long, not narrowed toward base, 30–100 cm long, 3–5 cm wide at base, densely spinose, spines 1–3 mm long, brown, suberect or slightly antrorse, inconspicuously and sparsely white-lepidote adaxially and very densely white-lepidote abaxially, trichomes sometimes forming narrow transversal white bands. **Scape** erect to suberect, 40–60 cm long, 0.6–0.8 cm in diameter, white, glabrous. **Scape bracts** linear-lanceolate, acuminate, 15–20 × 2–2.5 cm, paleaceous, distinctly exceeding the internodes, greenish-white, densely white-lepidote abaxially and glabrous adaxially, entire, the lowest ones minutely serrulate at apex, the upper ones entire, erect and completely enfolding the scape. **Inflorescence** simple, strobilate, cylindrical, obtuse and without any apical coma of sterile bracts, very densely many-flowered, erect or suberect, 7–12 cm long, 2–3 cm in diameter. **Floral bracts** suborbicular, truncate and mucronate, 12–13 mm long, including the 1–1.5 apical mucro, 12–15 mm wide, entire, enfolding the base of the flowers, reddish-rose, densely and coarsely white-floccose, subchartaceous except for the membranaceous margins, shorter than the sepals, carinate toward base. **Flowers** 60–100, ca. 18 mm long, sessile, polystichous and densely arranged, suberect, odorless. **Sepals** broadly ovate, obtuse and mucronulate, very asymmetrical with a subrounded lateral wing which equals their mucro, ca. 7 mm long, mucro 1–2 mm long, 4–5 mm wide, connate at base for ca. 0.5, reddish-rose, densely and coarsely white-floccose. **Petals** narrowly obovate, emarginate and very slightly cucculate, suberect at anthesis, 12–14 × 3–4 mm, free, white toward base and lilac toward apex, bearing at base 2 coarsely fimbriate appendages 4–6 mm above the base. **Stamens** included.

Filaments slightly dilatated toward apex. **Anthers** narrowly ellipsoid, base obtuse, apex acute, ca. 4 mm long, fixed near the middle. **Stigma** ellipsoidal, conduplicate-spiral, white. **Ovary** broadly ellipsoid, ca. 5 mm long, 3–4 mm in diameter, green, densely and coarsely white-floccose; epigynous tube 1–1.5 mm long; placentation apical; ovules minutely caudate.

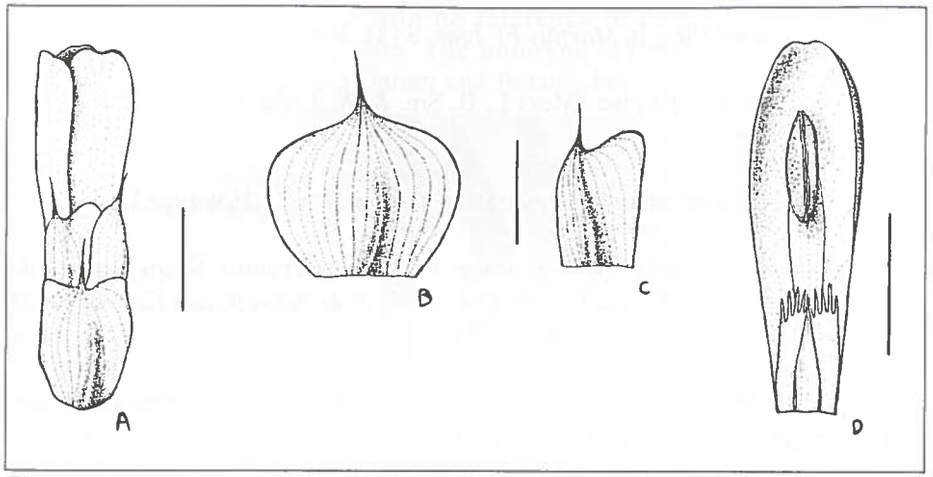

Figure 12. *Aechmea triticina*. A, flower; B, floral bract; C, sepal; D, petal. (scale = 5mm)

In contrast to Wendt (1997), *A. triticina* reveals clear morphological affinity with *A. bocainensis* E. Pereira & Leme, from which it differs mainly by leaf-blades bearing smaller spines, inflorescence much longer, floral bracts with a shorter apical spine, sepals densely and coarsely white-floccose with a shorter apical spine and ovules minutely caudate (not obtuse).

Beyond this, there are clearly visible characteristics that distinguish *A. triticina* from the complex of species related to *A. pineliana*. The most important of them in *A. triticina* [not mentioned by Wendt (1997), but remarked by Smith & Downs (1979)] is the lacking of a coma of sterile bracts at the inflorescence apex. On the other hand, this characteristic is always visible in *A. pineliana* and the taxa related to it, like *A. guarapariensis* E. Pereira & Leme and *A. roberto-seidelii* E. Pereira. It should be noticed that the group of species to which *A. triticina* belongs (e. g., *A. bocainensis*, *A. vanhoutteana*, *A. alopecurus*, *A. brueggeri*) exhibits vividly colored floral bracts (rose to red) and petals in various shades of lilac. In contrast, on the group to which *A. pineliana* belongs, the floral bracts and petals vary chromatically between white and yellow, assuring the visual distinction of the taxa involved. It is worth remarking that the information about the greenish coloration of the flowers, indicated in the protologue of *A. triticina*, was not generated from data observed directly by Mez, who explicitly mentioned it (1891-94). This information was attributed to Glaziou by Mez and is certainly mistaken.

Figure 13. Nova Iguaçu, a suburb of Rio de Janeiro as seen from the Tinguá mountains.

Mainly an epiphytic species, *A. triticina* Mez can occasionally be found growing on the ground wherever light is more abundant. Its habitat is the Atlantic Rain Forest understory between 200m and 800m altitude that still covers much of the Tinguá mountain range about 60 km north of Rio de Janeiro city. Large clumps are common, with as many as 20 rosettes, especially at tree bifurcations. Flowering occurs all year round, but is concentrated in summer (November until March) when most of the rosettes in the clumps send out their colorful inflorescences, making up a sublime sight. Such must have amazed Glaziou, the first to collect the species on the locality of Palmeiras, Rio de Janeiro state and also the most influential landscape artist to work in Brazil during the nineteenth century. The species was rediscovered in 1998 near the city of Sacra Família do Tinguá, just 10 km from Palmeira da Serra, probably the same "Palmeiras" mentioned by Glaziou. Two species of hummingbirds and various insects have been observed visiting the flowers.

The topic related to the taxonomic positioning of *A. triticina* var. *capensis* L. B. Sm. and the synonyms related to *A. triticina* by Wendt (1997) will be presented in a latter article following the present study.

ACKNOWLEDGEMENT

We wish to thank FAPERJ for the scholarship given to Bruno Rezende Silva and also the researcher Andrea Costa, for her valuable suggestions.

Figure 14. The species flowering at the occasion of its rediscovery at the private reserve of Quinta de Santa Matilde, near Sacra Família do Tinguá.

Figure 15. A close-up of the inflorescence of *Aechmea triticina.*

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Rio de Janeiro, Brazil

Strybing Tour Correction.

There is a minor correction to tour schedules that some of you who have already registered for the 2000 World Bromeliad Conference may have received. Some of the information packets mailed to early registrants lists the tour as being scheduled for Monday, July 2, 2000. The correct date should be Monday, July 3. All other information is correct.

Clive Innes

Clive Innes, former President of the European Bromeliad Society and author of several books on bromeliads and cacti and succulents, passed away on March 7, 1999.

A long-time member of both the BSI and the European Bromeliad Society, Mr. Innes will be missed.

Lotusland's Bromeliads – Caring for the Collection

Seth Napel **Photographs by the author**

During the summer of 1960 Madame Ganna Walska hired well-known bromeliad expert and collector Fritz Kubisch to design the original bromeliad garden, under her supervision, just outside her bedroom in the Pavilion Cottage. Much of the original plant material, collected by Kubisch on many trips to South and Central America, still flourishes in the garden today.

Garden designer Bill Paylen came on the scene later in the 1960's to redesign the upper garden and reorganize all the excess plants that Madame had been moving to another location lower on the property. Paylen played a crucial role in the garden's design and still plays an active part by consulting on the culture and display of the plantings. In addition, Paylen's relentless passion for bromeliads and their conservation have further inspired me to preserve and increase the collection for future generations to enjoy. The collection is classified as a familial collection, meaning consisting of only one plant family. The collection consists of 33 genera, 187 species and a number of cultivars bringing the total number of taxa to 215 that are displayed in large swaths, or as I refer to them, colonies.

Managing an extensive plant collection can easily become a full-time responsibility. The last two years have been spent in renovations of the plantings, dividing mature plants, and amending the soil; always placing emphasis on growing the right plant in the right place. New additions for the collection are acquired from other botanical gardens, nurseries, and, of course, bromelphiles. Recent acquisitions have come from the collections of Lloyd Kiff and Dutch Vandervort, for example.

The collection is split between two locations; the lower and upper bromeliad gardens. The lower garden is approximately 12,000 square feet and the upper is about 7, 000 square feet of cultivated beds. Bromeliads, if given the right conditions, grow like wildfire. The annual vegetative reproduction rate of most broms is 2 to 5 "pups" or offsets per mature plant. With the total number of plants exceeding 2,600 there are always truckloads of extra plants after a renovation.

Bromeliads at Lotusland are primarily cultivated terrestrially (in the ground) although many species are also displayed epiphytically (growing in trees). To accommodate the needs of bromeliad root systems, soil is amended with a blend of sandy compost. After replanting, the area is top-dressed with one to two inches of organic matter to increase the soil's microbial activity and promote soil viability.

Figure 16. Tillandsias and aechmeas blend well together in the garden.

Figure 17. The lower bromeliad garden at Lotusland.

Fertilization of the broms is done on a bi-annual basis. One application in early spring and again in mid or late summer. In keeping with Lotusland's overall approach, the primary choice of material is an organic liquid fertilizer with an N-P-K ratio of 0-10-10. This is supplemented by the addition of another organic product high in secondary nutrients and trace micronutrients. All materials are applied at half strength and as a foliar feeding utilizing a 105-gallon spray rig.

The gardens are situated under the canopy of numerous old coast live oaks (*Quercus agrifolia*), many of which are in a slow decline (said to occur over a matter of a hundred years!). Bromeliads, being heliophytes (sun-loving plants), need sufficient sunlight to continue their photosynthetic process. As a result of too much shade, broms don't perform well and display a pale or stunted appearance. Annual consultation with the staff arborist to discuss future tree shaping techniques and new ideas for getting more sunlight into the garden is done routinely. Furthermore, as our native oaks succumb to old age and oak root fungus (*Armillaria mellea*), more sustainable trees, such as *Taxodium mucronatum*, palms, and water-loving *Quercus virginiana* are added.

Fortunately, Santa Barbara's Mediterranean climate permits us to grow bromeliads outdoors throughout the year. As an experienced horticulturist and an avid lover of bromeliads, I can ensure all that visit the gardens will see a dramatically scenic and diverse display of these astonishingly adapted plants.

Santa Barbara, California

New E-mail Address

The E-mail address for Membership Secretary Carolyn Schoenau has changed. It is now bsi@nersp.nerdc.ufl.edu. The new address differs only slightly from the old one by replacing the nervm (old) with nersp.

Tour Schedule for San Francisco World Conference

Roger Lane

There is much to see and do in the San Francisco Bay Area, and BSI members registered for the conference will have a variety of tours available to sample them.

Tour 1 – Member's Plant Collections

This tour will take you to visit the bromeliad collections of at least two local members. It is provided free to all conference registrants and will last about 4 hours. The tour will take place on Saturday, July 1 in the morning and will be repeated in the afternoon.

Tour 2 – California Wine Country

Enjoy the sights and tastes of the California wineries. Depart by crossing the Bay Bridge towards the Napa Valley. Stop for wine tours and tasting. Continue north to Calistoga (known for its hot springs and mineral waters). Enjoy lunch and shopping along the main street. Next stop will be Sharpsteen Museum (created by Disney animator Ben Sharpsteen). After lunch travel the Silverado Trail to Sonoma County for more wine tasting. Return to hotel by way of the Golden Gate Bridge. This tour will leave from the hotel on Tuesday, June 27 at 8 a.m. and return at 5 p.m. The tour cost is $45 per person which includes tickets for the wineries and bridge tolls. The tour is limited to 53 persons.

Tour 3 - Monterey Bay Aquarium, Carmel and 17 Mile Drive

Enjoy spectacular views of the Pacific Ocean as you head south from our hotel. Pass through the Salinas Valley (artichoke capital of the world) and through Monterey to John Steinbeck's Cannery Row. Visit the Monterey Bay Aquarium, a world-renowned aquarium that includes a million-gallon tank with the largest window on Earth. The latest aquarium addition opened this year with displays of rarely seen sea creatures from the depths (2000 feet). Enjoy time on your own for lunch and shopping in the Cannery Row area. Follow the Pacific Ocean along the 17-mile drive that includes many famous golf courses. Spend time in Carmel (home of unique shops and cafes). Pass by one of the oldest Spanish Missions in the country on the way back to the hotel via the Silicon Valley (computer capital of the world). This tour will leave from the hotel at 8 a.m. and return about 7 p.m. on Wednesday, June 28. The tour cost is $60 per person and includes tickets for the aquarium and 17-mile drive entrance fee. The tour is limited to 53 persons.

Tour - 4 Carnivorous Plant Nursery and Winery

This tour combines a trip to California Carnivores, a nursery specializing in carnivorous plants with a stop at the Mark West Winery located next door. This may be the only retail nursery in the United States specifically catering to the cultivation of carnivorous plants, although there are a few mail order only firms. At the nursery, there are over 400 varieties of insect-eating plants on

display, with information signs to help provide a self-guided tour. Magnifying glasses, books, photo albums, newsletters and other items are available for public use. There will be plants for sale. We ask that you B.Y.O.B. (bring your own bugs), if you wish to feed the plants. Photographers are welcome. This tour will leave from the hotel on Thursday, June 29 at 7:30 a.m. and return at 1:30 p.m. The tour cost is $35 per person and includes a box lunch to eat at the nursery. The tour is limited to 52 persons.

Tour 5 - Filoli Gardens

Filoli is a Georgian Revival House, built between 1915 and 1917, located south of San Francisco. The property became a part of the National Trust for Historic Preservation in 1975. The Filoli Gardens are considered one of the finest examples of private estates gardens representing the "Golden Age of American Gardens". Our tour will be led by one of the docents. This tour will take approximately 3 fi hours and leaves from the hotel on Thursday, June 29 at 2 p.m. The tour costs $26 per person and includes the entry fee to the estate and gardens. This tour is limited to 35 persons.

Tour 6 – Alcatraz Island

Alcatraz Island, San Francisco's most popular tourist destination, offers a close-up look at the historic and infamous federal prison long off-limits to the public. Visitors to the island can not only explore the remnants of the prison, but learn about the Native American occupation from 1969-1971, early military fortifications and the West Coast's first (and oldest operating) lighthouse. These structures and the island's many natural features - gardens, tide pools, and bird colonies are being preserved by the National Park Service. Our bus will drive you to Pier 41 where you take a boat to the island. Once on the island you are on your own for about 2 hours to visit the former penitentiary with an audio taped cellblock tour that has drawn high praise. This tour is scheduled on Friday, June 30 from 7:30 a.m. to 1 p.m. The tour costs $35 per person and includes the boat trip and the audio taped tour. The tour is limited to 53 persons.

Tour 7 - Strybing Arboretum and Conservatory of Flowers

The Strybing Arboretum and the Conservatory of Flowers in Golden Gate Park provide an opportunity to view plants from all over the world. The 55 acres in the arboretum contain 8000 varieties of plants – some of which are no longer found in their native habitats. San Francisco's cool mild climate allows displays of highland tropical plants that are usually not found in most arboretums. There is also a collection of puyas to be found here. The conservatory, built in 1879, is currently closed to the public for renovation because of extensive wind damage to the structure in 1995 (30,000-glass panes destroyed). However, our group will be allowed entrance for a private tour of the historic building. It has 3 temperature zones to accommodate plants from various climates, including bromeliads. It is world renowned as a leader in orchid preservation, particularly of at-risk high altitude orchids from the rainforests of Central and South America. This tour will leave from the hotel at 8 a.m. on Monday, July 3 and take approximately 4 hours. The tour costs $25 per person and is limited to 35 persons.

Los Altos, California

Welcome New Members

The following individuals joined the Bromeliad Society International during the first half of 1999. The BSI welcomes them aboard and thanks them for their support.

Luis Abenir
Shawn Ardoin
Rose Ashley
Bill Bailey
Edna Bailor
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Affiliates in Action

Gene Schmidt

The Bromeliad Society International welcomes the Illawarra Bromeliad Society, Inc. as its newest affiliate. This society is located in the Illawarra region of New South Wales, Australia; and current officers are Mr. Jeffree Bartley, President; Mr. Graham Bevan, Vice-president; Mr. Robin Gray, Treasurer; and Mrs. Margaret Barley, Secretary. The BSI thanks them for making both societies stronger, and we look ahead to many years of growth and prosperity for the Illawarra Bromeliad Society. Congratulations!

The Bromeliad Society of New Zealand commissioned a new trophy for the 1999 Annual Competitive Show to be presented to the winner of Best Neoregelia. The eminent New Zealand artist/sculptor Christine Hellyar, whose work is in many public and private collections, created a colored patined bronze of a stylized Neoregelia. Christine, a member of the New Zealand society, is better known to other members as Christine Ensor. The winner of the first trophy turned out to be not one but three! Judge Dave Anderson, said that try as he might, he could not separate the three winning plants and so the trophy will be held in turn by Graham Alderson, Len Trotman, and Peter Waters. A record number of over 300 plants were displayed in 26 classes for this year's show. *(The Bulletin, March-April, '99, Bromeliad Society of New Zealand, Inc.)*

The auction of the Sarasota (FL) Bromeliad Society was a great success. Dr. Pineapple, Dale Jenkins, donated an *Aechmea correia-araujei*, and it was mentioned that it was put up for bid because Dale couldn't get a pineapple out of it. Dr. Jenkins also shared about 50 pineapple plants with those at the meeting. Other interesting plants were an *Aechmea andersonii* donated by Harry Luther that was collected by Wally Berg and recently described, and conversely an *Aechmea bracteata* var. *pacifica* donated by Wally and collected by Harry. John Anderson of Corpus Christie, Texas donated a Mexican *Androlepis* that is a new species and not yet named. One of the highlights was said to have been Wally Berg announcing that there were several people who promised plants for the auction and didn't bring them. He then pulled auctioneer Bill Timm's *Tillandsia fasciculata* cv. 'Cathcart' from the head table and proceeded to auction it off! After the Cathcarts announced that this particular plant was rare the bidding was fierce and the plant sold for $120. By the look on Bill's shocked face and hands tightly gripping the podium, some in the audience weren't sure if it was a joke or not! *(The Newsletter, Vol.4, Issue 35, 99, Sarasota Bromeliad Society)*

Congratulations to Jo Deville for being named a Life Member of the Bromeliad Society of South Florida in recognition of her many years of service to the BSSF and her ready participation in their events. Dr. Howard Frank, the speaker at May's meeting, spoke of his work trying to control the introduced Evil Weevil of Florida, *Metamasius callizona*. Nat DeLeon, president of the Florida Council of Bromeliad Societies, also spoke of the difficulty in getting funds for research to identify a biological control for the weevil. He is also trying to get

the word out to the State Legislature of Florida about the severity of the infestation and the need for government backing. *(The Bromeliadvisory, June, '99, Bromeliad Society of South Florida)*

The New York Bromeliad Society display at the Plant Show held from April 6th to 8th at the Citicorp Atrium received high praise from all who saw it. There were about 50 plants in bloom and the color impact was stunning. The plants were brought by Jackie Hodes, Herb Plever, and Henry Turner. Eighteen people were there to serve the exhibit, and thanks go to all those who constructed and setup the exhibit. *(The Bromeliana, May, '99, New York Bromeliad Society)*

The Bromeliad Society of Central Florida's 24th Annual Bromeliad Show in Orlando during May featured some outstanding bromeliads. There were 176 entries this year, with a *Tillandsia edithae* grown by Eloise Beach stealing the show. The plant was 15-20 years old and had reached the size of five feet long by two feet wide! The sale part of the show was phenomenal - much higher than the year before, and for the first time in years there were plants donated to the sale. The BSCF's membership drive continued to be a success with twelve new members for the club and two new members for the BSI. *(Newsletter, May, '99, Bromeliad Society of Central Florida)*

Gene McKenzie and Larry Giroux, newsletter editors of the Caloosahatchee *Meristem*, traveled in May to New Orleans, LA, to be a part of the judging team for the Greater New Orleans Bromeliad Society (LA) Show, with 225 entries. Fred Ross, newsletter editor of the GNOB Society, took both Gene and Larry on several mini tours to see some of the sites Gene had longed to see for years. She writes that being able to judge a show out of state is such a rewarding experience; getting to see new plants, meet new friends, and to appreciate the efforts of other societies to promote bromeliads. *(The Caloosahatchee Meristem, June, '99, Caloosahatchee Bromeliad Society)*

Planning for the 2000 World Bromeliad Conference to be held in San Francisco, CA, continues. The celebration of the 50th Anniversary of the BSI will be the perfect time to honor BSI Affiliated Societies. We plan to do this by issuing new affiliate certificates with the theme of the 50th Anniversary at the banquet, as well as holding an affiliate meeting sometime during the conference. This will be a chance for affiliated members from around the world to meet and address suggestions or concerns they may have. We are also encouraging affiliated societies to bring to the conference some kind of table top display that would show others insight into their local society. This might include pictures of members or perhaps a written history, but by all means be creative. Conference registrants will vote on best exhibit, and the top prize will be $100. Those not winning best exhibit will receive something suitable for their society library. If your society has someone who is planning on attending the world conference please discuss the possibility of their bringing a display from your society. For more information on the 2000 World Bromeliad Conference, contact BSI's web site at **http://bsi.org** , or contact me directly at GENOPS@aol.com for information or questions dealing with affiliated society plans.

Duluth, Minnesota

Problems of the Past

Derek Butcher

Did you know that there are two forms of *Aechmea* 'Covata' in Southern California and both are correctly named UNDER THE OLD RULES?

Let me explain. Under the old rules of manual hybridizing, if a species was crossed with another species and the resultant grex was given a name then this name would apply to all crossings. It did not matter which one was the seed parent or if different varieties were used. " Rules were rules".

I know that in Australia in the 1970's the likes of Grace Goode and Bill Morris complained about the differences you got by swapping the role of the parent plant. However, the wheels of officialdom grind exceedingly slow and only in 1995 did we see the International Code of Nomenclature of Cultivated Plants eventually swing to the naming of individual clones. Why oh why didn't we have this in the 1970's?

Let us return to the problem at hand. In 1982 I purchased an *Aechmea* 'Covata' at the Orange County Bromeliad Show in Los Angeles. It had an inflorescence sunk in the leaf rosette and we assumed that Hummel had crossed *Aechmea recurvata var. ortgiesii* or *var. benrathii* with *Aechmea comata*. This hybrid is now widespread around Australia. A repeat of this cross was done by Keith Bradtberg here in Adelaide in 1988 using *Aechmea recurvata var. recurvata* which produced a long scaped inflorescence. Two clones were selected and called 'Keith's Comet' and 'Golden Comet'.

In 1998 I invested in a Computer and "surfed the net" and was surprised to find a different *Aechmea* 'Covata' in the photos on the Florida Council Web pages[1] from Pamela Koide of Birdrock Tropicals. This had an inflorescence well above the leaf rosette. The parents could easily be *Aechmea recurvata* and *Aechmea comata* but the elongated scape indicated *Aechmea recurvata var. recurvata* as the other parent. Harvey Kendall of Los Angeles remembers my foray into the USA and believes that the form with the hidden inflorescence originated with Hummel. We also know from Bill Baker of California Gardens Nursery that there were at least two distinct forms. The more impressive form is undoubtedly the one where the inflorescence stands proud and tall.

Now that we are aware that there are at least two forms I suggest we call the hidden inflorescence form 'Covata Too' to distinguish the two! Why am I doing this? It is hoped that mail order purchasers of this plant will not be disappointed when they get the hidden inflorescence form when they were expecting the exserted form and vice versa. It is also hoped that photographic references on the Internet will help future purchasers in deciding what they want to buy.

[1]HTTP://FCBS.ORG

To add to the intrigue we know of yet another possible '*comata* x *recurvata*' plant. It was "collected" by Chester Skotak in Seidel's nursery in Brazil and found its way to Australia as an unnamed species. It was named *Aechmea* 'Flaming Star' and seems even brighter than *Aechmea* 'Covata'.

So the long-scaped Aechmea 'Covata' should retain this name but if the inflorescence is hidden in the leaf rosette, would you please change your label to Aechmea 'Covata Too'.

Fulham, South Australia

Suggestions for collecting and sowing Tillandsia seed

Nat De Leon

The following are comments and suggestions relating to collecting, storing, and sowing seeds of tillandsias.

1. Seeds probably ripen with the start of the rainy season.

2. To insure viability, seedpods should be showing some brown color.

3. Seed capsules should be put into a bag. If you use a plastic bag, do not seal it completely or moisture will develop and unopened capsules may not open and spoil.

4. If unopened capsules do not open within a week, capsules should be opened manually. Each capsule is three-parted. With your fingernail you can divide the capsule. This should be done in an area (indoors) without wind or the seeds may disperse.

5. Seed containers should be marked with the species name, date collected, and the collection coordinates.

6. If the seed collector is also going to sow and grow the seeds, seeds can be sown on almost anything. You can also make up plaques from old shade cloth. Seeds can also be sown on tree trunks or thick branches. Coarse barked trees, (i.e. oak trees) are best.

7. When sowing seeds use a wind still area. If you are using trees as hosts, sowing during the early evening is usually more calm.

8. After sowing seeds, the most important step is to water them. This can be done with a fog nozzle or spray bottle. Do not hold the spray stream too close to the seeds or the seeds will disperse.

9. Water thoroughly! This will fix the seeds to its host.

10. Hang plaques or use trees that are exposed to bright light, but not full sun.

11. Watering frequently (except on rainy days) will speed germination.

12. Once germination starts (you will see a little speck of green), reduce watering to twice a week.

13. After the germinated seeds produce about three leaves, you can start using a weak solution of fertilizer.

14. Tillandsia from seed are slow. Patience is the name of the game.

15. When sowing the seeds, record the date seeds are sown.

16. In thinking things over, it probably would be best to use zip-lock plastic bags to collect and then transfer the seed and/or capsules into paper envelopes.

Miami, Florida

Reprinted from the newsletter of the Florida West Coast Bromeliad Society, July 1999.

Golden Anniversary

The Bromeliad Society International World Bromeliad Conference

Registration form

San Francisco, CA

Hyatt Regency Hotel

June 26 through July 5, 2000

Registration Rates are:

$115.00 January 2, 1999-January 1, 2000

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Your BSI Affiliate Name?_____(if applicable)

Amount (per registrant)_____ Check/Visa/Master Card (circle one) #_____

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Signature as it appears on your card_____

Add $15.00 per registrant if not a BSI voting member. (Do not pay dues and receive *The Journal of The Bromeliad Society*)

Send this form and payment to: Carolyn Schoenau, P.O. Box 12981, Gainesville, FL 32604

The registration fee is 70% refundable until June 15, 2000. After that no refund will be given (except in cases of illness or death)

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Prices include postage at book rate. Order from BSI Publications, 6523 Camino Real, Carlsbad CA 92009. California residents add 7.75% sales tax. Please make checks out to "Bromeliad Society, Int." Publications may be ordered on line at htttp://bsi.org

The Bromeliad Society International

The purpose of this nonprofit corporation is to promote and maintain public and scientific interest in the research, development, preservation, and distribution of bromeliads, both natural and hybrid, throughout the world. You are invited to join.

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Photograph by Bill Soerries

A colorful Bigeneric

A collection of bromeliads beautifully displayed at the home of Bill Soerries in Columbus, Georgia. The display is covered by polyethylene plastic in the winter (notice the wooden frame in the background) and provided heat when needed. The plastic is removed during the summer to take advantage of the Georgia warmth and humidity. The plants are thriving under this treatment.

Calendar

31 Jul-1 Aug	The South Bay Bromeliad Associates will present their 31st annual bromeliad show and plant sale at the South Coast Botanic Garden, 26300 South Crenshaw Blvd., Palos Verdes Peninsula, California. Show Noon to 4:30 p.m. on Saturday and 10 a.m. to 4:30 p.m. on Sunday. Plant sales hours on both days are from 10 a.m. to 4:30 p.m. There is an admission fee to the botanical gardens which include entrance to the show and sale. Contact: Bryan Chan. (818) 787-4265 or e-mail BCBROME@aol.com.
31 Jul-1 Aug	The Sacramento Bromeliad Society will hold its annual show and sale at the Shepard Garden and Arts Center, 3330 McKinley Blvd, Sacramento, California. Hours for both the show and sale are from 10 a.m. to 4 p.m. on both days. Contact: Keith Smith (530)823-0203.
28-29 Aug	Bromeliad Society of Greater Chicago show and sale, "Attack of the Bromeliads". Chicago Botanical Gardens, Glencoe, IL. Contact: Steve Goode (815) 459-1623.
28-30 Aug	Bromeliads X, hosted by the Cairns Bromeliad Study Group will be held at Cairns in Queensland with a full program of show, plant sales, seminars, tours and other conference trappings. For more information see the Bromeliads X website at http://members.xoom.com/bromeliads10 or contact Lynn Hudson 0740-533-913.
24-25 Sep	1999 FCBS Annual Bromeliad Extravaganza in Tampa at the Holiday Inn, 2701 E. Fowler Ave., Tampa, FL 33612. Setup, cash bar, pool party and buffet on Friday. Sales, home tours, seminars and rare plant auction on Sunday. Contact: Tom or Carol Wolfe (813) 961-1475.
18-19 Sep	The River Ridge Bromeliad Society show and sale will be held at the Esplanade Mall, 1401 W. Esplenade, Kenner AL. Show hours 1-9 p.m. on Saturday, noon to 6 p.m. on Sunday. Sales are from 10 a.m. to 9 p.m. on Saturday, noon to 6 p.m. on Sunday. Contact: Al Alcock 607-799-4813.
5-7 Nov	The Caloosahatchee Bromeliad Society will present their BSI Standard Judged Show at Terry Park on Palm Beach Blvd in Ft. Myers, Fla. Sale & Show open Saturday 9 a.m. to 5 p.m., and Sunday from 10 a.m. to 4 p.m. Contact: Dianne Molnar 549-3404 or Gene McKenzie, 997-6392

Journal of the Bromeliad Society

Vol. 49, No. 4 July-August, 1999

Editor: Chet Blackburn, 720 Millertown Road, Auburn, California 95603.
Telephone and Fax: 530-885-0201, E-mail: blackburn@neworld.net

Editorial Advisory Board: David H. Benzing, Gregory K. Brown, Pamela Koide, Thomas U. Lineham, Jr., Harry E. Luther, Robert W. Read, Walter Till.

Cover photographs. Front: *Tillandsia cretacea*, about 65 cm tall, flowering at Marie Selby Botanical Gardens. Text begins on page 150. Photograph by Vern Sawyer. **Back**: A beautiful display of bromeliads at the home of Bill Soerries in Georgia. Photograph by Bill Soerries.

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Cultivar Corner

Chet Blackburn

When I first acquired a specimen of *Neoregelia* 'Empress Variegata' (figure 1) from Bill Baker of California Gardens, I had some doubt as to whether Bill had the correct label on the plant. As a young offset, the plant's form is not that of a typical *Neoregelia*. In fact, with it's narrow, arching foliage it looked more like an *Aechmea* than a *Neoregelia*, but a *Neoregelia* it did turn out to be. This is one of my favorite bromeliads. Many bromeliads displaying red foliage markings tend to lose that color during the darker days of winter, but not this one. It stands out in a greenhouse at any time, but particularly so in the winter when many other bromeliad colors have faded while waiting the return of brighter light and longer days. This is a variegated form of *Neoregelia* 'Empress', a cultivar of unknown parentage that was part of Mulford Foster's collection. It probably appeared sometime during the seventies. The variegated form was developed in the Bert Foster greenhouses in 1979.

Another plant bearing colorful foliage is *Billbergia* 'Ralph Graham French', (figure 2) a cultivar of *Billbergia vittata*. It develops purplish-black leaves in bright light with silver crossbanding and a hot-pink clear margin. The inflorescence has the brilliant red bracts, rose sepals, and rich blue petals typical of the species. The plant was registered in 1992 by Kathy French, who named it in honor of her father.

Two John Arden hybrids are also pictured. One is a bigeneric, × *Vrieslandsia* 'Cascading Flame' (figure 3) which is a cross between *Vriesea* 'Redtail' and *Tillandsia ampla*. It features a large many-leafed rosette with green tapering leaves that are mottled in red. The pendant inflorescence is large in relation to the plant. The plant was registered in 1996.

In the same year, Mr. Arden registered *Vriesea* 'Aztec Gold' (figure 4), a hybrid between *Vriesea triligulata* and *Vriesea* 'Brentwood' (Dusty). The two-foot inflorescence consisting of a purple scape and yellow bracts and flowers emerges from a rosette 1.5 feet in diameter. As with many of the Arden hybrids, the foliage is bicolored. The upper surfaces of the leaves are green and the lower surface maroon.

Auburn, California

Photograph by Bill Soerries

Figure 1. *Neoregelia* 'Empress Variegata'

Photograph by Kathy French

Figure 2. *Billbergia* 'Ralph Graham French'

Photograph by Pamela Koide

Figure 3.
× *Vrieslandsia* 'Cascading Flame'

Figure 4.
Vriesea 'Aztec Gold'

Photograph by Pamela Koide

Introducing: *Tillandsia cretacea*

Harry E. Luther

Tillandsia cretacea L.B.Smith (cover photograph) is both a spectacular ornamental and a very interesting species from an ecological and ethnobotanical standpoint. It has one of the northernmost distributions of any large tillandsia: into subtropical Sonora and Chihuahua states in Mexico.

The earliest mention of this species seems to be by Howard Scott Gentry (1942) who collected the plant in 1935. This collection (*Gentry 2032* at F) was originally misdetermined as *Tillandsia inflata* Mez, a name later changed, for nomenclatural reasons, to *T. mooreana* L.B.Smith. Gentry's plant was described as a lithophyte growing along the Río Mayo in the Sierra Charuco of Sonora.

This taxon was next encountered in Chihuahua in 1957. Based on this collection (*Knobloch 564* at US) the new species *Tillandsia cretacea* was described by Lyman B. Smith in 1974.

In 1977, in the final installment of the South Bay Bromeliad Associates Bulletin, published as "Tales Of Spencer," Ralph Spencer (1977) writes about *T. cretacea* (as *T. mooreana*), a species he had been unsuccessful in locating in habitat but had seen in cultivation.

A few years later, the ethnobotanical collector Robert Bye, Jr. (1979) reported *T. cretacea* (again as *T. mooreana*) to be "a companion plant of peyote" and "Harming the bromeliad is considered to be very dangerous". His voucher specimens (*Bye 2966, 6093* and *7096* at HUH) were gathered from 1972 to 1975 in the Barranca de Batopilas in the state of Chihuahua. Notes on two of the herbarium specimens state that the plant is "companion of peyote and the devil" (*6093*) and "touching the plant will cause one to go crazy" and "induces visions of many colors" (*7096*). This writer is still awaiting the colors portion.

The pictured plant was collected as a small seedling in 1993 from a steep-walled barranca north of Alamos, Sonora, Mexico, quite near to the much earlier Gentry collecting site. Flowering occurred five years later. The cultivated plant is only about 1/2 the size of the wild plants in habitat. I would guess that the plant might prefer cooler and drier conditions than those prevailing in Florida. At any rate, the inflorescence is spectacular and long lasting.

Although *Tillandsia cretacea* is quite uncommon in cultivation, artificially propagated plants are available from at least one California nursery.

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Book Review

Jason R. Grant

Botanica. The illustrated A-Z of over 10,000 garden plants and how to grow them. Turner, R.J. Jr. & E. Wasson. 1997. Random House Australia Pty. Ltd. 1007 pages, hard cover, 30 cm, ISBN 0 09 1836158. Order from: Random House Australia Pty. Ltd., 20 Alfred Street, Milsons Point, NSW, Australia 2061, tel. 612 9954 9966, fax 612 9954 9008.

This book is one to rival Graf's Tropica or Exotica. This book (with an accompanying CD ROM for the computer) contains, as the title suggests, thousands of photos. In contrast to Graf's books, there are descriptions for each genus, and then again for each species illustrated. The brief descriptions are of the plant's morphology, their native habitat, how to grow them, and in which zone(s) they may be grown.

The book has editorial consultants from Australia, New Zealand, the United Kingdom, and the United States. Therefore, the range of plants covered in the book is well-covered geographically, as well as in all types of gardens, temperate to tropical. In the case of bromeliads there are entries for *Abromeitiella (Deuterocohnia)*, *Acanthostachys*, *Aechmea*, *Ananas*, *Billbergia*, *Bromelia*, *Canistrum*, *Catopsis*, *Cryptanthus*, *Dyckia*, *Fascicularia*, *Guzmania*, *Neoregelia*, *Nidularium*, *Orthophytum*, *Pitcairnia*, *Portea*, *Puya*, *Quesnelia*, *Tillandsia*, *Vriesea*, and *Wittrockia*.

This is one of those great books to have sitting around to page through every once in a while. Strange plants from different parts of the world are illustrated, as well as species common in your own area. There really isn't anything significant about the bromeliad photos or descriptions, but the inclusion of so many species for a book covering plants from all over the world is surprising. If you are only looking for bromeliads then this isn't for you. But if you want a good general book similar to Graf's books with a large number of species with descriptions, then this is to be recommended.

Fontaine-Andre 30, Neuchatel 2000, Switzerland

Tillandsia Samaipatensis

Lee Moore **Photograph by the Author**

On a recent trip to Bolivia (August 98), we found a species of *Tillandsia* of particular note. Before leaving for Santa Cruz, I had called Harry Luther, Director of the Bromeliad Identification Center at Marie Selby Botanical Gardens, to ask if there is anything in particular that we should look for after describing the areas we intended to explore. He told me to be on the lookout for a large yellow-branched *Tillandsia* that was recently named for the Department of Samaipata with a town of the same name.

On the first day of our journey traveling the southern road from Santa Cruz toward Cochabamba it turned out to be the first plant that we found. We were lucky that they all happened to be in full inflorescence and were easy to identify from his description. Thank God for "Ole Harry," he knows just about everything about bromeliads.

Only a few kilometers before the town of Samaipata, we spotted large plants of *Tillandsia samaipatensis* growing on the canyon walls with spectacular bright butter-yellow branched inflorescences. Growing to a height of about 1.5 mtrs, the inflorescence grows upright like a towering Ponderosa Pine until it gradually leans over under its own weight at maturity. The area where they are found is about 1800 mtrs. MSL and is arid most of the year. The plants were growing lithophytically or in the loose dirt among Cacti and Agaves.

Figure 5. *Tillandsia samaipatensis* growing on steep cliffs in Bolivia

This species appears to be endemic to this one area. They only occurred sporadically over a few kilometers and were not seen again throughout the rest of the trip even though we were passing through the same mountains. Collecting a few specimens proved to be difficult because most of them were growing on the steep canyon walls across the river from the road. They were mostly unattainable, so I imagine that they will remain there undisturbed for some time to come. They also appear to be monocarpic; meaning that they do not pup and grow only from seed after maturing, dying and finishing their cycle by spreading their seed like *T. fendleri.* There were some small hair-like plantlets at the base of some of the plants I collected, but I could not ascertain whether they were hair pups or simply seedlings produced by seeds lodging at the base. Maturation from seed could possibly require a decade. This observation was made from noting many plants with dried inflorescences from previous years that were still lush and green with no pups showing. Still others had dried and tumbled down the hillsides.

My first thoughts in finding this plant was that its color and form of inflorescence could be of great importance in introducing new blood for future hybrids which are becoming more spectacular each year among the commercial growers.

From Cochabamba we returned to Santa Cruz via the northern road. On the other side of the mountains we found many other species of *Guzmania* and *Vriesia* of spectacular color and form of inflorescence but these were in very high altitude and will be the subject of a future article on another trip.

There was one species of *Vriesia* (probably *Vriesea maxoniana*) of note which I found at a lower altitude, hence a warmer area. I found only one cluster with a dried inflorescence and a few pups that were just coming into bud. The dried inflorescence showed that it was a single 'feather' of unknown color. At the time of writing this article, it appears that the color is going to be a bright yellow.

Bolivia is a wonderful country in which to travel. Accommodations are excellent and the food fantastic. Even in the "boonies" in roadside restaurants, we had Rainbow Trout or river fish and a choice of venison or other jungle animals such as the Paca or Agouti, which is the most delicious meat you could imagine. The river catfish is even better than the trout. Of course, you can get chicken or tough beef but who wants that stuff when those other juicy things are available? The excellent food in Bolivia was one of the highlights of this trip that everyone commented on.

Every summer I organize 3-4 trips with groups of no more than 7 adventurous explorers to accompany me on expeditions to Peru, Ecuador, Bolivia

and sometimes Nicaragua[1]. I would like to acknowledge my fellow members on this Bolivian adventure who, as a group, made this one of the more enjoyable trips.

Jim Thompson, the only 'rookie' on the trip (now a veteran) is the Floriculturist for Disney's Animal Kingdom in Orlando. Many of the Aroids and Bromeliads found on this trip will be integrated into the Animal Kingdom. Jack "Juanito" Percival of San Diego was the life of the trip. Even if we would not have found any plants at all, we had "Juanito". Then there was Jack Dammann of the Virgin Islands, an old timer from my 'Bullis Expedition 1992' (see the Jan-Feb 1994 issue of the Journal of The Bromeliad Society). Mary Jean Poetz of St. Louis and Bill Janetos from a little one-horse town in New Hampshire have been charter members of my expeditions every year for the last decade.

As noted previously, I organize expeditions every summer to explore and search for new and exciting tropical plants. We all have a great time and have lots of fun and always find lots of interesting plants. The plants that we collect are non-CITES and I take care of any necessary permits.

Everyone asks me if it is safe to travel in 'those countries'. My response is that the only dangerous part of the journey is passing through Miami...be very careful there!

Miami, Florida

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[1] For details contact Lee Moore, P.O. Box 560822, Miami, Florida or by phone at 305-274-3980.

Gift Memberships Available

Carolyn Schoenau

Why not give a membership in the Bromeliad Society International to someone for ***Christmas, birthdays,*** or just because you like them enough to improve their knowledge of bromeliads. Consider giving one to a botanical garden, a library or your bromeliad society, billed per your instructions. Renewals can be billed to you if you so specify. Donors are acknowledged in the Journal and in a welcome letter to the recipient.

Photographing Bromeliads

John Catlan

I'm well, Genny's well, Spud the dog is well, all's well here at Jacob's Well. Maurie Kellett rings me the other day and tells me how much he loves my photos. He thinks they're just great and would I do an article an photography? A little flattery goes a long way. At least he had the decency to fill the gap between the flattery and the sting with a lot of brom talk and he had me agreeing before I'd really considered it. A true artist is Maurie.

The main problem I have with a lot of photographs of plants is that the photo does not flatter the plant. Photos of food flatter the food. Photos of clothes flatter the clothes. Then there is the angle used in photographing models, then there is the make up, then there's the lighting, then there are the accessories. We value big, little is not the preferred choice. When taking photographs, size is not relevant but proportions are. A photo can give you the impression that an object is large or small.

Barney, a friend who was once photographing snakes, used this to his advantage. It was not necessary to take photos of a two-meter snake, a snake of a meter was much easier to handle, and providing that the shot was set up correctly no one knew the difference. Barney would convert the corner of his lounge room to the great outdoors, setting out small logs, small rocks, small tufts of grass, small dried leaves and to this was added a very adequate lighting set up.

During summer there would be numerous households wanting snakes removed. The snake would be collected and transported in an Esky containing a couple of freezer blocks wrapped up in a towel, then the Esky lined with towels. By the time he got home the snake's metabolism would have slowed down until it would enter a state similar to hibernation.

You had to get in close so that the snake dominated the photo. This made the snake look large. One approach would be to use a lens that put you way back and the snake would still fill the frame, but that was no good. The snake had to take a striking stance and/or focus it's attention on the camera; it gave the series of photos something extra. You had to check to make sure everything was right camera-wise, then the hibernating snake would be artistically arranged. Then it was lights, camera, action! You were in a countdown situation. The lights were warming up the snake. The warmer the snake, the more aggravated it became. The art was in getting the photos, then getting the snake back into the lettuce crisper of the fridge for a fast cool down before the venom started dripping from the camera lens. Then you could start another session.

It was just a very unfortunate set of timing and circumstance that at lunch time, Barney had just popped the snake back into the lettuce crisper when Mrs. Barney decided a salad would be nice for lunch. When Mrs. Barney went to get out the lettuce she was confronted with a very aggressive snake, who five seconds ago was sunning himself under the lights. She chucked a number ten wobbly of all times together with a touch of the vapors.

USING BACKGROUND

Background is important to any group of plants but must not detract from the subject. Barney preferred a natural background that was out of focus. If the subject was in sharp focus and dominated the area framed, the eye did not stray, and in a series of photos he used the same style of background. The background became boring and the subject would hold the eye's interest. For example, when shooting a series of different bottlebrush flowers he used the blue of the sky to very good effect.

You may choose a colored background but stay away from reds, yellows and oranges. They kill the subject because they are too overpowering. My choice is black, and over the years the background in the photos will remain constant. If I change over to taking slides, when they are shown in a darkened room the subject should leap out at you from the screen.

EXPOSURE COMPENSATION

You may find a small exposure compensation dial near the film rewinder (at least that's where it has been on the cameras that I have used). When using print film you can set it on zero position and leave it there because of the exposure latitude of print film. The lab will be able to compensate for some of the variations in the scenes you photograph. If you are using slide film, which has no exposure latitude, it is essential to understand how the exposure compensation control can help.

If your subject has a dark background, you should give a - 1 or - 2 setting to get the correct exposure of the subject. If you photograph a scene such as a person against a white wall the meter will 'see' a very bright subject and give a short exposure. The wall will appear normal and the person will be dark against it. In a situation like this a -1 or -2 will produce a wall which is whiter than white and it will give a much better exposure for the person. You will learn from experience what compensation to give. A lot depends on the area of background in relation to the area of the subject. I have seen this problem many times when plants have been photographed using the walls of a white plastic or glass house as a background. The plant has shown up dark and the detail indistinct against the white background. What should happen when you give it a +1 or +2 is that

the plants appear normal with good detail depth of color but the white will appear much brighter.

The human brain, takes what the eye sees and adjusts and simplifies it. The photographer has to learn to override the brain and see what is actually there and not what the brain decides we want to see.

COMMENTS ON LIGHT

Artificial light will give different color casts to photos. Our eyes do see this color and will get a glimpse of this when we first step into a room or turn a light on but our brain rapidly makes adjustments until every thing appears normal. You will notice the same thing when driving at night. When you first drive some road systems they appear to be an odd color but within a few moments our brain adjusts everything back to being closer to normal. If you grow neoregelias and have a big interest in them you will notice that artificial light will often kill their color.

Sunlight in the early morning is bluish/cold (minimum dust in the air) and in late afternoon reddish/warm (increased dust content) which is different to the light during the day but our brain adjusts and we see it as a constant color. I found this difference very difficult to notice. If you grow neos and observe them closely you will notice the color in the morning and afternoon is far better than in the middle of the day. That is because morning, bluish/cold and afternoon, reddish/warm (reflecting off the plants) enhances the color of your plants. Because of your interest in neos you will notice the color change and if you check out the way the sunlight appears at the various color phases of your neos (through the day) you may begin to see the variations in sunlight.

Way back before I was born; builders of churches oriented their predominantly blue stained glass windows to catch the morning light (bluish/cold) and their predominantly red stained glass windows to catch the afternoon light (reddish/warm) and this enhanced their color. This light is light quality.

Lack of light will give you long green strappy leaves lacking in color, but if there is too much light, the leaves will be shorter on compact plants but the color will be bleached out of foliage. Strong light in the case of spotted plants will turn the outer leaves all red and leave only the center with spots. In plants like *Neoregelia* 'Bob and Grace' and *Neoregelia* 'Lambert's Pride', the green/white banding is restricted to the center leaves and is burnt to red in the outer leaves. The color of the bracteate leaves is affected when the plant flowers and can be enhanced by correct light; too low will reduce it and too high a light will bleach the color out before it should fade. This light is light intensity.

The brain only lets you see what you want to see or expect to see. The rest is edited out by the brain, so when you take photographs of your own plants you have to be careful to clean and check plants and pots very carefully. For some unknown reason when you photograph other people's plants the imperfections are much more noticeable than your own. I am not making this up, it is a fact, and photography has the ability to ram this home on occasion.

This is the reason I get skeptical about the general public criticizing a judge's decision, especially a person who has entered plants in the same show. When they say they are totally impartial, I believe them, but I know there is a case for saying they can't see the blemishes for the plant. Before you photograph plants look at each leaf, look in every nook and cranny, look at total appearance, look, look and then look some more.

Think like a judge and go through each point of the plant. However, you are not judging a plant, you are looking for hidden imperfections and highlighting the good aspects.

When I was about eight years old I became aware of a framed piece of embroidery hanging on Grandma Baker's lounge room wall. By the time I was eighteen I finally knew what it meant.

"There are none so blind as those who will not see."

When I started taking photographs, it was a humiliating experience to realize that the boundaries these simple words encompassed was far greater than I was aware of. One of the biggies of photography is to look at a plant/scene/object and actually see what is there. If you cannot teach yourself to see what you are looking at, how can you photograph it in a manner that flatters? The ability to see what you are looking at comes in lots of very small steps.

REASONS FOR NOT USING OUTDOOR LIGHTING

Outdoors light contrasts and is transitory; it either seems to be raining, blowing a gale, blowing plants over or ruffling the backing screen, or be excessively hot producing gallons of sweat on the view finder, or misting it over in winter. The most important reason is that all this mucking about is time consuming so in the end I opted for using the second bedroom and turned it into a place for taking photos.

We need to be aware of shadows/light contrast. The human eye to brain system can distinguish far more variations in shadows than film can capture. You have to realize that once a shadow gets past a certain density in relation to the bright portions of the subject, they will appear as black and there goes the detail.

That is the advantage of fill in flash. When you are photographing plants in full sunlight, the fill in flash will reduce the contrast (shadows) from harsh sunlight. Some people prefer to photograph plants in the shade as this reduces the contrasts. The T.T.L. (through the lens) metering system will cut off the flash at the moment the correct exposure has been reached. You may have to adjust the aperture (f stop) to get a shutter speed that will be long enough, and if your camera does not have T.T.L. it becomes much more complicated and you will have to make several tests to get it right.

REASONS TO USE AN INDOOR SETUP

For one thing, it is much more relaxing and gives you plenty of time to study the plant and to study the picture through the viewfinder. Stop and think about what you are doing. Record all the details for future reference or you will not learn by either your failures or successes. Otherwise, you will occasionally produce some magnificent photos and you will be asking yourself why you can't produce them all the time.

When you relax you can go through a mental checklist and try and imagine what the photo will look like. The more aggravated you become the less control your brain will have in making decisions.

FILM PROCESSING

I decided to get my films processed at Kodak one-hour processing because it is cheaper and I spend less time running around. They do a pretty good job and if they do stuff it up they will reprint it. Then, when and if you begin to take good photos you may change to a specialist lab. You may have the impression that one hour labs do a lot of manipulation of your photos but as far as I can tell from looking around, I believe they just print and that's it. They do manipulate your exposure problems. It would appear that on occasions some lab technician does forget to set a dial at the correct mark.

Brooks Atkinson, in *Once around the sun*, said, "The virtue of the camera is not the power it has to transform the photographer into an artist, but the impulse it gives him to keep on looking - and looking".

Jacob's Well, Victoria, Australia

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A new *Aechmea* from Amazonian Ecuador

Harry E. Luther

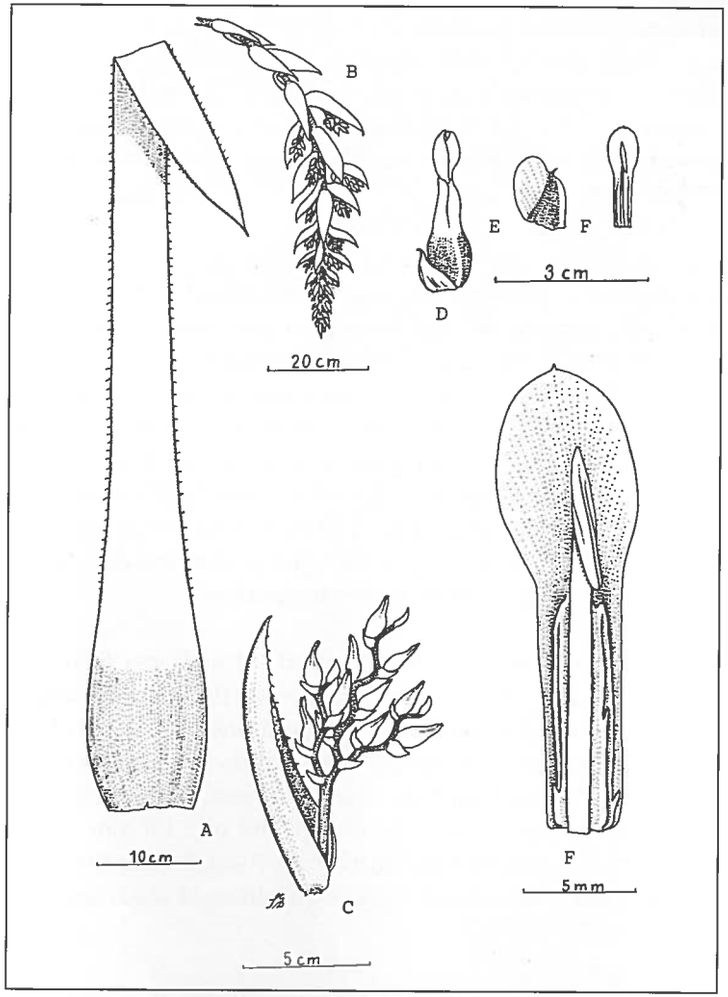
Finding large AND beautiful new bromeliads becomes increasingly more difficult as time goes by and unexplored forests shrink and disappear. The following new species of *Aechmea* is an especially interesting addition to the flora of Ecuador.

***Aechmea patriciae* Luther, sp. nov.** (Figure 6)
A *A. williamsii* (L,B. Smith)L.B.Smith & Spencer cui affinis sed inflorescentia tripinnata, rhachi geniculata et petalis brevioribus differt.

Type. Ecuador. Pastaza: vic. of the resort Kapawi, 300-400 m elev., epiphytic with *Aechmea lonqifolia* and *A. chantinii*, grown from seed collected Nov. 1995, flowered in cultivation 3 June 1999, *Patricia Bullis s.n.* (Holotype:QCNE; Isotype:SEL).

Plant an epiphyte. **Leaves** rosulate, 25 to 30 in number, spreading, 85–95 cm long, coriaceous, green. **Leaf sheaths** elliptic, entire, somewhat nerved, 15–20 × 8–12 cm, dark castaneous especially adaxially, very densely dark; punctate lepidote. **Leaf blades** ligulate, acute, pungent, 5–7 cm wide, variably serrate with dark 2–5 mm long spines, appressed pale punctate lepidote especially abaxially. **Scape** arcuate, 25–35 × 1 cm, fugaciously white floccose, reddish. **Scape bracts** elliptic, acute pungent; 8–12 × 3–4 cm, variably serrate, appressed pale lepidote, rose to light pink. **Inflorescence** declinate tripinnate, 30–40 × 12–18 cm. **Primary bracts** elliptic, acute, variably serrate, rose, the lowest like the upper scape bracts and exceeding the branches; the upper becoming gradually smaller and much shorter than the branches. **Primary branches** with a slender flattened 1–4 cm long peduncle. **Secondary bracts** broadly elliptic, apiculate, like the floral bracts. **Secondary branches** 2–5 cm long, distichously 3-to 8-flowered, the geniculate rachis quadrangular. **Floral bracts** broadly elliptic, rounded and apiculate, 7–9 mm long, nerved, pale lepidote, pink. **Flowers** sessile, opening during the day, spreading at 30 to 45 from the axis at anthesis. **Sepals** free, very asymmetrical with a broad wing, mucronate 11–14 mm long, thin coriaceous, nerved, sparsely pale lepidote, very pale pink. **Corolla** erect, spreading only at the apex. **Petals** free, oblanceolate, broadly acute and apiculate, 20 × 3–4 mm, lavender-blue, each with a pair of 11–14"mm long longitudinal ridges; the ridges each with one or more small, acute appendages at 3–5 mm above the base. **Ovary** ellipsoid, ca. l. cm long, pale green to white.

Aechmea patriciae differs from the related *A. williamsii,* also from western Amazonia, by having a tripinnate (vs. bipinnate) inflorescence with the branch rachis geniculate (vs. nearly straight) and shorter (20 vs. 26 mm long) petals. In addition, this new species has a declinate inflorescence, a feature not otherwise found in the "former *Streptocalyx*".



Drawing by Stig Dalstrom

Aechmea patriciae Luther: A, leaf; B, inflorescence; C, primary bract and branch; D, floral bract and flower; E, sepal; F, petal and stamen.

The name honors the collector Patricia Bullis of Princeton, Florida who grows many ornamental bromeliads in her nursery.

Marie Selby Botanical Gardens, Sarasota, Florida

Werauhia sanguinolenta 'Rubra', a Wonderful Garden Subject

George Stamatis **Photographs by the Author**

I first read about this stunning plant in the Tropiflora *Cargo Report*. Being fond of tropical foliage plants, I always look out for something with unique foliage. The description of it sounded really good; strongly colored foliage, large sized plant, fast growing, and so on. I decided to import some bromeliads and ordered some of the seedlings of this species as they were advertised at the time. That was about 4 years ago.

Looking at the plants now, I am amazed. They have developed beautifully and quickly, and I am surprised at their rapid growth! I planted them into pots until they outgrew the pots (it did not take long). I then planted them out in the garden with all the other bromeliads. I put them in full sun, three in a hot rocky area and the other three in a more moist location. In the full sun and warm humid air they all developed into superb specimens with deep purple leaves in huge rosettes of a meter wide with long broad leaves. They have proven to be very hardy and vigorous. I fertilize them lightly every 2 weeks with an orchid fertilizer. As for watering, I seldom water them as the rainfall is usually sufficient. They are growing in the open ground and do not mind having their roots in soil. They basically look after themselves.

In January 1998, the first one flowered. It took less than 3 years from seedling to flower! The inflorescence is not colorful, but still interesting and adds to the boldness of the plant; a very tall multi-branched spike of plain green. The plant's main attraction is its foliage. The blooms opened from the late night hours until the early hours of sunrise. They were pale purple and white in color and smelled like a musty room. I would go out at 5:00 a.m. and find bees buzzing around the inflorescence pollinating it. I was hoping that it would self-pollinate, which it did. It produced copious quantities of seeds and the seedlings are growing very well.

The remaining five specimens flowered during the following season, a year after the first one bloomed. They are very stately plants when in bloom with their inflorescences reaching over a meter in height. They unfortunately produce only one pup from the center which re-occupies the spot where the mother plant was before, but the abundance of seedlings will make up for that.

If you live in a suitably warm and humid climate and can obtain this species, do so without delay. It is one of the best landscape bromeliads I have ever grown.

Scottburgh, South Africa.

Figure 7. A group of three *Werauhia sanguinolenta* 'rubra' planted out in an open sunny area among stones and other bromeliads.

Figure 8. The first one to flower. The inflorescence twisted like a snake as it developed, and then eventually straightened.

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(in memory of George Anderson)

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Bromeliads in the Singapore Botanical Gardens

Len Colgan **Photographs by the Author**

On the day preceding a university mathematics conference, I took the opportunity to visit the Singapore Botanic Gardens, mainly because I had prior information that a major bromeliad collection had been acquired in recent years and was now on display. There were many large pink/red albo-marginated ananas and various dyckias growing in the open, but these clearly had been there for years. I was directed towards the northern section containing The National Orchid Garden, the largest orchid showcase in the world. Before paying the $2 entrance fee, I inquired about bromeliads. The authoritative person supplying information denied any knowledge of such plants, stating that this vast enclosure contained only orchids. Unperturbed, I entered.

The fact that one entire corner of this orchid garden had been set aside for the Yuen-Peng McNeice Bromeliad Collection, unbeknown to those at the entrance, is of concern. The first sight of bromeliads was a scene of flowering pitcairneas, *Aechmea blanchetiana*, *Aechmea nudicaulis* 'albo-marginata', *Aechmea distichantha*, and various puyas and dyckias, offset by a number of colorful neoregelias. Further inwards in a shaded area, growing amongst orchids, were many superbly grown *Vriesea saundersii* × *bituminosa*, mounted neoregelias, flowering guzmanias and various hanging tillandsias.

Next was a somewhat brighter section with more large ananas, puyas, cryptbergias and defoliated tree trunks adorned with numerous smaller red neoregelias. Sufficient light filtered through to enable a few photographs to be taken, despite overcast conditions. Sadly, the bulk of the collection was a final disappointment. It was housed inside a large shadehouse that did not appear to get sufficient light or air-circulation. Inside was a sign that said:

> "HISTORY OF THE COLLECTION: Through the generous sponsorship of Lady Yuen-Peng McNeice, this unique collection of bromeliads on display was acquired from Shelldance Nursery in the United States in 1994. This collection consists of 23 genera, 320 species and about 520 taxa (cultivars, varieties and hybrids)."

Presumably Michael Rothenberg made a deal to sell most, if not all, of his nursery stock, including distinctive Yamamoto hybrid neoregelias, to enable this display to be set up in Singapore. A lot of time and effort is still being spent to care for this collection, but with the public pouring through it is not easy to keep the large shadehouse devoted solely to bromeliads in peak viewing condition. While I was there, plants in flower included neoregelias, canmeas, guzmanias, softer aechmeas and cryptanthus. Labels have been misplaced. For

example, a *Catopsis* was labeled "*Vriesea corcovadensis*" and a *Cryptanthus* Pink Starlite was labeled "*Neoregelia* × 'Polka Dot Junction'". Many tillandsias were tied to hanging cord, which goes against my principles of ensuring they are securely mounted. By displaying neoregelias on cut-down tree branches, the staff clearly have knowledge of growing conditions, but the lack of sufficient light overall will never allow these plants to reach the same aesthetic beauty of those growing outside. In addition, the conditions made photography here pointless without a flash. But, next time you are in Singapore, the collection is worth a visit, irrespective of your appreciation of the predominant orchid display.

Warradale, South Australia, Australia

The Shelldance collection sold to Singapore Botanical Gardens was a varied one. The original stock consisted primarily of the bromeliad inventory from California Jungle Gardens, purchased when that nursery ceased existence. California Jungle Gardens had been owned by David Barry, Jr., a former BSI President and one of its founders. Later Shelldance also purchased the inventory of the Rod McClellan Orchid firm, which had been acquired from Plaza Nursery of Buena Park, California when it ceased operation. That nursery had been owned by bromeliad pioneer Kelsey Williams. The Shelldance collection was further augmented with extensive importation of bromeliads and with some of the fine hybrids from Hawaiian hybridizer Howard Yamamoto. At one time, the Shelldance collection was one of the finest in the country, but had deteriorated somewhat in the years prior to the sale Singapore Gardens. CHB

Figure 9. Pitcairnias, *Aechmea blanchetiana*, and various neoregelias growing outdoors.

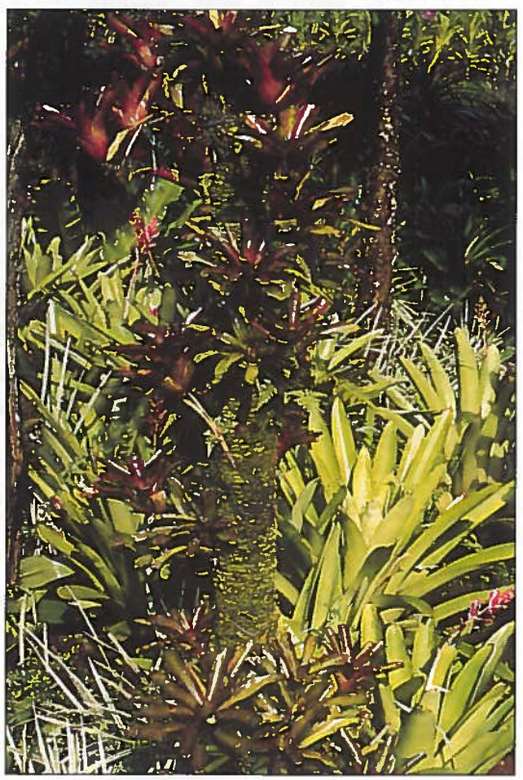

Figure 10. Neoregelias and *Aechmea distichantha*.

Rediscovering *Aechmea triticina* Mez

Bruno Rezende Silva[2] & Elton M. C. Leme[3]

Aechmea triticina was described in 1892 by Karl Mez, based on material collected by A. Glaziou with no reference to date, at the locality of Palmeiras, Rio de Janeiro State. The holotype is presently located at the Herbarium of the Botanischer Garten und Botanisches Museum Berlin-Dahlem, Germany. Since the original description, practically nothing has been added to the knowledge about the species.

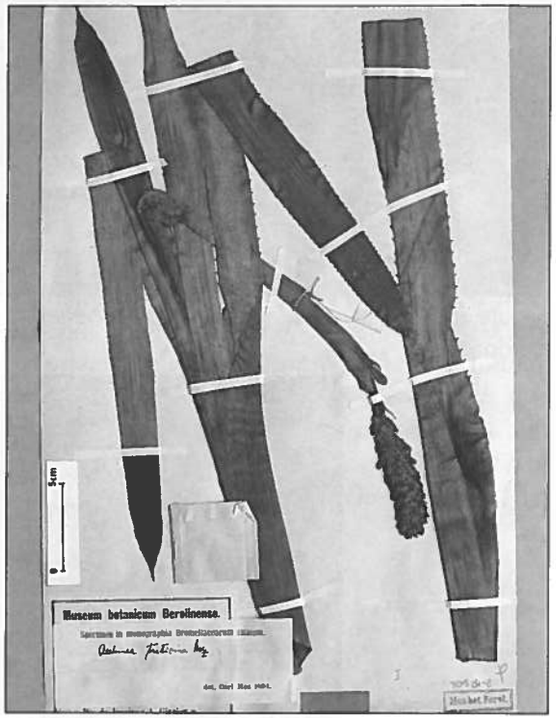

Figure 11. Holotype of *Aechmea triticina* deposited in Berlin-Dahlem Herbarium.

Smith (1955) associated *A. triticina* with the species complex headed by *A. pineliana* (Brong. ex Planch) Baker, which was maintained in Smith & Downs (1979). This conception naturally became prevailing, as can be exemplified by the illustrations of *A. triticina* presented by Baensch & Baensch (1994), with clear resemblance to *A. pineliana*.

During the revision of subgenera Pothuava – to which *A. triticina* belongs –, Wendt (1997) did not deviate from the conceptual line initiated by Smith (1955) and Smith & Downs (1979), explicitly associating this taxon to *A. pineliana*. As a consequence, new synonyms were incorporated into *A. triticina*, which reveals thinking compatible with the adopted conception of the species.

Only recently populations were discovered from collections carried out at the probable region of the type locality with characteristics that fit precisely into the protologue of *A. triticina*. On the other hand, the new specimens made it possible to ascertain that the conceptual line followed by Smith (1955), Smith & Downs (1979) and Wendt (1997), based essentially on the analysis of dried specimens, deviated strongly from the original concept of the species outlined at the end of last century by Karl Mez.

[2] Graduate student in biology at the Federal University of Rio de Janeiro (UFRJ) and apprentice at the Department of Botany of Museu Nacional (UFRJ).

[3] Herbarium Bradeanum – e-mail: me@tj-tj.gov.br

Aechmea triticina Mez, in *Martius Fl. bras. 3* (3): 369. 1892.

Synonym: *Pothuava triticina* (Mez) L. B. Sm. & W. J. Kress, *Phytologia 66* (1): 75. 1989.

Type. Brazil, Rio de Janeiro: Palmeiras, *A. Glaziou 8985*. (Holotype:B).

Material examined: Brazil, Rio de Janeiro, Paulo de Frontin, Sacra Família do Tinguá, Quinta de Santa Matilde, 25 Mar. 1998, *B. R. Silva 9*, cult *E. Leme 4435* (R, HB); 10 June 1998, *B. R. Silva 66* (R).

Plant epiphytic, propagating by basal stout shoots, flowering ca. 90 cm high. **Leaves** 20 to 25, chartaceous, exceeding the inflorescence, forming a crateriform rosette. **Sheaths** narrowly oblong-elliptic, 10–15 × 3–5.5 cm, pale castaneous adaxially, greenish abaxially, densely brown-lepidote on both sides, nerved. **Blades** sublinear-lanceolate, acuminate, ending in a long pungent spine ca. 1 cm long, not narrowed toward base, 30–100 cm long, 3–5 cm wide at base, densely spinose, spines 1–3 mm long, brown, suberect or slightly antrorse, inconspicuously and sparsely white-lepidote adaxially and very densely white-lepidote abaxially, trichomes sometimes forming narrow transversal white bands. **Scape** erect to suberect, 40–60 cm long, 0.6–0.8 cm in diameter, white, glabrous. **Scape bracts** linear-lanceolate, acuminate, 15–20 × 2–2.5 cm, paleaceous, distinctly exceeding the internodes, greenish-white, densely white-lepidote abaxially and glabrous adaxially, entire, the lowest ones minutely serrulate at apex, the upper ones entire, erect and completely enfolding the scape. **Inflorescence** simple, strobilate, cylindrical, obtuse and without any apical coma of sterile bracts, very densely many-flowered, erect or suberect, 7–12 cm long, 2–3 cm in diameter. **Floral bracts** suborbicular, truncate and mucronate, 12–13 mm long, including the 1–1.5 apical mucro, 12–15 mm wide, entire, enfolding the base of the flowers, reddish-rose, densely and coarsely white-floccose, subchartaceous except for the membranaceous margins, shorter than the sepals, carinate toward base. **Flowers** 60–100, ca. 18 mm long, sessile, polystichous and densely arranged, suberect, odorless. **Sepals** broadly ovate, obtuse and mucronulate, very asymmetrical with a subrounded lateral wing which equals their mucro, ca. 7 mm long, mucro 1–2 mm long, 4–5 mm wide, connate at base for ca. 0.5, reddish-rose, densely and coarsely white-floccose. **Petals** narrowly obovate, emarginate and very slightly cucculate, suberect at anthesis, 12–14 × 3–4 mm, free, white toward base and lilac toward apex, bearing at base 2 coarsely fimbriate appendages 4–6 mm above the base. **Stamens** included.

Filaments slightly dilatated toward apex. **Anthers** narrowly ellipsoid, base obtuse, apex acute, ca. 4 mm long, fixed near the middle. **Stigma** ellipsoidal, conduplicate-spiral, white. **Ovary** broadly ellipsoid, ca. 5 mm long, 3–4 mm in diameter, green, densely and coarsely white-floccose; epigynous tube 1–1.5 mm long; placentation apical; ovules minutely caudate.

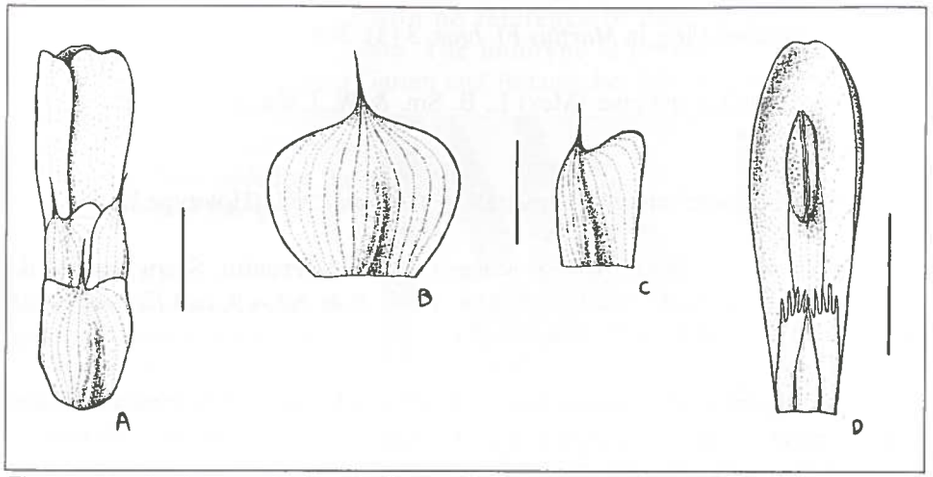

Figure 12. *Aechmea triticina*. A, flower; B, floral bract; C, sepal; D, petal. (scale = 5mm)

In contrast to Wendt (1997), *A. triticina* reveals clear morphological affinity with *A. bocainensis* E. Pereira & Leme, from which it differs mainly by leaf-blades bearing smaller spines, inflorescence much longer, floral bracts with a shorter apical spine, sepals densely and coarsely white-floccose with a shorter apical spine and ovules minutely caudate (not obtuse).

Beyond this, there are clearly visible characteristics that distinguish *A. triticina* from the complex of species related to *A. pineliana*. The most important of them in *A. triticina* [not mentioned by Wendt (1997), but remarked by Smith & Downs (1979)] is the lacking of a coma of sterile bracts at the inflorescence apex. On the other hand, this characteristic is always visible in *A. pineliana* and the taxa related to it, like *A. guarapariensis* E. Pereira & Leme and *A. roberto-seidelii* E. Pereira. It should be noticed that the group of species to which *A. triticina* belongs (e. g., *A. bocainensis*, *A. vanhoutteana*, *A. alopecurus*, *A. brueggeri*) exhibits vividly colored floral bracts (rose to red) and petals in various shades of lilac. In contrast, on the group to which *A. pineliana* belongs, the floral bracts and petals vary chromatically between white and yellow, assuring the visual distinction of the taxa involved. It is worth remarking that the information about the greenish coloration of the flowers, indicated in the protologue of *A. triticina*, was not generated from data observed directly by Mez, who explicitly mentioned it (1891-94). This information was attributed to Glaziou by Mez and is certainly mistaken.

Figure 13. Nova Iguaçu, a suburb of Rio de Janeiro as seen from the Tinguá mountains.

Mainly an epiphytic species, *A. triticina* Mez can occasionally be found growing on the ground wherever light is more abundant. Its habitat is the Atlantic Rain Forest understory between 200m and 800m altitude that still covers much of the Tinguá mountain range about 60 km north of Rio de Janeiro city. Large clumps are common, with as many as 20 rosettes, especially at tree bifurcations. Flowering occurs all year round, but is concentrated in summer (November until March) when most of the rosettes in the clumps send out their colorful inflorescences, making up a sublime sight. Such must have amazed Glaziou, the first to collect the species on the locality of Palmeiras, Rio de Janeiro state and also the most influential landscape artist to work in Brazil during the nineteenth century. The species was rediscovered in 1998 near the city of Sacra Família do Tinguá, just 10 km from Palmeira da Serra, probably the same "Palmeiras" mentioned by Glaziou. Two species of hummingbirds and various insects have been observed visiting the flowers.

The topic related to the taxonomic positioning of *A. triticina* var. *capensis* L. B. Sm. and the synonyms related to *A. triticina* by Wendt (1997) will be presented in a latter article following the present study.

ACKNOWLEDGEMENT

We wish to thank FAPERJ for the scholarship given to Bruno Rezende Silva and also the researcher Andrea Costa, for her valuable suggestions.

Figure 14. The species flowering at the occasion of its rediscovery at the private reserve of Quinta de Santa Matilde, near Sacra Família do Tinguá.

Figure 15. A close-up of the inflorescence of *Aechmea triticina.*

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Rio de Janeiro, Brazil

Strybing Tour Correction.

There is a minor correction to tour schedules that some of you who have already registered for the 2000 World Bromeliad Conference may have received. Some of the information packets mailed to early registrants lists the tour as being scheduled for Monday, July 2, 2000. The correct date should be Monday, July 3. All other information is correct.

Clive Innes

Clive Innes, former President of the European Bromeliad Society and author of several books on bromeliads and cacti and succulents, passed away on March 7, 1999.

A long-time member of both the BSI and the European Bromeliad Society, Mr. Innes will be missed.

Lotusland's Bromeliads – Caring for the Collection

Seth Napel **Photographs by the author**

During the summer of 1960 Madame Ganna Walska hired well-known bromeliad expert and collector Fritz Kubisch to design the original bromeliad garden, under her supervision, just outside her bedroom in the Pavilion Cottage. Much of the original plant material, collected by Kubisch on many trips to South and Central America, still flourishes in the garden today.

Garden designer Bill Paylen came on the scene later in the 1960's to redesign the upper garden and reorganize all the excess plants that Madame had been moving to another location lower on the property. Paylen played a crucial role in the garden's design and still plays an active part by consulting on the culture and display of the plantings. In addition, Paylen's relentless passion for bromeliads and their conservation have further inspired me to preserve and increase the collection for future generations to enjoy. The collection is classified as a familial collection, meaning consisting of only one plant family. The collection consists of 33 genera, 187 species and a number of cultivars bringing the total number of taxa to 215 that are displayed in large swaths, or as I refer to them, colonies.

Managing an extensive plant collection can easily become a full-time responsibility. The last two years have been spent in renovations of the plantings, dividing mature plants, and amending the soil; always placing emphasis on growing the right plant in the right place. New additions for the collection are acquired from other botanical gardens, nurseries, and, of course, bromelphiles. Recent acquisitions have come from the collections of Lloyd Kiff and Dutch Vandervort, for example.

The collection is split between two locations; the lower and upper bromeliad gardens. The lower garden is approximately 12,000 square feet and the upper is about 7, 000 square feet of cultivated beds. Bromeliads, if given the right conditions, grow like wildfire. The annual vegetative reproduction rate of most broms is 2 to 5 "pups" or offsets per mature plant. With the total number of plants exceeding 2,600 there are always truckloads of extra plants after a renovation.

Bromeliads at Lotusland are primarily cultivated terrestrially (in the ground) although many species are also displayed epiphytically (growing in trees). To accommodate the needs of bromeliad root systems, soil is amended with a blend of sandy compost. After replanting, the area is top-dressed with one to two inches of organic matter to increase the soil's microbial activity and promote soil viability.

Figure 16. Tillandsias and aechmeas blend well together in the garden.

Figure 17. The lower bromeliad garden at Lotusland.

Fertilization of the broms is done on a bi-annual basis. One application in early spring and again in mid or late summer. In keeping with Lotusland's overall approach, the primary choice of material is an organic liquid fertilizer with an N-P-K ratio of 0-10-10. This is supplemented by the addition of another organic product high in secondary nutrients and trace micronutrients. All materials are applied at half strength and as a foliar feeding utilizing a 105-gallon spray rig.

The gardens are situated under the canopy of numerous old coast live oaks (*Quercus agrifolia*), many of which are in a slow decline (said to occur over a matter of a hundred years!). Bromeliads, being heliophytes (sun-loving plants), need sufficient sunlight to continue their photosynthetic process. As a result of too much shade, broms don't perform well and display a pale or stunted appearance. Annual consultation with the staff arborist to discuss future tree shaping techniques and new ideas for getting more sunlight into the garden is done routinely. Furthermore, as our native oaks succumb to old age and oak root fungus (*Armillaria mellea*), more sustainable trees, such as *Taxodium mucronatum*, palms, and water-loving *Quercus virginiana* are added.

Fortunately, Santa Barbara's Mediterranean climate permits us to grow bromeliads outdoors throughout the year. As an experienced horticulturist and an avid lover of bromeliads, I can ensure all that visit the gardens will see a dramatically scenic and diverse display of these astonishingly adapted plants.

Santa Barbara, California

New E-mail Address

The E-mail address for Membership Secretary Carolyn Schoenau has changed. It is now bsi@nersp.nerdc.ufl.edu. The new address differs only slightly from the old one by replacing the nervm (old) with nersp.

Tour Schedule for San Francisco World Conference

Roger Lane

There is much to see and do in the San Francisco Bay Area, and BSI members registered for the conference will have a variety of tours available to sample them.

Tour 1 – Member's Plant Collections

This tour will take you to visit the bromeliad collections of at least two local members. It is provided free to all conference registrants and will last about 4 hours. The tour will take place on Saturday, July 1 in the morning and will be repeated in the afternoon.

Tour 2 – California Wine Country

Enjoy the sights and tastes of the California wineries. Depart by crossing the Bay Bridge towards the Napa Valley. Stop for wine tours and tasting. Continue north to Calistoga (known for its hot springs and mineral waters). Enjoy lunch and shopping along the main street. Next stop will be Sharpsteen Museum (created by Disney animator Ben Sharpsteen). After lunch travel the Silverado Trail to Sonoma County for more wine tasting. Return to hotel by way of the Golden Gate Bridge. This tour will leave from the hotel on Tuesday, June 27 at 8 a.m. and return at 5 p.m. The tour cost is $45 per person which includes tickets for the wineries and bridge tolls. The tour is limited to 53 persons.

Tour 3 - Monterey Bay Aquarium, Carmel and 17 Mile Drive

Enjoy spectacular views of the Pacific Ocean as you head south from our hotel. Pass through the Salinas Valley (artichoke capital of the world) and through Monterey to John Steinbeck's Cannery Row. Visit the Monterey Bay Aquarium, a world-renowned aquarium that includes a million-gallon tank with the largest window on Earth. The latest aquarium addition opened this year with displays of rarely seen sea creatures from the depths (2000 feet). Enjoy time on your own for lunch and shopping in the Cannery Row area. Follow the Pacific Ocean along the 17-mile drive that includes many famous golf courses. Spend time in Carmel (home of unique shops and cafes). Pass by one of the oldest Spanish Missions in the country on the way back to the hotel via the Silicon Valley (computer capital of the world). This tour will leave from the hotel at 8 a.m. and return about 7 p.m. on Wednesday, June 28. The tour cost is $60 per person and includes tickets for the aquarium and 17-mile drive entrance fee. The tour is limited to 53 persons.

Tour - 4 Carnivorous Plant Nursery and Winery

This tour combines a trip to California Carnivores, a nursery specializing in carnivorous plants with a stop at the Mark West Winery located next door. This may be the only retail nursery in the United States specifically catering to the cultivation of carnivorous plants, although there are a few mail order only firms. At the nursery, there are over 400 varieties of insect-eating plants on

display, with information signs to help provide a self-guided tour. Magnifying glasses, books, photo albums, newsletters and other items are available for public use. There will be plants for sale. We ask that you B.Y.O.B. (bring your own bugs), if you wish to feed the plants. Photographers are welcome. This tour will leave from the hotel on Thursday, June 29 at 7:30 a.m. and return at 1:30 p.m. The tour cost is $35 per person and includes a box lunch to eat at the nursery. The tour is limited to 52 persons.

Tour 5 - Filoli Gardens

Filoli is a Georgian Revival House, built between 1915 and 1917, located south of San Francisco. The property became a part of the National Trust for Historic Preservation in 1975. The Filoli Gardens are considered one of the finest examples of private estates gardens representing the "Golden Age of American Gardens". Our tour will be led by one of the docents. This tour will take approximately 3 fi hours and leaves from the hotel on Thursday, June 29 at 2 p.m. The tour costs $26 per person and includes the entry fee to the estate and gardens. This tour is limited to 35 persons.

Tour 6 – Alcatraz Island

Alcatraz Island, San Francisco's most popular tourist destination, offers a close-up look at the historic and infamous federal prison long off-limits to the public. Visitors to the island can not only explore the remnants of the prison, but learn about the Native American occupation from 1969-1971, early military fortifications and the West Coast's first (and oldest operating) lighthouse. These structures and the island's many natural features - gardens, tide pools, and bird colonies are being preserved by the National Park Service. Our bus will drive you to Pier 41 where you take a boat to the island. Once on the island you are on your own for about 2 hours to visit the former penitentiary with an audio taped cellblock tour that has drawn high praise. This tour is scheduled on Friday, June 30 from 7:30 a.m. to 1 p.m. The tour costs $35 per person and includes the boat trip and the audio taped tour. The tour is limited to 53 persons.

Tour 7 - Strybing Arboretum and Conservatory of Flowers

The Strybing Arboretum and the Conservatory of Flowers in Golden Gate Park provide an opportunity to view plants from all over the world. The 55 acres in the arboretum contain 8000 varieties of plants – some of which are no longer found in their native habitats. San Francisco's cool mild climate allows displays of highland tropical plants that are usually not found in most arboretums. There is also a collection of puyas to be found here. The conservatory, built in 1879, is currently closed to the public for renovation because of extensive wind damage to the structure in 1995 (30,000-glass panes destroyed). However, our group will be allowed entrance for a private tour of the historic building. It has 3 temperature zones to accommodate plants from various climates, including bromeliads. It is world renowned as a leader in orchid preservation, particularly of at-risk high altitude orchids from the rainforests of Central and South America. This tour will leave from the hotel at 8 a.m. on Monday, July 3 and take approximately 4 hours. The tour costs $25 per person and is limited to 35 persons.

Los Altos, California

Welcome New Members

The following individuals joined the Bromeliad Society International during the first half of 1999. The BSI welcomes them aboard and thanks them for their support.

Luis Abenir
Shawn Ardoin
Rose Ashley
Bill Bailey
Edna Bailor
Doug Barth
Harvey Bassin
Douglas Binns
John Blakeney
Pam Boggs
George Bosworth
Kirk Bridgewater
Gloria Brown
Frank Caldwell
Catherine Campbell
Domenico Carotenuto
Maria Castro
Jimmy Chiasson
Lester Ching
Trixie Clarke
Madeline Clopton
Richard Coarsey
Fern Coblentz
Cindy Compton
Marlen Conklin
John Conway
Donald Crago
Jane Dahin
Franco D'Ascanio
Geraldine Davy
Dawson United Kingdom
Cynthia De Blasio
Randy Delaney
Naomal Dias
Deborah Donofrio
Lynne Fagan
Richard Fateman
David Feix
Marta Fernandez
Kevin Flint
James Frame
Fumio Fujikawa
Theodore Gopin
K. Govender
Deborah Guilford
Linda Halley
Evelyn Hallowel
Serussi Harel
Gordon & Susan Hauter
Jimmy Hayes
Jack Hays
Mabel Hazelwood
Kent Hines
Sandra Humphrey
Tetsuro Ikeda
John Ingram
Sally Janus
Tom Jaszewski
Jonathan Kajiwara
Rick and Rhoda Keeler
Patrick Kelly
Bruce Knadler
Glen Kuhn
Irwin Lawson
Jack Lewis
Jean Long
Luis Lopez
Juanine and Jerry Lowery
Antonin Lukscheiter
Michinori Matsumoto
Bruce Messmore
Joe Montgomery
John Murphy
Wilma Murphy
M. Newberger
Mary O'Connor-Gay
Lisa Patino
Alison Pinder
Noma Pinto
Jefferson Pipes
Shirley Powell
Larry Rahme
William Rapp
Robert Rausch
Fred & Mary Rinebold
Betty Rogers
Udo Schulze
Marsha Segal-George
Sam Shepherd
Joe Smilgius
Somtus Somburanayut
Louis Spielman
William Stanton
John Stehlik
L. Stewart
Satoko Takahashi
Robert Thompson
Ronald Travis
Yvrose Valdez
Betty Van Keuren
Joel Wainsztein
James Wolf
Hideki & Yumiko Yamaguchi

Affiliates in Action

Gene Schmidt

The Bromeliad Society International welcomes the Illawarra Bromeliad Society, Inc. as its newest affiliate. This society is located in the Illawarra region of New South Wales, Australia; and current officers are Mr. Jeffree Bartley, President; Mr. Graham Bevan, Vice-president; Mr. Robin Gray, Treasurer; and Mrs. Margaret Barley, Secretary. The BSI thanks them for making both societies stronger, and we look ahead to many years of growth and prosperity for the Illawarra Bromeliad Society. Congratulations!

The Bromeliad Society of New Zealand commissioned a new trophy for the 1999 Annual Competitive Show to be presented to the winner of Best Neoregelia. The eminent New Zealand artist/sculptor Christine Hellyar, whose work is in many public and private collections, created a colored patined bronze of a stylized Neoregelia. Christine, a member of the New Zealand society, is better known to other members as Christine Ensor. The winner of the first trophy turned out to be not one but three! Judge Dave Anderson, said that try as he might, he could not separate the three winning plants and so the trophy will be held in turn by Graham Alderson, Len Trotman, and Peter Waters. A record number of over 300 plants were displayed in 26 classes for this year's show. *(The Bulletin, March-April, '99, Bromeliad Society of New Zealand, Inc.)*

The auction of the Sarasota (FL) Bromeliad Society was a great success. Dr. Pineapple, Dale Jenkins, donated an *Aechmea correia-araujei*, and it was mentioned that it was put up for bid because Dale couldn't get a pineapple out of it. Dr. Jenkins also shared about 50 pineapple plants with those at the meeting. Other interesting plants were an *Aechmea andersonii* donated by Harry Luther that was collected by Wally Berg and recently described, and conversely an *Aechmea bracteata* var. *pacifica* donated by Wally and collected by Harry. John Anderson of Corpus Christie, Texas donated a Mexican *Androlepis* that is a new species and not yet named. One of the highlights was said to have been Wally Berg announcing that there were several people who promised plants for the auction and didn't bring them. He then pulled auctioneer Bill Timm's *Tillandsia fasciculata* cv. 'Cathcart' from the head table and proceeded to auction it off! After the Cathcarts announced that this particular plant was rare the bidding was fierce and the plant sold for $120. By the look on Bill's shocked face and hands tightly gripping the podium, some in the audience weren't sure if it was a joke or not! *(The Newsletter, Vol.4, Issue 35, 99, Sarasota Bromeliad Society)*

Congratulations to Jo Deville for being named a Life Member of the Bromeliad Society of South Florida in recognition of her many years of service to the BSSF and her ready participation in their events. Dr. Howard Frank, the speaker at May's meeting, spoke of his work trying to control the introduced Evil Weevil of Florida, *Metamasius callizona*. Nat DeLeon, president of the Florida Council of Bromeliad Societies, also spoke of the difficulty in getting funds for research to identify a biological control for the weevil. He is also trying to get

the word out to the State Legislature of Florida about the severity of the infestation and the need for government backing. *(The Bromeliadvisory, June, '99, Bromeliad Society of South Florida)*

The New York Bromeliad Society display at the Plant Show held from April 6th to 8th at the Citicorp Atrium received high praise from all who saw it. There were about 50 plants in bloom and the color impact was stunning. The plants were brought by Jackie Hodes, Herb Plever, and Henry Turner. Eighteen people were there to serve the exhibit, and thanks go to all those who constructed and setup the exhibit. *(The Bromeliana, May, '99, New York Bromeliad Society)*

The Bromeliad Society of Central Florida's 24th Annual Bromeliad Show in Orlando during May featured some outstanding bromeliads. There were 176 entries this year, with a *Tillandsia edithae* grown by Eloise Beach stealing the show. The plant was 15-20 years old and had reached the size of five feet long by two feet wide! The sale part of the show was phenomenal - much higher than the year before, and for the first time in years there were plants donated to the sale. The BSCF's membership drive continued to be a success with twelve new members for the club and two new members for the BSI. *(Newsletter, May, '99, Bromeliad Society of Central Florida)*

Gene McKenzie and Larry Giroux, newsletter editors of the Caloosahatchee *Meristem*, traveled in May to New Orleans, LA, to be a part of the judging team for the Greater New Orleans Bromeliad Society (LA) Show, with 225 entries. Fred Ross, newsletter editor of the GNOB Society, took both Gene and Larry on several mini tours to see some of the sites Gene had longed to see for years. She writes that being able to judge a show out of state is such a rewarding experience; getting to see new plants, meet new friends, and to appreciate the efforts of other societies to promote bromeliads. *(The Caloosahatchee Meristem, June, '99, Caloosahatchee Bromeliad Society)*

Planning for the 2000 World Bromeliad Conference to be held in San Francisco, CA, continues. The celebration of the 50th Anniversary of the BSI will be the perfect time to honor BSI Affiliated Societies. We plan to do this by issuing new affiliate certificates with the theme of the 50th Anniversary at the banquet, as well as holding an affiliate meeting sometime during the conference. This will be a chance for affiliated members from around the world to meet and address suggestions or concerns they may have. We are also encouraging affiliated societies to bring to the conference some kind of table top display that would show others insight into their local society. This might include pictures of members or perhaps a written history, but by all means be creative. Conference registrants will vote on best exhibit, and the top prize will be $100. Those not winning best exhibit will receive something suitable for their society library. If your society has someone who is planning on attending the world conference please discuss the possibility of their bringing a display from your society. For more information on the 2000 World Bromeliad Conference, contact BSI's web site at **http://bsi.org** , or contact me directly at GENOPS@aol.com for information or questions dealing with affiliated society plans.

Duluth, Minnesota

Problems of the Past

Derek Butcher

Did you know that there are two forms of *Aechmea* 'Covata' in Southern California and both are correctly named UNDER THE OLD RULES?

Let me explain. Under the old rules of manual hybridizing, if a species was crossed with another species and the resultant grex was given a name then this name would apply to all crossings. It did not matter which one was the seed parent or if different varieties were used. " Rules were rules".

I know that in Australia in the 1970's the likes of Grace Goode and Bill Morris complained about the differences you got by swapping the role of the parent plant. However, the wheels of officialdom grind exceedingly slow and only in 1995 did we see the International Code of Nomenclature of Cultivated Plants eventually swing to the naming of individual clones. Why oh why didn't we have this in the 1970's?

Let us return to the problem at hand. In 1982 I purchased an *Aechmea* 'Covata' at the Orange County Bromeliad Show in Los Angeles. It had an inflorescence sunk in the leaf rosette and we assumed that Hummel had crossed *Aechmea recurvata var. ortgiesii* or *var. benrathii* with *Aechmea comata*. This hybrid is now widespread around Australia. A repeat of this cross was done by Keith Bradtberg here in Adelaide in 1988 using *Aechmea recurvata var. recurvata* which produced a long scaped inflorescence. Two clones were selected and called 'Keith's Comet' and 'Golden Comet'.

In 1998 I invested in a Computer and "surfed the net" and was surprised to find a different *Aechmea* 'Covata' in the photos on the Florida Council Web pages[1] from Pamela Koide of Birdrock Tropicals. This had an inflorescence well above the leaf rosette. The parents could easily be *Aechmea recurvata* and *Aechmea comata* but the elongated scape indicated *Aechmea recurvata var. recurvata* as the other parent. Harvey Kendall of Los Angeles remembers my foray into the USA and believes that the form with the hidden inflorescence originated with Hummel. We also know from Bill Baker of California Gardens Nursery that there were at least two distinct forms. The more impressive form is undoubtedly the one where the inflorescence stands proud and tall.

Now that we are aware that there are at least two forms I suggest we call the hidden inflorescence form 'Covata Too' to distinguish the two! Why am I doing this? It is hoped that mail order purchasers of this plant will not be disappointed when they get the hidden inflorescence form when they were expecting the exserted form and vice versa. It is also hoped that photographic references on the Internet will help future purchasers in deciding what they want to buy.

[1]HTTP://FCBS.ORG

To add to the intrigue we know of yet another possible '*comata* x *recurvata*' plant. It was "collected" by Chester Skotak in Seidel's nursery in Brazil and found its way to Australia as an unnamed species. It was named *Aechmea* 'Flaming Star' and seems even brighter than *Aechmea* 'Covata'.

So the long-scaped Aechmea 'Covata' should retain this name but if the inflorescence is hidden in the leaf rosette, would you please change your label to Aechmea 'Covata Too'.

Fulham, South Australia

Suggestions for collecting and sowing Tillandsia seed

Nat De Leon

The following are comments and suggestions relating to collecting, storing, and sowing seeds of tillandsias.

1. Seeds probably ripen with the start of the rainy season.

2. To insure viability, seedpods should be showing some brown color.

3. Seed capsules should be put into a bag. If you use a plastic bag, do not seal it completely or moisture will develop and unopened capsules may not open and spoil.

4. If unopened capsules do not open within a week, capsules should be opened manually. Each capsule is three-parted. With your fingernail you can divide the capsule. This should be done in an area (indoors) without wind or the seeds may disperse.

5. Seed containers should be marked with the species name, date collected, and the collection coordinates.

6. If the seed collector is also going to sow and grow the seeds, seeds can be sown on almost anything. You can also make up plaques from old shade cloth. Seeds can also be sown on tree trunks or thick branches. Coarse barked trees, (i.e. oak trees) are best.

7. When sowing seeds use a wind still area. If you are using trees as hosts, sowing during the early evening is usually more calm.

8. After sowing seeds, the most important step is to water them. This can be done with a fog nozzle or spray bottle. Do not hold the spray stream too close to the seeds or the seeds will disperse.

9. Water thoroughly! This will fix the seeds to its host.

10. Hang plaques or use trees that are exposed to bright light, but not full sun.

11. Watering frequently (except on rainy days) will speed germination.

12. Once germination starts (you will see a little speck of green), reduce watering to twice a week.

13. After the germinated seeds produce about three leaves, you can start using a weak solution of fertilizer.

14. Tillandsia from seed are slow. Patience is the name of the game.

15. When sowing the seeds, record the date seeds are sown.

16. In thinking things over, it probably would be best to use zip-lock plastic bags to collect and then transfer the seed and/or capsules into paper envelopes.

Miami, Florida

Reprinted from the newsletter of the Florida West Coast Bromeliad Society, July 1999.

Golden Anniversary

The Bromeliad Society International World Bromeliad Conference

Registration form

San Francisco, CA

Hyatt Regency Hotel

June 26 through July 5, 2000

Registration Rates are:

$115.00 January 2, 1999-January 1, 2000

$130.00 January 2, 2000-June 1, 2000

$150.00 June 2, 2000 and at the door.

Please print or type (we want to be able to reach you).

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Name On badge(s)? (please print)

1._____ BSI voting member___(this will be checked)

2._____ BSI voting member___(this will be checked)

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Your BSI Affiliate Name?_____(if applicable)

Amount (per registrant)_____ Check/Visa/Master Card (circle one) #_____

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Add $15.00 per registrant if not a BSI voting member. (Do not pay dues and receive *The Journal of The Bromeliad Society*)

Send this form and payment to: Carolyn Schoenau, P.O. Box 12981, Gainesville, FL 32604

The registration fee is 70% refundable until June 15, 2000. After that no refund will be given (except in cases of illness or death)

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Prices include postage at book rate. Order from BSI Publications, 6523 Camino Real, Carlsbad CA 92009. California residents add 7.75% sales tax. Please make checks out to "Bromeliad Society, Int." Publications may be ordered on line at htttp://bsi.org

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The purpose of this nonprofit corporation is to promote and maintain public and scientific interest in the research, development, preservation, and distribution of bromeliads, both natural and hybrid, throughout the world. You are invited to join.

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