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Cover photographs: Front: *Guzmania testudinis* var. *testudinis,* a species described by L.B. Smith & R.W. Read in 1979 is discussed on pages 214–216, 218. Photo by Peter Bak. Back: The main building at Caraça, the center of a large preserve rich in native bromeliads. Please see pages 206–213. Photograph by Luiz Claudio Marigo.

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Neoregelia ampullacea Variants

Geoff Lawn

Some bromeliad species such as *Neoregelia ampullacea* show considerable variation. Over 40 distinct forms are known in cultivation. By current botanical classification, none is different enough to warrant variety status but many have cultivar names. Culture and climate affect their appearance but, under fairly uniform growing conditions, the subtle differences become apparent amongst the following loosely grouped plants.

"Tigrina types." The true *Neoregelia tigrina* has relatively narrow stripes, pure white flowers, and stolons of up to 25 cm in length. It is unlike any known *N. ampullacea.* At least 20 different kinds of "tigrina types" are cultivated, ranging from tiny tubes 2 cm tall by 1 cm in diameter to a large form 20–25 cm tall with 10-cm stolons. Characteristic are the midbrown to reddish crossbands on the reverse of the leaves and less regular banding on the 5–8 green, upper leaf blades. Often the cross banding is intermingled profusely with speckles or minute spots, particularly on the obverse. Foliage base colour varies too from scurfed, mossy grey-green to bright lettuce green. In this category, the lower half of the tight rosette is comparatively narrow, flaring more at the top, usually with cusped or rounded leaf tips.

The "variegata" form with yellowish green leaf margins is a tigrina type along with 'Freckles',[1] 'Midget', 'Zebrina' (upright 15 cm tube with wide, maroon stripes). Others in this group are:

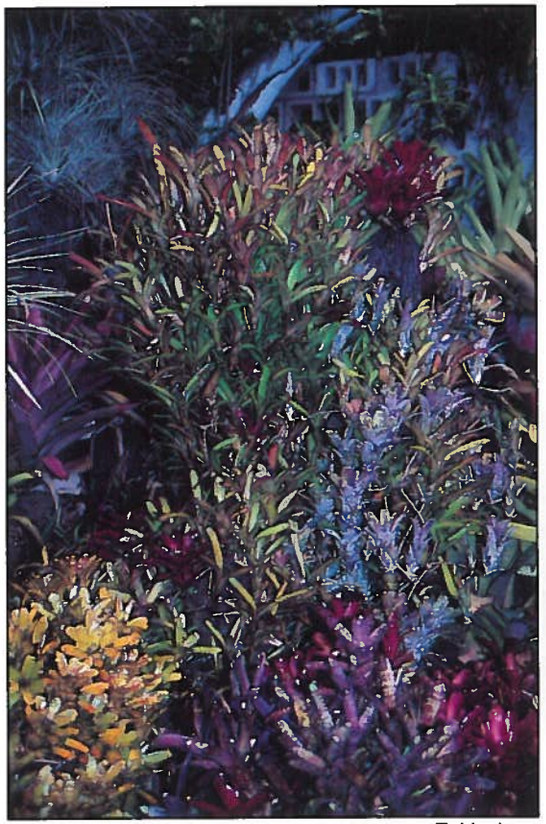
- 'Pixie', a *N. ampullacea* cultivar similar to 'Zebrina' has strong, purplish red zebra-like crossbands and pointed leaf tips.
- 'Purpurea', heavily striped burgundy at the rosette base and reverse.
- 'Black Beauty', an intraspecific cross[1] of *N. ampullacea* x *N.* 'Tigrina', with the entire foliage liberally splotched and banded sepia red when grown in bright light.

"Punctatissima types." Again, a misleading term because the true *Neoregelia punctatissima* has white, sericeous, transverse spots, pure white flowers, and a species "known with certainty from the type collection alone, doubtfully in cultivation."[2]

Prominent characteristics of about a dozen different variants are a fuller, more open rosette 10–20 cm across with 8–15 lustrous leaves appearing greenish yellow in strong light, even bright gold in the tropics, and a series of punctuated

[1] *Not identified in the BSI hybrid & cultivar list, 1991.*

[2] *Smith & Downs, Bromelioideae, p. 1562.*



T. Lineham

Figure 1
Clusters of *Neoregelia ampullacea* cultivars, growing on a tree fern stump in May Moir's dooryard in Honolulu.

brown or red crossbands that are more pronounced in the reverse. The actual width, spacing, and number of these hieroglyphs distinguishes one from another. The "Rubra" form has coppery bronze foliage with darker, brick red markings.

Amongst both "tigrina" and "punctatissima types" petal colour ranges from pale lavender to deepest violet on the blade margins, the central portion being whitish.

Within the species *Neoregelia ampullacea* there is 'Purple', a plain green, compact, full rosette with a rosy, purple-flushed centre. *N. lilliputiana* is a closely allied dwarf of the genus at 2–3 cm in height and 1 cm across. It may not be botanically distinct from *N. ampullacea.*

Other *Neoregelia ampullacea* cultivars include 'Empressa', 'Grand Duchess', 'Marie?', 'Minnie Mouse', 'Nitritis', 'Princess', 'Regalia', 'Speckles', and 'Spreckle'. These miniatures are invariably hardy, attractive, and prolific. Often filling a pot, bowl, mobile, or hanging basket in a few seasons. Their climbing or cascading growth habit is an arresting sight when allowed to ball or mass into 100-tube colonies. Many *N. ampullacea* hybrids abound often retaining that robustness and strikingly barred foliage. They are ideal for collectors with limited space.

Como (Perth), Western Australia

This article appeared in BromNews *(Bromeliad Association Perth & Districts, Inc.), November-December 1991;* Bromeletter *(Bromeliad Society of Australia, Inc.), March-April 1992; and in* Bromeliad Newsletter *(Bromeliad Society of New South Wales (May 1992). It has been edited here to conform with the names given in the Beadle list of hybrids and cultivars (1991). This article may set a new record for being reprinted.*—Ed.

Tillandsia tillii, a New Species from Jalisco, Mexico

Renate Ehlers

***Tillandsia tillii,* R. Ehlers sp. nov.**

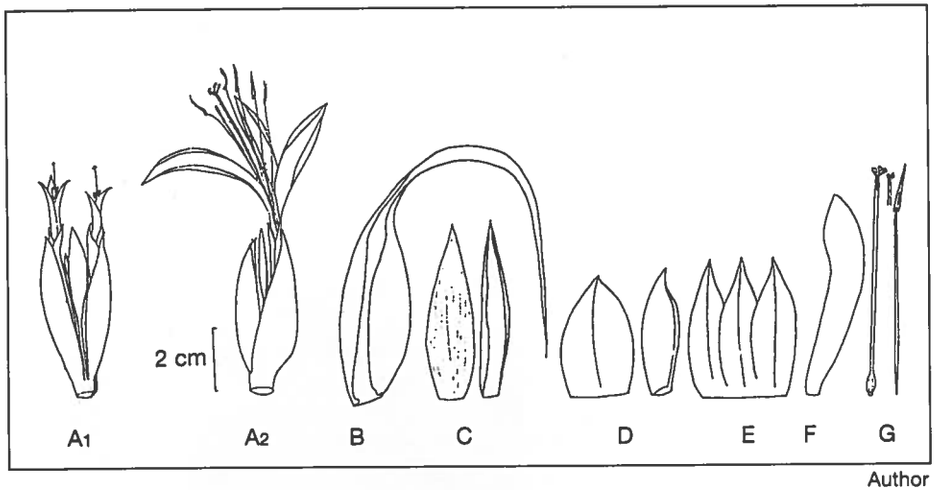
A *T. laui* Matuda, cui versimiliter affinis, foliis pallide viridibus adpresse lepidotis cum limbis brevioribus, spicis magis patentibus, axi inflorescentiae visibili, spicis angustioribus solum circa 2-floribus, bracteis primariis longe evalibus inflatis vinese-punctatis, bracteis florigeris sepalis brevioribus, sepalis multo longioribus et breviter connatis et petalis elliptice-acuminatis nec spathulatis differt.

Typus. Mexico, Estdo. Jalisco: ad australem urbis Puerto Vallarta in Sierra el Tuito, ca. 1600 m.s.m., epiphytica in pinus sp. et arboribus caducifoliis, 16. 3. 1990, leg. *R. & K. Ehlers EM 901608* (holotypus et isotypi: WU). Adhuc nota solum loco classico.

Author

Figure 2
Tillandsia tillii, from Jalisco, Mexico.

Plant stemless, flowering 15–60 cm high, 45 cm in diameter. *Leaves* numerous, forming an erect, subspreading infundibuliform rosette with subbulbous base. *Leaf sheaths* erect, 13–16 cm long, 8 cm wide, elliptic, distinct, subinflated, somewhat nerved, proximally 5 cm light brown then violet-brown, adaxially less, abaxially more, finely appressed brown lepidote, above the sheath 4 cm wide. *Leaf blades* up to 28 cm long, narrowly triangular, tapering to a short, subfiliform, often-twisted apex, more or less spreading, nerved, moss green with violet spots especially toward the tips; adaxially finely and abaxially



Author

Figure 3

Tillandsia tillii. A1, EM 901608 spike; A2, EM 901609 spike; B, primary bract; C, petals of EM 901608; D, floral bract; E, sepals; F, petal of EM 901609; G, pistil and stamen.

Author's note: Just as I was completing the description and drawing of *Tillandsia* EM 901608, the second plant (901609) came into bloom, completely different. With 901608 the throat of the corolla is always closed while that of 901609 is wide open; the tips of the petals are widely separated from each other, the shape of the petals is also different.

densely appressed gray lepidote. *Scape* 10–12 cm long, erect, stout 1.5 cm in diameter, *scape bracts* densely imbricate, foliaceous, the sheaths concealing the scape, the blades to 20 cm long and recurved. *Inflorescence* erect, to 30 cm high, 18 cm wide, cylindric, bipinnately composed of more than 20 polystichously arranged spikes spreading 60–80 degrees from the main axis, internodes 1.5 to 1 cm long. The inflated sheaths of the lower primary bracts longer than the spikes, the apical ones as long as the spikes, enfolding the broad side of the spike, ovate, to 6.5 cm long and 5.5 cm wide, light green, translucent with purple-red spots, strongly nerved, proximal half dark punctulate lepidote, distal half gray lepidote, 2–2.5 cm wide above the sheath. The blades of the lower primary bracts to 18 cm long, narrowly triangular, acuminate, reflexed; upper bracts becoming gradually shorter and more or less acute, light green densely lepidote. Axis of inflorescence very stout, visible. *Spikes* dorsiventrally compressed with the adaxial side flat, the peduncle 6 mm long, 10 mm wide, to 5.5 cm long, 2.5 cm wide, elliptic, two-flowered with an additional vestigial flower; *stipe* to 1.2 cm long, the basic spike reduced to 1 flower. *Flowers* odorless, subsessile, 6.5 cm long. *Floral bracts* shorter than the sepals and densely enfolding them but leaving their apices visible, to 3.7 cm long, 2.3 cm wide, elliptic, acute, with subhyaline margins, nerved, appearing glabrous but minutely punctulate lepidote, alate carinate, whitish green, apically faintly red spotted. *Sepals* to 4.4 cm long and 1.3 cm wide, narrowly elliptic, acute with curved apex, the posterior two connate with each other for 5–6 mm

and to the anterior for 3–4 mm, all towards the base with thickened keels, membranaceous, nerved, whitish green. *Petals* 5–8 cm long to 1.3 cm wide, narrowly elliptic, narrowly acute, firm, nerved, porcelain white, forming an erect tube with revolute tips, corolla throat from nearly closed around the filaments to wide open. *Stamens* exserted. *Filaments* to 4.5 cm long, equal in length, flat, 1.3 mm wide tapering to 1 mm at apex and base, basal third plicate and twisted. *Anthers* to 1.3 cm long, 1.1 mm wide, linear, subbasifixed at the sagittate base, egg yellow, pollen yellow. *Ovary* 8 mm long, 5 mm in diameter at base, conical, light green. *Style* longer than the stamens, to 5.2 cm long, 1.5 mm wide, white; *stigma* 1.5 x 1.5 mm with erect, single-twist lobes, white, (Type II of Brown & Gilmartin [1984]).

The L.B. Smith key (Smith & Downs 1977) did not provide any correlation. The plant seems to be related to *T. laui* Matuda but differs in the following characteristics:

Leaves light green, appressed lepidote, shorter blades. *Inflorescence branches* spread to 80 degrees, axis visible, spikes narrower, 2-flowered. *Primary bracts* long-ovate, inflated, red-spotted. *Floral bracts* shorter than the sepals. *Sepals* longer and short connate. *Petals* elliptic-acute, not spatulate.

We name this new species in honor of our friend, Dr. Walter Till, of the Botanical Institute, University of Vienna, Austria, who is known and respected for his studies of the genus *Tillandsia* and especially for his dissertation on the subgenus *Diaphoranthema.* We are grateful to Dr. Till for his generous cooperation with our work.

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Brown, G.K.; Gilmartin, A.J. 1984. Stigma structure and variation in Bromeliaceae—neglected taxonomic characters. Brittonia 36 (4): 364–374.

Gardner, C.S. 1983. A systematic study of *Tillandsia* subgenus *Tillandsia.* College Station: Texas A&M Univ.; 1982. Dissertation. Ann Arbor, MI: Univ. Microfilms International; 1983.

Smith, L.B.; Downs, R.J. 1977. Tillandsioideae (Bromeliaceae). Flora Neotropica. Monograph no. 14, part 2. New York: Hafner Press.

Stuttgart, Germany

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Pitcairnia fosteriana, a Striking Species; A New Collection in Ecuador

Werner Rauh

In July 1983, Alexander Hirtz of Quito, Ecuador, and the author collected a climbing *Pitcairnia* in Selva Allegre in a cloud forest in northeastern Ecuador. The plant had thick stems, a big strobiliform inflorescence and flowers with white-yellow or pale brown petals becoming pendent after anthesis (Fig 4). In appearance it was unlike any *Pitcairnia* species that we had seen. The flowers resembled those of *Tillandsia viridiflora.*

At first we believed that we had found a new species, but with the *Pitcairnia* key of the Smith and Downs monograph,[1] we determined it to be *Pitcairnia fosteriana,* known only from Sibunday-Narino in southwestern Colombia.

Our plant is, therefore, new to Ecuador and we can add remarks to the original description:

Plant up to 5 m long, climbing on trees with help of stem roots; stems very stout, up to 5 cm thick, laxly foliate. *Sheaths* broadly ovate, enfolding the stem with brown scales, densely serrate with dark brown, 5-cm long spines. *Blades* dimorphic, in seasonal intervals: the new shoot begins with reduced, spinose-serrate, dark brown cataphylls; the other ones are normal: green leaves with an entire blade 20 cm long[2] and 8 cm wide. *Petiole* more or less distinct up to 20 cm long, spinose-serrate at the base. *Blades* persistent, but the older ones drying off. *Scape* up to 1 m long, ascending; *scape bracts* imbricate, strongly spinose-serrate, dark castaneous, the lower ones with long caudate blades, the upper ones only acute and pungent. *Inflorescence* simple, densely strobilate, up to 20 cm long and 5 cm thick. The axis and base of the flowers covered with spreading, dark castaneous scales. *Floral bracts* erect, densely imbricate, yellowish, serrate-spinose, at least the basal ones, green, soon turning brown and drying off, about 10 cm long, exceeding the sepals. *Flowers* with a short, slender pedicel. *Sepals* linear-lanceolate, acuminate, 5 cm long, carinate, nerved; *petals* up to 20 cm long, yellow-green or brown in bud, at anthesis strongly curved back, yellowish green and white at the base or pale brown with a white margin and ligules at the base. *Stamens* with thin filaments, hanging down, as well as the 30-cm long *style* with yellow, twisted *stigmas.*

Author

Figure 4
Pitcairnia fosteriana inflorescence and flower with yellow-white petals.

According to our observations, *Pitcairnia fosteriana* must be a night bloomer as well as *P. loki-schmidtii* Barthlott & Rauh, *P. macrochlamys* Mez, and *P. xanthocalyx* Mart., all from Mexico.[3]

In any case, *Pitcairnia fosteriana* is an interesting plant. Our collection number is *Rauh 60258,* July 1983, holotype in Herbarium, Institute of Systematic Botany, University of Heidelberg (HEID).

Heidelberg, Germany

NOTES:

1. Smith, L.B.; Downs, R.J. Pitcairnioideae. Flora Neotropica. Monograph, no. 14, pt. 1. New York: Hafner Press; 1974: 260.
2. According to L.B. Smith (see note 1) the blade is up to 1.2 m long.
3. Rauh, W. *Pitcairnia loki-schmidtii* Barthlott et Rauh, sp. nov. Bromelienstudien, 19, Trop. u. subtrop. Pflanzenwelt 60:934–941; 1987.

Jacqui A. Watts, BSI director and secretary of the European Bromeliad Society, would like to swap newsletters with as many BSI affiliates as possible. Her address is: Grove Goch Bodfari, Denbigh Clwyd LL16 4DE, United Kingdom.

Ann Boon has resigned as newsletter editor of the Bromeliad Society of New South Wales after serving for almost all of the nine years since that society was formed. She is the first of the NSW society to be elected a life member, a well deserved recognition for faithful service in preparing their monthly publication. As we noted not long ago, newsletter editors deserve recognition. Some are not even accepted as officers of their societies even though they probably know more about what's going on than do the elected officers. We congratulate Ann and her husband Eric on having more time now to enjoy their new home and large bromeliad collection.—TUL

Bromeliads of the Masaya Volcano Complex

Pat Werner

Located just outside of Managua, Nicaragua, is the Masaya volcano complex made up of three volcanoes, Masaya, Santiago, and Nindiri. The group is relatively low, 400 meters in height. It has been active, or at least smoking, since it was first viewed by the Spanish chronicler Gonzalo Fernandez de Oviedo y Valdes in 1529.[1] A few years later, an adventuresome Spanish priest, Fray Blas del Castillo, was lowered into the volcano Nindiri sitting on a bucket because someone thought they had seen molten gold in the mouth of the volcano.[2] The priest's comments were not recorded (although he was probably slightly singed and smelled of sulfur when finally pulled up the 500 feet to the lip. Had he but looked around, he would have noticed a great abundance of tillandsias on the edges of the volcano.

The ground surrounding the lip of the volcano is made up of lava that flowed out of the volcano and covered the surrounding plains for several miles to the east in 1772. The lava is still there, partially covered by vegetation in some spots and barren in others. Several varieties of trees and bushes have reclaimed the lava fields including the tree that produces the national flower, the sacuanjoche (Plumeria rubra). On it and other trees and rocks is found *Tillandsia ionantha.* Common to the point of not being noticed by the natives in the area, *T. ionantha* turns scarlet every November so that one can see scarlet dabs of color as far as the lava fields extend.

Univ. of Texas Press

Figure 5
West-central Nicaragua, showing the general location of the Masaya volcano complex.

Usually in close proximity to the *T. ionantha* is *T. balbisiana.* From a distance the curly leaves of that species are visible on most tall trees. It apparently likes heat more than most other plants. The altitude of the lava surrounding the volcano Santiago is perhaps 250 meters above sea level. During the dry season, and especially

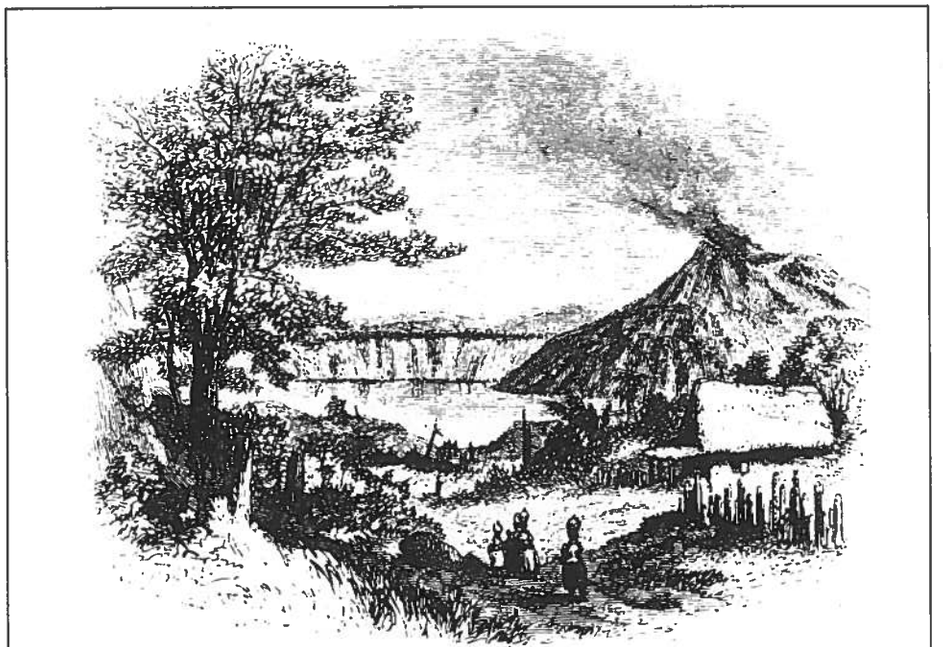
from March to July, the air temperature of the lava beds approaches or exceeds 100 degrees F. every day. Mirages caused by the heat waves are common and the temperature of the rocks will fry an egg. No matter, *T. balbisiana* sprouts on some of the rocks in an area where there is no shade. Some of the leaves turn slightly reddish, some slightly gray. When the rains start in June, the entire plant turns a light green, seemingly unharmed by being slightly cooked for months on the hot rocks.

Tillandsia schiedeana is also present almost everywhere in this area as it is throughout most of Nicaragua. It looks green in November during the abundant rains but turns a pronounced gray by February. A less common plant is *T. paucifolia,* which flowers in May and June. Then, the entire plant turns a pretty pink for about six weeks. It then turns green with the coming of the rainy season and light gray after the rains. Werner Rauh[3] and L.B. Smith[4] list a few records of *T. paucifolia* collections. Rauh notes that the plant is found associated with cacti and can be expected from 600–1500 meters altitude in Mexico and Costa Rica. Smith lists a few locations in southern Mexico and one in Guanacaste province of Costa Rica with altitudes from 600–1500 meters in mostly dry areas. My observations are that *T. paucifolia* abounds on the lava beds directly to the north of the volcano Santiago. It is also to be found in Granada, a colonial town located 12 miles west of Santiago on the shores of Lake Nicaragua. There, thousands of the plants hang on telephone wires and tile roofs and have probably been there since the American filibusterer William Walker incinerated the town in November of 1856.

On the shore of Lake Nicaragua adjacent to Granada is a large public beach. On the trees facing east toward the lake are colonies of thousands of *T. paucifolia,* a few of which fall on people eating in outdoor restaurants. There are millions of *T. paucifolia* in the Tipitapa River drainage area just north of Granada and even more plants all along the Pacific coast from Puerto Corinto south at least to Montelimar. They are easy to find: just look in cow pastures.

Around the edges of the crater lake named for the volcano Masaya and located next to that volcano, one can find *Tillandsia caput-medusae* occasionally. That species is not common since it is to be expected in transition areas or in cloud forests. Yet it is found on trees between the lake and the volcano where, in the dry season, the heat radiates from the lava fields, slightly roasting anyone who walks there.

Three other species bear discussion. One can usually tell that bromeliads are present upon entering a certain area. The telephone lines will be covered with fuzzy balls of tillandsias and they may extend for miles. Around Masaya they run, with some interruptions, from the outskirts of town to the Costa Rican border, a distance of perhaps 90 miles. The most common is *Tillandsia recurvata.* It is also common on brush as well as trees close to the volcano Masaya interspersed with *T. schiedeana, T. ionantha,* and *T. balbisiana.*



LAKE AND VOLCANO OF MASAYA.—1859.

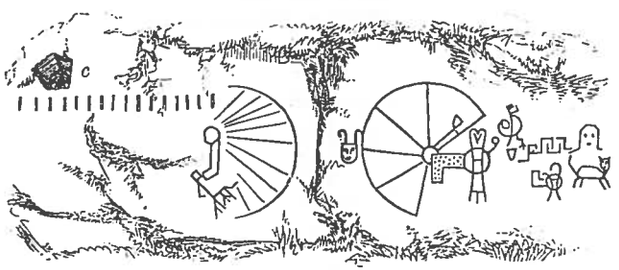
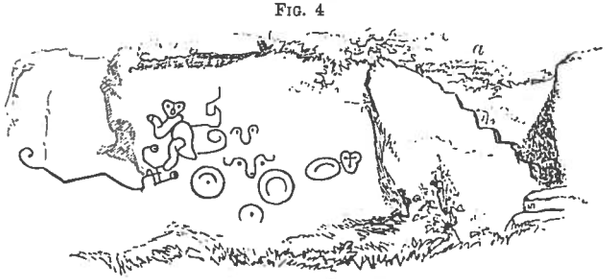


FIG. 4



SCULPTURED ROCKS AT MASAYA.

Figure 6
Engravings from E.G. Squier's *Nicaragua* (see Notes). The lower shows "figures rudely cut in outline on the face of the rock for more than a hundred yards" near the edge of the lake in a deep cut.

The next variety to be discussed warrants a little explanation. In 1850, the United States government sent a bright, young engineer named Ephriam G. Squier to Nicaragua. He carried diplomatic status. His instructions were to look at the possibility of an interoceanic canal through Nicaragua. He travelled throughout western Nicaragua and one of the areas that he described in detail included the Masaya volcano, the adjacent Masaya Lagoon, and the town of Masaya. Although his stay was short, he found out about a large panel of Indian petroglyphs and recorded several sketches of them in his book (fig. 6).[5]

While climbing around the cliffs between the town of Masaya and Lake Masaya 300 feet below, I recently found those petroglyphs. They are exactly as Squier drew them and are located perhaps 400 yards from the edge of the lake in a deep cut in the rock that acts as a natural drainage and open sewer for part of the town. The cut ends abruptly in a waterfall of perhaps 150 feet that plunges directly on the shore of Masaya Lagoon. The waterfall has water from June to November only. There I noticed many clumps of *Tillandsia usneoides,* Barba vieja, or Spanish moss, hanging from a tree that was growing on the side of the cliff next to the waterfall.

It seems curious to me that in this place, which is perhaps 20 meters above sea level and in a dry, deciduous forest with the volcano located four kilometers away, there should be Spanish moss. Perhaps it absorbs water evaporating from the lake. I have climbed around most of the other cliffs of the lagoon and travelled by car around the lagoon and have found more *T. usneoides* at two other locations where there are no waterfalls.

The only other bromeliad that I have found in the region is *Bromelia pinguin.* It is found simply everywhere, some plants growing to over six feet tall. It flowers in June, turns bright red, and attracts many of the African bees to its numerous, closely bunched flowers.

Managua, Nicaragua

NOTES:

1. Incer, Jaime. Nueva geografica de Nicaragua. Managua: Editorial Recalde; 1970, p. 227.

2. Squier, Ephraim George. Nicaragua, its people, scenery, monuments, resources, conditions, and proposed canal. Rev. ed. New York: Harper & Bros., 1860. Tr. to Spanish by L. Cuadra. Managua: Nueva Nicaragua; 1989, p. 344.

3. Rauh, Werner. Bromelien. Stuttgart: E. Ulmer; 1981; p. 192.

4. Smith, L.B.; and Downs, R.J. Tillandsioideae. Flora Neotropica. Monograph no. 14, pt. 2. New York: Hafner Press; 1977, p. 998.

5. Squier, p. 282.

Brazil; a Trip Report
Part 2

T. U. Lineham **Photos by the author except as noted**

In the last issue we explored in the vicinity of Ouro Prete, Minas Gerais. On the fifth day of the trip we left that city and turned east, still on fine highways frequented by freight trucks with signs on their tail gates advising us in various and colorful language that it was preferable to pass on the left. Very late in the evening we arrived at Caraça, near Santa Bárbara, just before the gates were closed. This second installment concludes the report.

Caraça was founded in 1775 as a monastery and remained as such for two hundred years. We learned that fact and related information from a bicentennial history prepared by Fr. José Tobias Zico, the senior member of the community. His book related that Auguste de Saint-Hilaire[1] was among the famous who have visited this restricted place. Mulford and Racine Foster spent several days at Caraça before World War II and collected extensively. Few visitors, in later years, have been permitted to collect there. The church people welcome tour groups to stay in the small hotel and to use the dining room, to visit the waterfalls, to admire the scenery, but not to touch. We were very fortunate that Elton was able to persuade Fr. Zico to permit us to collect.

The pleasure of unfolding from the car and finding that the cook would fix late supper for us was lessened when we unpacked. The reserve alcohol can had leaked into Sam's suitcase, which was at the bottom of the trunk. That liquid lacks the juniper-berry fragrance of other alcohol products but it evaporated overnight.

The first morning after our late evening arrival we had mild warming up exercises with a two-kilometer hike to Cascatinha, a little waterfall. There, we found a tour group of students from São Paulo being lectured to by accompanying teachers. We searched with only minor success for bromeliads, climbed rocks, fell in holes concealed by grasses and small bushes and escaped with minor bruises. Then, back two kilometers past the Emperor's Bath[2] to Tanque Grande, a little lake formed by a dam, with large ledges nearby. Water seeps through the cracks in the ledges and tiny cryptanthus and dyckias grow in those cracks—the perfect example of lithophytic growth.

[1] Voyage dans les provinces de Rio de Janeiro et de Minas Gerais, T. 1, pp. 218–225.

[2] Dom Pedro II, 1825–1891, emperor of Brazil (1831–1889).

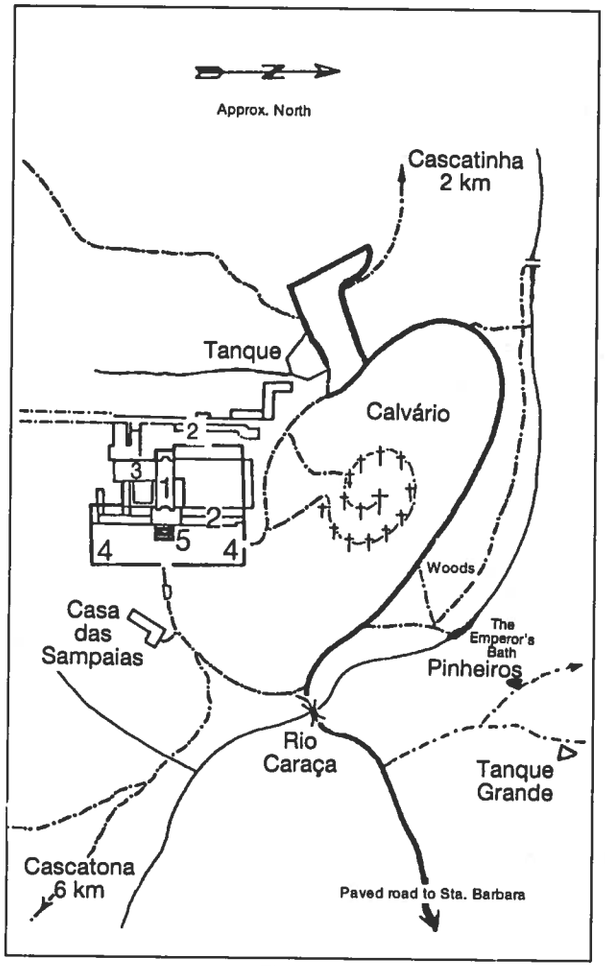


Figure 7
The church at Caraça and its surroundings. 1, the Gothic church; 2, guest quarters; 3, restaurant; 4, garden; 5, stairs. The Casa das Sampaias provided a room for Racine Foster during her visit since she was not permitted to share Mulford's room in the men's quarters (segregation being practiced then).

The major exercise of the day was a hike of about 12 kilometers to visit the very large falls at the farthest corner of the reserve—Cascatona. The experienced explorer and plant collector would probably think nothing of hiking up hill half of the distance and down hill the other half. The track was rocky, badly rutted, and poorly marked in some places. At the end was a defaced shrine and near it on one side was a granite wall with *Tillandsia gardneri* on the rock face enjoying the spray from the very high and noisy falls. Thoroughly tired out from the outbound romp we climbed up hill half the way back and then down hill the remaining half, arriving in the dark. Weary. Slim pickings.

The next day Sam and I cleaned plants and compared notes. The indefatigable Elton and Claudio were off to the really high hills in the vicinity of the Gian, the mountain with a rocky profile Racine Foster said gave the place its name "Caraça," giant face, or mask. Their march of some eight kilometers was the most productive of our searches up to that time. They returned seven hours later with large bags full of plants. While we were thinking of the United States Agriculture Department inspectors, they explored and gathered. Their advantages of knowledge and endurance demanded respect.

The third major stop was at Domingos Martins in the state of Espírito Santo, the home town of Roberto Kautsky, one of our honorary trustees.[3] We

[3] J. Brom. Soc. 36:195; 1986.

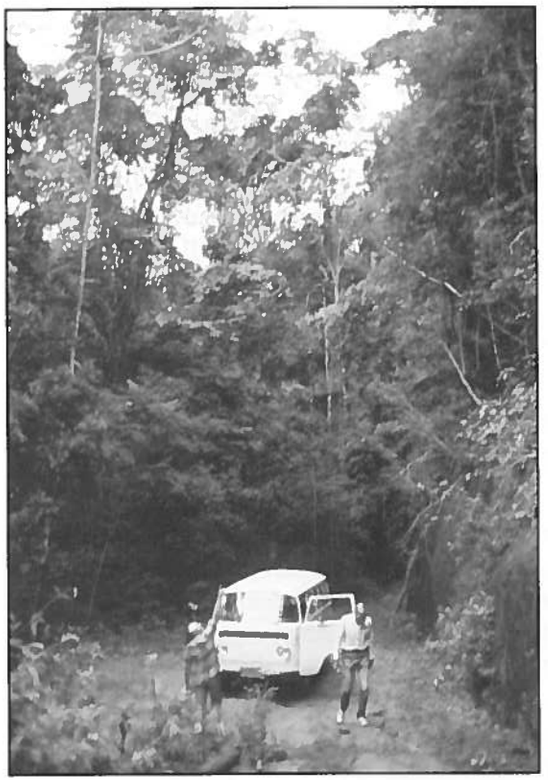


Figure 8
The road to Boqueirão, Espírito Santo. Note the very heavy growth of vegetation and the great granite ledges. Claudio Marigo and Roberto Kautsky (pointing) on the left of the van have found something of interest while Sam Smith is set to explore.

Figure 9
On the granite ledge shown in figure 8 we found *Vriesea carinata* and long, trailing growths of *Neoregelia pauciflora* with moss on the damp rock.

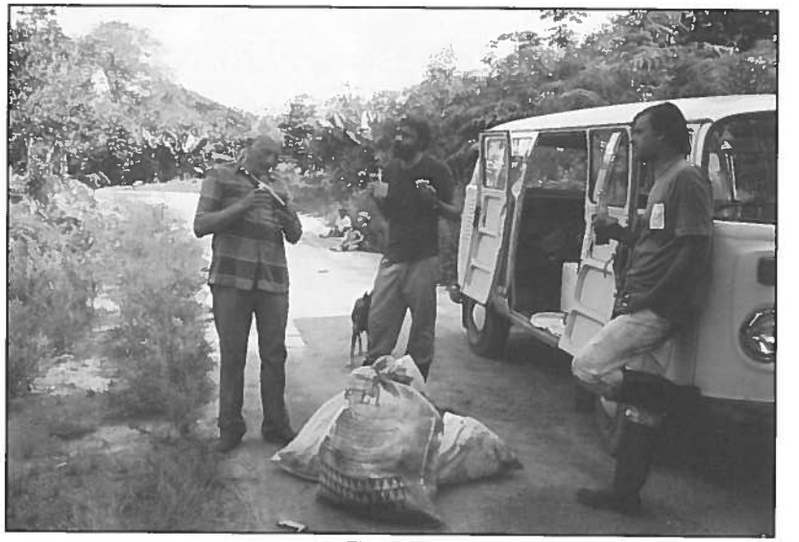


Figure 10
Bags of specimens collected on Boqueiraj lie by the roadside while Caludio Marigo and Elton Leme listen to Roberto Kautsky explain the benefits of his soft drink product. The kids and the dog are from the nearby farm.

had heard about German communities in Brazil and here was one. Our hotel was just like a Bavarian inn, clean, comfortable, and inexpensive. The meals were the best of the entire trip. The cost was the least.

Some have read *Journal* accounts of Kautsky's Mountain where he cultivates the bromeliads and orchids that he has collected nearby. Some have visited that place. We didn't. We went exploring.

On a bright, new day, we drove to Boqueirão, not really off the beaten path because there were frequent freight trucks loaded with bananas and other produce. The expedition had been arranged well in advance. It included Roberto Kautsky, his orchid-growing friend Vital Schunk and Vital's VW van, plus the original four of us.

The objective was one of the rounded, granite knobs that you remember from pictures of the Sugar Loaf in Rio and peaks in the Organ Mountains. This one was more modest in size (from a distance). In fact, there were two of them squeezed together.

We drove down through a long valley, hugging the roadside when the banana trucks came along, crossing and recrossing the Rio Biriricas, and rested after a while near a ledge shaded by large trees and vines. It was another wet rock with *Vriesea carinata* and trailing clusters of *Neoregelia pauciflora.* Refreshment was provided from Roberto's soft-drink bottling works. Then, back in the van, we followed the winding dirt road upwards until we came to a cleared

Figure 11
Boqueiraj, Espírito Santo, somewhat obscured by the foreground vegetation. Our path was approximately from the center foreground towards the mountain and then diagonally upwards between the relatively smooth granite of Boqueiraj and the neighboring hill on the right.

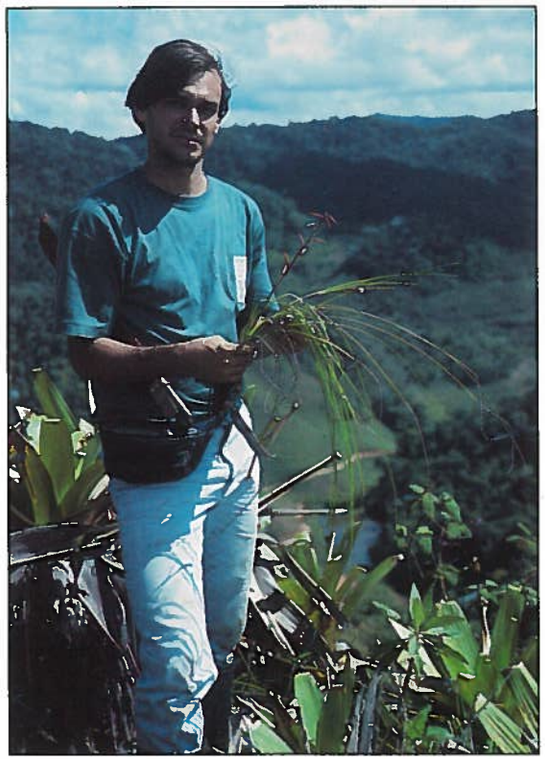


Figure 12
On top of Boqueiraj, Elton Leme found *Pitcairnia flammea* var. *macropoda.* He is standing among *Vriesea extensa* that covered much of the area.

Figure 13
Vriesea extensa grows in dense clumps on the mountain top with the insectiverous *Utricularia reniformis* in its leaf sheaths. You can see the dried inflorescences of *V. extensa* and the purple petals of *Utricularia.* Our farmer-guide appears at the top of the picture.

Figure 14
Canistrum lindenii var. *roseum* forma *humile* found on the side of the mountain in very dense shade with just this ray of sunlight. Much of the accumulation of leaves and twigs has been removed to prepare the specimen for its portrait.

area planted with bananas. We looked around and there stood the challenging knobs.

Roberto hired a local farmer with his machete to guide and chop, then off through the bananas to the bottom slope of the hills. After the bananas came scrub growth and an increasing gradient. The higher we went the bigger the trees. Bamboo stalks and palms grew in between, large vines dangled, and the real climbing began.

First, you find some place that isn't going to break away for one foot, then grab something that feels as if it will support you, then move the other foot, then the hand, and keep on doing it. Not too hot, but humid. We could hear water dripping from the rock. It was surprising that there were few spiders but no bugs, no scorpions, no animals or reptiles. They must have heard us coming. Up ahead it was chop, chop, slip and slide, but keep moving upwards. Roberto with machete in one hand and market basket hooked over his arm, farmer chopping, Elton chopping, Claudio muttering, Sam lost somewhere below. The closer we got to bare rock, the wetter and steeper the track. The rock was covered with running water that sprayed everything in the vicinity. Climb some more, pant, gasp, where did everybody go? Then, open sky and the top. Not like bald, Australian Ayers Rock but covered with tall grass like an alp, a small grove of stunted trees, bromeliads, and a few orchids.

It was a different world with strange vegetation. Up some 800 meters all was quiet. To the east, we could see the port of Vitória some 30 kilometers distant. Looking down in another direction, we could see a coffee farmer drying beans. There were no signs that other humans had visited this place. The most common bromeliad was *Vriesea extensa,* its sunburned leaf sheaths providing homes for the insectivorous *Utricularia reniformis.* Other species collected up there were *Pitcairnia flammea* var. *macropoda* and *Aechmea machrochlamys.* The many other species collected on the side of the hill are named in Elton's list on page 213. I felt like the bear that went over the mountain.

After about an hour, we reversed the slipping, sliding, and clutching but paused on the way down to take pictures and collect.

Not satisfied with that exertion, the leaders decided to sweep a nearby hillside for specimens. There were bromeliads there but not readily seen. The old saying about the forest and the trees seemed to apply in reverse. Until one becomes accustomed to the dense growth, it is nearly impossible to see individual plants. If you can find a place to sit and look around slowly, the brain clears and the individuals become evident. It was a long way to go to learn that lesson, but everyone, even Elton, began with collection number one. The remarkable fact is that while so many bromeliads have been described, collectors

continue to find new species, new varieties, new forms. It was then time to go home, so we went.

The happy postscript is that we arrived in Miami at around 5 a.m. and successfully passed the agriculture inspection. It was old hat to Sam. I was a tired but happy apprentice explorer.

A SHORT READING LIST:

An Englishwoman who paints our flowers. (Tr. by L.B. Smith from Realidad. Aug. 1974.) J. Brom. Soc. 30:253–255; 1980.

Leme, E.M.C. An excursion to Domingos Martins, Brazil, J. Brom. Soc. 31:211–214; 1981.

Mee Margaret. In search of flowers of the Amazon forests...diaries; ed. by Tony Morrison. Woodbridge, Suffolk, England: Nonesuch Expeditions, Ltd.; 1988.

Wiedman, H.W.; Kavaljian, L. Roberto Burle Marx. J. Brom. Soc. 32:3–11; 1982.

E.M.C. LEME'S PRELIMINARY INVENTORY OF PLANTS COLLECTED, APRIL 1990

4th and 5th days. State of Minas Gerais. State Park of Itacolomi, +/– 1500 m, mountain above the town of Ouro Preto:
Billbergia elegans
Cryptanthus schwackeanus
Pitcairnia sp.

Cachoeira das Andorinhas, +/– 1000 m, vicinity of Ouro Preto:
Billbergia sp.
Cryptanthus schwackeanus
Dyckia sp.
Neoregelia sp. (possibly new)
Pitcairnia sp.

Tripuí Park, vicinity of Ouro Preto:
Aechmea bromeliifolia
Bromelia sp.

6th and 7th days. Minas Gerais. Caraça, 900-1,700 m:
Aechmea bromeliifolia
A. lamarchei
Billbergia elegans
B. vittata
Bromelia sp.
Cryptanthus glaziovii
C. aff. *leopoldo-horstii* (possibly new)
C. schwackeanus
Dyckia cinerea
Neoregelia bahiana
Nidularium aff. *fulgens*
Nidularium sp. nov. (to be described as *N. linehamii)*
Quesnelia indecora
Tillandsia gardneri
T. geminiflora
T. recurvata
Vriesea clausseniana
V. friburgensis var. *paludosa*
V. monacorum
V. oligantha
V. regnelli

7th day. Espírito Santo. Boqueirão, Santa Leopoldina, +/– 800 (first hill)
Aechmea warasii
Billbergia chlorantha
Billbergia euphemiae
Canistrum lindenii var. *roseum* f. *procerum*
Canistrum triangulare
Cryptanthus pseudoglaziovii [4]
Neoregelia ampullacea
N. pauciflora
Nidularium rutilans
Pitcairnia flammea var. *macropoda*
Quesnelia marmorata
Tillandsia geminiflora
T. kautskyi
T. spiculosa var. *spiculosa*
T. spiculosa var. *ustulata*
Vriesea carinata
V. ensiformis
V. extensa
V. fosteriana
V. hydrophora
V. lubbersii
V. neoglutinosa
V. psittacina
V. scalaris

(second hill)
Acanthostachys strobilacea
Aechmea entringeri
A. hostilis
A. pedicellata
Cryptanthus pseudoglaziovii
Neoregelia leprosa
N. pauciflora
Nidularium innocentii
N. procerum

[4] Leme, E.M.C. A new species from Santa Leopoldina, Espírito Santo State. Cryptanthus J. 6:10–11; 1991.

Four Interesting Bromeliads

Chester Skotak and Peter Bak[1]

Aechmea nidularioides is always a handsome plant when in flower. The plant pictured on the left in figure 15 was collected by Dennis Cathcart and Wally Berg in Leticia, Colombia, a few years ago. This plant is large, the inflorescence is many-bracted and somewhat round in shape. When in the last stages of flowering the bracts start to turn green and in about a week turn from bright red to dark green.

The plant shown on the right comes from Tena, Ecuador. It has fewer bracts but stays in color at least four months after flowering. After rereading the article by Carol Johnson about the difficulty of setting seed on these plants[2] I crossed these two plants at sunup each morning and set vast quantities of seed. The seed will be donated to the Seed Fund for distribution and I hope that *Aechmea nidularioides* will soon be found in all collections as it certainly is worth growing.

Aechmea rodriguesiana (L.B. Smith) L.B. Smith (fig. 16) is starting to appear in various collections around the world thanks to the generosity of Harry Luther, director of the Bromeliad Identification Center at Selby Gardens.

Peter Bak

Figure 15
Aechmea nidularioides specimens collected in Colombia and Ecuador (left and right, respectively).

P. Bak

Figure 16
Aechmea rodriguesiana is a tall plant, flowering over 6 dm (about 2 ft.) tall. The Mee painting mentioned in the text shows the floral bracts a whitish pink in contrast with the red shown here. Smith & Downs, fig. 671 A-B shows only a single branch and sepal. A photograph of the overall appearance of this species would be welcome.

W.A. Soerries

Figure 17
Guzmania longipetala is a native of the lower level Andes (700–1200 m) of Colombia.

This epiphytic aechmea comes from around Manaus, Amazonas, Brazil. A reproduction of a painting by Margaret Mee of this species appears in her book, *In Search of Flowers of the Amazon Forests* (colored plate opposite page 12), with a location given as "Rio Maraú, Amazonas."[3]

The plant I have is an easy grower and very spiny to handle. It has been in bloom for three months and continues to flower at this writing [early December 1991]. It should be a fine addition to anyone's collection.

Guzmania longipetala (Baker) Mez is an outstanding bromeliad found in the western Andes of Ecuador and Colombia. The photograph of the specimen shown in figure 17 was taken in Lita, Ecuador, by Bill Soerries, an avid plant collector from Georgia.

Lita is a plant collector's paradise with many new bromeliads still being discovered there. When I went looking for *Guzmania longipetala,* I stayed in Lita for a week and searched daily in new areas and new tree tops. Anyone who has been collecting knows that a severe neck ache will be the result of looking constantly up. The reason for mentioning this is that I found this guzmania growing in the mud and had stepped on many dozens before realizing that they were the very plants I had been searching for. This species is definitely not a terrestrial but was found as such on a roadside cut. Many bromeliad seedlings grow on the fresh, open cuts of new roads in the tropics but are soon starved out by other plants such as weeds for lack of light. This was just a lucky find.

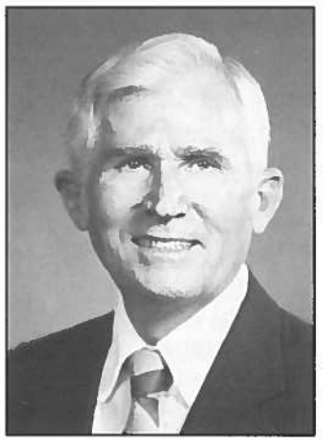
Lita is located northwest of Ibarra in the province of Esmeraldas, a four- or five-hour drive from Ibarra if you ask directions and two to three days if you do not. The town has one hotel. If you plan to stay there, bring your own food unless chicken feet, potatoes, and water are enough.

The trip there can be breathtaking, but if you don't ask directions what starts as a simple plant collecting expedition can turn into a real adventure. *Guzmania testudinis* (front cover) is one of the newer guzmanias from the western Andes to be described. This showy species was first collected in 1977 in a cloud forest in the Choco of Colombia. It was published by Lyman B. Smith and Robert W. Read in 1979.[4]

In recent years both the typical form and a new variety have been discovered in northwestern Ecuador. The first author collected *Guzmania testudinis* var. *testudinis* near the town of Maldonado and has successfully cultivated it at his guzmania farm near Palmares in Costa Rica. It is a spectacular plant deserving wide cultivation. Its cultural requirements consist of a well-drained planting mix, shade, humidity, and moderate temperatures.

[continued on page 218]

New President and Vice-President Elected



Cantú Studio

Figure 18
Dennis Odean Head

Dennis Odean Head of Houston, Texas, was elected president of the society for a three-year term by the directors at the Tampa meeting of the Board in June 1992. Odean has served as a director of the BSI and as chairman of the Finance & Audit Committee. He is also a past-president of both the Bromeliad Society/Houston Inc. and the Southwest Bromeliad Guild. He served as co-chairman of the 1990 World Bromeliad Conference in Houston.

Odean has been growing bromeliads for the past 20 years. He and his wife Betty have an extensive collection. He has made several notable bromeliad hybrids, mostly neoregelias, which is his favorite genus. Odean and Betty are both master bromeliad judges having judged shows throughout Texas, Oklahoma, Louisiana, Alabama and Florida. He treasures all the friends that he has made throughout the bromeliad world.

Simon's Studio

Figure 19
Thomas W. Wolfe

Thomas W. Wolfe, Tampa, Florida, was elected vice-president at the 1992 annual Board meeting. Tom is a director of the society and has served as secretary. He is a past-president of the Bromeliad Guild of Tampa Bay, Inc., past-chairman of the Florida Council of Bromeliad Societies, Inc., and was general chairman of the 1992 World Bromeliad Conference held in Tampa. He is also a master bromeliad judge.

Tom's extensive collection of bromeliads gathered during the past 30 years is housed in five greenhouses and is arranged in the landscape around his home. He has a particular interest in aechmeas and enjoys growing from seed.

Four Interesting Bromeliads

[continued from page 216]

Guzmania testudinis var. *testudinis* is nearly three feet tall when in flower with moderately firm, bright green leaves. The inflorescence is red and yellow with densely packed flowers on spreading branches.

Alajuela, Costa Rica

NOTES:

1. Addresses of the authors: a) Chester Skotak, Dura Flor S.A., Apdo. 652–4050, Alajuela, Costa Rica; b) Peter Bak: Corn. Bak B.V., Bromeliaceen, Dorpstraat 13a, 1566 AA Assendelft, The Netherlands.
2. Johnson, Carol M. *Aechmea nidularioides,* Subgenus *Aechmea.* J. Brom. Soc. 39:74: 1989.
3. Mr. Luther states: "My plant came from Hal Wiedman in the early 1980s. He obtained it from Roberto Burle Marx. As Burle Marx often received plants from Margaret Mee it is conceivable that the plant in cultivation and the subject of her painting are the same collection."
4. Phytologia 41(5): 333–334, 344.

GIFTS TO THE COLOR FUND have been made by Gene McKenzie, editor of the Caloosahatchee Meristem, the newsletter of the Caloosahatchee Bromeliad Society in Fort Myers, Florida, and by John and Pat Carpenter who live in Ipswich, Queensland, just north of Brisbane. We were pleased to see and talk with these friends at the Tampa world conference in June. We thank them for their generosity.

As we noted in our annual report to the Board of Directors, the cost of the *Journal* is not being matched by membership fees but the difference is currently met by advertisement receipts and by gifts. A cooling thought as we approach autumn or spring, depending on the hemisphere, is that the state of our finances is like skating on thin ice—somewhat precarious. We are all the more grateful for these gifts.—TUL

THE BROMELIAD SOCIETY, INCORPORATED congratulates the members of the **Bromeliad Guild of Tampa Bay,** their friends and associates on their successful conclusion of the 10th World Bromeliad Conference.

Bromeliads VII, Brisbane, Easter 1993 reminders in the form of refrigerator door magnets were distributed at the Tampa conference. That conference, the second to be held in Brisbane, is now being planned. Further information will be provided. The Australian conferences, which usually include representatives of the Bromeliad Society of New Zealand, are especially noteworthy because of their published proceedings.—D.O.H.

Regional Reflections

Bringing Home Your New Plants

This article by Mr. Plever is appropriate for both the useful advice that it contains and the news about the growth of the New York Bromeliad Society. There is no escaping the fact that the growth and continued health of local societies and of the BSI depend on the interest shown and the energy expended by the officers and committee chairmen in recruiting new members and keeping them as well as all other members informed and active.—Ed.

I have written this article many times, following our spring plant orders. It certainly bears repeating for the benefit of our 25 new members whom we warmly welcome into the bromeliad world. We urge you not to be reticent about seeking information, advice, and assistance from any and all of our officers and members. You will be picking up the plants you ordered at our May 5th meeting, and when you arrive home it will be late in the evening. Yet you needn't worry about potting up your bromeliads that night as the relative humidity will be fairly high and your indoor heating will be turned off. You will have time enough to take care of your plants within the next four or five days.

It is a good idea, however, to isolate your new plants until they have been carefully inspected. When you are ready to attend to them, check each plant for any signs of pests or disease. Although the nurseries that shipped them are usually careful about pests, it is impossible for any large operation to be pest free.

Peel off any bad lower leaves and check the base for any signs of mealybugs. Then check the leaves for signs of scale. If you find any evidence of pests or disease, immediately separate and isolate the plant and prepare to treat it with an appropriate pesticide or fungicide.

Even before close inspection, it is a good idea to fill your sink with water and soak each bromel separately, swishing it around vigorously to free any debris, dead leaves and/or insects that may be lodged in the leaf axils. Your tillandsias will only need an inspection and then a good soaking of at least 30 minutes (preferably an hour). Then they can be placed on newspaper to dry for a day before you mount them (if you are going to use an adhesive).

You don't have to wait if you are going to tie the tillandsias on. Adhesives such as hot glue or Liquid Nails won't fix well if the plants or the bark, or wood are still wet or even damp, so make sure everything is thoroughly dry before you start the mounting procedure. Large tillandsias such as *T. xerographica* will need to be tied on as well as glued to the cork bark. You will need some long plastic ties or insulated wire as tying material. Do not use bare copper wire as the copper is toxic to bromels.

Even if you find some signs of pest, you can keep them in check temporarily by washing them with soap or swabbing them with alcohol. As soon as the weather

warms up enough to permit you to work outdoors, you can put down any infestation by dipping your plants in a solution of a good systemic pesticide like Cygon 2E...

Start thinking about where you will place your plants in your setup and make room for them [please refer to the author's article in July–August, 1992 issue, "The 'Right' Plants for Your Particular Spaces"]... Don't be too casual about planning these logistics as you, like all of us, have probably ordered more plants than you have room for.

Herb Plever

Reprinted from Bromeliana, *The New York Bromeliad Society, Inc., May 1992.*

Shippers Beware

I have a sad tale to tell. It is absolutely true and not exaggerated one tiny bit. SHIPPERS BEWARE!

I recently ordered a fairly large quantity of live plants. I paid the shipper and the goods came forth in quick fashion. There were three largish boxes, all three in perfect condition.

I dragged the three boxes into my work area and my excitement mounted. I knifed the first box and it looked wonderful. There were layers of newspaper covering the contents with just enough moisture to keep the plants fresh and snappy. I carefully removed the newspapers and then the trouble started! Underneath the newspapers was a thick layer of plastic popcorn. At the same exposure a gentle breeze came up. Can you guess what happened? Yes, you are right! The plastic popcorn blew out of the box and covered my entire nursery.

I took the goods out of the box and they were in excellent condition. Just beautiful. Of course, there was another layer of plastic popcorn at the bottom of the box and the breeze caught that layer too.

The second box added to the mess. My place looked like Christmas and I had to go thru the packing very carefully as I had to make certain that I had all of my goods extracted. Sometimes I had to go thru the boxes two and three times to get all the plants. The third box was the worst! My place looked just like a fresh snowfall.My helper and I started to clean up the mess, which was almost impossible! We tried hand-picking but we could get only a few pieces. We tried sweeping, but the breeze just blew the plastic popcorn right out of the dust pan. We worked for three hours and finally got plastic shopping bags and filled them up, one by one. We are still picking up stray plastic and **Please Mr. Shipper! Don't use that dratted plastic popcorn again! Please!**

Would you like to hear the rest? My shipper included extra plants because I had bought a pretty good quantity. That was nice, I thought. He didn't realize however, that I didn't know what the extras were and nobody on the West Coast

seems to know what they are or how much they are worth! Oh well! I've guessed before.

Gerson Jules Velick
Los Angeles, California

Pineapple May Reduce Hay Fever Symptoms

Hay fever sufferers may be helped by eating a pineapple ring 1 cm thick [a standard slice] at breakfast during the spring, according to an ear, nose and throat specialist at the Royal Victorian Eye and Ear Hospital in Melbourne.

Dr. Brian Pyman is about to begin a major trial looking into the mechanisms by which pineapple may alleviate hay fever symptoms. He became interested in the area after a trial was performed at the department of botany at the University of Melbourne by Professor Bruce Knox.

The latter study, on a small number of subjects, found that pineapple decreased hay fever symptoms. A control group given watermelon experienced no such reduction in their symptoms.

Dr. Pyman believes there are a number of reasons why the pineapple may act as a natural dampener of hay fever symptoms. "There are many components of pineapple that are candidates for this effect," he said. "Pineapple is full of bromolein [sic], an enzyme which may reduce the symptoms of runny nose. Alternatively, the pineapple may act on the body's mucosa, again stopping the runny nose."

Dr. Pyman aims to recruit people whose hay fever has responded to pineapple. Participants in the study will be asked to have their hay fever provoked with rye grass allergen. Dr. Pyman will then test the ease with which subjects develop these symptoms after eating pineapple and after a period without the fruit. Any person who has found pineapple to be a help with hay fever should contact the Pineapple Trial, 32 Gisborne Street, East Melbourne 3002 [Victoria, Australia].

Tania Ewing

Reprinted from Bromeliad Newsletter *Bromeliad Society of New South Wales, April 1992. We have been unable to learn who first published this notice. Alice Williams, secretary of the society writes that one of their members "obtained it from his local medical surgery."*

Book Reviews

Margaret Mee's Brazilian Flowers, a bound diary for 1992 sponsored by Petrobras and published by Fundação Botânica Margaret Mee. The diary, a gift from Renate Ehlers, includes 14 colored plates of Mrs. Mee's watercolors of orchids, bromeliads, and other plants.

The foundation is supported by companies and individuals in the cause of conservation. The address is Av. Rio Branco, 181 sala 2007, 20040 Rio de Janeiro.

The introduction in both Portuguese and English includes information about the foundation, a sketch of Margaret Mee's life, and quotations from her writings. The plants are identified on the verso of each plate. It would be a shame to scribble in this diary but with daily use you would get to see and further appreciate each of the paintings and the many small sketches. Why don't you write to the foundation for information?

A NEW PERIODICAL. Backyard Bromeliads, edited and written by Patsy Worley is available in individual copies or by six-month subscription. Issue number 1 was published in June in time to be displayed at the Tampa World Conference. This magazine is intended by a hobbyist for other hobbyists as a means of sharing information. The example consists of 16 pages in clearly typed format, 8 ½ inches tall; three black and white illustrations and five color prints of pictures taken by John Worley. Price for six issues is $18.12 to U.S. addresses; $25.38 to other addresses, both including first class or airmail postage; price per copy is ⅙ amounts shown. Address: 5127 43rd Avenue E, Bradenton, FL 34208.

The first issue includes short, illustrated discussions of *Aechmea phanerophlebia* and *Billbergia* Thelma Darling Hodge, a report of visit to Wally and Dorothy Berg's home and bromeliad collection in Sarasota, Florida. The editor has made a fine beginning with a very ambitious project. We wish her well.—TUL

BSI LIBRARY NEWS. In 1984, after having served for more than a year as editor, we received an assortment of books and pamphlets that we suppose was the BSI library assembled by Victoria Padilla. There was no specific identification.

We made a quick card file of the titles at the time and since have added to the collection by gift and purchase. We now have written a more detailed card file of some 160 titles and have transcribed most of the information to a computer base so that we can print a list. The list is first of all an inventory and a quick finding device. It is not a bibliographic record in the library sense. The books are arranged in a useful but not systematic order. I have no intention of applying the Dewey Decimal System or the Library of Congress Classification System.

Are the books and other materials taken care of? Yes. Are they appreciated and used? Yes. May you borrow them? Probably not, but you may ask.—TUL

Questions & Answers

Conducted by Derek Butcher

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. Why is it that several adjectives are sometimes used to describe the same variety of a species?

A. A short answer might be misinterpreted so I shall give you my usual long answer. The *International Code of Botanical Nomenclature* is not new and it is revised frequently to tell us how plant names are to be constructed. It applies to all names. More detail concerning the names of hybrids is contained in the *International Code of Nomenclature for Cultivated Plants.* The problem is that not everybody reads the Codes and not everybody has access to the various records. Both botanists and horticulturists are working to reduce the confusion. The Luther List of binomials is a great help and it will be even better with the addition of synonyma (stop calling that plant *Tillandsia circinnata).* Don Beadle's list of grex and cultivar names is an invaluable reference. We can help by recognizing the difference between a real name and one applied for sales purposes. Red leaves do not necessarily justify calling a plant "variety rubra," or green leaves "green form." Those tags may be useful for sales catalogs but try to keep them out of your collection. They won't help you.

It seems that most recent descriptions now include the plant colors but the dried specimens in the herbaria retain their value since they provide the essential characters without the distractions of variables. After all, many bromeliads will develop short, intensely red leaves under bright light conditions while duplicates grown in the shade will have long, green leaves.

Lyman Smith was probably right a long time ago when he wrote: "Dry it and I will name it."

Q. How often should you water bromeliads?

A. This question is undoubtedly the most frequently asked wherever bromeliads are sold to the general public. It is also the hardest to answer because there are so many conditions to be considered: outdoors or indoors? shade house or glass house? have you a supply of rainwater?

One answer that may satisfy for a short while is: water regularly so that the potting mix is never completely dry or always saturated. The frequency depends on whether the weather is hot or cold, the humidity high or low.

To give more details: 1) All bromeliads need water to some extent. 2) Most tillandsias and some vrieseas will not easily adapt to pot culture but should be attached to pieces of wood or rock. These plants should be watered with a fine mist spray to imitate fog or cloud dampness. An expert at apartment house bromeliad growing supplements for recurring cloud forest treatment with bathtub soakings. A few words on this point will not suffice. 3) Bromeliads with natural vases, such as most aechmeas and billbergias, need water in both the vases and in the potting mix. The complication is that outdoor plants with funnelform leaf shapes will house mosquito larvae unless flushed regularly (which is a good cultural practice, anyway). 4) Some pitcairnias are deciduous and should be allowed to dry during their dormant period. Others come from boggy places and need a great deal of water at all times.

These answers are not to tease you. We all have to learn by observing and by reading. Charles Wiley wrote what is probably the best outline on the subject in his article, "Water and Good Growing," in the March–April 1976 issues of the *Journal,* pages 59–65 [1] You will learn from it. He said, "when you water, do a lot of it." And I add, "but don't ever use water from a water softener."

[1] Also reprinted in March–April 1988, pp. 59–65. Both issues are available from the editor, see inside front cover of this issue for prices.

Don Beadle's **1991 Preliminary Listing of All Known Cultivar and Grex Names for the Bromeliaceae** is available from Sally Thompson, BSI Publication Sales, 29275 N.E. Putnam Road, Newberg, OR 97132. Prices per copy are:

United States 3rd class	$20.00
airmail	$23.00
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airmail	$24.00
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BROMELIAD SOCIETY, INC.
BALANCE SHEET AS OF 12/31/91

	12/31/90	12/31/91
CURRENT ASSETS		
Cash - Texas Commerce Bank	14,577.43	11,303.13
Cash - General Fund Special	54,795.33	58,055.57
Cash - Life Membership Spec.	10,751.13	12,140.70
Cash - Padilla Research Fund	2,597.36	2,751.61
Cash - Padilla Endowment Spec.	–68.17	1,339.67
Total Cash	82,653.08	85,590.68
ADVANCES		
1992 World Conference	1,000.00	1,000.00
Steckler	200.00	200.00
Musleh	375.00	375.00
Navetta	100.00	—
Beltz	200.00	200.00
Total Advances	1,875.00	1,775.00
FIXED ASSETS		
Library and Equipment	4,348.39	4,413.39
Less Depreciation	2,089.54	2,089.54
Total Depreciated Assets	2,258.85	2,323.85
Investments - Unisys	200.00	200.00
Investments - USTN	10,020.31	14,665.65
Inventory (not adjusted)	52,497.00	52,497.00
LIABILITIES		
Racine Foster Memorial Fund	—	25.00
TOTAL NET WORTH	149,504.24	157,027.18

BANKS

Texas Commerce Bank	Merrill Lynch
Friendswood, Texas	Houston, Texas
Account 0055517	Account 582-07J70

BROMELIAD SOCIETY, INC.
FINANCIAL STATEMENT – 1991

BALANCE - CHECKING ACCOUNT 1/1/91		14,577.43
RECEIPTS		
Advertising - Journal	4,764.17	
Back Issues	1,437.30	
Cultivar Registration	3,181.51	
Color Fund	962.00	
Culture Sheets	632.96	
Dividends	—	
Donations	113.50	

Interest - General		4,581.63	
Interest - Endowment Fund		1,053.18	
Judges Certification		40.00	
Medallions & Trophies		1,790.99	
Memberships		34,609.69	
Postage		54.94	
Publications		5,434.36	
Seed Fund		1,507.00	
Slide Program		100.00	
Padilla Endowment		5,000.00	
Tax Refund		2,190.00	67,453.23
DISBURSEMENTS:			
Administrative Expense		—	
Affiliate Newsletter		366.26	
Bank Charges, Fees		50.00	
Cultivar Registration		2,916.27	
Culture Sheets		1,900.00	
BSI Meetings		453.56	
Grants		—	
Journal - Allowance	1,800.00		
Journal - Mail Service	7,003.25		
Journal - Misc.	1,188.01		
Journal - Typesetting	6,172.00		
Journal - Prtg. & Photos	22,159.54	38,322.80	
Judges Certification		110.42	
Medallions & Trophies		2,348.50	
Membership - Contract	5,400.00		
Membership - Expenses	1,802.48	7,202.48	
Presidents Expense		33.01	
Publications		1,560.08	
Seed Fund		1,349.65	
Slide Program		—	
Treasurers Expense		14.66	
Tax Expense		2,190.00	
Contingency			
Envelopes - Membership	135.60		
Envelopes - Journal	877.00	1,012.60	59,830.29
TRANSFER - NON INCOME ITEMS			
Padilla Research Endowment		–5,000.00	
EXCESS OF INCOME OVER EXPENSES			2,622.94
TRANSFER - INCOME/EXPENSE ITEMS			
To BIC		–100.00	
To Library		–65.00	
To R. Foster Memorial Fund		25.00	
Advance Refund		100.00	
Special Funds - Interest		–5,157.24	
Special Funds - Fees		50.00	
Special Funds - Life Membership		–750.00	–5,897.24
Balance Checking Fund @ 12/31/91			11,303.13

BROMELIAD SOCIETY, INC.
SPECIAL FUND ACCOUNTS - 1991

GENERAL FUND	
Balance 1/1/91	54,795.33
Interest for Year 1991	3,300.47
Bank Charges and/or Expenses	–40.23
Balance 12/31/91	58,055.57
LIFE MEMBERSHIP	
Balance 1/1/91	10,751.13
Add Life Membership	750.00
Interest for year 1991	647.44
Bank Charges and/or Expenses	–7.87
BALANCE 12/31/91	12,140.70
PADILLA RESEARCH FUND	
Balance 1/1/91	2,597.36
Interest for year 1991	156.15
Bank Charges and/or Expenses	–1.90
Balance 12/31/91	2,751.61
PADILLA ENDOWMENT FUND	
Balance 1/1/91	–68.17
Bromeliad Society/Houston Donation	5,000.00
Purchase of Treasury Notes	–4,645.34
Prepaid Interest	–173.00
Interest for year 1991	1,226.18
Balance 12/31/91	1,339.67

BROMELIAD SOCIETY, INC.
SPECIAL FUND ACCOUNTS - 1991

BROMELIAD IDENTIFICATION CENTER	
Balance 1/1/91	21,560.46
BSI Luther Expenses	–6,398.00
BSI Luther Internships	–963.00
Interest for Year 1991	1,131.61
Transfer from BSI 1991	569.15
Bank Charges and/or Expenses	–15.15
Balance 12/31/91	15,885.07

BROMELIAD SOCIETY, INC.
PROPOSED BUDGET - 1992 AND 1993

	1992 BUDGET	1993 BUDGET
RECEIPTS:		
Advertising - Journal	5,000.00	5,204.00
Back Issues	1,500.00	1,500.00

Color Fund	1,000.00	1,000.00
Culture Sheets	700.00	700.00
Cultivar Registration	1,000.00	1,000.00
Dividends	6.00	6.00
Interest - General	4,500.00	4,500.00
Interest - Endowment	1,100.00	1,100.00
Judges Certification	100.00	100.00
Medallions/Trophies	1,500.00	1,300.00
Memberships	38,000.00	37,000.00
Postage Refund	200.00	200.00
Seed Fund	1,500.00	1,700.00
Slide Program	300.00	300.00
Donations	200.00	200.00
Publications	7,500.00	5,700.00
Padilla Research Fund	—	—
Total Receipts	64,106.00	61,510.00
DISBURSEMENTS:		
Administrative Expense	100.00	100.00
Affiliate Newsletter	250.00	250.00
Bank Charges/Fees	100.00	100.00
Computer Upgrade	2,000.00	—
Conservation	200.00	200.00
Cultural Booklet	400.00	
Cultivar Registration	500.00	500.00
Culture Sheets	—	—
BSI Meetings	500.00	500.00
Franchise Tax	10.00	10.00
Grants	1,500.00	2,500.00
Journal - Allowance	1,800.00	1,800.00
Journal - Mail Service	8,000.00	8,000.00
Journal - Misc. Expense	2,200.00	2,200.00
Journal - Prtg. & Photos	22,000.00	22,000.00
Journal - Typesetting	7,300.00	7,300.00
Journal - Envelopes	—	1,000.00
Judges Certification	300.00	200.00
Medallions/Trophies	2,500.00	2,500.00
Membership - Envelopes	—	—
Membership - Contract	5,400.00	5,400.00
Membership - Expenses	2,200.00	2,200.00
President's Expense	200.00	200.00
Publications	1,500.00	1,500.00
Roster	3,000.00	—
Secretary Expense	200.00	200.00
Seed Fund	1,350.00	1,350.00
Slide Program	100.00	—
Treasurer's Expense	200.00	200.00
Contingency Fund	296.00	1,096.00
Total Disbursements	64,106.00	61,510.00
Reserves	—	—
Totals	64,106.00	61,306.00

The Bromeliad Page

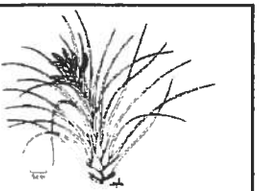
The Bromeliad Page

A very special calendar for the Bromeliad enthusiasts is coming this fall. It will have 13 beautiful full color pictures of various types of Bromeliads and as many Club show dates as we can possibly get to let you know when and where clubs from around the world are having events that you might want to attend. There are also numerous religious and special International holidays. Keep up with what's going on in 1993 in the world of Bromeliads. Get with the other members of your club and save 10% with your order of 10 or more.

The cost of the calendar is $10.00 each. For U.S. and Canadian orders, first class postage is $2.50. Foreign postage is $5.50. For orders of 10 or more, we would like for you to send only the amount necessary to cover the cost of the calendars you are ordering. For the postage due, we will ship your order back to you C.O.D. for that amount. We feel that this is the most cost effective way of not overcharging anyone for their order, especially those to foreign destinations. Calendars will be shipped the first of November. Orders received after October 1 will be filled until supply is exhausted and the difference will be refunded to you. Commercial inquiries are welcome.

Please make all checks and/or money orders payable through a U.S. bank in U.S. funds and mail to:

The Bromeliad Page
P.O. Box 1762
Venice, Florida 34284
USA



January 1993

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3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24/31	25	26	27	28	29	30

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PLEASE NOTE:

(1) *The Bromeliad Society Bulletin* volume 1 (1951) is still available at $10.00 plus postage and insurance. **There are no other complete volumes of the Bulletin** but many scattered issues 1952–1958 available. In groups of 6, $10.00 plus postage and insurance.

(2) There are no volumes or separate issues of the *Bulletin* or *Journal* available for the years 1959–1975.

(3) Processing of 1976–1983 volumes may take up to 6 weeks.

PAYMENT in United States dollars to BSI must accompany all orders for the *Journal.* Inquire for availability and cost of the *Bulletin*.

ORDER FROM or address inquiries to:
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1508 Lake Shore Drive, Orlando, FL 32803-1305
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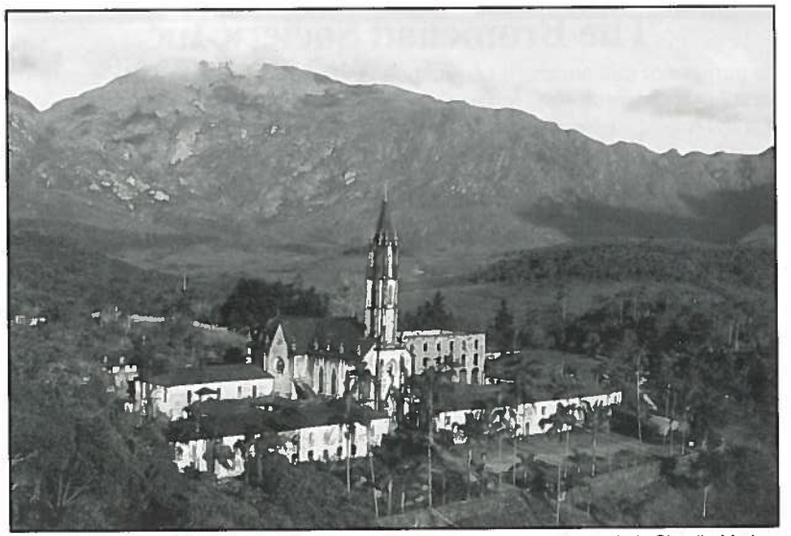
The purpose of this nonprofit corporation is to promote and maintain public and scientific interest in the research, development, preservation, and distribution of bromeliads, both natural and hybrid, throughout the world. You are invited to join.



Luiz Claudio Marigo

The main building at Caraça is the Gothic-style church at the center of a large preserve rich in native bromeliads. Mulford and Racine Foster collected here before World War II. While tourists are encouraged to visit and look, the wild life is carefully protected. Please see pages 206–213.

Calendar of Shows

14 June–7 Sept. "Epiphytic Jewels; Canopy Dwellers of the Tropical Rain Forest," by Ms. Bonni Arant Ertelt. Museum of Botany and the Arts, The Marie Selby Botanical Gardens, 811 South Palm Avenue, Sarasota, Florida.

12–13 September River Bend Bromeliad Society 15th Annual Show & Sale. Belle Promenade Shopping Center, 1701 Barataria Blvd., Marrero, LA. Friday 8 p.m. to 10:30 p.m. entries; Saturday 9 a.m. to 1 p.m., judging; show hours: 1 p.m. to 9 p.m.; Sunday noon to 5 p.m. Sale hours: Saturday 10 a.m. to 9 p.m. and Sunday noon to 5 p.m. Paul Cooper, 504-831-1075.

19–20 September River Ridge Bromeliad Society Annual Show and Sale. City Park Botanical Gardens, 200 Victory Avenue, New Orleans, LA. Sale hours: Saturday and Sunday 10:00 a.m. to 5:00 p.m.; Show Hours: Saturday 1:00 to 5:00 p.m.; Sunday 10:00 a.m. to 5:00 p.m. Earl Vicknair 504-737-2974.

10–11 October Sarasota Bromeliad Society Annual Show and Sale, co-sponsored with Marie Selby Botanical Gardens, will be held at the Gardens, 811 South Palm Avenue, Sarasota, Florida. Saturday 10 a.m. to 5 p.m.; Sunday 10 a.m. to 4 p.m. Co-chairmen: John Worley 813-747-2231 and Wally Berg 813-924-0060.

24–25 October Southwest Bromeliad Guild Annual Show and Sale with Bromeliad Society/ Houston as host society. Houston Garden Center, Hermann Park, 15 Hermann Ave., Houston, TX. Entries and set-up 23 Oct. Show open to the public after judging, Saturday, 2 p.m. to 5 p.m.; Sunday 11 a.m. to 4 p.m. Betty Head 713-774-7778.

31 Oct.–1 Nov. Caloosahatchee Bromeliad Society Exhibition and Sale (not a judged show). Exhibition Hall, 1320 Hendry Street, downtown Fort Myers, FL. Saturday 9 a.m. to 5 p.m., Sunday 10 a.m. to 4 p.m. MAIN EVENT: Florida Council of Bromeliad Societies, Inc. 1992 EXTRAVAGANZA dinner & auction beginning at 6 p.m. dinner reservations required; featured speaker Don Beadle. Betty Ann Prevatt 813-334-0242.