

Journal of The Bromeliad Society



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Editor: Thomas U. Lineham, Jr., 1508 Lake Shore Drive, Orlando, Florida 32803

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

COVER PHOTOGRAPHS. Front: A close-up of *Billbergia nutans* inflorescence. This species may be one of the most widespread in collections and the macrophotograph helps us to see its beauty. Louis Dutrie discusses billbergias on pages 244-247, and Don Beadle has more information on pages 266-267. Photograph by Don Beadle. Back: *Cryptanthus 'It'*, a variegated offshoot of a specimen collected by M.B. Foster in 1948. Please see pages 256-258. This photograph by Mr. Foster in 1965.

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THE BROMELIAD

for Victoria Padilla

In the air! maybe there
these spindly creatures
are ethereal. Maybe at
the Heart of Hurricane.
But know them as I know them!
When Caribbean breezes
are spiders' transport,
leaf to leaf. Know them,
the leathery grapplers,
air plant,
woody rooted, sawtooth wind-slicer
holds fast to slippery bark of Anything!

Fierce, succulent, windworn.
Know them! Passionate exhibitionists,
burning, aching high
violet sweetheart of hummingbirds,
broad berried wands of ripening Tropica, all
halleluyah, still

no pretense to divine. They are great
colonizers,
white tufted seeds parachute course
between trees,
through curtains of lianas
cling to craggy bark,
build gardens, festooning cities.

Bromeliad, out on a limb, civilization
of raw vegetable kingdom generating until all
kingdom, life and limb, crashes to the ground.

Frog pond! Serpent house! Stagnant channeled
reservoir! Malaria nursery!

Sky Chalice!

Or wedged on rocky sun blast ledge! Or anchored
as forbidding hedge
for robbers. Barbed.

MICHAEL ROTHENBERG

The Bromeliads: Genera—Species—Hybrids (continued)

Louis Dutrie

[In the September-October 1987 number, we reprinted the author's discussion of the aechmeas and their hybrids in parts 1 and 2 of a 10-part series.]

III THE ANANAS

The species of *Ananas* (*Ananassa* Lindley)¹ are terrestrial bromeliads. As such, they require a brighter environment than that accorded epiphytic species which, in nature, grow in shade or semishade.

According to Mez, all the *Ananas* are of the varieties of *A. sativa* Lindl.² that produce excellent and well known fruits, and which at one time were produced on a commercial scale in the region of Paris.

Now met with in cultivation are *Ananas bracteatus* Lindl. with long green leaves, and *Pseudananas sagenarius* (Arruda da Camera) Camargo (*A. macrodotes* (E. Morren) Harms with shorter but wider leaves, brownish above, brown beneath. Both are edged with strong spines, which make them disagreeable and even dangerous for the tissues and epidermis.

Two varieties with variegated leaves are noteworthy:

- *A. sativa* var. *penangensis* hort.³ Leaves wide at the base, acuminate, gracefully arched, bordered and lined with yellow and tinted with red at the base and on the edges which are armed with strong spines. The plant must be cultivated in strong light for the variegation to reach its full development. It is then a magnificent plant.
- *A. sativa* var. *porteana* hort.³ Less brilliant than the former, it is nevertheless far from being without merit. Here, instead of the edges, it is in the center of the leaf that is marked by a wide yellow band tinted brightly with red.

A third variety with variegated leaves, *A. sativa cochinchinensis* hort.³ has its leaves bordered with greenish yellow, contrasting a little with the green background. Much less interesting than the preceding, which are the only ones truly worth cultivating and which can be classed among the most beautiful bromeliads.

THE BILLBERGIAS

The genus *Billbergia* Thunberg comprises about 50 species to which must be added the numerous hybrids. In most, the inflorescence forms a pendant

Fig. 1
Billbergia amoena. "A-mee-na" means beautiful and so it is with its distinctive salmon-pink bracts, green ovaries, blue-green sepals, and blue-tipped petals.



Racine Foster



Don Beadle

Fig. 2
Billbergia vittata was first described in 1848. While "vittata" means longitudinally striped, the broad, white bands across the leaves are the more obvious character.

cluster with large rose or brilliant red bracts and petals of a bright violet-blue. The colors are striking, but the flowers are short-lived.

Billbergia pyramidalis var. *pyramidalis* (*B. thyrsoides*), [and] *B. × vexillaria*, a cross between *B. morelii* and *B. pyramidalis* var. *pyramidalis* (*thyrsoidea splendida*), have a strong, compact, pyramidal spike, on an upright stem, the petals dark violet and the bracts brilliant red, the flowers producing a grand effect, but lasting only a few days.

But there are others of interest as foliage plants, whether because of their form or by the coloring of the leaves. For example:

- *B. zebrina* (Herbert) Lindley. Brazil. Few leaves, converging at the base, upright, curved downward at the top, very long, very spiny, tough, often tinged with brown, white stripes on deep green.
- *B. nutans* H. Wendland ex Regel. Brazil. Acaulescent and stoloniferous plant. Linear, acuminate leaves, 30–60 cm long, green, arched. An interesting, simply formed species, ornamental, very suitable for apartment house culture.
- *B. vittata* Brongniart ex Morel. Brazil. Beautiful leaves in a rosette, channeled, tough, dark green, strongly striped in white, edged with brown spines.
- *B. decora* Poeppig & Endlicher. Peru. Leaves ligulate, sharp, broad at the base, toothed, about 50 cm long and 5 cm wide, marked on underside with white transverse bands.
- *B. amoena* (Loddiges) Lindl. Rio de Janeiro. Ligulate leaves, obtuse, finely toothed, green above, lepidote, whitish and striped beneath, 40–70 cm long and 5 cm wide, arranged in a cylindrical form in the lower half, curving downward at the top.
- *B. brasiliensis* L.B. Smith (*B. leopoldi*)⁴ Brazil. A large and beautiful plant with hard, tough leaves about 80 cm long and 5 or 6 cm wide, in a tight tube for two-thirds of their length, then widening out and curving downward at the top, edged with strong, triangular spines, green above, remarkably banded in white on the reverse side.

The six varieties listed above with their slender form and variegated foliage make a marvelous display in the center of a basket or on large logs.

- *Quesnelia marmorata* Lemaire (*B. marmorata* Lemaire). Brazil. Leaves broad, truncated and macronate at the top, spiny, dark green, strongly splotted and striped with reddish brown.
- “*B. Saundersi* Morelliana Hort. ?” I was given under this name a plant resembling *B. chlorosticta*, but a little larger and more robust, with wide leaves, tubular for two-thirds of its length, then widening out, curving downward, light green, with abundant, creamy white spots.

These two latter species should be grown very close to the glass if one wants their foliage to be brightly colored. They are then valuable for all purposes.

HYBRIDS OF BILLBERGIAS

The hybrids of billbergias are numerous. Bellair and Saint-Léger in *Les Plantes de Serre*⁵ have mentioned about fifteen. Some such as *B. × vexillaria*, are of great beauty, but the short duration of their flowers takes away much of their interest.⁶

I have attempted only one hybridization: *Billbergia chlorosticta* (*B. saundersii*) × *B. pyramidalis*, and inversely,⁷ in the vague hope of uniting in a single plant the beautiful flower of the second and the beautiful foliage of the first. Result: although vividly splotted with oval spots and areas of white, the foliage of the hybrids was much less striking than that of *B. chlorosticta* and the pendant flower was also less brilliant. The plants could be utilized but I did not attempt to multiply them.

THE CRYPTANTHUS (Otto and Dietrich)

This genus offers us a series of small plants of special form with foliage that is banded, spotted, or streaked with different colors, which lend themselves admirably to all kinds of decoration to which they give a characteristic note. Let us cite the most interesting:

- *Cryptanthus sinuosus* L.B. Smith (*C. undulatus* Otto & Dietrich)⁸ Brazil. There are in cultivation several varieties or species closely resembling one another, with wavy leaves that are in a very open rosette, some with leaves that are green above and silver below (*discolor* = *C. acaulis* var. *argenteus* Beer), others (*ruber* and *purpureus* = *C. acaulis* var. *ruber* hortus ex Beer) with leaves that are brown or reddish brown.

The group *Cryptanthus bivittatus* includes *C. bivittatus major* hort.⁹, a relatively robust plant, with broad, brownish green leaves, having two greenish yellow, wide, longitudinal bands. *C. bivittatus minor* Regel,⁹ Brazil, a pretty miniature, with wide-spread green leaves marked with two longitudinal ivory bands, tinted with reddish rose, a charming little plant of many uses; *C. bivittatus* var. *bivittatus* (*C. bivittatus* var. *moënsis* hortus). Under this name there was given to me a species intermediate between the two preceding with leaves as long as those of *C. bivittatus major* but with half their width and as brightly colored as *C. bivittatus minor* which it does not exceed in height, that is, a few centimeters, so much do the leaves extend horizontally from their base.

Closely resembling *Cryptanthus bivittatus minor*, but smaller still, is *C. lacerdae* Antoine, that forms a pretty rosette, extending obtuse, oblong leaves, 5 cm long, relatively wide, grayish green, marked above by three silver bands, joining at the top. The underside is whitish lepidote.

Cryptanthus zonatus (Visiani) Beer. Brazil. The leaves, from 15–25 cm long and 4–5 cm wide, are a dark, velvety green, with wide and numerous transverse lepidote bands, grayish white above, lepidote, white beneath.



Don Beadle

Fig. 3

Billbergia hybrid of *B. pyramidalis* and *B. chlorosticta*. This same formula produced Foster's 'Fantasia'. It was also tried by Louis Dutrie who decided not to "attempt to multiply them."



Don Beadle

Fig. 4

Billbergia × *vexillaria*, "a most splendid hybrid, according to M. André, who raised it quite recently from a cross between *morelii* and *pyramidalis* var. *pyramidalis*" (from J.G. Baker's Handbook of the Bromeliaceae, 1889). Remade by Don Beadle who also took the photograph.

"*C. zonatus brunneis* Hort." This is a variety of the preceding species of which the leaves are reddish brown with contrasting gray bands.

Cryptanthus beuckeri E. Morren. Southern Brazil. The appearance of this plant is quite different from those described above. The leaves are erect, with long petioles, the leaf itself is leathery, oval, lanceolate, 10–15 cm long, 5–7 cm wide, spread out, marbled with deep green and tinted with rose on a whitish background; underside white. It is a very beautiful species, very distinctive.

HYBRIDS OF CRYPTANTHUS

The *Cryptanthus* were of special interest to M. Jacob Makoy, of Liège, who obtained several hybrids:

- *C. × makoyanus* Makoy hort. A hybrid between *C. acaulis* and *bivittatus*, intermediate between the parents, leaves dark green, marked along their length with a double, pale green band.
- *C. × cochleatus* E. Morren. Obtained by pollenizing *C. acaulis* with *C. zonatus*, white beneath, reddish brown above, with transverse, scaly, gray bands.
- *C. × lubbersianus* and *C. regeli* hort.,¹⁰ both resulting from the crossing of *C. bivittatus* × *C. beuckeri*. The first recalls the seed-bearer, the second, the sire.

Finally, *C. × osyanus* hort. The product of *C. lacerdae* × *beuckeri*. It is like *C. beuckeri* except that its shape is a little smaller. Its leaves are petioled, the upper side of the leaf is colored white and rose, and marbled with green, the under side is covered with white scales. It is, in my opinion, the best hybrid of *Cryptanthus*.

[To be continued]

NOTES:

1. Except as noted, names and authors have been changed to agree with the Smith & Downs monograph; previous names are shown in parentheses.
2. Now *Ananas comosus* var. *comosus*, see Smith & Downs, pt. 3, *Flora Neotropica*, no. 14:2061-2063.
3. These varieties are not mentioned in Smith & Downs although they note on p. 2064: "The latest detailed listing by Maxwell O. Johnson (1935) gives some 135 varieties."
4. Although M. Dutrie attributes *B. leopoldi* to E. Morren in this instance, Smith & Downs (p. 2007) list as a synonym *B. leopoldi* (Vershaefelt Hortus ex Lemaire) Linden ex Houlet.
5. Bellair, Georges Adolphe; Saint-Léger, L. Les plantes de serre; description, culture, emploi des espèces ornementales. . . . Paris: [s.n.]; 1900.
6. [Author's note]: "More than 20 hybrids have been created at the Jardin Botanique de Liège. The varieties *Chevalieri*, *Gravisiana*, and *Prof. Monoyer* are particularly beautiful."
7. Smith & Downs (p. 2034): *B. 'Fantasia'* Foster, Bromel. Soc. Bull. 7:42. 1957=*pyramidalis* × *chlorosticta* (*saundersii*) and *B. × giraudeana* Kramer & Wittmack, Gartenflora 36: 330. 1887=*pyramidalis* × *chlorosticta* (*saundersii*).
8. Smith & Downs, (p. 1593): "Possibly not distinct from *C. acaulis* (Lindley) Beer."
9. Not listed in Smith & Downs.
10. The latter not listed in Smith & Downs.



Mulford Foster's 1948 Flight Around South America

Racine Foster

Photographs by Mulford B. Foster

It had been two years since we collected in Colombia in 1946. Mulford was studying bromeliads ever more closely; he was almost hypnotized with the thought that the largest bromeliad, *Puya raimondii*, was growing in the Alto Plano of Bolivia and he hadn't been there. He had to see it! Of course, along the way there were a few other bromeliad pilgrimages to make, such as checking *Bromelia* species in Surinam, or seeing if the four acres of *Dyckia fosteriana* further south had been ravaged. It was to be a hop, skip, and jump tour around South America. Our responsibilities in Orlando were so overwhelming that one of us had to stay home!

So, on September 28, 1948, he was off on an air trip around South America stopping only a few days at certain locations. This short trip lasted three months!

Our collecting experiences together in Mexico, Cuba, Brazil, and Colombia before this 1948 flight had been rough, hard slugging with intense work on dried specimens, continual care of live plants, combined with cleaning palm seeds as well as making identifiable sketches of the plants in flower. We didn't have any time for relaxation, all we could manage was a scant few hours of sleep, generally in less than comfortable circumstances. As to the pleasures on these trips, they were whatever visual stimuli we could catch on the run and the nostalgic reminiscences we could contemplate in repose at home. There were no night clubs, no embassy parties, no moonlight cruises, no luxury dinner parties. For us all was work for the bromeliads!

When I review the endless work we did on those trips, I experience again the support we gave each other. Neither of us could have accomplished the same amount of work alone. I said it then, I say it now. But I have to change my tune somewhat! This hectic 1948 trip was an exception. Mulford, alone, produced an amazing amount of botanical evidence in the traditional way. Since his evenings and rest periods were devoted to writing notes, letters, and descriptions of the collected specimens as well as drying and pressing plants, he had little time to spend on drawings. This omission was unfortunate considering that during our earlier trip to Brazil he made a hundred drawings.

Puerto Rico

From Day One in Puerto Rico, where he stopped for four days, September 28 through 31, Mulford reflected a frenzy of collecting and started the pattern of the activities of the trip: 1) flower pollen for Dr. G. Erdtman in Sweden at the World Palynology Center, 2) bromeliad specimens for Dr. Lyman B. Smith at the

Smithsonian Institution, 3) fern spores for Mrs. Carrell of Jacksonville, Florida, and 4) philodendron cuttings for horticultural friends. In fact, one of his major reasons for stopping in Puerto Rico was to investigate the extent of the self-heading philodendron industry which resulted from his discovery of how to pollinate philodendrons. Until then it had been an unknown process in local horticultural circles.

Mulford's collection numbers started with #2368 in Puerto Rico in the Caribbean Rain Forest on the mountain El Yunque. His quickly written notes on the bromeliad *Guzmania berteroniana* will acquaint the neophyte with what needs to be written on each collected plant to give the specimen recognizable identification:

Province: Carolina; Puerto Rico; Caribe Rain Forest; elevation 2,500 ft. 9/30/48. Epiphytic on trees; *Leaves*: light green, glabrous, strap-shaped, 18 in. long. *Inflorescence*: 16 in. long; spike loose, globular; *Bracts* inflated, orange-pink; *Flowers*: orange-yellow, thick, succulent; *Sepals*: white with orange-yellow tips; *Petals*: connate; *Filaments* glued to petal, not fused, free at top and bottom.

This kind of botanical detail required not only keen observation but much patience and time in writing it down.

Surinam

October 2, 3, and 4, 1948 found Mulford in Paramaribo, then Dutch Guiana, now Surinam, a very different experience from other South American countries.

Paramaribo, the number one city, is the port and capital. The meaning of its name is analyzed as: Para=water, mari=small, bo=place around. It is located

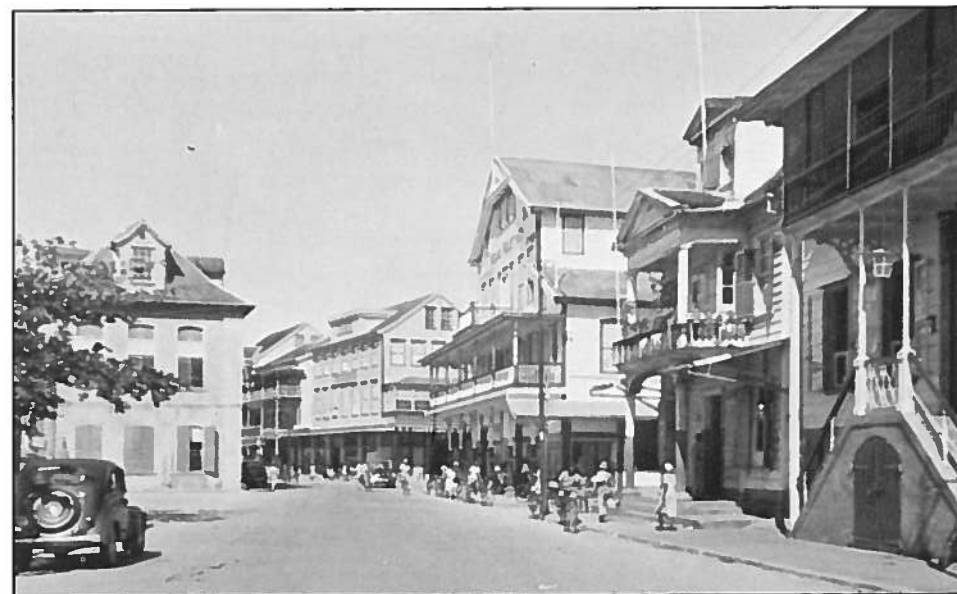


Fig. 5. Paramaribo, Surinam, 1948

slightly above sea level, just north of the equator. The Bush Negro and Arawak Indians predominate although, of course, there are many citizens whose Dutch or English ancestry is evident.

To quote from Mulford's letter written while waiting for a late plane: "This is a poor, primitive country. Every race on earth is represented here except Eskimos, I think. There are very, very few all-white people and the mixture is beyond deduction although the true East Indian, Japanese, Chinese, Javanese, and Bush Negroes can easily be sorted out. I see no drunkenness. Everybody works hard and almost everybody has a bicycle, thousands of them on all the streets all the time. Couples side by side in the evening—they don't do much walking. The Dutch influence is also very evident in the architecture."

One problem for a plant lover who stops for only a short visit in a country such as Surinam is the lure of the land beyond. The range of mountains toward the west invited exploration; there must be a lot of new bromeliads out there! A Dutch expedition had recently started on a big interior trip which would take three months by river.

The most Mulford could manage was a short excursion to an Arawak Indian village which, as the photo shows, was very primitive, out of another age, yet within a short distance of modern conveniences in the city. Unfortunately, the jeep got stuck in mud while trying to cross a vast, treeless, swampy savanna. In a land where time stands still, the three hours it took for men to get the jeep out was just another event of the day, but for Mulford it was three hot hours of frustration.

However, in spite of the short, three-day collecting time, Mulford had a feeling that it was a successful effort. This feeling was confirmed when Dr. Lyman



Fig. 6. Arawak Village, Surinam

Fig. 7.
Unexpected delays
while collecting in
Surinam.



Smith concluded much later that Mulford had found three new bromeliad species: *Bromelia alta*, *B. fosteriana*, and *Aechmea lateralis*, all described by Dr. Smith.

Bromelia alta, a heavily spined terrestrial with leaves up to twelve feet long is one of the largest members of the genus.

Aechmea lateralis, a seven-foot tall bromeliad called "sinsin" by the Arawak Indians, has a curiously shaped inflorescence as shown in figure 8 (on next page). It is lateral at the base and it emerges under the leaves from the caudex in all directions. That is why Mulford thought he had discovered *Disteganthus basilateralis* or possibly a new genus.

From his letter: "I have one big surprise for you and especially for Lyman. Undoubtedly, I have found *Disteganthus*! This is a great thrill! I do not have flowers, but I do have fruit and photos. I found it not far from Mr. van Leesten's home out on the pineapple plantation. Incidentally, the fruit tastes like a pineapple. I say it is *Disteganthus*, but I do not know exactly how the leaves compare to the one shown in the drawing by Mez. It is not far from the genus *Bromelia*; the leaves are almost a match. The fruits are on leafless stems, shooting out from the base under the leaves. We will have plenty of seeds; I hunted for over an hour before I finally found one in fruit. The inflorescence near the ground is almost completely covered up with leaves and sticks; it is not easy to see them unless you are really looking for them." It was not until Dr. Smith identified the plant as *A. lateralis* in 1954 that the confusion was cleared.

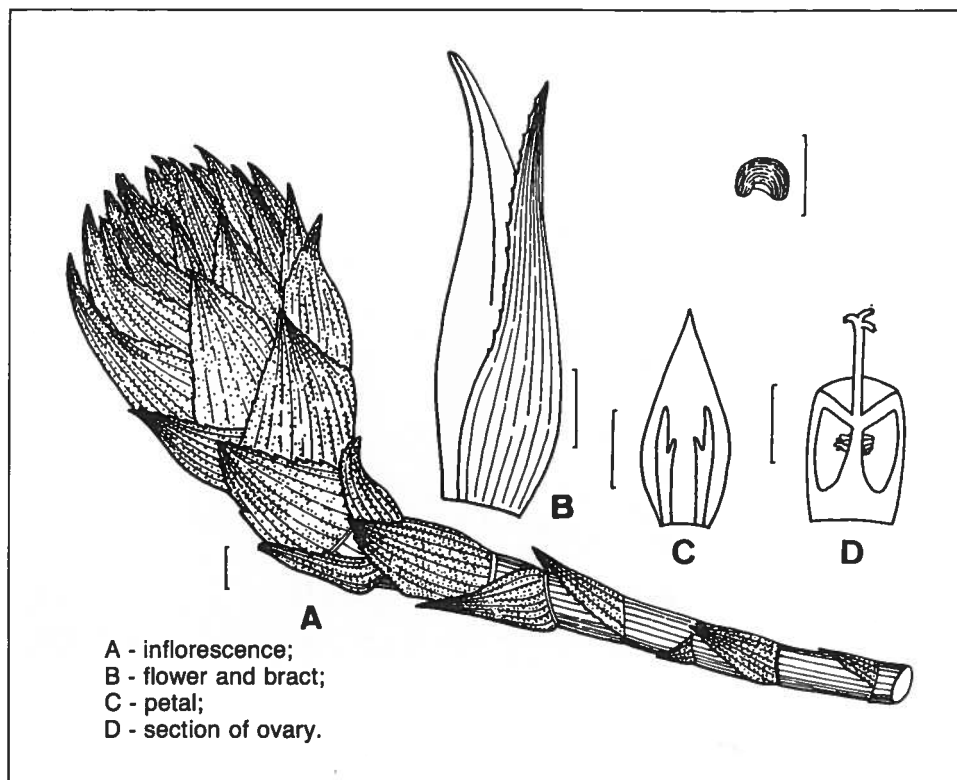


Fig. 8

Aechmea lateralis L.B. Smith a new species from Surinam.¹

Bromelia fosteriana also departs from family characteristics. It is not stoloniferous. New shoots arise all around the base of the old plant after it has bloomed. Mulford found deep down in the axis of the plant many small seedlings which had sprouted in the debris of the old flower head.

Of course, he found a number of familiar bromeliads such as *Aechmea mulfordii* (formerly *Gravisia aquilega*), *Tillandsia bulbosa*, *T. flexuosa*, *T. tenuifolia* var. *surinamensis*, and various unknown tillandsias, plus *Aechmea bromeliifolia*, *A. mertensii*, and unfamiliar guzmanias.

Also in Surinam, seeds for Fairchild Gardens were collected from the palms *Maurita flexuosa*, and *Astrocaryum paramatta*, and from several interesting philodendrons.

Collection #2391 proved to be a very interesting, small, wild pineapple which grew in the shade of the jungle surrounding the Matha savanna. Dr. Stahel, the local botanist, said that it is very common all around the islands in the rivers and throughout Surinam in moist, shady forests, the opposite kinds of conditions in which other pineapples grow. The Indians do not plant it. They have a larger

cultivated form which they plant in the sun in dryer areas. The Arawak name for it is "anareci."

An interesting nonbromeliaceous collection was a new species of *Amaryllis*, *A. vanleesteenii* (named by H.P. Traub), which was found living in solid shell mounds. It had three different phases: one red, one pink, and one pure white. It was named for the gentleman who gave much major assistance to Mulford.

Brazil

A card from Belém, Pará, in northern Brazil, dated October 7/48 and collecting notes dated October 8 affirmed that Mulford stopped for one day at the famous city, Belém (Bethlehem), on a tributary of the Amazon where he found three philodendrons of interest plus two bromeliads. One, *Streptocalyx poeppigii* was very similar to one we collected at Pepine, Putumayo in southern Colombia. Amazing that across the years and the span of the continent he would remember a certain bromeliad in a certain place from our trip in 1946!

The other bromeliad was *Ananas lucidus* (formerly *Ananas erectifolius*). The natives name it "curuá." The leaves of this small pineapple produce one of the best fibers in the Amazon valley.

At this stop, it was a pleasant surprise to meet another American, and even more of a surprise that it was another Foster (Adrian) who was there on a Guggenheim grant from his teaching at the University of California, Berkeley, working at the pineapple institute under Dr. Felisberto C. Camargo from the Instituto Agronomica, Campinas, São Paulo.

From Belém, it was a reluctant flight over the states of Ceará and Rio Grande do Norte. Reluctant because there must be a lot of bromeliads on those rocks below and he wasn't doing anything about them.

October 9, 10, and 11 was a stop at Campina Grande in Paraíba, sixty miles inland from the port city of João Pessoa, at about 1750 ft., an altitude that bromeliads like. It gives them a little coolness at night to compensate for the heat of the tropical day.

Twenty specimens, from #2407 through #2426, were collected. Nineteen bromeliads and one begonia were sent to me with detailed botanical descriptions. (I marvel that he could produce so much of this kind of work after arduous collecting). Of course, I sent all the material on to Lyman Smith for naming.

Another three-day stop (October 12, 13, 14) at Recife, Pernambuco, found Mulford collecting enthusiastically in a deep woods near the botanical garden. He was also on the littoral where *Aechmea muricata* L.B. Smith grew in large clusters in low, salty land where the tide often wets the sand. The natives call it "abacaxi da Praia," or pineapple of the seaside. It was uncanny that a very short

excursion into the country brought him to the Serra Negra area near the state of Paraíba which he had just left the day before, but then he had been on the other side of this same range of mountains.

Again and again in letters he repeated the thought, "together we must come back to this part of Brazil. Everything is different from the state of Bahia."

In *The Bromeliad Society Bulletin* of November-December 1952,² Mulford introduced a new description of cryptanthus, "Earth Stars." Quoting from that article somewhat describes what happened next in Brazil when he found *Cryptanthus fosterianus* in the Serra Negra mountains north of the city on October 12, 1948.

"To suddenly come upon a carpet of leaf-mulch studded with quaint, star-like plants, i.e. a colony of *Cryptanthus* species, is to feel the thrill of viewing a galaxy of stars, earth stars this time instead of celestial ones."

That's the way it was in seeing for the first time the stunning *Cryptanthus fosterianus*, a new species.

South from Pernambuco he landed in the state of Bahia where other interesting botanical treasures resulted from an excursion on October 19 in the Monte de Burro range at 3,500 ft. in the Serra Sincora in Maracás.

Growing in full sun, on sloping bare rocks, the roots in crevices, making compact masses was *Dyckia maracasensis* Ule. The lateral inflorescence, three feet high, displayed dark orange flowers curved upward from the scape, a very different characteristic.

Near this dyckia were large bulbs growing in rich, black loam, also in the rock crevices. They were not in bloom at the time of collection but did produce a red flower a few months later at home. Bulbs and specimens were sent to Dr. H. Traub who found them to be a new species, *Amaryllis maracasa*.

Another bromeliad was found next, *Hohenbergia utriculata* Ule, a very colorful plant with leaves almost red in the sun. The inflorescence thrusts up six feet and is branched; the scape is rose red; the flowers are lepidote with scurfy pink sepals and blue petals. What a sight!

In these same rocky crevices was *Begonia vitifolia* var. *bahiensis* Arruda da Camera which grows six to eight feet high. The leaves are heavily veined, a begonia to rave about! Not far away was *Begonia greisa* A.d C., both seemingly out of place. Nearby in a cluster of scrub trees was growing our ubiquitous friend, *Aechmea bromeliifolia* (Rudge) Baker. It is found all over the coastal states of Brazil.

Just two days in Bahia had far-reaching effects in bromeliad horticulture. It was on October 19 in the Municipio of Maracás at 3,500 ft. on the Monte de

Burro range that Mulford picked up a cryptanthus which became famous in the plant world, collection #2466. The medium green leaves when turned over showed silver-gray-brown underside, but this did not make the plant conspicuous. It was the stiff, crinkled, wavy edges of the leaves that caught his eye (Fig. 9); this pie-crust effect, more dominant, more rigid than other cryptanthus intrigued him. He credited these characteristics to the harsh, wind-swept mountain conditions surrounding the small, sheltered thicket which was its habitat. When transported to other conditions, it proved to be a good trouper in the process of adaptation.

This curious cryptanthus grew very well in its new home in Orlando. So, by the time Bob Wilson (then of Fantastic Gardens in Miami) saw it, Mulford could spare a few plants.

Bob was a careful grower who fed plants on a regular basis. Was it different nourishment, different light, different water, or just the built-in cell alteration that caused a change? For whatever reason, a variegated sport, a mutation, appeared on one of those green, pie-crust cryptanthus. It was a sensation! The soft green and white leaves, flushed with pink did not resemble the stiff, crinkled, plain green leaves of the mother plant at all. Bob Wilson, in a joyous moment, named the sport 'It' (photo on back cover). Continuous removal of the side shoots did not deplete its energy, rather only encouraged its growth. It had a meteoric popularity. Many growers filled their greenhouses with this stunning, fast-growing cryptanthus.

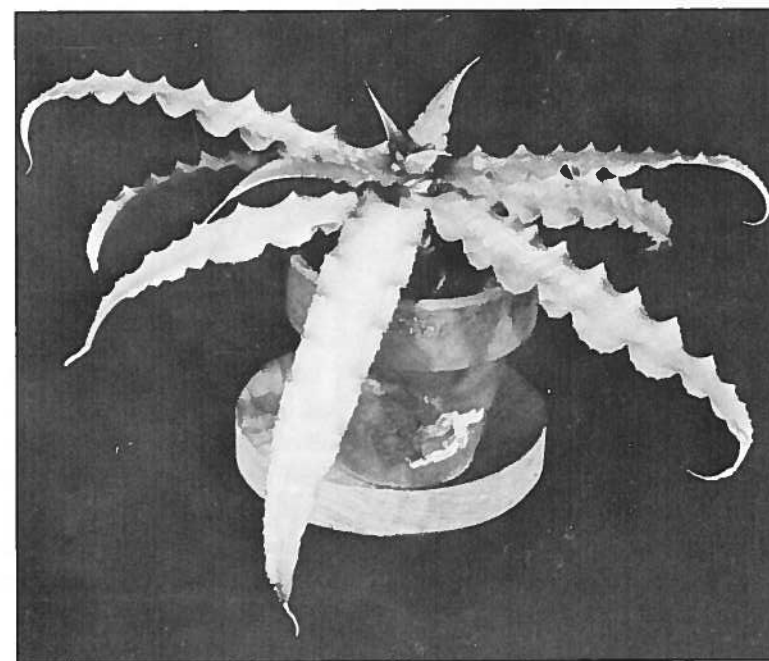


Fig. 9

The collected *Cryptanthus* #2466 found in Maracás, Brazil. Bob Wilson named the variegated offshoot *Cryptanthus* 'It'.

Collecting bromeliads in the wild can be a rewarding experience, not always on the spot, but when the surprises that issue later make bromeliad history. Such was the experience of *Cryptanthus* #2466.

What is #2466? So far as I know, that collected cryptanthus has never been botanically described because the plant was not in flower at the time of Mulford's collection and may not have bloomed thereafter. This sport, 'It', is *not* a hybrid. I must emphasize this point. No insect or human hand with paint brush had anything to do with putting pollen from the male flowers onto the stigma or female parts of #2466. The handsomely variegated pup was, originally, a mere chance offshoot.

Bob Wilson described³ 'It' as a "mutation nova" which is exactly the perfect description for this most unusual cryptanthus. Eloise Beach later suggested⁴ a very unusual use for this cryptanthus: 'It' can be used as a light meter! The location that produces the most pink flush in *Cryptanthus* 'It' leaves is an excellent place for growing most other bromeliads. From bromeliads we have much to learn!⁵

[To be continued]

NOTES:

1. Smith & Downs. Bromelioideae, fig. 665 (in part), p. 1939.
2. *Bulletin* 2:63, 65, 67; 1952, reprinted (in part) in *J. Brom. Soc.* 34:56-58; 1984.
3. Robert Gardner Wilson and Catherine Wilson. *Bromeliads in Cultivation*. (Coconut Grove, FL: Hurricane House, c1964), p. 85.
4. *J. Brom. Soc.* 29:102; 1979.
5. Photographs of 'It' and notes appear also in *J. Brom. Soc.* 22:27; 1972 and 27:216; 1977.

RESEARCH GRANT AVAILABILITY

The Bromeliad Society wishes to announce the availability of modest research grants. Awards will range normally between \$100 and \$500. Projects may be oriented toward any aspect of bromeliad biology. Applied or basic problems may be addressed. Judgments will be based on the intrinsic merit of the written proposal, specifically its probability of yielding important new knowledge about the Bromeliaceae. Proposal reviews will be conducted by a panel of expert growers and botanists. Applications will be reviewed three times each year. The deadlines will be the first of January, May, and September. Reviewer comments will be provided to all applicants.

Anyone interested should contact the chairman of the Research Grant Committee, David H. Benzing, Department of Biology, Oberlin College, Oberlin, Ohio 44074, for additional details including a copy of the grant request guidelines.

A New Species from Central Peru Werner Rauh

Tillandsia bagua-grandensis Rauh spec. nov.

Planta caulescens a basi rosulae ramosissima, valde caespitosa. Planta solitaria erecta florens usque ad 12 cm alta. *Folia rosulae* numerosa, rosulam erectam usque ad 8 cm altam, 8 cm diametientem formantia. *Vaginae* distinctae usque ad 1 cm longae, 0.8 cm latae albo-lepidotae. *Laminae* anguste triangulae, attenuatae usque ad 6 cm longae supra vaginam 4 mm latae erectae vel divergentes, valde involutae dense appresso-cano-lepidotae. *Scapus* usque ad 4 cm longus, tenuis, viridis, erectus. *Bracteeae scapi* imbricatae, basales tantum lamina brevi et vagina longa scapum amplexentem, rufescenti-badiae, dense lepidotae, paulatim in bracteas florales transientes. *Spica* simplex, laxissime disticha 5-6 flora. Rhachis visibilis paulum flexuosa, glabra, viridis angulato-complanata; internodia 0.8 cm longa. *Bracteeae florales* erectae, lanceolato-acuminatae, 1.5 cm longae, 0.5 cm latae rufescenti-badiae, glabrae, interdum



Fig. 10
This new species from central Peru, *Tillandsia bagua-grandensis*, forms dense mats with its rosettes 8 cm high and about 8 cm wide (roughly 3" x 3") and inflorescence up to 12 cm (nearly 7").

Photo by author

tantum apice disperse lepidotae, ecarinatae, tam longae quam sepala, in vivo laeves. *Sepala* alba, posteriora indistincte carinata, usque ad basim libera, 1.5 cm longa, 5 mm lata, tenuia, membranacea, glabra. *Petala* ligulata, alba, 2.5 cm longa, 5 mm lata lobis recurvatis. *Stamina stylusque* inclusa. Stylus albus filamenta alba transverse plicata superans.

Holotypus: B.G.H. 54 227, leg. *Ursula Perino* (juli 1982), in herb. inst. bot. system. univ. heidelb. (HEID).

Patria et distributio: Peruvia meridionalis, Dptm. Apurimac, in parietibus rupium apud Bagua Grande (Marañon), 800 m.s.m.

Plant with short stems, richly branched at the base of the rosettes and forming dense mats. Single plant erect, flowering up to 12 cm high. *Leaves* erect, numerous, forming a dense rosette, 8 cm high and \pm 8 cm wide. Sheaths conspicuous, 1 cm long, 0.8 cm wide, white lepidote. *Blades* narrow-triangular, attenuate, up to 6 cm long, above the sheath 4 mm wide, erect to divergent, involute, densely adpressed gray-lepidote. *Scape* erect, up to 4 cm long, thin, green, shorter than the leaves. *Scape bracts* imbricate, the basal ones with a short blade and a long, reddish brown, lepidote sheath, transforming gradually into the floral bracts. *Spikes* simple, laxly distichous, with 5–6 erect flowers, 6 cm long. *Rachis* visible, slightly flexuous, glabrous, green, applanate. *Floral bracts* erect, lanceolate, acute, 1.5 cm long, 0.5 cm wide, glabrous, reddish brown, sometimes laxly lepidote at the tips, ecarinate, as long as the *sepals*; these free up to the base, the posterior inconspicuous carinate, 1.5 cm long, 5 mm wide, thin, glabrous. *Petals* ligulate, 2.5 cm long, 5 mm wide, with recurved blades, white. *Stamens* and *style* included, white filaments transversal-plicate. Style exceeding the stamens.

Holotype: B.G.H. 54 227, leg. *Ursula Perino* (Juli 1982), im Herb. Inst. System. Bot. Univ. Heidelberg (HEID).

Distribution and locality: Southern Peru, Dptm. Apurimac, on steep rock cliffs near Bagua Grande (Valley of the Rio Marañon), 800 m.

T. bagua-grandensis is a nice, small *Tillandsia*, easy to cultivate, related to *T. caulescens*, distributed also in southern Peru (Río Apurimac valley). It differs from *T. caulescens* by the short stems, the short rosette, the densely lepidote leaves, the lax inflorescence, and the floral bracts which are as long as the sepals.

*Institute for Systematic Botany and Botanical Garden
of the University of Heidelberg, West Germany*

MRS. RACINE FOSTER of Orlando, FL, and **MR. NATHANIEL E. HESS** of Sands Point, Long Island, NY have recently contributed most generously to the *Journal* color fund. We appreciate their awareness of the continuing need for this support and thank them for their gifts. — Ed.

Paradise Revisited; A San Diegan Volunteer in Costa Rica

Jack E. Percival, Jr.

In your lifetime, have you dwelt on the fantasy of wandering through a lush tropical rainforest with plenty of time to do it? Since viewing my first Tarzan movie as a teenager, I have harbored that tantalizing fantasy—each year with increasing intensity.

Botanist friends returning from Costa Rica's most famous tropical garden, Las Cruces Tropical Botanical Garden, recently reported the alarming news that the garden had fallen into disrepair and was in critical need of immediate help. Finding this information most discomforting, I reflected that nine years ago I had been spellbound upon seeing those magnificent bromeliad plantings and landscaping. Especially remarkable were acres of massive neoregelias used as ground cover, thousands of tillandsias, nidulariums, and aechmeas covering tree limbs, stumps, and rocks.

I had vowed to return to all this and decided now that the time had come when my fantasy, my dream would be realized: I would volunteer to travel to Costa Rica and help renovate what was once a true paradise. And, with plenty of time during this trip to wander.

I contacted friends in the capital, San José, who forwarded my offer to the director of the garden. My offer was accepted and I took off from San Diego with three pairs of gloves, trimming shears, two trowels, and my autographed copy of Victoria Padilla's *Bromeliads*.

Las Cruces is nestled in the mountains at an elevation of about 3,500 feet in the southeast corner of the country. It is 10–15 miles from the Pan-American Highway just before it enters Panama. Here it is perennial springtime with delightful day temperatures in the 70s and low 60s at night.

The garden specializes in collecting and displaying aroids, ferns, palms, gesneriads, bromeliads, orchids, heliconias, and gingers. All of these plants are placed among broadleaf evergreens, pines, and some magnificent tall oaks, many covered with moss and epiphytes.

After a tiring eight-hour bus ride from the airport in San José, I was warmly greeted by the newly appointed director, Luis Gomez. Since the bromeliad section covers vast expanses, it was necessary to survey the entire layout first. I soon discovered that the reports of degeneration were most accurate and that this once spectacular showplace, indeed, was in critical need of restoration. Plants were covered with layers of pine needles and dried leaves, some bromeliad clumps with



Jack Percival

Fig. 11

Before: During the author's 10-day working vacation at Las Cruces Tropical Botanical Garden he concentrated on large bromeliad beds badly in need of renovation.

multiple pups attached had grown to the size of a bathtub, others were buried beneath fallen tree limbs. Young pines and palms had invaded many areas and the original border groundcover grasses had spread throughout. Many mounted specimens had long since fallen to the ground.

Blame for this condition cannot be placed on any one person. Lack of funds and labor seem to be the unfortunate cause for the neglect. The present caretaking group, the Organization for Tropical Studies (OTS), assumed full control less than a year ago and, no doubt, is aware that the budget must be increased if the garden is to retain its original purpose and its reputation. Director Gomez has but five workers and finds it not only difficult to bring the garden back to its original beauty, but also to maintain it once the beauty has been restored.

I was happy to learn that the OTS was to place a permanent plaque in the garden honoring the first director, an honorary trustee of the Bromeliad Society, Inc., Robert G. Wilson and his late wife Catherine. The area where the plaque was to be placed became my priority and challenge.

I was assigned a capable, fulltime worker, Uriel. He and I trimmed, replanted, discarded, pruned, and depupped hundreds of bromeliads starting at 5:30 in the morning fog. The only experience I came to dread was the afternoon shower in cold spring water.



Jack Percival

Fig. 12

After: With the plants cleaned and pups removed, the area was ready to receive the plaque prepared by the Organization for Tropical Studies honoring Robert G. and Catherine Wilson, the Garden founders.

Finally, one week before the formal placing of the Wilson plaque, we completed the section in good order—with the hundreds of bromeliads showing in full color, ready to pay homage to these two great horticulturists.

Bob Wilson, now in his midseventies, has retired as director after some 26 years of building one of the world's most unusual tropical gardens. He lives on the grounds in his charming house on the hill, surrounded by his faithful dog, his vast library, his greenhouses, artifacts, and memories. The grave of his lifetime partner in bromeliads and marriage, Catherine, is in the garden among the plants she loved and cared for.

In Mr. Wilson's place now stands one of Costa Rica's finest and ablest botanists, Luis Diego Gomez. Formerly director of the National Museum of Costa Rica, Señor Gomez has, with little help, inaugurated a massive plan to renovate the entire garden and to replace the decaying greenhouses.

I bade farewell to Las Cruces with still another vow: I would return again, but, I hope, with a team of bromeliad enthusiasts to help renovate (and at the same time to wander, and with plenty of time to do it!).

San Diego, California

BOOK REVIEWS

Tillandsia, by Paul T. Isley III. Gardena, CA: Botanical Press, 1987. 256 p., illus. (many in color). \$50.00

There are many popular books about cacti, succulents, and orchids, but only a few about bromeliads, especially about tillandsias. The reasons may be that bromeliad collecting is relatively young and that there are few commercial sources of rare species.

Now, Paul T. Isley III, an owner of a big bromeliad nursery specializing in tillandsias, has written and published a tillandsia book of considerable size directed toward the amateur. The book is well bound and cased, the print and paper are of high quality, and there are many color photographs, some of them page size (28×22 cm—that is 11×8½ in.).

The first chapter contains general remarks about physical characteristics, blooms and reproduction, outdoor and indoor care, fertilization and water quality, pests, relationships with ants, and related matters. In chapter two, the main body of the book (120 pages), the author describes in detail 60 tillandsias and one gray vriesea, *Vriesea espinosae*. The text and photographs are excellent.

Chapter three consists of photographs, without text, of other tillandsias and species of other bromeliad genera. An unusual contribution appears in the next chapter: biographical sketches of many of the most notable botanists who have worked with tillandsias.

The remaining two chapters include a survey of botanical nomenclature and tillandsia taxonomy, a guide to the pronunciation of the Latin names, a detailed description of tillandsia evolution, morphology and physiology, blooms, and reproduction. In addition, there is a notable section on tillandsia trichomes with black and white SEM photographs of the upper and lower leaf surfaces of all 60 species described. A glossary, an index, and a color chart for determining the color of the flowers complete the book.

Mr. Isley's *Tillandsias* is the best work of its kind now available. It is disappointing that only 60 species of the nearly 500 of this big genus are described. We must, however, understand that the author's intention was to describe not only species but to introduce the reader to the morphology and physiology of this curious biological group of plants—the true "air plants."

This excellent book is recommended to all tillandsia amateurs and collectors. As might be expected in a work as complex as this, our review copy contained minor errors which the author could correct with an errata sheet. — Werner Rauh

[Please see advertisement on page 279.]

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Garden Plants of the Tropics (Venezuela), by Francisco Oliva-Esteva. Caracas, Venezuela: Ernesto Armitano. 2nd ed. (English), 1987, 430 pages, extensively illustrated in color, 27 × 24 cm. \$40.00. Available from Mrs. Jeffrey Andrews, 159A Grant St., Framingham, MA 01701.

Dr. Julian A. Steyermark, well known to *Journal* readers, explains in his introduction that the author, landscape architect Francisco Oliva-Esteva, has selected for this work more than 300 of the plants most commonly found in Caracas gardens. He expresses the hope that "this book may be used as a basis for those who have an enthusiasm and interest to search for ornamental plants to use for adorning their Caracas homes and gardens." That hope could very well include a great many more plant lovers because most of these plants grow also in the southern United States and in areas where similar climatic conditions prevail.

Each plant is identified by a common name, a Latin binomial, a synonym when applicable, and family name. There are relatively short descriptions, a bibliography, and an index of botanical names. The "Alphabetical Order of Families" includes the names of 23 bromeliads, with three more listed in a brief "Second part."

The large format and the many, excellent, full-, half-, and quarter-page color illustrations give the impression that this is in the nature of a coffee table book, but even a slight reading will persuade the page-turner that this is a work of reference value.

Plant fanciers regardless of habitat will find this book interesting and instructive, and photographers will find it admirable. Purchasers may consider the price somewhat high if they haven't recently experienced the shock of prices for paperbacks and hardbound fiction. This book is not an *Exotica*, but it is not intended to be.

Recommended for the botany or horticulture collections of public and academic libraries, for landscape architects, hobbyists, and bromeliad societies interested in developing their libraries. — T.U.L.

ANNIVERSARIES

The BROMELIAD SOCIETY OF CENTRAL FLORIDA is celebrating its 15th anniversary this year. Seventy-five percent of its current members are also BSI members. Are there other affiliates with a higher percentage? Congratulations to BSCF and thanks again for your gift to the color fund.

The BROMELIAD SOCIETY OF AUSTRALIA, INC. will have its Silver Jubilee celebration on 1 April 1988. The Society has just been granted Incorporation status.

The neighboring BROMELIAD SOCIETY OF NEW ZEALAND will celebrate its 25th Jubilee with a two-day show at Eden Garden on 2-3 April 1988.

Congratulations to the officers and members of these societies.

B.L.B.E.R.J.R.

Don Beadle

Billbergias will inevitably seek out and occupy the darkest, dampest, and dreariest corners of your greenhouse. Once there, they will degenerate into large, dense masses of lanky, green, scale-infested foliage and will eat their tags. I do not expect you to take my word for this astonishing phenomenon. The proof lies in your own greenhouse. Notice the occupant of the lightest, brightest, and most desirable area. Does the genus on its tag begin with a "B"? I thought not. You are probably looking at the "N"-word, or the "T"-, or "V"-words, but surely not a "B." Maybe even the "C"-word, but never a "B"-word. You will find most of your "B" tags, if indeed you find tags, in the dank, dark, dismal locations.

Billbergias behave this way because they are troubled by feelings of inferiority engendered and constantly reinforced by the callous and insensitive grower. A study of the psychological profiles of certain billbergias has revealed one problem to be a deep-seated envy of the longer blooming period of their more colorful cousins. The billbergia compensates for this shortcoming by prominently displaying its reproductive apparatus and thereby encouraging the promiscuous and indiscriminate creation of hordes of illegitimate offspring. The consequence of this behavior in the bromeliad world is much the same as for other life forms. The billbergia suffers a loss of self-respect, declines in social status to the lowest level, experiences growing discontent, and finally resorts to revolution.

Although hardly fashionable in this day and age, I confess to having barely repressed feelings of sympathy and empathy for the cause of the beleaguered billbergia. I know others of similar sensitivity must feel the same. In fact, I have recently observed a small but growing grassroots movement among the more radical billbergia sympathizers. Resentment has been skyrocketing since the recent plunge of the billbergia spot market coupled with the poor outlook in billbergia futures. Imports are off dramatically as is domestic production. A billbergloomly outlook, at best!

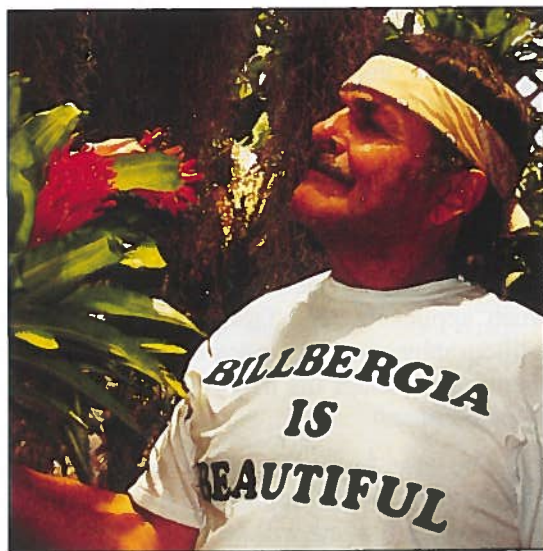


Photo by Author

Fig. 13. The author

It was inevitable that an increasingly militant group of radical billbergia growers would tire of waiting for the government to do something about the billbergia crisis. It appears that, finally, relief is at hand. Last week I attended a clandestine meeting of radical fringe billbergia activists at a secret location. In attendance was the cream of internationally noted billbergia growers, hybridizers, and their ever-present groupies. Feelings ran high. As emotions flamed I became afire with billfever and willingly accepted the mandate thrust upon my shoulders to carry the message to the world that the day of justice and equality for the billbergia is finally at hand.

As chairman of the Action Committee for the newly organized BILLBERGIA LOVERS BROTHERHOOD FOR EQUAL RIGHTS AND JUSTICE RIGHT-NOW (BLBERJR) I have, accordingly, prepared a preliminary list of demands to be presented to an emergency meeting of the BSI Board. A synopsis of this list is as follows:

1. *Equal Opportunity Housing.* Effective immediately, billbergias shall be fully integrated into the "Country Club" areas of the greenhouse. No more tenement and barrio living under the benches and behind the trash cans. No more overcrowding, high carbohydrate diets, and scale bugs. Billbergias are naturally friendly and gregarious and prefer to live in neat, single-family dwellings in a nice neighborhood.

2. *Equal Health and Sanitation Services.* Billbergias are by nature a clean and tidy group, but require assistance to stay varmint-free and well groomed. Billbergias shall, therefore, be examined at least once a week for various varmints and groomed until they say "Quit." Further, billbergias should not have to occupy the same pot with their long-dead ancestors. Periodic removal and prompt disposal of billcorpses will begin immediately.

3. *The Environment.* Billbergias like clean water and fresh air just as well as the next bromeliad. They are primarily nonsmokers, preferring fully functional trichomes. Billbergias shall, therefore, be provided at all times with climatic conditions equivalent to those on any hilltop in Vista, California, or a reasonable facsimile thereof. Further, the watering of the billbergias shall be on a plant-by-plant basis and must be performed in accordance with minimum standards as established by the Brother Beadle Watering and Meditation Institute of Corpus Christi, Texas.

4. *Birth Control.* The immediate imposition of stringent birth control procedures is imperative. Recently, the media disclosed the details of a sordid and shameful incident where pollination was attempted for no other reason than that the two parties were in bloom at the same time. Really! This has got to stop before all billbergias look as much alike as do neoregelias.

[Continued on page 271]

Regional Reflections

IMMOKALEE PINEAPPLE HARVEST IS FRUITFUL FIRST

For the first time in about 60 years consumers can enjoy Florida pineapples. Libby Fresh Fruit Company of Immokalee had its first commercial harvest this spring and fruit first reached local stores in April.

Spokeswoman Vivian Manuel said these pineapples are only for the fresh market and not for the canning industry. The pineapples, grown on a 200-acre plantation 13 miles south of Immokalee (Collier County), are being sold mostly in Florida stores, but also are available through the Southeast. There is a limited supply of the fruit, so it won't be sold during January, February, and September.

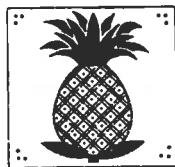
These are premium quality fruits. They are allowed to mature on the plant. Since the pineapples reach full growth before harvesting, they look different from those imported from Central America, which have to be harvested early because of the long shipping distances. This pineapple is gold in color and the crown is lush.

Collier County's agriculture-extension agent, Reggie Brown, said he thinks Libby will be successful in the sale of Immokalee pineapples. Demand is exceeding supply. Mr. Brown says that Libby has the technical knowledge to make their project successful. It is a technology-driven business. There is a lot of proprietary information that Libby has that the average producer lacks.

The extension director of neighboring Martin County, Bo Whitty, said that if Libby's venture succeeds, it will be the first time since the 1920s that commercial pineapples have been grown in Florida. He said that in the past pineapples grown around Stuart, in Martin County, were sold as far north as New York and Boston. When a railroad running through Florida was extended to Key West, the Cuban pineapple industry killed the Florida business. After that, Dole moved to Hawaii years ago and took over the marketplace.

[Reprinted from the *Caloosahatchee Meristem*, editor: Gene McKenzie, and first published in the Fort Myers News-Press, June 2, 1987.]

[The extensive pineapple industry of Queensland is not being deliberately ignored in reprinting this regional report, we just have not heard recently about that product. Any volunteers? — Ed.]



CATOPSIS

Catopsis, to me, are fascinating plants though some folk cannot understand why. They are usually a light green and stay that way. However, it is the shape that makes them so interesting. Many are bottle shaped while others look rather like a vriesea at first glance. Some of them have leaves whose undersides are coated with white powder, so this adds interest. They grow in forests in the same conditions as tillandsias and vrieseas. Their flower stems are sometimes pendant or can be erect and some are branched. Dainty little flowers are white or yellow.



Catopsis nutans var. *nutans*¹

You feel, maybe, there is nothing about the above description to attract you? Well, growing them with your tillandsias they really look great. I have most of mine hanging in containers and grow them in fibre. They like a situation where they get a good light but not too much sun. At all times water must be kept in the centre—this is important. I have found they are not very generous with pups. Some seem to produce only one but I have had two on a couple—never more. They are not easy to get and I don't think there are many in this country.

There are 22 species and varieties. I have three so I have a long way to go before I get 22! Even if you can get only one it is worth having.

As there are so few catopsis and as they are so hard to get I am not giving any descriptions of the different plants. If you are lucky enough to have the opportunity to get one then grab it, and I am sure will enjoy its quite 'different' looks and how it contrasts with your tillandsias.

Bea Hanson

Reprinted from *Bromeliad Society of New Zealand Bulletin*
November 1986

1. From Smith & Downs Tillandsioideae, page. 1369.

Bromeliad Arrangement No. 18:
***Guzmania* Orangeade with**
Cryptanthus bromelioides
 May A. Moir



Richard Weisburd

Fig. 14
Guzmania Orangeade as the focal point of an arrangement with *Cryptanthus bromelioides* and bird's-nest fern (*Asplenium nidus*) leaves.

I was going away on a trip in May so I thought I ought to do another article before leaving. As I swept the courtyards, I kept looking for flowers and everything seemed just starting except for two stalks of bright orange-red spikes slightly over a foot long. I cut them anyway and took them on a tour of the garden and spotted some *Cryptanthus bromelioides* growing in full sun. These were pale yellow-green with center turning a slight red. I liked the combination so cut three heads. Next, I needed height and cut long leaves of bird's-nest fern of various sizes.

A friend had given me a bushy branch of a protea with yellow-green daisylike inflorescences. The tiny leaves and flowers of the protea made a good contrast with the large forms of the fern and cryptanthus. With this amount of material I needed a good size container and chose an old iron cooking pot, the type used in an open fireplace. Its black color balanced the weight of all the green plant material. I used a very large kenzan (needle holder) and pinned the tall fern leaves of a stalk of flowering banana.

I was asked what a person could use who did not have access to banana or heliconia. I remember that when living on the mainland I used a bunch of canna stalks tied together. Canna is common in lots of gardens. Florist pins go into the stalks easily, like banana.

Honolulu, Hawaii



B.L.B.E.R.J.R. [Continued from page 267]

5. Equal Opportunity Exhibition. A study group empowered to develop and implement a system for handicapping show plants of all genera other than billbergia must be formed now. This system should allow billbergias to win top awards at least 50 percent of the time until compensation is made for the prejudiced and discriminatory judging which has victimized the billbergia in the past.

Deliverance for the billbergia is at hand! Billbergia growers of the world, UNITE! Down with the nasty neo, the vile vriesea, and the deceitful dyckia!

Remember, we are watching you. Billbergia hot lines are now being organized. BLBERJR is now hiring out-of-work revenue agents to conduct covert spot checks of your greenhouses.

You have one month for voluntary compliance before we undertake drastic steps.

Corpus Christi, Texas

New Bromeliad Hybrids for 1986 and 1987

Brian E. Smith, Registrar

3035 Montego Place, Plano, TX 75023, U.S.A.

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Genus and Grege Names	Parentage	Registered By	Year
<i>Aechmea</i>			
Jeanne Eunice*	<i>A. blanchetiana</i> × <i>A. fulgens</i>	R. Foster	1987
Miriam*	<i>A. racinae</i> × <i>A. weilbachii</i>	R. Foster	1987
<i>Neophytum</i>			
George Anderson	<i>Neoregelia</i> Oeser's Chlorosticta × <i>Orthophytum navioides</i>	G.H. Anderson	1986
<i>Neoregelia</i>			
A Perfect Ten	<i>N. concentrica</i> × <i>N. Fairy Paint</i>	G.H. Anderson	1986
Ann Anderson	<i>N. Fairy Paint</i> × <i>N. Morris Henry Hobbs</i>	G.H. Anderson	1986
Knockout	<i>N. cruenta</i> "Rubra" × <i>N. Morris Henry Hobbs</i>	G.H. Anderson	1986
Lavender Lovely	<i>N. princeps</i> × <i>N. Dexter's Pride</i>	G.H. Anderson	1986
Oeser's Chlorosticta	Unknown	G.H. Anderson	1986
Top Spot	<i>N. cruenta</i> "Rubra" × <i>N. First Prize</i>	G.H. Anderson	1986
War Paint	<i>N. concentrica</i> × <i>N. Oeser's Chlorosticta</i>	G.H. Anderson	1986
<i>Tillandsia</i>			
Houston	<i>T. meridionalis</i> × <i>T. stricta</i>	M.A. Dimmitt	1987
Feather Duster	<i>T. gardneri</i> × <i>T. stricta</i>	M.A. Dimmitt	1987
White Star	<i>T. ixioides</i> × <i>T. meridionalis</i>	M.A. Dimmitt	1987

*Erroneously identified as cultivar in *J. Brom. Soc.* 37:104.

NEW BROMELIAD CULTIVARS

Genus and Cultivar Names	Source or Origin	Registered By	Year
<i>Neoregelia</i>			
'Black Magic'	<i>N. Oeser's Chlorosticta</i> etc.	G.H. Anderson	1986
'Brenda Starr'	selection of <i>N. A Perfect Ten</i>	G.H. Anderson	1986
'Bullseye'	<i>N. princeps</i> × complex undef.	G.H. Anderson	1986
'Cover Girl'	<i>N. Oeser's Chlorosticta</i> etc.	G.H. Anderson	1986
'Dark Horse'	<i>N. Dexter's Pride</i> × <i>N. Fairy Paint</i> etc.	G.H. Anderson	1986
'Fandango'	<i>N. princeps</i> × (<i>N. concentrica</i> × <i>N. Oeser's Chlorosticta</i> etc.)	G.H. Anderson	1986
'Groovy Ruby'	selection of <i>N. Lavender</i> Lovely	G.H. Anderson	1986
'Hanky Panky'	<i>N. Oeser's Chlorosticta</i> etc.	G.H. Anderson	1986
'Jim Dandy'	<i>N. Fairy Paint</i> × <i>N. concentrica</i> etc.)	G.H. Anderson	1986
'Kayo'	selection of <i>N. Knockout</i>	G.H. Anderson	1986
'Mandarin Orange'	<i>N. Oeser's Chlorosticta</i> etc.	G.H. Anderson	1986
'Moulin Rouge'	<i>N. Oeser's Chlorosticta</i> etc.	G.H. Anderson	1986
'My Valentine'	<i>N. princeps</i> × (<i>N. concentrica</i> etc.)	G.H. Anderson	1986
'Peter Pan'	Unknown	G.H. Anderson	1986
'Pink Puff'	<i>N. Fairy Paint</i> × (<i>N. concentrica</i> etc.)	G.H. Anderson	1986
'Purple Smurple'	<i>N. Dexter's Pride</i> × <i>N. Green Apple</i>	G.H. Anderson	1986
'Queen of Hearts'	<i>N. Fairy Paint</i> × (<i>N. princeps</i> × <i>N. concentrica</i> etc.)	G.H. Anderson	1986
'Ruby Red'	<i>N. Dexter's Pride</i> etc.	G.H. Anderson	1986
'Sensation'	Complex of forms	G.H. Anderson	1986
'Super Chief'	<i>N. concentrica</i> × <i>N. Dexter's Pride</i>	G.H. Anderson	1986
'Tangerine'	<i>N. Oeser's Chlorosticta</i> etc.	G.H. Anderson	1986
<i>Tillandsia</i>			
'Flaming Spire'	selection of <i>T. Houston</i>	M.A. Dimmitt	1987
'Pink Fountain'	Unknown	M.A. Dimmitt	1987

Seeds are for Everybody

Harvey C. Beltz, Seed Fund Chairman

I am the preacher of preserving bromeliad species. A recent Seed Fund list accompanies this sermon. Seeds are cheap. The preservation is priceless. Have you been reading in the *Journal* and in competing publications such as the *Smithsonian* about the rate of destruction of the rain forests of Central and South America? With the forests go the plant habitats. Then what? Would you like to borrow dried specimens from the nearest herbarium (please show your credentials) for your next show and tell? Will species disappear and never be described or brought into cultivation?

Friends, you have recently read Jimmy Antel's story about how he and Sandy grow hybrids and you can see how easy it is. You have read about Grace Goode and George Anderson and their hybrids and how they worked with the seeds. The May-June *Journal* told about Mulford Foster and his magic with seeds. Growing species is no more difficult.

Have you ever tried to grow these plants from seed? Do you know that you can improve your collection with choice plants from these seeds and at the same time experience the satisfaction of watching a seed grow into a beautiful, mature plant?

In 1986, I received seed orders from 86 people in 27 states and 11 countries including Tahiti, South Africa, and the Philippines. I have received seeds from more than 25 people. But these numbers are not significant in themselves. What counts is that of all the Bromeliad Society members we had something like 1.13636 percent contributing seeds and 3.9 percent ordering them. These contributors and the intrepid 86 get our special thanks. We should ask the Conservation Committee to design an award for them.

The cultural handbook published by the Society includes detailed instructions on seed culture and there have been many articles on the subject in the *Journal*. Many of you have seen Grace Goode's video on hybridizing and seed culture. Both the cultural handbook and the video are available from the Society Publications chairman (please see her ad on page 279).

Two of our members, John Reese and Kendl Lyons, both of Texas, grow most of their plants from seed. I wouldn't suggest that everybody copy them (not fair to the nurserymen), but they set an interesting example. I hope to hear from you soon. And just in case of questions, write to the editor or to me. Be glad to help and to further the cause.

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September-October 1987

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mulfordii
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pectinata
pubescens
recurvata (species)
recurvata v. *recurvata*
smithiorum
victoriana v. *discolor*

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seideliana
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NIDULARIUM

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flammea v. *flammea*
v. *floccosa*

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species no. 1
no. 2

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balbisiana
brachycaulos
caput-medusae
complanata
flabellata
fraseri
gardneri
guatemalensis
hamaleana
heterophylla
ionantha v. *ionantha*
v. "rubra"
makoyana
meridionalis
polita
stricta
tenuifolia v. *tenuifolia* =
T. pulchella v. *rosea*
tricholepis
usneoides
valenzuelana

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psittacina
v. *rubro-bracteata*
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splendens v. *formosa* =
v. *major*
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Foreign customers please use international money orders, available at banks and post offices. Please save seed for the seed fund. Instructions in Vol. XXVII, #6, Vol. XXVII, #3, and Vol. XXVIII, #5. I will accept your donation or will trade two of my packets for one large one of yours. Request a planting guide if interested. A long, stamped self-addressed envelope (#9 or #10 or approximately 22 cm) with your order will get you a free bonus packet. If you would like to receive the list regularly, send a supply of long stamped self-addressed envelopes. I will pay the postage on foreign orders.

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. I was told to give my neoregelias lots of light. When I put them out in the sun, many leaves bleached out with large areas that eventually turned brown. Others developed a pale yellow cast to most of the leaves. What should I do now?

A. Lots of light and full sun are two different things. Full noonday sun is a bit much for most neoregelias with some exceptions such as *N. cruenta*, *N. concentrica*, *N. olens* (and its variations). Even these plants need to acclimatize slowly to full sun over a period of weeks. Most neoregelias need some protection from midmorning 'til midafternoon. That is the reason for lath and shade houses. Those structures do not block out all sun, but only a portion according to their construction or the density of the shade cloth used.

Every plant has a light intensity characteristic, either sun-loving or shade-loving and everything in between. Each plant has a photosaturation point beyond which more light does not contribute to food production, but may enhance color formation as the plant attempts to produce pigment to reflect certain portions of the light spectrum.

Use morning and evening sun to help your plants adapt to high light situations.

Q. Does temperature affect the color of bromeliads?

A. In my opinion, definitely yes. In the Houston, Texas, area the months that have a sharp differential in day and night temperatures seem to enhance the color of most genera. When the temperature stops dropping below 70° F at night a noticeable reduction in brilliance can be observed. Of course, at this time, daytime temperatures reach the high 90s or exceed 100°. The first cool spell of autumn starts to revitalize the plants. For example, a *Neoregelia carolinae* (*meyendorffii* in hort.) bloomed in early spring with great beauty, faded during the summer and regained its color in autumn, lasting until almost the new year. This was the longest time I have ever known a plant to remain in good color and condition. To my eye, plants in this area are somewhat dull and even bleached, not from sun but from heat in midsummer. There are exceptions, especially among the neoregelias such as *cruenta*, *wilsoniana*, 696, and their hybrids.


Q. When I buy a plant in bloom, it is usually for the intense color. The offsets, however, frequently lack the brilliance of the original. How can this condition be corrected?

A. Several factors may be involved. First, a healthy plant will obviously produce a better bloom than one that is just surviving. Nutrition can be vitally important at this point. The building blocks of all plant nutrition, nitrogen, phosphorus, and potassium, must, of course, be available in the correct ratios. As a bromeliad matures it needs less nitrogen and more potassium and phosphorus. Although the role of trace elements is not fully understood, it has been demonstrated that the lack seriously affects the metabolism of the plant. Aside from nutrition, temperature and light are major factors. Not all plants respond alike to light. For a number of years my guzmanias and nidulariums suffered from over-bright conditions because I was not aware of that fact. Some very dark neoregelias and aechmeas are most handsome when grown in rather shady conditions. Although I find no major study relating to day/night ratios, it seems logical from studies of other plants that this might be a factor in the blooming of bromeliads.

A definite influence is the amount of light required for peak brilliance. More is not necessarily better, adequate light—yes; on the other hand, an excess can cause bleaching. *Tillandsia cyanea* in my greenhouse needs turning 180 degrees every few days while the inflorescence is developing, or one side becomes quite pale. Some neoregelias simply do not look their best unless grown in full sun, as part of their coloration is an attempt to protect themselves from excessive light. This same light treatment would cook and bleach most guzmanias and nidulariums.

Many plants have a preferred temperature, and excess on either side will affect the size and color of the inflorescence. Many of my aechmeas that bloom in late summer instead of early fall are much smaller and less colorful than their sister plants that bloom later. I have found no method of controlling this problem.

A final word regarding nutrition. When a plant starts into bloom there is nothing to be accomplished by rushing to fertilize it. The required nutrients for the bloom it is going to make are all stored in the tissues and additional absorption has ceased. Therefore, attention to the specific requirements of a specific plant are sometimes a necessity during the entire growth cycle. Commercial growers usually work with a relatively small number of species or hybrids, although they may grow these in great quantity. In order to get the quality necessary for commercial success, every known requirement of each particular clone is carefully considered.

Some plants do not seem to do well in certain areas. Perhaps your plants were shipped in from a different climate. Ask friends and local growers for advice. Growing a few plants well is more rewarding than struggling with a great variety that are only mediocre. This truism is being applied slowly to my own collection. 

Nominations Open for the 1988 Election of Directors

Clyde P. Jackson

Nominations are now being accepted for the election of directors of the Bromeliad Society, Inc. for the term 1989-1991. The Society is divided into 10 geographical regions and each region elects its own director(s). Ballots for this election will be mailed with the May-June issue of the *Journal*.

Nominations must be made in writing and be postmarked no later than 15 March 1988. Each nominee must be a member of the Bromeliad Society, Inc. Six nominations will be accepted for each position. The six earliest postmarks will determine the slate for each position. No director may serve more than two consecutive terms.

Regions having positions open in 1989:

Directors-at-large (any region)	2 positions
Australia	1 position
Florida	1 position
Outer	1 position
Texas	1 position

Who may nominate? Each affiliate president and each director may nominate one candidate for director for his or her region only and one candidate for director-at-large.

Procedure for nominating: 1. Obtain the consent of the nominee. 2. Report the name and address of the nominee to the Nominations Committee chairman with the name of the region to be represented. 3. Request that an acceptance form be sent to the nominee.

Responsibilities of the nominees: By completing, signing, and returning the acceptance form, the nominee agrees to run for the position indicated, to be an active BSI Board member, and to attend all annual Board meetings at his or her own expense (the attendance requirement does not apply to the Australia or Outer Region directors). Further, the nominees will send a brief biography to the chairman.

Mail nominations to: BSI Nominations Committee Chairman
3705 Shadycrest
Pearland, TX 77581

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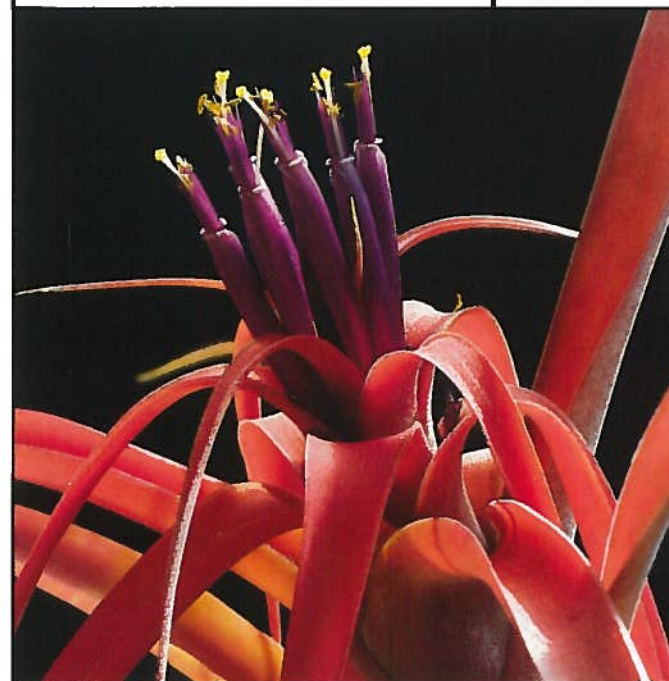


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Photo by M.B. Foster

Cryptanthus 'It', photographed by M.B. Foster in 1965. This sport of an unnamed species collected by Mr. Foster in Brazil in 1948 was first noticed by Bob Wilson and named by him. Mrs. Foster describes the event on pages 256-258 and emphasizes that the plant is not a hybrid.

Calendar of Shows

November 6-8 Florida Council of Bromeliad Societies State Show hosted by the Caloosahatchee Bromeliad Society. "A Harvest of Bromeliads." Lee Co. Garden & Activities Center, Cleveland Ave. in front of Lee Memorial Hospital, Fort Myers, FL. Saturday, 9:00 a.m. to 6:00 p.m.; Sunday, 10:00 a.m. to 4:00 p.m. Plant sales, art display and sales, rare plant auction. Eleanor Kinzie (813) 332-0210.

May 1988 World Bromeliad Conference, "Miami Magic." Host: The Bromeliad Society of South Florida.