

# **Journal of The Bromeliad Society**



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# Journal of the Bromeliad Society

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**Editorial Advisory Board:** David H. Benzing, Racine S. Foster, Sue Gardner, Amy Jean Gilmartin, Harry E. Luther, Robert W. Read

**COVER PHOTOGRAPHS.** Front: *Tillandsia* × Houston 'Flaming Spire', one of the best clones to flower so far. It differs from other Houston in having whiter leaves, a sturdy straight inflorescence, and very deep red-pink floral bracts. Dr. Dimmitt describes his works on page 162. Photograph by the author. Back: *Vriesea scepttrum* was first described by Carl Mez in 1896. This is the first mention (page 175) and the first color photograph in the *Journal*. Photograph by E.M.C. Leme.

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## From Tarapoto to Moyobamba; Plant Collecting at the Edge of Amazonia

Juan A. and Eneida B. Rivero

*If you are afraid of thorns, don't ever look for flowers.*

— Anonymous

We were exhausted, having collected frogs until late the night before. It was now six in the morning when we heard the terrible commotion. A rooster or some other gallinaceous bird was running around within the hotel grounds, from all appearances within the building itself, cackling, flapping, jumping, and flying. When we came out to investigate, there was a man brandishing a big stick and running after the rooster with clear, criminal intentions: the rooster was to serve for the chicken stew to be prepared for dinner that day.

When everything was over, every guest in the hotel with a personal radio turned it on, forcing music into the rooms of those who did not have the good fortune to possess one. A day had started at Tarapoto, Peru.

Tarapoto is a jungle town, simple and unpretentious. Whatever the inconveniences, and there are many, they are fully compensated by the hospitality and affability of the Peruvian people. In this respect, Peruvians are second to none.

Our scientific interest in the Tarapoto area was in its frogs, but we have plants as a hobby and bromeliads, orchids, and heliconias have our preference. So, while collecting frogs (mostly at night) we sometimes deviated our efforts to obtain a few plants. We must say from the beginning that, except for the known presence of *Tillandsia wagneriana* along the banks of the Mayo River, the Tarapoto area is extremely poor in bromeliads. This condition contrasts sharply with the Machu Picchu area, where cliffs and mountain slopes are literally covered with bromeliads. But Machu Picchu, at 2,000 meters, is a protected area and besides, its plants may not grow well under our warm conditions.

Originally we intended to visit Yurimaguas, right in the Amazonian jungle (where mosquitoes are said to have sucked a drunkard to death) and about eight hours by dirt road from Tarapoto. The heavy rains, however, had made the road impassable and, according to our source, the weather was to remain that way for at least 20 days more. So, we opted for Moyobamba, higher up in the Andes (800 m) and separated from Tarapoto by four to five hours of "turnpike." The turnpike turned out to be a muddy, slippery dirt road that required double traction on four occasions.



The only interesting bromeliad collected was a fairly large plant (Fig. 1), with apple green leaves profusely covered with red spots<sup>1</sup>. Practically no bromeliads were seen along the road to Catarata de Ahuachiacu, but on approaching the falls, a distant tree was seen to contain a number of plants, and the particular specimen referred to was on the ground, its origin unknown but probably belonging to the same species growing on the tree.

Another species of what appears to be a small *Guzmania* was collected in deep shade near the Boca-Toma de Agua (the water intake for Tarapoto). This species was growing in low bushes under very dark and humid conditions. It looks like one of the dwarf forms of *Guzmania lingulata*, but its clumping habit seems to be different.

For the trip to Moyobamba, we contracted with an invaluable guide, Jorge Aching (San Martin 514, Tarapoto, Peru) who has aided many of the commercial and scientific collectors visiting the area. Jorge has the agility of a cat, is quite knowledgeable of plant families and genera, and knows where the plants are. He can climb any tree in search of an elusive bromeliad or *Platyserium andinum* (of which he claims there are two species, although only one is reported from South America), but would not catch a frog for anything on earth.



Authors

Fig. 1. Jorge Aching, the authors' guide is holding one of the few bromeliads collected in the Tarapoto area of Peru. A tentative identification is *Tillandsia* species.

<sup>1</sup> Harry Luther thinks that this is a *Tillandsia* species since he does not know of any spotted guzmanias from Amazonia.



Authors

Fig. 2. A view of *Pitcairnia* growing along the roadside bank on the way from Tarapoto to Moyobamba, Peru.

Jorge took us to places along the Mayo River where calabash trees were loaded with orchids, mostly rodriguezas and oncidiums, and where a form of *Aechmea chantinii* grew only on horizontal branches. We have hundreds of specimens of this form, originally obtained from Lee Moore, but have always grown them on vertical trunks and palms.

High up in the mountains, and about an hour and a half before reaching Moyobamba, we collected the third species of bromeliad. It was a small species, probably a *Tillandsia*, with a short, red spike about three inches high, and the blooming plant already had a sucker, but there were no other specimens around although trunks and branches were covered with beautiful philodendrons, anthuriums, peperomias, and a spectacular ribbon fern with leaves three feet long.

If you are interested only in bromeliads, the Tarapoto area may not be the best place to go unless you are a believer in the axiom that good fragrances come only in small jars. A detailed search (which we did not do) might reveal plants of high quality, even though the number of species and individuals might be insignificant. After all, *Tillandsia wagneriana* and *Guzmania lindenii* come from this general area.

If, however, in addition to bromeliads you are interested in the Araceae, heliconias, orchids, begonias, or ferns the Tarapoto area is an excellent collecting place. We obtained at least eight species of heliconias, some of them spectacular, no less than 15 species of Araceae that we did not have, as many ferns, and a begonia with enormous, white inflorescences nearly two feet in diameter, and other things. Orchids require so many permits that we decided not to collect any, but it was good to see them growing by the tons.

One word of warning. Food and lodging are very inexpensive at Tarapoto, but gasoline is as high as in the United States and automobiles are in such poor condition that one wonders how they can be mobile. Besides, double traction is usually needed (perhaps not in the dry season starting in July) and taxis are not equipped with double traction.

We were fortunate that we could count on the generous help of Dr. Daniel Rosales of the local Ministry of Agriculture, who loaned us a jeep with chauffeur for four days, starting at 3:30 p.m. each day and all day on Saturday. Others less fortunate will have to depend on taxis or "colectivos" (which take several people on fixed routes). Arrangements can perhaps be made in advance through Jorge Aching.

Dept. de Biología, Recinto Universitario de Mayaguez  
University of Puerto Rico, Mayaguez

## SICK LIST:

We are sorry to report that Dr. Raulino Reitz is ill. Father Reitz is an honorary trustee of the society, and director of the Herbario "Barbosa Rodrigues." His address is: Avenida Marcos Konder, 800, 88300 Itajai, Santa Catarina, Brazil.

From the June *Bulletin* of the Bromeliad Society/Houston we have learned that Jim Mayfield, a former president of that society has been hospitalized. His address is: 1616 Vassar, Houston, TX 77006.

We join their friends in wishing them a speedy recovery to good health.  
—TUL



## New Bromeliads, 4: An Unusual *Dyckia*

Lyman B. Smith

Not since the days of Mulford Foster has there been a species of *Dyckia* of such outstanding appearance as *D. scrutator* with its open inflorescence high above the leaves and very long pedicels. It seems to be stretching up and out to scrutinize its surroundings, hence the name.

### *Dyckia scrutator* L.B. Smith

*Plant* nearly stemless, slightly over 30 cm high. *Leaves* to 6 cm long, covered with minute appressed scales; sheaths suborbicular; blades narrowly triangular, thick, 1 cm wide, laxly serrulate. *Scap*e slender much exceeding the leaves, glabrous; scape-bracts erect, narrowly triangular, entire, shorter than the internodes. *Inflorescence* simple, very open, few-flowered, glabrous. *Floral bracts* ovate, apiculate, 6 mm long; pedicels very slender, spreading, to 25 mm long. *Sepals* ovate, obtuse, 8 mm long, slightly shorter than the immature petals, yellow (! Cordeiro & Simonis); petals green (! Cordeiro & Simonis). *Stamens* unknown.

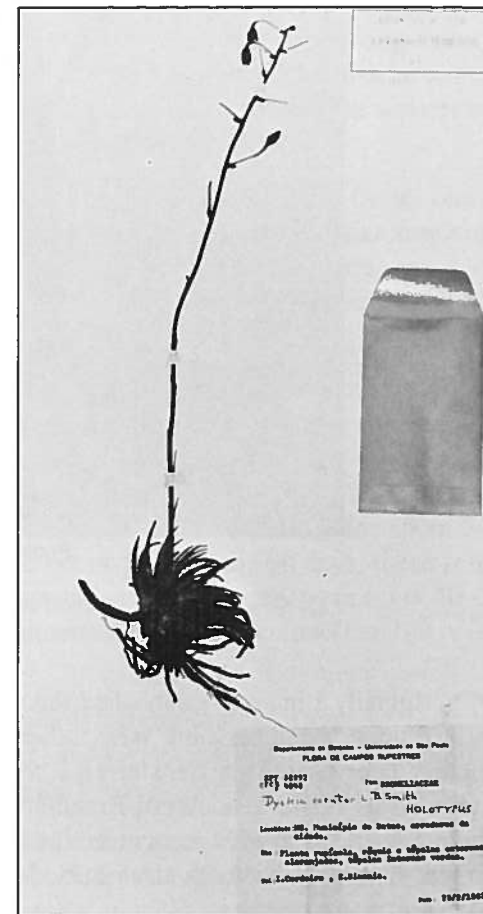
### *Dyckia scrutator* L.B. Smith, sp. nov.

A *D. heloisae* L.B. Smith, cui valde affinis, pedicellis longioribus bracteis florigeras multo superantibus differt.

*Planta* subcaulis, paulo ultra 30 cm alta. *Folia* ad 6 cm longa, obscure adpresque lepidota; vaginis suborbicularibus; laminis anguste triangularibus, crassis, 1 cm latis, laxe serrulatis. *Scapus* gracilis, elongatus, glaber; scapi bracteis erectis, anguste triangularibus, integris, quam internodiis

Fig. 3.

While somewhat indistinct, this herbarium photograph shows the important characters of the new species, *Dyckia scrutator* described by Dr. Smith.



[Continued on page 155]



## Morren's Paintings, 8: *Aechmea nudicaulis* var. *aurea-rosea* Lyman B. Smith



Photograph by the author of a painting  
by C.J.E. Morren.

Fig. 4. *Aechmea nudicaulis* var. *aurea-rosea* considered a distinct species by Morren.

Originally Linnaeus established this species as *Bromelia nudicaulis* based on Plumier's cumbersome West Indian *Bromelia pyramidata*, *aculeis nigris*. A century later Grisebach transferred it to its present position in *Aechmea*. Baker extended its range to southern Brazil and recognized Morren's *aurea-rosea* as a distinct species and Mez recognized the Brazilian plant as different from the West Indian. It is quite common around Rio but must be seen living to be appreciated.

Smithsonian Institution, Washington, D.C.

## Foliage Hardiness in Bromeliads

William M. Rogers

To the collector, leaves are the most important part of a bromeliad. Apart from ornamental foliage forms, no flowering bromeliad is worth looking at if its foliage is tatty. Even minor blemishes can spoil it for commercial sales, or for the competition show table.

In the 19th century those few growers who could afford to cultivate the plants would go to any lengths to provide the correct conditions for perfection. Although they were happy to grow what they could get, they had vast problems in finding, identifying, collecting, transporting the plants before they could even try growing them. Today more and more people are wanting to have a go with the plants and often finding it very frustrating.

Bromeliads appear to be very popular in many areas with climates marginal to their normal habitat. No doubt, that is part of the challenge of growing them. It is not a mass market like roses or dahlias. The weather can sometimes be too hot and dry, there may be too much ultraviolet in the atmosphere, and the winters too cold and frosty, and too wet.

The bromeliad leaf, compared to many plants, has a long life cycle, one to three years. Since each leaf has a set place in a formal, usually circular structure, one damaged leaf can ruin three years effort. As they are often brittle, or subject to bruising, physical damage can be common. Wind and hail can occasionally be disastrous.

This article arises from my attempt to grow bromeliads out in the open. I have about 200 species mostly in the open, with the help of a few shady walls, some evergreen trees, two verandahs, and an open-sided fibreglass-roofed shade house. Auckland has a fairly equable climate with no exceptional climatic highs or lows. I can grow most of my plants outside most of the time, but for about 300 hours over 13 weeks in summer, say five hours on 60 of the 90 days, there is too much ultraviolet and the leaves scorch and bleach. In winter we can get 10–20 frosts of 3–10 degrees C for several hours at night, or perhaps another 100 hours broms won't tolerate.

Today the emphasis is changing towards getting the exact type of plant we want to grow for the place we want it for, and producing it with the minimum of effort to make the longest display possible. Prepackaged gardening, in fact.

So far the enthusiasm has been for the most exotic flowers and foliage possible. If only we would now keep as a concept in the back of our minds that the toughest, strongest plants will, in the long run, give the greatest satisfaction to the most people.

The following is probably a grower's daydream. It is only theoretical and it is addressed to collectors from the wild, to plant breeders, and to growers.

Many bromeliad species appear to have a wide range of habitat, whether geographical, or ecologic. They presumably have an extremely varied genetic makeup to help cope with their "difficult" habitats. It might be that the toughest and strongest could be put in cultivation if collectors were to get their plants where possible from the most exposed situations, bare, sunny, windswept rocks, clearings in the forest rather than shady places, exposed branches rather than sheltered ones; if breeders were to use not only the finest flowers and foliage, but tougher forms in their breeding programmes; if seed raisers were to concentrate on any plants that appear tougher than the rest. The environmentalists might complain that we are messing around with nature, but we would be reshaping it that more people could enjoy the fragments within reach.

This reshaping is already happening in amateurs' collections, but it is slow and haphazard. One's collection gets full of plants that don't make the grade. Some get damaged easily, some don't flower freely, some just don't do well. Each city, each town, each collection has its own climate or microclimate. The plant that does well in a wide range of situations will win out. From the several thousand bromeliad species, no doubt some will do better in Florida than in California, in Singapore than in Cairo, and where they are modified they will change in different ways.

Some problems with bromeliad foliage are no doubt cultural. How does one harden foliage off to prevent burning if it comes out of a greenhouse? With many plants a few days of increasing light will solve the problem. Bromeliad leaves once formed in low light often remain tender. The usual liquid fertilizers easily available to home growers in New Zealand are high in nitrogen or urea-based. They produce foliage growth, but often at the cost of hardiness. What type of feeding will form the toughest plants?

Can the pineapple industry help in any of this? Their plants are naturally sunlovers. How do they minimize the problem of frost damage, apart from avoiding frosty areas?

What is a model for a perfect bromeliad? One that develops in a very short time and remains attractive for a long period without deterioration.

With the hundreds of bromeliads in cultivation for extremely varied situations the possibility for selection and improvement is equally varied. One thinks of the popular kinds already fairly easy to grow: neoregelias, *Aechmea fasciata*, some vrieseas, some tillandsias. Most kinds should be capable of some improvement beyond their present capacity, and hence, the number of people finding them worth cultivating.

Is the biochemistry of foliage hardiness understood and how much more can it be improved? For physical damage there are the usual problems of leaf flexibility and resistance to scratching, buckling, dieback, and resistance to scale and rot. The capacity for improvement is unending.

When one reads of the slow improvement of the garden rose over 3,000 years or so, one thinks of all the skills the modern plant developer has at his fingertips. Modern *Aechmea fasciata* and the branching vriesea hybrids took 100 years to develop. Many more kinds have come out in the last 30 years. One wonders what delight the future holds.

As a grower, I need to get hold of the best plants available, use the best methods known, and grow the plants to the best of my ability.

East Auckland, New Zealand

[News of the author's death in early October 1986 was published in the Bulletin of the Bromeliad Society of New Zealand. The memorial states that Mr. Rogers was a horticulturist trained at Kew Gardens and a holder of the New Zealand National Diploma of Horticulture. He was a founder and first president of the Bromeliad Society of New Zealand, a prolific writer for their Bulletin. He was always willing to share his knowledge. Harry Martin, our honorary trustee from New Zealand, observed at the funeral, "There is no doubt that we are all better for having known Bill. We wish him joy and peace."]

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## New Bromeliads, 4: An Unusual *Dyckia* [continued from page 151]

brevioribus. *Inflorescentia* simplex, laxissima, pauciflora, glabra. *Bracteae florigeræ* ovatae, apiculatae, 6 mm longae; pedicellis gracillimis, patentibus, ad 25 mm longis. *Sepala* ovata, obtusa, 8 mm longa quam petalis immaturis paulo brevioribus, aureis (! Cordeiro & Simonis); petalis viridibus (! Cordeiro & Simonis). *Stamina* ignota.

Brazil: Minas Gerais: Datas: arredores da cicade, rupicola, 23/2/1983, I Cordeiro & E. Simonis 4048 (holotype SPF 30892).

The word "rupicola" indicates the open, arid habitat is typical of the genus *Dyckia* and the state of Minas Gerais is the center of the genus. The holotype and only known specimen is in the University of the State of São Paulo.

United States National Museum  
Washington, D.C.

# Flower Induction and Inhibition in Bromeliads

Peter R. Paroz

One of the unusual attributes of bromeliads is that they can be induced to flower by chemical agents. The earliest references mention the practice of using smoke from fires to induce flowering in glasshouse-grown pineapples in the Azores Islands. In 1932, Rodriquez showed that it was the ethylene component of the smoke which was the active agent. Since that time, there have been many investigations for other active materials. In recent years there have been numerous references in the *Journal* to the use of A.N.A., Ethepon, and B.O.H. for bromeliad flower induction. In commercial pineapple culture, A.N.A. and Ethrel are used to induce flowering in cultivars of *Ananas comosus*.

The usefulness of this procedure was limited because flowering could be induced, but there was no way to inhibit the natural flowering of the plant in a manner which allowed flower induction at a later time. In pineapples, A.N.A., which induces flowering at 10 ppm, effectively inhibits flowering at 100 ppm, and the duration of inhibition is unpredictable and uncontrollable.

Research has established that internally produced ethylene is the active agent which triggers the flowering mechanism. Recent studies have identified the biochemical pathways which produce this endogenous ethylene and have opened up the possibility for the complete control of flowering in bromeliads.

A recent paper by DeProft,<sup>1</sup> and others, demonstrates the potential value of this new information. The test plants for this experiment were one-year-old seedlings of *Guzmania lingulata* var. *minor* which were treated by pouring 10 ml of solution, at the concentration nominated, into the centre of the plant, and observed, in part, for the time to first flower open and the number of plants which flowered.

The results of De Proft's experiments are shown in the following table:

Treatment	Concentration	% Flowering	First Flower (Days)
Control	—	60	78 ± 21
AVG	0.1 mM	0	Infinity
IAA	0.1 mM	80	75 ± 20
ACC	0.4 mM	100	75 ± 13
AVG 0.1mM + AVG	0.4 mM	100	76 ± 9
Ethepon	500 ppm	100	74 ± 9

These results show the complete inhibition of flowering by AVG and the induction, or restoration, of flowering by ACC. The other point of note is the substantial reduction in the spread of flowering in the treated plants.

[Continued on page 157]

# Many "Dry-Growers" Prefer to be Wet

George H. Anderson

Many bromeliad hobbyists find it difficult to grow nice specimens of *Dyckia*, *Hechtia*, *Deuterocohnia*, *Puya* and other "dry-growers." Their problems begin when they attempt to duplicate the xerophytic conditions they imagine these plants prefer. They commonly put together a coarse, highly porous and permeable mix that is low in organic content. These mixes hold little moisture and as the plants grow the leaves shield the mix and further reduce the water available to the roots. This water starvation causes a dieback of the leaf tips that becomes more and more unsightly.

The solution to all of this is to grow them very wet. Use an absorbent mix and water from the bottom by setting the container in a pan of water. We use the taller geranium-style pots since these plants like to put their roots straight down. Put a bit of gravel in the bottom of the pot and use Hyponex All Purpose Potting Soil. Cut this mix with some coarse perlite and throw in some MagAmp slow release fertilizer. Supermarkets sell a variety of cheap aluminum foil pans in various sizes from tart to pie that are ideal to set the pots in.

It is not necessary always to have water standing in the pans. The primary concern is to make certain that the mix stays quite damp. It is alarming at first to see the pot sitting in a pan of water. You will be afraid the plant will rot off in short order. Not to worry, the plant will love it. Later on if you want to enter your plant in a show, just dry it out for a few days and this will enhance the color.

Metairie, Louisiana

[continued from page 156]

These results have far-reaching implications for all who grow bromeliads: the hobbyist, the nurseryman, or pineapple farmer, because now there is the potential to grow plants for flowering to a tight and predetermined schedule.

Interested readers are referred to the original paper for full details of the experiment and results.

Bromeliad Society of Queensland, Brisbane

## END NOTES:

1. De Proft, M.; Jacobs, L.; De Greef, J.A. Endogenous ethylene production and flowering of Bromeliaceae. In: Fuchs, Y.; Chalutz, E., eds. Ethylene, biochemical, physiological and applied aspects. The Hague: Martinus Nijhoff/Dr. W. Junk; 1984.
2. A.N.A. .... 1-naphthyl acetic acid  
ACC ..... 1-aminocyclopropane-1-carboxylic acid  
AVG ..... aminoethoxyvinyl glycine  
B.O.H. .... 2-hydroxy ethylhydrazine  
Ethrel, ethopon. .... 2-chlorethyl phosphonic acid  
IAA ..... indole acetic acid

## A Good Tree Fern Substitute

Nat De Leon

A number of years ago, I used to visit Tradewinds Orchid Nursery to inspect and buy orchids. The nursery was owned by Oliver Coffee and managed by Ken Little. Oliver spent some time each year in Mexico collecting orchids.

One day while visiting the nursery, Oliver said that he wanted to show me a new orchid potting medium he was experimenting with. The strange looking stuff came in two forms: different size chunks and single strands of varying lengths. The material came from tree ferns growing in Mexico. Oliver told me that if his orchids grew well in the fiber, he was seriously considering having it packaged to sell as an orchid potting medium. I asked him to sell me a small quantity of each of the various grades as I thought it might have possibilities as a bromeliad growing medium as well. It should be noted that at that time South Florida was being hit by at least one hurricane a season. These, plus the near misses, dumped large amounts of rain in our area. The common medium of the time, peat moss and perlite, or peat moss and vermiculite just weren't loose enough to drain such large amounts of rain and sometimes fatal root rot resulted.

With the material from Oliver, I began to experiment with different ways of using the tree fern, planting species of various genera into straight tree fern fiber, and incorporating the material with the common mixes of the day. After much experimentation, I finally settled on a potting mix incorporating  $\frac{1}{3}$  part of the coarse grade of tree fern fiber,  $\frac{1}{3}$  peat moss, and  $\frac{1}{3}$  perlite, adding more tree fern for drier growers and more epiphytic species. The tree fern added greatly to the good drainage and aeration so essential to good growth in our area.

Mr. Coffee went into full production with his tree fern, packaging the material in two-cubic foot boxes. The only real problem was in potting tillandsias. These were potted by using small chunks, wedging the plant as tightly as possible in the pot. This process was awkward and time consuming. I suggested to Oliver that if these could be mounted on a full slab of tree fern the task would be easier and the plants would grow better. I also suggested that many orchids would take to slab growing.

Two months later I got a call to go over to the nursery and there bought the first boxes of tree fern slabs. Until a year before Mr. Coffee's death, all tree fern came exclusively from Mexico. Then, or shortly after, the Mexican source seemed to dry up completely. Fortunately, sources from Guatemala took over.

Over the years, the price of tree fern has climbed steadily because of increased labor and transportation costs. When my two sons went into the bromeliad

nursery business, we purchased five hundred bags at a pretty good price. Since I was sure that costs would continue to climb, I decided that I had to come up with a substitute by the time they exhausted their supply. In the meantime, whenever a new material appeared on the market, I experimented with its possibilities. These materials included various kinds of expanded rock, cypress mulch and pure bark, and rice hulls, and all had some major drawbacks.

At the Parrot Jungle in Miami we use an engine-driven lawn sweeper to sweep up grass clippings after mowing. The sweeping action is accomplished by a series of brushes with very stiff, long-lasting nylon bristles. Once, when the brushes needed replacing, I got the bright idea of trying to use the remaining bristles in the same manner as I use tree fern fiber. The bristles were about one inch long and being very strong and stiff were hard to cut. The cutting being completed, I used them instead of tree fern in my  $\frac{1}{3}$  potting mix ratio. Since nylon is a synthetic, inert material, it will not break down, but the real test would be to find out if it held its stiffness for a long time.

The bromeliads grown in this mix did very well and developed strong root systems. After more than three years, the peat moss had all but disappeared, leaving only the nylon and perlite. The nylon still maintained its stiffness. I searched the entire Miami area for companies that might use that type of nylon, but was never able to find one. Whoever finds a source of nylon that could be used as part of a potting medium will be doing bromeliad growers a great service.

I again took another look at fir bark which I had tested years previously. The cost was only slightly less than that of tree fern. When mixed with peat moss it still produced snow mold in the mix. While snow mold is not harmful to bromeliads, once it develops the bark breaks down rather fast and loses its usefulness. It seemed that if we were going to find a replacement for tree fern fiber, it would have to be some form of pine bark.

Whenever I went to a lumber yard or garden center, I always inspected the bags of pine bark. The results were always the same: large chunks of thick bark, too large to be used in a potting medium. This activity went on for some time. Then one day I got lucky. While visiting Natureland Garden Center in Miami, I proceeded to check out their pine bark. They had bags of something called mini-nuggets. Could this be what I had been looking for? I bought a bag and took it back to the nursery for closer inspection. The bark was, in fact, just what I had been looking for. It averaged about one inch in length and width and about one-quarter inch in thickness. The material was reasonably uniform with a minimum amount of bark dust or floor sweepings. I went back and bought ten more bags to begin the great experiment. I mixed the bark in a ratio of  $\frac{1}{3}$  each of bark, peat moss, and perlite, and made another mix of  $\frac{1}{2}$  bark mixed with  $\frac{1}{4}$  peat and  $\frac{1}{4}$  perlite. Seedlings and offsets of a wide variety of bromeliads were potted, tagged and dated. They grew very well. Inspection after six months showed good root systems and no snow mold. Inspection after one year revealed the same conditions.



My sons then ordered a whole truck load of bagged mini-nuggets from Southland Co. of North Carolina. After three years they are now well into their second truck load. We are convinced that we have a worthwhile substitute for tree fern fiber. I have heard statements made that the resins in the pine bark would injure bromeliads, but we have not observed any such damage.

I must confess that if given a choice I would prefer tree fern fiber because it holds the plant in place better until the root system takes over. But, the use of pine bark results in substantial savings. The retail price of tree fern fiber is about \$14.00-\$16.00 for a 2 cubic foot bag these days. Compare this to the pine bark retail cost of \$3.25-\$3.50 for a 3 cubic foot bag. Wholesale savings are even greater. As of this writing, I have found mini-nuggets bagged by three different companies so it is safe to conclude that the material is becoming readily available.

All things considered, pine bark in this form is easy enough to work with, it is better than using a peat moss and perlite mix, and the financial savings are a welcome benefit.

*Miami, Florida*

## NOTE TO AUTHORS

Articles proposed for publication in the *Journal* should be typewritten and be double spaced. Scientific material should follow the CBE Style Manual, 5th ed., published by the Council of Biology Editors, Inc., 1983. Other material should follow the *Chicago Manual of Style*, 13th ed., 1982. Preferred forms of illustration are: 35 mm color (positive slides for projection, not for prints), glossy black and white photo prints, and India ink line drawings. A release to copy all illustrative material for BSI (no commercial) purposes must accompany the material.

Address any questions concerning material to the editor. There is a continuing need for material, especially for personal experience with all aspects of bromeliad culture. All material will be acknowledged, proposed substantive revisions will be discussed with the author. All original illustrative material will be returned unless permanently released.

TUL



## Mary Freeman Wisdom

Paul T. Isley, III



Mike Posey

Fig. 5. Mary Wisdom.

Mary Wisdom died on December 7, 1986, and the bromeliad world lost one of its most ardent supporters. From the early 1960s through the World Conference in New Orleans in 1986, she never missed an opportunity to pursue her interest. With the exhibition of her Morris Henry Hobbs paintings and with her beautiful home opened for the garden tours, few would argue that Mrs. Wisdom was the pillar around which Jack Grubb and his able assistants produced the magnificent "One Mo' Time."

Mary Freeman Wisdom was born in Birmingham, Alabama and moved to New Orleans with her family when she was a few months old. She attended LaSalle College in Boston, but was graduated from Newcomb College in New Orleans. She married William Bell Wisdom in 1929. Of their three children, Mary Elizabeth and Adelaide survive her.

Mrs. Wisdom and her husband were among the founders of the New Orleans Symphony in 1936. Her other interests included the Episcopal Church, classical music records, minerals, travel, and, later in life, her grandchildren.

The devastating stroke that Mary Wisdom suffered in 1973 paralyzed her left side. Although confined to a wheelchair for the rest of her life, she maintained her many interests with determination and strength of spirit, never allowing the physical handicaps of her situation to cloud her positive disposition or zest for life. Her death was peaceful and she was surrounded by her family when her long, happy, and productive life drew to its close.

*Manhattan Beach, California*



## *Tillandsia* × Houston: A New, Artificial Hybrid

Mark A. Dimmitt

*Tillandsia stricta*, a native of Brazil, and *T. meridionalis* from Argentina are loosely related species. The most notable differences are that the latter has stiffer, more lepidote leaves and its flowers are white instead of blue. I crossed the two in 1982 and flowered the first hybrids in 1986.

*Tillandsia* × Houston (grex) (*T. stricta* × *meridionalis*) (and reciprocal)

*Plant* acaulescent, a dense, spreading rosette to 27 cm in diameter. Vegetative reproduction by basal offsets after flowering. *Leaves* up to 140 in number, many more than either parent, narrow-triangular, erect-spreading or arching in different clones, fairly stiff but less so than those of *T. meridionalis*; *leaf blades* to 16 cm long, 13 mm wide near base, usually medium green but some clones whitish-lepidote. Most clones conspicuously lepidote only on lower surfaces of leaves. *Inflorescence* usually arching to nodding (straight in a few clones), simple, dense, 15 to 20 cm long. Most clones flower for three to four weeks between December and February. *Scape* about equaling leaves. *Spike* 6–9



Author

Fig. 6.

A typical *Tillandsia* Houston flanked by its parents *T. meridionalis* (l.) and *T. stricta* (r.). The hybrids are more robust than either species and bloom later. The scale is 12 inches long.

[Continued on page 172]

## Name Correction for a Mexican *Tillandsia*

Sue Gardner

*Tillandsia schiedeana* Steudel subspecies *glabrior* (L.B. Smith) C.S. Gardner is the correct name for an attractive small tillandsia that is well represented in the trade and bromeliad collections around the world. This subspecies occurs in large colonies on perpendicular canyon walls from Tequisistlan to Totolapan in the state of Oaxaca, Mexico at 900 to 1200 meters.

Dr. Lyman B. Smith described this plant originally as *T. pueblensis* var. *glabrior* from a few dried specimens in 1958.<sup>1</sup> Without fresh flowers, the plant, with its thick, curved, gray-lepidote leaves and small, simple spike, appears similar to *T. pueblensis*. In 1983, Wilhelm Weber and Renate Ehlers described<sup>2</sup> this same plant as *Tillandsia schiedeana* var. *totolapensis* from a living specimen collected in Mexico. Since Dr. Smith's varietal name has precedence it must be conserved even though the species epithet is corrected.<sup>3</sup>

Although this subspecies is more closely related to *T. schiedeana* than to *T. pueblensis*, it is distinct from the former by several significant characteristics, most of which are associated with saxicoloy. For example, it forms large clumps



Author

Fig. 7. *Tillandsia schiedeana* subspecies *glabrior* is the correct name for the plant earlier described as *T. pueblensis* var. *glabrior* and *T. schiedeana* var. *totolapensis*. The clumping habit of this subspecies is shown in the photograph.



of a single clone (Fig. 7), and individual rosettes have both long, descending stolons and thick, upwardly second leaves. These characteristics are often found in saxicolous species including *T. pueblensis*.

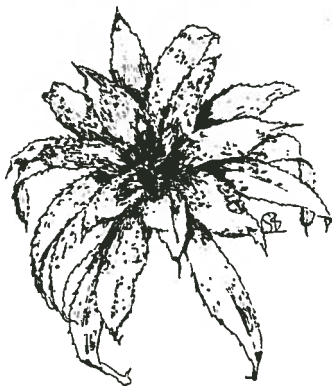
*Tillandsia schiedeana* subsp. *schiedeana* is widespread, and occurs from northern Mexico to northern South America. Specimens of this subspecies also occur sympatrically with subsp. *glabrior*. Specimens of the typical subspecies occur also in saxicolous forms. They do not, however, display modification of the typical spherical clumps of stellate rosettes with straight leaf blades joining the leaf sheath at a 90 degree angle. Similarities in inflorescence characteristics of the two taxa support conspecific classification, however, assignment to different subspecies indicates a greater difference than varietal classification does.

Pigmentation of the flowers varies between and within the two subspecies. A larger amount of red pigmentation is typical of the petals of subsp. *glabrior* with one-half to all of the petal lobes red, whereas in samples from six populations of the typical subspecies only a few specimens in each were found to have a small amount of red pigment at the base of the primarily yellow petals.

Corpus Christi, Texas

#### END NOTES:

1. Smith, L.B. Notes on Bromeliaceae X. Phytologia 6:83-87; 1958.
2. Weber, W. New Tillandsias from Mexico. J. Brom. Soc. 33:30-33; 1983.
3. Gardner, G.S. New species and nomenclatural changes in Mexican *Tillandsia*—I. Selbyana 7:361-379; 1983.



## Dallas Developments: Directors' Decisions, 1987

The Board of Directors of the Bromeliad Society, Inc. met in Dallas, Texas on the 23rd of May 1987. This was the annual, general meeting to receive the reports of officers and committee chairmen, to elect new officers and committee chairmen, to decide various proposals, and to authorize a new budget.

The financial statement, the approved budget, and a digest of the minutes will be published as soon as possible, but in the meantime here are notes from the meeting:

#### Finances:

The most important information is that the value of bank deposits and investments at the end of 1986 was about \$8,000 less than at the end of 1985. The reason is the abrupt change in interest rates. The result is that in order to maintain the budget at about the same amount as last year (\$62,000) the treasurer will have to transfer \$4,200 from reserve funds. We shall need many more new members to overcome this deficit.

The *Journal* is not only the primary benefit that the members get from the society, but it is the primary expense. It seems that every time the editor has found a way to save money with a more efficient typesetter or mailing service, printing costs and the price of color illustrations increase. For fiscal year 1988, for example, we estimate that the *Journal* direct and indirect costs will be nearly \$44,000. We are now trying to decide if we could possibly gain more members by increasing the number of color pictures and the total number of pages in the *Journal* and, at the same time, keep from going broke in the process. Advertising never has been a big income earner, but we shall try again to increase the number of advertisers without increasing the rates. We think that it is better not to increase the ad rates and the membership dues now. The immediate need is to get more people writing about their experiences with bromeliads to balance the sometimes preponderance of technical material, and to encourage membership drives. In this respect there is a choice to be made between "what does the BSI do for me?" and "What have I contributed to the common fund of information about growing bromeliads?" We hope that there will be lots of positive material about this appearing in the *Journal* in the next months.

#### Election results:

The corresponding secretary, editor, membership secretary, recording secretary, and treasurer were reelected. The president and vice-president serve three-year terms so there was no election for those offices this year.

[continued on page 173]



## *Guzmania monostachia* var. *variegata* in Panama, a New Record

Harry E. Luther

The variegated variety of *Guzmania monostachia* was first found sometime before 1935 as it was listed in L.H. Bailey's *Standard Cyclopedia of Horticulture* published that year. It evidently soon vanished from cultivation. In 1953, Mulford Foster again described it in the *Bromeliad Society Bulletin*, volume 3, page 30, as a native of Collier County, Florida, "in Big Cypress near Deep Lake." He credited Roy Woodbury of the University of Miami with the discovery. Prof. Woodbury was also the first to collect *Tillandsia pruinosa* Swartz in the same area of the Big Cypress.

*Guzmania monostachia* is found in several rather extensive colonies in Collier, Dade, and Monroe counties of Florida. It is also very common and widespread in the Neotropics from Nicaragua and the Caribbean to Bolivia and northern Brazil, but the variegated variety was until now thought to be endemic to one site in the Big Cypress Swamp.



John Kress

Fig. 8.  
*Guzmania monostachia* var. *variegata* collected from the Caribbean coast of Panama. Until now this variety was thought to be endemic to one site in the Big Cypress Swamp, Collier County, Florida.

Panamanian plants of *Guzmania monostachia* var. *variegata* are very similar to those of Florida. The plants vary in diameter from 30 to 65 cm with thin, pale green leaves irregularly striped with white. The Panamanian plants differ in one characteristic that will undoubtedly add to their horticultural appeal: the brightly colored inflorescence. The flowers of *G. monostachia* from Florida are autogamous (self-pollinating) and the inflorescence is not attractive to potential pollinators; the floral bracts are pale, usually pink or flesh colored. In contrast, the Panamanian plants are normally outcrossing and, based on my unsuccessful attempts to produce seed, they appear to be self-sterile. Their apical floral bracts are brilliant red and obviously more conspicuous to animal pollen vectors.

Variegated plants appear to be relatively common in the one small population observed in Panama.

*Guzmania monostachia* (Linnaeus) Rusby ex Mez var *variegata* hortus ex Nash.

PANAMA. Bocas del Toro: vic. of Chiriqui Grande, ca. 10 m. elev., June 1986, Luther, Besse, Halton, & Kress, s.n. Fl. in cult. at Selby Gardens, Dec. 1986, E. A. Christenson & N. Vecchio 1655 (SEL).

M.B. Foster Bromeliad Identification Center  
Marie Selby Botanical Gardens  
Sarasota, Florida

THE MULFORD B. FOSTER BROMELIAD CENTER located at Selby Botanical Gardens in Sarasota, Florida, and directed by Harry E. Luther is a valuable asset available to all BSI members. Whether newly collected from the wilds or wildly growing in your apartment or greenhouse, bromeliads deserve being accurately named and this is the place to get it done. Why assume that a plant tag is accurate when for \$5.00 you can find out? The method is: (1) send the entire plant if it is small, or (2) send an entire leaf plus sheath, and the inflorescence including a fresh flower. If the inflorescence is very large, send a color slide with a branch of the inflorescence. A drawing of the plant would be helpful. Add your observations about the growing conditions even of your greenhouse. Wait until the danger of freezing is past before sending through the mail. Harry will reply. Send to: M.B. Foster Bromeliad Identification Center, Marie Selby Botanical Gardens, 811 South Palm Ave., Sarasota, FL 33577.



# *Tillandsia demissa*

Werner Rauh

*Tillandsia demissa* L.B. Smith (1954)

A striking *Tillandsia* of southern Ecuador, known only from the region of Oña to Saraguro (Prov. Loja), is the saxicolous *Tillandsia demissa*. It grows only on steep rock walls and we collected it near Saraguro.

*Tillandsia demissa* has short but thick, rhizomatous stems, covered with remains of the old leaves, which bear a big rosette of 80–100 cm high and 1.5 m in diameter (Fig. 9). *Leaves* many, 90–120 cm long, mostly erect; the elder hanging down. *Sheaths* inconspicuous, ample, up to 30 cm long, 10–15 cm wide, brown lepidote. *Blades* ligulate, acute-attenuate, 50–120 cm long, 8–11 cm wide, flat, green, gray-waxy, obscurely punctulate-lepidote with some purple mottling. *Inflorescence* pendent. *Scape* decurved, short, hidden in the rosette. *Scape bracts* densely imbricate and subfoliaceous, erect. *Inflorescence* up to 1.2 m long, 12–15 cm in diameter, densely bipinnate, cylindrical (Fig. 10), with  $\pm$  35 erect spikes. *Primary bracts* broadly ovate, up to 20 cm long, 5 cm wide, erect, green to wine-red, gray-waxy, the basal ones with a foliaceous blade, longer than the spikes; the upper ones only acute-attenuate and mostly shorter than the spikes. The latter 12–16 cm long, 3–3.5 cm wide, erect, strongly complanate, densely 8-to 17-flowered, with a short, sterile base. *Floral bracts* suborbicular, 3.2 cm long, 3 cm wide, equaling the sepals, carinate, with an acute and incurved apex, wine-red and gray-waxy. *Sepals* free, the posterior carinate, 30 mm long, elliptic, obtuse, glabrous beneath, densely lepidote above, yellowish green. *Petals* 4.5 cm long, erect, violet. *Stamens* and *style* included.

This big *Tillandsia*, of which young plants are very attractive because of the gray-waxy leaves, is known only from the Cuenca-Loje region of southern Ecuador.

Our collection number is: *Rauh 35 209/a*, June 1980.

Heidelberg, West Germany



Author

Fig. 9.  
*Tillandsia demissa*, aptly named for the drooping habit of the inflorescence, from southern Ecuador, is shown growing on steep rock walls. With the accumulation of new and old leaves it grows to a diameter of 1.5 meters.



Fig. 10.  
A detail of the *T. demissa* pendent inflorescence. The *T. demissa* inflorescence is up to 1.2 meters long and 12–15 centimeters in diameter.

Author



# Interesting Tillandsias of Cuba

Karel Willinger

I have written this article about tillandsias not very well known by collectors—the tillandsias native to the Island of Cuba.

My journey in May of 1985 led me to Havana. In the surrounding area I went through several forests, but found that the number of plants has been decreasing there and that specimens of tillandsias are rare.

Two days later I left for the Viñales Valley near the town of Pinar del Río. This valley is beautiful, green, and full of vegetation of all kinds. I stayed at the motel San Vicente and from there made one-day trips searching for tillandsias. In addition to common plants such as *Tillandsia bulbosa*, *T. valenzuelana*, *T. flexuosa*, and *T. balbisiana*, I found lovely specimens of *T. utriculata* and *T. capitata* (Fig. 11) growing on limestone cliffs called “mogotes.” These are eroded limestone about 200 m high and up to 500 m long (Fig. 12). It is unfortunate that most of the mogotes are very hard to reach. It would take mountaineering equipment to climb them.

In the valley, I found several specimens of *Tillandsia lucida* and beside them interesting hybrids. Next to mature plants of *T. valenzuelana* I found beautiful dark brown-violet seedlings with the shape of *T. flexuosa*, but nowhere could I find any grown plants of *T. flexuosa*, the nearest ones being about 700–1,000 m from the place of discovery. I suppose that these young plants were hybrids of



Author

Fig. 11. In the Viñales Valley on the western end of Cuba, the author found many varieties of *Tillandsia* including *T. capitata* shown growing on a limestone cliff.



Author

Fig. 12. The limestone cliffs of the Viñales Valley, called “mogotes,” are so steep that mountaineering equipment would be needed to climb them.

*T. valenzuelana* and *T. flexuosa*. The mature *T. flexuosa* were such as we know them, greenish silver.

After my return to Havana, I flew across the island to Oriente province and to its capital, Santiago de Cuba. Then I continued about 30 km along the coast to the village of Daiquiri where I put up at a motel. The local vegetation was quite different from that in the Viñales Valley. There was cactus and in place of woods there was prairie with thick bushes and thorny growth. I stayed there for a week and made several trips to the mountains. During my journey to Lake Baconao, I found quantities of *Tillandsia argentea*, although my friends thought it a different plant because it is different from the *T. argentea* from Mexico and Guatemala.

When climbing the fourth highest mountain of Cuba, Pico Gran Piedro, I found in a bamboo grove several beautiful plants of *Guzmania* [*monostachia*?] and an interesting *tillandsia* similar to *T. circinnata*, but with an inflorescence more similar to *T. circinnatoides* (it does not have a branched floral stem, it is smaller, and has a brown-silver colour).

Near the end of my visit, I found the most beautiful tillandsia. It was at the foot of the highest mountain of Cuba, Pico Turquino. We set out from Daiquiri on a three-day journey to climb the mountain. After reaching the village of Las Cuevas, we filled our water bottles and climbed 400 m above sea level and then



stayed overnight in the woods. The next morning we continued climbing and finally reached the top at about 1630 hours. On the summit there was a nice, shady wood in which several kinds of beautiful, cold-loving orchids were growing, but no tillandsias. We stayed overnight in an old, ruined restaurant at a height of 2,200 m.

The next morning, we were awakened by the cold; we were not prepared for the temperature of eight degrees C. We soon set out on our return trip and decided to have lunch near the place where we had spent the previous night. Looking around I found a plant of a special colour. The shape is similar to *T. balbisiana*, but its colour is yellow-red and the bloom is light violet. One of my friends found another interesting plant. It was, in fact, *T. ionantha*, or a natural cross of *T. pruinosa*. The plant leaves are longer and corrugated. The inflorescence grows over a rosette and forms a smaller rosette over the main plant.

In October 1986, I repeated this trip with three friends. We collected many bromeliads and also some interesting orchids. All of these plants are in good condition.

*Ceské Budejovice, Czechoslovakia*

## ***Tillandsia* × Houston: A New, Artificial Hybrid**

*[continued from page 162]*

cm long, 3–5 cm wide, dense, polystichous. Floral bracts 25–30 mm long, 15–20 mm wide, loosely imbricate, pale pink to deep rose-red, often lepidote at tips. Flowers broadly funnelform, 7–11 mm in diameter, near white to pale blue. Flowers fertile.

This hybrid grex differs from its parent species mainly in size, being much larger, leafier, and bearing much larger spikes. It is intermediate between the two parents in other characters. Because of its size and vigor, it was named in recognition of the very large and active Houston Bromeliad Society.

The best one of the 40 or so plants to flower the first year has been named 'Flaming Spire'. Its long spikes are stiff and straight, and the floral bracts are deep rose-red, almost crimson; the flowers are pale blue. The leaves are more lepidote than those of most clones and are a whitish color.

*Tillandsia stricta* is an extremely vigorous species; it flowers in only 3½ years from seed, whereas most other species take at least five years to mature. It usually imparts this vigor to its hybrids, making it an excellent parent. Several more *T. stricta* hybrids will be published here in the near future.

*Tillandsia* × Houston is quite fertile; F2 sibling crosses and backcrosses are growing vigorously.

*Arizona-Sonora Desert Museum, Tucson, Arizona*

## **Dallas Developments: Directors' Decisions, 1987**

*[continued from page 165]*

These committee chairmen were reelected: Charlene Rose, Affiliated Shows; Stan Oleson, Affiliated Societies; Tom Montgomery, Awarded Cultivars; Harry Luther, BIC director; Mark Dimmitt, Conservation; Gregory Reid, Finance and Audit; Bill Frazel, Judges Certification; Annie Navetta, Publications; David Benzing, Research Grants; Harvey C. Beltz, Seed Fund; Mary E. Massey, Slide Library.

These are new Committee Chairmen: Wayne Guthrie, Bylaws Revision; Brian Smith, Hybrids Registrar; Clyde Jackson, Nominations; Tom Montgomery, World Bromeliad Conference.

### **Significant decisions and developments:**

- The Board established the Victoria Padilla Memorial Bromeliad Research Fund to be administered by the Research Grant Committee. In addition to the annual appropriation, the Society will solicit gifts for this fund from individuals and affiliates.

- Grace M. Goode, Alexandra Headlands, Queensland, was elected honorary trustee in recognition of her superior contributions to bromeliad culture including hybrids of remarkable beauty, exceptional ability in garden design employing bromeliads, and bromeliad literature both written and visual.

- The Conservation Committee goals and code of conduct were approved. They will be published in the next issue of the *Journal*.

- We have a new hybrid registrar: Brian Smith. Mr. Smith published the second edition of his *Manuscript of Bromeliad Hybrids and Cultivars* in 1984 (it was reviewed in the Jan.-Feb. *Journal* 1985). He has a giant task ahead in bringing registration up to date, reviewing new applications, and publishing a new compilation. More coming on this subject.

- Funds were appropriated for publishing the revised *Handbook for Judges and Exhibitors*. It is expected that the cost will be recovered through selling the *Handbook*. There is more information about the *Handbook* in this issue.

- Funds were appropriated for publishing a new membership directory. It will be distributed with the September-October *Journal* if at all possible.

- The Seed Fund is not only paying its own expenses but there are more contributors and more subscribers than before.

- Publications are being ordered on consignment by more international affiliates than by those in the United States. The consignment period will be extended to make the sale of Society publications more attractive.

- The draft bylaws arrived too late to be considered and will be worked on by a new group during this year.

These notes are not official. The official reports will be in the September-October issue if we keep on schedule.

— Editor

## Bromeliad Arrangement, No. 16: *Guzmania lingulata*

May A. Moir



Jim Delatorre,  
Honolulu Academy of Arts  
Fig. 13.

An arrangement of *Guzmania lingulata* faded from its original brilliant red to a creamy white, backed with royal palm sheaths, and with Peter Buck ti leaves providing rose colored tones.

This was one of a pair of arrangements at the entrance to the Honolulu Academy of Arts. Two pieces of the sheath of the royal palm were used as the background material to give height and contrast. In front of the palm are the leaves of the rose colored Peter Buck ti (*Cordyline*). I enjoy the *Guzmania lingulata* in the garden from the time it comes out brilliant red, then fades to

[Continued on next page]

## *Vriesea sceptrum*

Elton M.C. Leme

Described by Carl Mez in 1896, *Vriesea sceptrum* is seldom found in cultivation, but can be seen growing in places 1-2,000 m above sea level in the states of Rio de Janeiro, Minas Gerais, and São Paulo, Brazil. It usually thrives as an epiphyte inside the wet Atlantic forest, forming relatively large groups. The specimen in the photo (see back cover) was collected on the boundaries between Rio de Janeiro and Minas Gerais states, near Itatiaia National Park. This species reaches a height over one meter when in flower, which in combination with its showy colors puts it in a privileged position in the bromeliad world.

A very interesting color variation was observed recently in a specimen collected by Alvim Seidel in a relatively dry area in the state of Bahia. Although maintaining the usual orange color of the petals, its bracts showed a very nice yellow color. We have decided to describe this atypical specimen in *Bradea* as a new form called *V. sceptrum* f. *flavobracteata* Leme.

Rio de Janeiro, Brazil

[continued from page 174]

apricot, and then to almost cream color. At this point, they are about finished so I do not mind cutting them for an arrangement. The cream color of the *lingulata* repeats the off white of the palm sheath. All this was arranged in a large copper dish. Rocks were used at the base with plenty of water. The wet rocks give off moisture for the plant material as well as helping to brace it.

Honolulu, Hawaii



# Some Interesting Puyas in the Wroclaw Herbarium: *Puya grandidens*

[A series continued from the July-August 1986 issue]

Wilhelm Weber

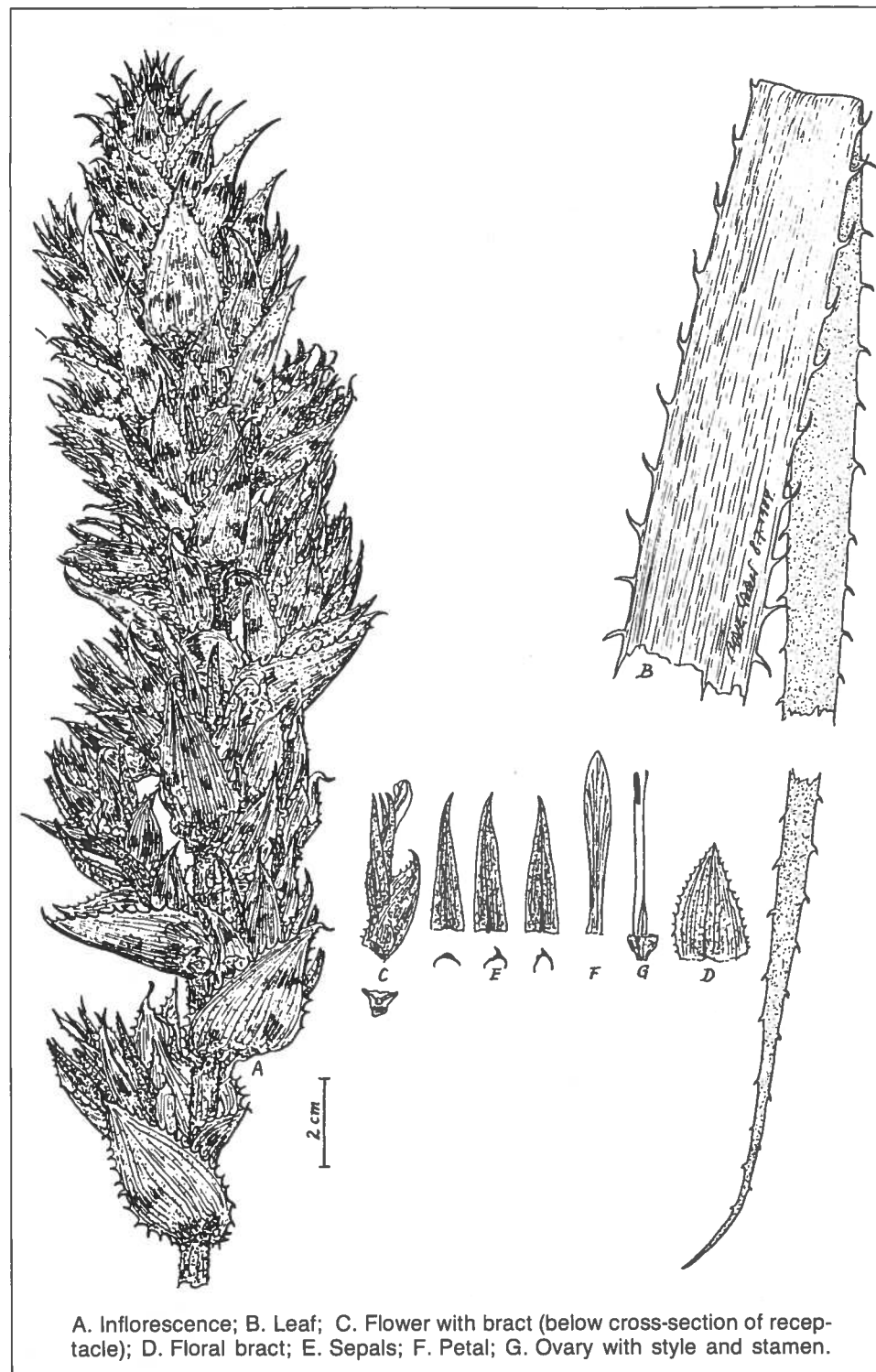
*Puya grandidens* Mez, Repert. Nov. Sp. 3: 10. 1906.

*Plant* caulescent, flowering barely 1 m high, stem to 20 cm in diameter, branching. *Leaves* ca. 50 cm long, sheaths unknown, blades narrowly triangular, long acuminate, to 45 mm wide, above pale green, glabrous and lustrous, beneath densely appressed white lepidote, margins serrate with antrorse spines to 7 mm long. *Scape* 6–10 mm in diameter, white tomentose soon becoming glabrous. *Scape bracts* very broadly ovate, white lepidote, lacinate-spinose, laminate, the upper lax. *Inflorescence* very densely bipinnate, cylindric, over 25 cm long, to 8 cm in diameter, axes stout, white tomentose. *Primary bracts* like the upper scape bracts, spinose serrate. *Branches* sessile, subdensely strobilate, suberect, 5–10 cm long, exceeding the primary bracts. *Flowers* suberect, subsessile, to 48 mm long, receptacle angled. *Floral bracts* ovate-elliptic, long acuminate, pungent, 25–30 mm long, shorter than the sepals, carinate, margins serrate, araneous. *Sepals* subtriangular, long acuminate, 30–35 mm long, coriaceous, araneous-tomentose, the posterior strongly alate-carinate. *Petals* narrowly lanceolate, eligulate, to 42 mm long; glaucous-green, stamens and style included, anthers obtuse, 7 mm long, subdorsifixed.

**Type:** A. Weberbauer no. 2738 (holotype B, photo F; isotype WRSL), below Ocros, Cajatambo, Ancash, Peru, 31 Mar 1903. After the type only re-collected 26 May 1962 also at Ancash by Emma Cerrate.

Fig. 14. *Puya grandidens*

Drawing by the author





# Handbook for Judges, Exhibitors, and Affiliates is Revised

Valerie L. Steckler

Advance orders are now being accepted for the newly revised *Handbook* which will be ready for delivery on 1 September, 1987. The *Handbook* is essential to anyone interested in staging, judging, or exhibiting in a Bromeliad Society, Inc. standard show. The revision clarifies areas subject to misinterpretation and clearly states:

1. The requirements to be met if any affiliated society plans to award Bromeliad Society, Inc. major medallions and plaques,
2. How an exhibitor should go about selecting and preparing plants for competition,
3. What a person must do to earn and retain good standing as an internationally accredited BSI judge.

The book is in a special, decorated, D-ring, loose-leaf binder so that page changes can be entered easily. There are 144 pages and an index.

There is new material about the Morris Henry Hobbs plaque for the best decorative container or artistic arrangement in the artistic show group, and the entire artistic design section has been expanded to include an explanation of design principles. The show schedule section has been enlarged with examples of three kinds of schedule that might be used, there is a new list of definitions, and many scales of points in both horticulture and artistic design have been updated. The *Cryptanthus* judging criteria have been revised and expanded extensively, and there is additional information on the *Acanthostachys*, *Neoregelia*, and *Ortho-phytum* genera.

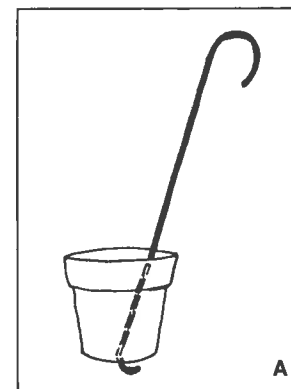
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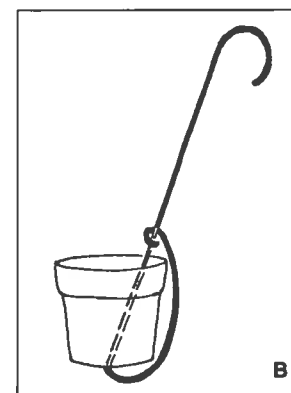
# Hang That Pot

Olwen Ferris

The longer I grow and experiment with bromeliads, the more I believe good aeration is the most essential ingredient for good, healthy growth. Light and moisture fill second and third places.

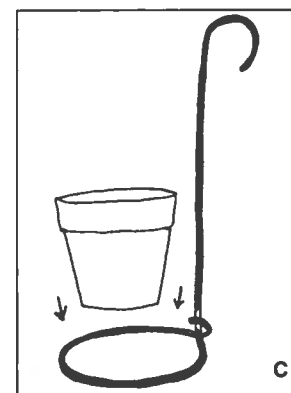


For good air circulation, it is often necessary to suspend plants and I have used the methods shown in the illustrations with success. If you have a mesh frame to house your plants, run a simple wire inside the pot, through the drainage hole, and turn it up into a hook. Bend the top part of the wire into a hook that will attach to the wire frame (A). This kind of hanger needs the pot to rest against the frame to stay in position.



For pots to hang from roof supports as in illustration B, you need a heavier wire to support the weight of the pot, plant, and mix. Insert a wire about 60 cm (24 inches) long, through the drainage hole with a bend so that  $\frac{2}{3}$  is used for the hanger and bend the remaining  $\frac{1}{3}$  from the bottom to the top of the pot, and wrap the end around the hanger part of the wire.

With the kind of hanger shown in illustration C you can change the pots at will. Take a length of wire and make a small hook at one end, then form a circle to fit a pot and hook over the wire that forms the upright portion of the hanger.



Paradise Point, Queensland

[Still another kind of pot hanger designed for use with vertical poles is regularly advertised in these pages.]

## Repotting and Potting On

Peter Paroz

When a plant outgrows its container, the question arises as to whether the plant should be repotted or potted on. The first action is to tap the plant gently out of the pot and to inspect the roots and potting mixture. The ideal situation is where the potting mixture is fresh and well aerated with no breakdown, with all the mixture held by a network of fine roots with white tips. These are the indications that all is well and the plant can be potted on.

If these conditions are not found, then a closer inspection is required. If the roots have not filled the pot, then check the size of the pot, the quality of the potting mixture, and the watering programme. If the roots have no white tips, there is no active growth. In this case, the grower should look for insect pests such as mealy bugs or symphylids, broken down potting mixture or unsuitable watering schedule. If the potting mix has broken down causing waterlogging and loss of aeration, then check the composition of the mixture and the time in use.

In any of these latter instances, repotting of the plant is required. This involves washing the old mixture away from the roots, trimming away any dead roots, and working fresh mixture between the healthy roots. Some shock to the plant will result, but in the long run the plant will benefit.

Where potting is appropriate, it is best to put the plant with the rootball undisturbed into a larger pot and filling in the extra space with fresh mix. In this way there is the least disturbance and growth usually proceeds uninterrupted.

*Reprinted from Bromeliacea, Nov.-Dec. 1986  
Bromeliad Society of Queensland*

We are very grateful to Dr. Lyman B. Smith and the members of the Bromeliad Society of Central Florida for their recent, generous gifts of money to help meet the cost of *Journal* color illustrations. These thoughtful and very welcome contributions are evidence of awareness of how expensive the color work is. They are greatly appreciated.

—TUL

## Questions & Answers

Conducted by Bob Heer and Tom Montgomery

*All readers are invited to send their questions and observations about growing bromeliads as a hobby to the editor. Answers will be sent directly to you and some questions will be published.*

**Q. How do you keep very young seedlings in the ground? Mine will not stay in the soil mixture.**

A. Have never known of this trouble except when roaches or other insects uproot the small seedlings and eat the roots, or if the seedlings are too close and too dry. Watering should be watched very closely. Too dry or too wet could cause drying off or rotting off of seedling roots. (MBF 4/6:94). (In the case of offshoots that refuse to stay in the potting mix) perhaps you cut them off too early. It would be best if you could wait until a root had formed before removing offshoots. If not, then make a hairpin-shaped piece of stiff wire, about six inches long, which has been covered with plastic, and arch it over the stubby base down into the soil. (MBF 7/6:96).

**Q. How do you handle *Vriesea carinata* new plants that come between leaves and do not have roots?**

A. When offshoots appear on *V. carinata* they are, generally, inside the basal leaves. Do not remove them until they have four or five leaves and are about four inches high. These can easily be removed by firmly pressing the offshoot down from where it is joined and then with a slight motion from side to side tear it off gently, always keeping a firm hold on the base. It may also be severed with a knife, but much care should be used not to sever the base where the new roots are to be formed. The shoot can be potted directly in osmunda fiber although it is safest to allow them to dry for two or three days before potting. (MBF 4/5:83).

**Q. Is it true that removing offshoots as soon as they are large enough to be removed encourages more offshoots to form? Do bromeliads vary in the number of offshoots they throw? What is the maximum we can expect from an aechmea? A vriesea? A tillandsia? Or is there no way of telling?**

A. Yes, removing offsets before they mature generally encourages more to form. Different species vary in number of offshoots formed. There is no rule for any one genus. Some tillandsias do not produce any offshoots. (MBF 7/5:80).

**Q. Two vrieseas, *V. hieroglyphica* and *V. fenestralis*, far from mature size, simultaneously developed upright conical growths in the centers that**

were first taken to be developing scapes, but were ultimately found to be bundles of central leaves sheathed in leaves that failed to open in the normal way. The encasement was very tight; it was difficult to find the edges of the outermost leaves, and they behaved almost as if cemented down; they could not be pried open, but had to be torn off piecemeal to release the inner leaves, which were crumpled and wrinkled. Is there any explanation for this behavior? A number of other plants, of these and other kinds, exposed to the same conditions of temperature, light and moisture, grew normally.

- A. This condition may appear in plants of any species of bromeliad, but experience has shown that vrie seas seem to be more susceptible than plants of other genera. As far as I know, no explanation for such behavior has been offered.

Not long ago, in peeling the outermost leaves from a plant, I noted that the water held in the leaves contained something rendering it somewhat viscous and tacky, and I wonder if this may offer a clue to such abnormal growth as described. By evaporation at the leaf edges, the water could leave enough of the sticky substance to cement them down, forming a cap; or by restraint on one edge, a leaf could be pulled to grow at an angle. (MBF and RKT 9:16). [At a later date, it was reported: put a few drops of a mild liquid soap or detergent in the center of the plant, then fill to overflowing with water. Allow the mixture to remain for half to an hour, then add more water, again to overflowing. The soapy water will dissolve the sticky substance. Loosen the leaves, working from the outside in, with a flat, blunt object such as a plastic plant marker. Finally, flush the plant thoroughly with water to remove all traces of soap.]

- Q. I have some vrie sea seedlings four months old and 1/8 inch high. At this rate, can I expect to live long enough to see them bloom?

- A. All I can say is that you are doing well by them and that you have no need to despair. Bromeliads are no more difficult to raise from seed than many other plants. They vary greatly among themselves as to period of germination and rapidity of growth. At one end, there are the aechmeas, billbergias, neoregelias, and all those with berry-like seed, and at the other end (the slow one) are the vrie seas, guzmanias, and tillandsias.

Given sufficient warmth and humidity, many bromeliad seeds, if they are viable, will show their willingness to germinate by showing a slight swelling in about two weeks time. The hardier species will show a bit of green from ten days to two weeks—while those seeds which have the feather-like appendages may take any time up to six weeks.

The following taken from the writer's own records may give some idea as to what the novice might expect.

Species	First Leaf	Transplanted into Community Pots
<i>Aechmea bracteata</i>	15 days	1 month later
<i>Aechmea orlandiana</i>	12 days	6 weeks later
<i>Billbergia rosea</i>	10 days	1 month later
<i>Dyckia</i> Lad Cutak	10 days	1 month later
<i>Hohenbergia stellata</i>	15 days	6 weeks later
<i>Neoregelia</i> hybrid	12 days	6 weeks later
<i>Vriesea poelmannii</i>	42 days	5 months later
<i>Vriesea splendens</i>	21 days	3 months later
<i>Vriesea vigeri</i> (= 'Rex' × rodigasiana)	52 days	eaten by birds VP 5/3:40-41

[There will be more information about seed culture in the next issues—Ed.]



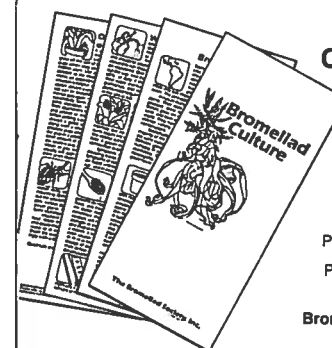
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E.M.C. Leme

*Vriesea sceptrum* was first described by Carl Mez in 1896. This is the first mention (page 175) and the first color photograph in the *Journal*.

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## Calendar of Shows

- July 18-19 Indianapolis Bromeliad Society 9th Annual Show and Sale. Glendale Mall, North Keystone and 62nd St., Indianapolis, IN. Saturday, 10:00 a.m. to 9:00 p.m.; Sunday, noon to 5:00 p.m. Elissa Haftsen (317) 251-3091, Bob Maddox (317) 459-3438.
- August 1-2 Bromeliad Society of Greater Chicago 3rd Annual Show and Sale. Chicago Botanic Garden, Lake-Cook Rd., East of Edens Hwy., Glencoe, IL. Saturday, 10:00 a.m. to 5:00 p.m.; Sunday, 9:00 a.m. to 5:00 p.m. Kevin O'Grady, (312) 835-5440, ext. 65.
- August 1-2 South Bay Bromeliad Associates 20th Annual Show and Sale. South Coast Botanic Garden, 26300 South Crenshaw Boulevard, Palos Verdes Peninsula. Saturday, noon to 4:30 p.m.; Sunday 10:00 a.m. to 4:30 p.m. Plant sales 10:00 a.m. to 4:30 p.m. both days. Open competition. Stan Oleson (213) 833-2657.