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Cover photographs. Front: *Puya retrorsa* Gilmartin. In the background is the volcano Chimborazo reaching an altitude of 6,310 meters. Photograph by José Manzanares. Text begins on page 108. ***Back:*** *Pitcairnia dodsonii* H. Luther. Photograph by José Manzanares.

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Notes on Mesoamerican *Pitcairnia I*

Jason R. Grant[1]

In recent years, the genus *Pitcairnia* has revealed numerous novelties in remote regions of Panama and Costa Rica. Recent studies of my own in Panama have revealed new species, range extensions, and the rediscovery of rare species. Here, two new species are described, *Pitcairnia geotropa* J.R. Grant, sp. nov. and *P. rundelliana* J.R. Grant, sp. nov. Additional reports will soon follow.

***Pitcairnia geotropa* J.R. Grant, sp. nov.** (Figures 1-2).

Species haec ab *Pitcairnia elongata* L.B. Smith differt inflorescentibus confertis, sine bracteis florigeris, et sepalis et antheris brevioribus.

Type. Panama. Chiriqui: Reserva Forestal Fortuna, roadside forest 60 km north of Chiriqui, 26 December 1996, 8/ 45′ 763″ N, 82/ 12′ 525″ W, -1175 m, *Grant 96-02645 & Rundell* (holotype US). Paratype: Panama. Chiriqui: Reserva Forestal Fortuna, roadside forest 58 km north of Chiriqui, 10 August 1997, 8° 40′ 775″ N, 82° 13′ 447″ W, -1158 m, *Grant 97-02816 & Rundell* (US).

Plants terrestrial, scandent, long-caulescent, flowering plants scandent to 0.5–1 m long on the ground before arching upward to 1.5–2.0 m tall (for a total length of 2–3 m long). **Stem** 2.5–3.5 cm in diameter, producing lateral roots up to 1 m long giving the plants balance as they grow on steep slopes; the stem branching into 8–10 separate shoots, each producing 3–6 leaves and capable of an inflorescence. **Leaves** dark green at maturity, monomorphic, persistent, long-petiolate, 114–170 cm long, inconspicuously lepidote, -50–60 per plant. **Sheaths** small and rather inconspicuous, tightly clasping the stem, ovate, 4–6 cm wide at base, 2–4 cm long, spinose. **Petiole** 48–69 cm long, spinose, spines (on petiole and sheath) 1–3 mm long, occurring primarily towards the base of the petiole, and also irregularly present but becoming shorter towards the blade. **Blades** lanceolate to more often broadly oblanceolate, apically acute to acuminate, entire, prominently 8–12 ribbed, 64–97 cm long, 6–(10–11) cm wide at middle, 6–(11–14) cm wide at its broadest above the middle. **Scape** (and lower portion of scape bracts, rachis, and pedicels) scurfy with copious amounts of thick brown nearly woolly scales, the scape at first erect, then curving downward to form a pendent inflorescence, 10-14 mm in diameter. **Scape bracts** foliaceous, lanceolate to oblanceolate, apically acute to acuminate, 35–48 cm long, 3.5–6.0 cm wide, only 2–3 in number per inflorescence, the lower portion (which is somewhat similar to a sheath) spinose. **Inflorescence** terminal, or terminal on lateral shoots, simple, conspicuously pendent, 63–85 cm long, appearing very much to mimic the inflorescence of *Heliconia ramonensis* Daniels & Stiles var. *lanuginosa* Kress (Det. W.J. Kress 1997) which grows along side it in its similar

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Figure 1.
Pendent inflorescence of *Pitcairnia geotropa* showing its red sepals and yellow petals.

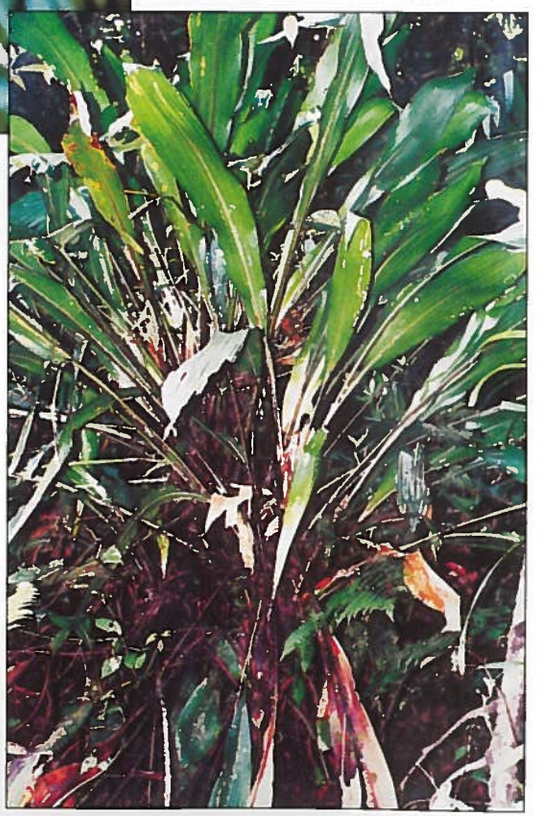

Figure 2.
Pitcairnia geotropa with its multi-shooted habit.

Figure 3.
Inflorescence of *Pitcairnia rundelliana* with Volcan Bani in the background.

Figure 4.
Flower of *Pitcairnia rundelliana;* notice the red sepals and petals.

overall length, red bracts and yellow flowers; rachis 6–10 mm in diameter. **Flowers** 90–95 mm long (from base of calyx to apex of corolla), blooming from the base to the apex of the inflorescence. However, since the inflorescence is pendent, the flowers appear to be blooming from top to bottom. When a flower is in bud and full bloom, it extends at a near 90 degree angle in respect to the scape. That is, straight out and parallel to the ground. Once the flower has bloomed, it turns downward and becomes appressed to the rachis. **Floral bracts** unknown; they are either entirely absent on the two inflorescences that comprise the type material, or so inconspicuously small that they become so desiccated in dried specimens to fall away (also absent in the collection of liquid-preserved flowers). **Pedicels** robust, scurfy, 4–6 mm in diameter. **Sepals** blood red, linear-obovate, apiculate to cuspidate, strongly navicular, leathery and firm, 41–46 mm long, 10–12 mm wide at base, 13–15 mm wide just above middle at its broadest, thickly keeled, the keel rounded and firm. **Petals** yellow, linear-obovate, apically acute to cuspidate, thick, fleshy, involute, appendaged, 67–92 mm long, 7–8 mm wide at base, 12–17 mm wide at its broadest above the middle, exceeding the sepals, stamens, and pistil, exserted 45–50 mm beyond the calyx; the single petal appendage 8–20 mm long (from the base of the petal to the apex of the free portion), 5–7 mm wide from the base to the free portion where it begins to round in to become overall obtuse in outline, the apical 2–7 mm free, incurved, and irregularly serrate to notched. When bound inside the calyx, the petals are straight (i.e. lateral in respect the ground), however, when they emerge from the calyx they curve upwards to give an overall upwardly curved "L" shape to the flower. This flower morphology is similar to that of the flowers of *P. arcuata* (André) André (incl. *P. oblanceolata* L.B. Smith). **Stamens** included, 79–82 mm long, shorter than the pistil; filaments 60–62 mm long, 1.0–1.5 mm wide; anthers linear, basifixed, 19–20 mm long, 2 mm wide. **Pistil** included, yellow, 77–88 mm long, longer than the stamens; ovary 1/3 inferior (i.e. -1/3 of its length is beneath the level of the base of the petals and androecium) 16–20 mm long, 4–6 mm wide at anthesis; style 58–63 mm long, 1–2 mm wide; stigma 3–5 mm long, 1–2 mm wide, with the conduplicate type stigma morphology, i.e. the three lobes twist spirally. Capsules and seeds unknown.

Pitcairnia geotropa is known from the understory of lush primary premontane rainforest and adventive on adjacent revegetating roadcuts and disturbed hillsides in the Reserva Forestal Fortuna in western Panama. It may be expected to be found in adjacent areas of Costa Pica.

The new species is clearly related to *P. elongata* L.B. Smith of Colombia to which it keys in Smith & Downs (1974). It differs strikingly however, in its inflorescence where the flowers are comparatively densely compacted (vs. the remotely spiraled flowers of *elongata* where the internodes are 1/3 to 1/2 the length of the flower), the ostensible absence of floral bracts (vs. elongata where each flower is subtended by a significant *Heliconia*-type-like bract that extends beyond the length of the flower itself), shorter sepals (41–46 mm long vs. 62–75

mm long), and shorter anthers (19–20 mm long, vs. 24–25 mm long). It has no affinities to any other Mesoamerican species, and will not be confused with any other currently known. Even among South American species, the only other species that approaches it is the one that to which it is most closely related, *P. elongata.*

The specific epithet *geotropa* (turning towards the ground) derives from the Greek *ge-*, earth, and *trope,* to turn, to emphasize the pendent nature of the inflorescence.

***Pitcairnia rundelliana* J.R. Grant, sp. nov.** (Figures 3-4).

A *Pitcairnia paniculata* (Ruiz & Pavon) Ruiz & Pavon, cui affinis, sed plantis longe caulescens, foliis, scapis, innorescentia, rachis et flores griseus-lepidotis, foliis monomorphis, corolla zygomorphis, petalis cucullatis super androecium et gynoecium.

Type. Panama. Chiriqui: Reserva Forestal Fortuna, roadside forest 42 km north of Chiriqui, 10 August 1997, 8° 40′ 775″ N, 82° 13′ 447″ W, -1158 m, *Grant 9702822 & Rundell* (holotype US; isotypes B, MO, NY, SEL). Paratypes: Chiriqui: Reserva Forestal Fortuna, roadside forest 42 km north of Chiriqui, just north of Valle de la Mina, 8° 40′ 775″ N, 82° 13′ 447″ W, -1158 m, 18 March 1996, *Grant 96-02404 & Rundell* (US 3 sheets; MO, SEL); Reserva Forestal Fortuna, roadside forest 42 km north of Chiriqui, 26 December 1996, 8° 40′ 775″ N, 82° 13′ 447″ W, -1158 m, *Grant 96-02643 & Rundell* (US); Reserva Forestal Fortuna, roadside forest 48.2 km north of Chiriqui, Quebrada Mono, 26 December 1996, 8° 42′ 278″ N, 82° 13′ 969″ W, -1188 m *Grant 9602648 & Rundell* (US); Reserva Forestal Fortuna, roadside forest 59 km north of Chiriqui, 10 August 1997, 8° 45′ 803″ N, 82° 12′ 757″ *W, Grant 97-02821 & Rundell* (US).

Plants terrestrial, long-caulescent, flowering plants scandent to 1–1.5 m long on the ground before arching upward to 1–1.5 m tall (for a total length of 2–3 m long). **Stems** 34 cm wide in diameter, older leaves falling away to leave only the sheaths on a long robust brownish stem. **Leaves** dark green at maturity, monomorphic, persistent, petiolate, spinose, gray-lepidote beneath, 90–190 cm long. **Sheaths** dark brown, irregularly spinose, faintly gray-lepidote, 3–5 cm long, 5–13 cm wide at the base. **Petioles** 65 cm long, spinose to 15–30 cm from base, spines dark brown, 3–6 mm long, copiously gray-lepidote, the base of the petiole dark brown where merging into the sheaths, and greener towards the blade. **Blades** long-acuminate, entire, 4–6 cm wide at the broadest above the middle. **Scape,** 15–20 mm wide in diameter. **Scape bracts** triangular, long acuminate, foliaceous, 11–15 cm long. **Inflorescence** tripinnate 80–100 cm long, rachis 5–15 mm wide in diameter; primary bracts (those that subtend the primary branches) triangular, acute to long acuminate, 2–11 cm long 1–2 cm wide at the broadest at the base. **Primary branches** 8–10 in number, 30–35 cm long. **Secondary bracts** (those that subtend the secondary branches), similar to the floral bracts triangular, acute, 5–9 mm long, 3–4 mm wide at the broadest at the

base; secondary branches 2–3 in number, 8–10 cm long. **Flowers** pedicellate, strongly trigonal, erect to slightly spreading at anthesis, 46– mm long from apex of petal to the base of the receptacle. **Floral bracts** (those that subtend pedicels) much shorter than the pedicels they subtend, acute, ever so slightly keeled, 2–6 mm long, 2–3 mm wide. **Pedicels** green merging to reddish, robust, longer than the subtending floral bracts, 5–13 mm long, 1.0–1.5 mm wide. Sepals bright red, slenderly triangular in outline, pungent, keeled, slightly involute, 11–16 mm long, 4–5 mm wide at the base, 3–4 mm wide at the middle, the base merging into a swollen-appearing receptacle. **Petals** bright red (same as that of the sepals), linearly-obovate, apically obtuse, glabrous, appendaged, 36–45 mm long, 3–4 mm wide at base, 11 mm wide at the broadest above the middle, individual petals displaced such to form a hood around the pistil and stamens, extending - 30 mm further than the sepals; the single petal appendage ovate, acute, 4–5 mm long (from the base of the petal to the apex of the free portion), the apical 1 mm free, 3–4 mm wide at the base. **Stamens** yellow, slender, 37–45 mm long, shorter than the pistil; filaments 30–37 mm long, 0.75 mm wide; anthers linear, 7–8 mm long, 0.75–1.0 mm wide, basifixed. **Pistil** yellow, 40–50 mm long, longer than the stamens; ovary 1/3 inferior, 5–8 mm long, 4–5 mm wide; style 33–40 mm long, 0.5 mm wide; stigma 2 mm long, 0.75 mm wide, with the conduplicate type stigma morphology, i.e. the three lobes twist spirally. **Capsules** dark brown, oblong, 10–15 mm long, 6–9 mm wide, trigonal, septicidal. **Seeds** bicaudate, linear-long to slenderly "s" shaped, 4–5(6) mm long in total length. **Embryo** ovate to elliptical, 1.0–1.5 mm long, rust to brown in color. **Endostome** extending linearly from diagonally opposite ends of the embryo, each 1–3 mm long, tan in color.

Pitcairnia rundelliana is known from the understory of lush primary premontane rainforest and adventive on adjacent revegetating roadcuts and disturbed hillsides in the Reserva Forestal Fortuna in western Panama. It may be expected to be found in adjacent areas of Costa Pica.

The new species appears to be most closely related to *P. paniculata* (Ruiz & Pavon) Ruiz & Pavon of Peru and Bolivia to which it keys in Smith & Downs (1974). It differs however, in its long-caulescence, densely-lepidote leaves, scape, inflorescence, rachis and flowers, monomorphic leaves, spiny petioles with spines that extend out perpendicular to the petiole to slightly upward pointing, and a zygomorphic corolla where the individual petals are displaced such to form a hood around the pistil and stamens (vs. the more actinomorphic corolla of *P. paniculata* where the petals are flee from another and curled back to expose the pistil and stamens). It doesn't appear to be related to any other species of *Pitcairnia* from Mesoamerica, but rather a South American element to which *P. paniculata* belongs.

Of the other red-flowered paniculate species of *Pitcairnia* in Panama and Costa Rica (*P. calcicola* J.P. Grant & J.F. Morales, *P. chiriquiensis* L.B. Smith, and *P. valerii* Standley), *Pitcairnia rundelliana* is distinct in its long-caulescence and

leaves with robustly spiny and gray-lepidote sheaths. The species is sympatric with *P. valerii* Standley, and can be differentiated in its longer flowers and shorter more robust inflorescence.

This species is named in honor of Dr. James R. Rundell (1957-) who has often joined me in collecting expeditions to Central America.

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Book Review

Jason R. Grant

Flora of the Venezuelan Guayana. Vol. 3 Araliaceae-Cactaceae. Steyermark, J.A., P.E. Berry, & B.K. Holst (general editors); Berry, P.E., B.K. Holst, & K.Yatskievych, volume editors. Missouri Botanical Garden and Timber Press, 1997. 774 pages, hard cover, 26 cm, ISBN 0-915279-46-0. Order from: Department Eleven, Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166-0299 USA; fax: (314) 577-9594; email: deptll@mobot.org; web site: HYPERLINK http://www.mobot.org.

The inside front jacket concisely sums up the objective of the Flora of the Venezuelan Guayana project. "This is the third book in a multivolume flora that is the first full scientific account of the plants of a botanically-rich and geologically ancient part of northern South America, the Venezuelan Guayana. This area is dominated by massive table mountains, tepuis, that tower over surrounding rain forest and savannas and provide a wealth of habitats for nearly 10,000 species of vascular plants."

The Flora is magnificently illustrated by a large number of fine black and white line drawings of the habit and relevant small features of numerous species by Bruno Manara. Each genus has representative illustrations, of which *Brocchinia* and *Navia* especially have many illustrations of previously never illustrated endemic species.

The Flora is unique in that it does not follow the usual phylogenetic sequence of families, rather an alphabetic sequence is utilized. In addition to the Bromeliaceae, this third volume of the flora contains treatments of such familiar families as the Arecaceae (palms), Asteraceae (composites) Bignoniaceae, and the Cactaceae. The Bromeliaceae is the seventh largest family of angiosperms in the flora with 284 species represented by 22 genera. The family treatment covers pages 548-676 of the 774-page volume. The Guayana shield of northern South America is the center of diversity and endemism for many Pitcairnioid genera, notably *Ayensua, Brewcaria, Brocchinia, Connellia, Lindmania, Navia,* and *Steyerbromelia.* The country of Venezuela covers the majority of the shield, sharing smaller portions with Brazil and Guyana.

The treatment of the Bromeliaceae presented in this flora is the synthesis of Holst's meticulous study of herbarium specimens and his first-hand knowledge acquired from fieldwork undertaken during expeditions to the flora area. His detailed studies revealed the flaws in Smith's taxonomy, and the appropriate adjustments were made. Holst not only reduced many superfluously-named species into synonymy, but also realigned species to their true generic placement. This is a fine body of work that may serve as a model for future treatments in the new "post-Smith" era.

Significant changes have been made in the taxonomy of the Venezuelan Guayanan Bromeliaceae since Smith (1974 & 1986). *Navia* especially has undergone a significant lowering in species number due to the reduction of species to synonymy and transfers to *Brewcaria, Brocchinia,* and *Steyerbromelia.* The latter two genera have also been significantly expanded since their recent inception. Holst (1994) placed numerous species into synonymy including: *Billbergia venezuelana (= B. rosea), Brocchinia bernardii (= B. melanacra), Brocchinia cryptantha (= B. hechtioides), Brocchinia oliva-estiivae and B. secunda (*both = *B. tatei), Guzmania geniculata and G. venamensis (*both = *G. sphaeroidea), Lindmania terramarae (= L. marahuacae), Navia gracilis (= N. reflexa), Navia grafii (= N. phelpsiae), Navia igneosicola (= N. arida), Navia isothrix* and *N. pedemontana (*both = *N. nubicola), Navia platyphylla (= N. ramosa, a" Steyerbromelia ramosa), Navia plowmanii (= N. diffusa, a" Steyerbromelia neblinae), Pitcairnia breweri (= P. armata), Pitcairnia wurdackii (= P. bulbosa), Tillandsia abysmophylla (= T. confinis),* and *Tillandsia valenzuelana (= T. variabilis).* The new combinations published in the Flora (Holst 1997a) are: ***Brewcaria brocchinioides*** (L.B. Sm.) B. Holst [≡ *Navia brocchinioides* L.B. Sm.], ***Brewcaria hechtioides*** (L.B. Sm.) B. Holst [≡ *Navia hechtioides* L.B. Sm.], ***Brewcaria hohenbergioides*** (L.B. Sm.) B. Holst [≡ *Navia hohenbergioides* L.B. Sm.], ***Brewcaria reflexa*** (L.B. Sm.) B. Holst [≡ *Navia reflexa* L.B. Sm.], ***Pitcairnia leopoldii*** (W. Till & S. Till) B. Holst [≡ *Pepinia leopoldii* W. Till & S. Till], ***Steyerbromelia neblinae*** B. Holst, substitute name [≡ *Navia diffusa* L.B. Sm., not *Steyerbromelia diffusa* L.B. Sm., Steyermark & Robinson], ***Steyerbromelia ramosa*** (L.B. Sm.) B. Holst [≡ *Navia ramosa* L.B. Sm.], ***Steyerbromelia thomasii*** (L.B. Sm.) B. Holst [≡ *Navia thomasii* L.B. Sm.]. Shortly after publication of the Flora, Holst (1997b) published: ***Brocchinia cataractarum*** (Sandwith) B. Hoist [≡ *Navia cataractarum* Sandwith], ***Brocchinia rupestris*** (Gleason) B. Holst [≡ *Tofieldia rupestris* Gleason, *Navia rupestris* (Gleason) Sandwith, and ***Brocchinia wurdackiana*** B. Holst (*Brocchinia* sp. A in Holst 1997a: 580). Holst follows several recent taxonomic changes at the generic level including *Racinaea,* but recognized neither *Pepinia* nor *Werauhia.*

This book is highly recommended for anyone interested in bromeliads. It serves as an important and thorough update for a significant portion and the center of diversity of a major branch of the family.

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Listed below are individuals and organizations who have made recent contributions to the BSI. Some contributed to the color fund, some have contributed memberships, others to the Mulford B. Foster Bromeliad Identification Center, and still others have donated to the BSI to use at it sees fit. Our thanks go out to all of them.

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Exploring for Ecuadorian Bromeliads

José M. Manzanares[1]

On April 5, 1997 Betty Girko, Vice-President of the Dallas Bromeliad Society, Jerry Raack, President of the Bromeliad Association International, Mónica de Navarro, President of the Quito Orchid Association, and the author left Quito, Ecuador for Cuenca. Betty has traveled to Ecuador every year since 1985 to study and photograph the natural wonders of this amazing country and Jerry had also made frequent trips to Ecuador in the past. Before leaving, we had obtained all the necessary collecting permits from the respective national authorities.

We joined Ed Doherty, President of the Dallas Bromeliad Society, and Gustavo Tapia, our guide and driver, a few days later in Loja.

The trip from Quito to Cuenca covers 292 Km., going through an inter-Andean valley, through some incredible scenery; including beautiful valleys, small villages, serene lakes and mountains with their peaks eternally covered in snow. To our delight, the day we left was clear and we had the opportunity to appreciate the Ecuadorian snow peaks in all their splendor: The Cayambe, the Intisana and the magnificent Cotopaxi were all visible along our route. Reaching the base of Cotopaxi we could see the Corazon and the Ilinizas, a little bit further on majestic Chimborazo, Tungurahua and Altar, the view of which kept us company until we reached Riobamba, 200 km to the south of Quito.

Near Riobamba we stopped for the first time to make a herbarium specimen of *Puya retrorsa* Gilmartin (figure 5), in full flower, which was found at the base of Chimborazo. Continuing our trip to Cuenca, and after passing through the town of Alausi, the road circles the Andean valley and leads off on a short branch to the western mountains where we observed a large number of Tillandsia sceptriformis Mez & Sodiro and *Tillandsia latifolia* var. *divaricata* (Benth.) Mez growing on the rocky walls. Twenty km before Zhud, located in Azoguez, we collected a sample of *Racinaea gilmartiniae* (L.B. Smith) M.A. Spencer & L.B. Smith in a habitat uncommon for this species, considering that all previous collections had been in Pilaló, Cotopaxi Province. In Tambo, Cañar Province, we stopped to collect among some large rocks. There we found *Tillandsia oroyensis* Mez and *Tillandsia incarnata* Kunth forma *violacea*. We arrived late in Cuenca, where we spent the night.

Next day, April 6, 1997, our goal was to reach Loja going through the south Andean valley, 228 Km. This would prove to be an exciting day. We were expecting to find various puyas and tillandsias to make corresponding herbarium specimens, but encountered so much more! Leaving Cuenca for Oña, we found our first specimen of *Tillandsia orbicularis* L.B. Smith, which covers large areas in road cuts. Thirty-three kilometers from Cuenca, where the mountains begin to

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rise, there are zones of Andean forests, at 3,010 m. above sea level. We stopped to study this zone and found *Tillandsia stenoura* Harms, *Tillandsia stenoura* var. *mauroi* Gilmartin, *Tillandsia complanata* Benth. and *Tillandsia wurdackii* L.B. Smith. We continued up to the páramo, where I wanted to find *Puya nutans* L.B. Smith flowering (figure 6). This variety grows new pups from the base and covers large expanses of land. Finally, we came to a zone where the páramo was covered with Puya nutans. 37 km. from Cuenca at 3,210 m we encountered some fog, which cut back on our visibility. We decided to stop when I saw some inflorescences of the plant from a distance. They turned out to be only brown inflorescences without flowers, but even those were considered a good find. We continued working our way uphill however, and we explored a little bit more, until ... Eureka. ! ! ! We found them completely in flower. What an exciting moment, a 14-year search culminating in these magnificent inflorescences. In this same area we also found *Puya pygmaea* flowering, another specimen that had been missing from the National Herbarium.

In a state of exhilaration we continued our journey to Oña, where we made various stops to collect *Racinae* cf. *euryelytra* J.R. Grant, *Racinaea tripinnata* (Baker) M.A. Spencer & L.B. Smith, *Tillandsia roezlii* E. Morren, and *Tillandsia humboldtii* Baker, all of them located between 3,000 and 3,100 m. above sea level. We were also searching for *Tillandsia walteri* Mez, which we found near La Paz, at 2,985 m above sea level. A few kilometers further we encountered another flowering specimen, and together with Jerry, we decided to go for it. Unfortunately, a small bug entered my right ear and I began seeing stars for a while. My companions took me to a health center since the bug would not leave and there was no way to remove it. We reached a small town, lost in the middle of the mountains. There was no doctor at the health center so we decided to go directly to Oña, but on the way I suddenly asked them to stop the car. There was a specimen of *Puya lanata* (Kunth) Schult. f. (figure 7) in full flower! We all left the car to take pictures of this magnificent specimen. I took samples for the Herbarium before we resumed our trip to the health center in Oña without any further stops. The area was at 2,090 m. above sea level and 17 km. from Oña. We also saw *Tillandsia secunda* var. *major* Rauh, *Tillandsia caerulea* Kunth and *Tillandsia latifolia* var. *divaricata* (Benth.) Mez.

In Oña, the doctor extracted the bug from my ear and we continued our trip. Oña is located in a hot semi desert valley, at 2,300 m. above sea level, where, with a little patience and climbing, *Tillandsia humilis* C. Presl. and *Tillandsia tectorum* E. Morren can be collected. These two specimens are located on vertical rocky walls. Leaving Oña we crossed a bridge over the Oña River. The walls are totally covered by bromeliads. Those that stand out are *Tillandsia demissa* L.B. Smith (syn. *Tillandsia fosteri* Gilmartin), *Pitcairnia pungens* Kunth and *Puya westii* L.B. Smith.

Near Saraguro we collected a specimen of *Tillandsia demissa* L.B. Smith (figure 8) with extraordinary beauty. After passing Saraguro, we were looking for

a *Puya* with a black inflorescence. Suddenly Jerry shouted to stop the vehicle. He had found it. We all left the car with our cameras, when something unexpected happened. In front of us we saw what appeared to be *Puya angelensis* E. Gross & Rauh. Rauh found the plant in the northern part of the country but not in Saraguro. This was something I couldnít accept. After analysis, I concluded it was *Puya roseana* L.B. Smith (Figure 9), barely known, and which is briefly described in the Monograph No. 14, Part. 1, of Lyman B. Smith and Robert J. Downs. In an even higher stage of excitement, we decided to go up the road leading to communication towers near Saraguro.

The road was in very bad condition. On the páramo we found hundreds of *Puya* cf. *nutans* flowering, a magnificent sight! Sadly, we did not find the *Puya* with a black inflorescence before we had to turn around because it was almost dark. As we were leaving, I thought I saw one so we stopped. Indeed, there in front of us was the rare *Puya*. It had an immature inflorescence about 2.5 m., but unfortunately was not flowering. As we headed toward Saraguro a red inflorescence caught our attention. Looking through binoculars we discovered that it was *Tillandsia burseri* Mez (Syn: *Tillandsia buseri* var. *nubicola* Gilmartin), but what really drew our attention was a plant on the other side with a yellow inflorescence. We stopped and all climbed up to look at it. What a pleasant surprise! We had found Racinaea *tetrantha* (Ruiz & Pavón) M.A. Spencer & L.B. Smith with a very intense yellow inflorescence. It was a truly magnificent specimen. This was the first time a plant with a yellow inflorescence had been found in Ecuador. The usual colors of *Racinaea tetrantha* in this country are red, orange and sometimes white (I found a white specimen in 1988, on the Loja-Zamora Road). As darkness was approaching, we continued our trip to Loja, without stopping again.

On our agenda for April 7 was to find two of the most searched for guzmanias in Ecuador. *Guzmania osyana,* (E. Morren) Mez, was described by Edourd Morren as *Caraguata osyana* in 1986, and transferred to the genus *Guzmania* in 1896 by Mez. The seeds were collected in 1875 by Gustave Wallis. At the Universal Exhibition in Anvers, the first flowering specimen was presented by Jacob-Makoy. The new species was dedicated to Lord Edourd Osy de Wychen, President of the Anvers Horticultural Real Society. The other plant we sought was *Guzmania poortmannii,* (André) André ex Mez, described by André in Bromeliaceae Andreanae in 1896 as *Thecophyllum poortmannii.* A specimen was collected by Poortman in June 1882 between Cangonama and Chinchanga, in the Province of Loja. The main characteristic is the violet petals, something highly unusual in the genus *Guzmania.*

We left Loja heading toward Catacocha and Cariamanga. After seventeen kilometers, we stopped to collect Tillandsia tovarensis Mez, Puya parviflora, the recently described Tillandsia portillae (see J.B.S.I., 47: 52-53), a problematic plant allied to Vriesea petraea (L.B. Smith) L.B. Smith and, after checking the petals and not finding stipules at the base, a plant I classified as Tillandsia zarumensis Gilmartin.

Close to San Pedro de la Bendita del Cisne, we turned on a side road that followed the river. The valley was filled with Acacia trees in which we found *Tillandsia usneoides* (L.) L., *Tillandsia rubroviolacea* Rauh, *Vriesea hitchcockiana* (L.B. Smith) L.B. Smith and *Puya lanata* (kunth) Achult. F. We continued our trip to Catacocha, but 9 km. further we stopped and found a wonderful undescribed *Tillandsia* species.

Reaching Velacruz, we found *Guzmania variegata* L.B. Smith, *Racinaea pendlandii* (L.B. Smith) M.A. Spencer & L.B. Smith, *Vriesea cylindrica* L.B. Smith, *Racinaea multiflora* var. *tomensis* (L.B. Smith) M.A. Spencer & L.B. Smith and a beautiful specimen of *Oncidium azuallensis* (Orchid).

Approaching Catacocha, Jerry found a specimen of *Tillandsia flagellata* L.B. Smith in flower. From here on all we found was devastated land, although we had hoped to see jungle and find our guzmanias. The deforestation has been so quick and violent that no forest remained. We were saddened upon the realization that we were not going to find the guzmanias. However, we had to continue.

This was a long trip, around 50 km. through a hot dry area, but we did find *Tillandsia* cf. *dichrophylla* L.B. Smith. Finally, we came to Loja. I was somewhat depressed since my hopes to find *Guzmania osyana* (E. Morren) Mez and *Guzmania poortmanii* (André) André ex Mez were unfulfilled. With the felling of trees, we will not only lose these two species, but a lot others will have met the same end. Please, if you know anything about these two guzmanias, let me know by writing to the address at the end of this article.

That night we met Ed and Gustavo in Loja. They had driven from Cuenca. We told them about our adventures in the hot dry lands without trees or Bromeliads.

On April 8, although I could not forget the disappointment of the day before, the possibility of finding *Tillandsia raackii* H. Luther raised my spirits. *Tillandsia raackii* H. Luther was found by Jerry Raack on his trip in 1995 while traveling with Jeff Kent.

Harry Luther named it in honor of its discoverer, Jerry Raack. We were also looking for *Pitcairnia andreetae* H. Luther with black flowers, and as per Betty's references, were also looking for a red-flowered form of *Pitcairnia andreetae.* We left Loja for Yangana, a town located 70 km. south of Loja, where the western chain of mountains rises with dense forests containing great biodiversity.

On the upper side of the mountains, in the middle of a beautiful Andean forest we stopped for the first time. There we saw various specimens of *Guzmania killipiana* L.B. Smith, *Mezobromelia capituligera* (Grisebach) J.R. Grant, *Racinaea penlandii* (L.B. Smith) M.A. Spencer & L.B. Smith, *Tillandsia laminata* L.B. Smith, *Guzmania coriostachya* (Griseb.) Mez. I also need to mention *Tillandsia stenoura* Harms, with spikes in the axil of the leaves similar to the ones of the *Tillandsia complanata* Benth. It is certainly a natural hybrid between

Tillandsia stenoura Harms and *Tillandsia complanata* Benth. also found for the first time by Jerry, during his trip to Ecuador in 1995 was *Tillandsia* cf. *Compacta* Grisebach (figure 10).

Down the mountain toward Zumba, in a lower Andean forest we entered a forest where we found *Guzmania squarrosa* (Mez & Sodiro) L.B. Smith & Pittendr., *Guzmania gloriosa* (André) André ex Mez, *Racinaea seemannii* (Baker) M.A. Spencer & L.B. Smith and a caulescent *Greigia* sp. of 50 cm., with leaves 20 cm long. Elated, we continued on only to find hundreds of *Mezobromelia bicolor* L.B. Smith in flower. At dusk we found *Tillandsia truncata* var. *major* H. Luther and *Tillandsia confinis* var. *caudata* L.B. Smith. We marked this place so that we could return to it the next day and journeyed on to Vilcabamba where we stayed the night.

On April 9, we left very early in the morning to return to the place that we had marked the day before on the road from Yangana to Valladolid. Our first stop was in a low Andean forest, with trees 10-15 m. tall, a "sotobosque" (shrub forest), covered with the *Guzmania squarrosa* (Mez & Sodiro) L.B. Smith & Pittedr. in flower. In this area we could also observe *Mezobromelia hutchisonii* (L.B. Smith) W. Weber & L.B. Smith, but unfortunately it was not flowering. We also found *Tillandsia confinis* var. *caudata* L.B. Smith. In the trunk of a dead tree we found a *Pitcairnia andreetae* H. Luther with red flowers. Ten kilometers further, at km. 57 from Vilcabamba we entered a forest where we found *Guzmania besseae* H. Luther in flower, Pitcairnia andreetae H. Luther with four hanging spikes, *Guzmania variegata* L.B. Smith and *Guzmania killipiana* L.B. Smith. There were also vegetative specimens of *Mezobromelia hutchisonii* (L.B. Smith) W. Weber.

We stopped in a pasture where we found beautiful specimens of *Tillandsia fendleri* Grisebach with spikes at the base of the scape and *Guzmania septata* L.B. Smith. From here, Jerry took us to the area where he had originally found *Tillandsia raackii* H. Luther. This area was a foggy forest, at 1,950 m. above sea level, that ended at the edge of the Palanda River. The first specimens we found were without flowers, but as we continued, we found various specimens with 3-5 white digitate spikes. The white flowers were pollinated by a brown hummingbird, that was only feeding on nectar from this kind of bromeliad, obviously attracted by the red foliage that provided a stark contrast with the white inflorescence. We were all fascinated by the flight of the hummingbirds. This area was also full of *Tillandsia platyrhachis* Mez and *Pitcairnia* cf. *alata* L.B. Smith, the biggest specimen of *Tillandsia raackii* H. Luther was found by Jerry, with an inflorescence containing seven spikes.

We turned back towards Yangana. Even though it was getting dark we decided to go up the road to the communications tower. Unfortunately darkness was fast approaching and we had to go back without reaching our goal, which was to locate *Tillandsia nervisepala* (Gilmartin) L.B. Smith found by Betty on a previous trip. We did find *Tillandsia tovarensis* Mez, *Tillandsia laminata* L.B.

Smith and the great *Puya parviflora* L.B. Smith and prepared herbarium specimens from them.

Returning to Yangana, we had a phenomenal night, the sky was very clear with bright stars and we could observe the Hale-Bopp comet with exceptional clarity. For a long while we all were fascinated with its beauty. I contemplated how Ecuador must have been 4,000 years ago, when this comet was supposedly seen the last time, and wondered how it will it be when it is arrives again.

On April 10, our destination was Zamora, capital of the Province of Zamora-Chinchipe located in the amazon jungle. During the trip from Loja to Zamora, we wanted to make herbariums specimens of *Guzmania sibundoyorum* L.B. Smith, *Mezobromelia fulgens* L.B. Smith and *Racinaea seemannii* (Baker) M.A. Spencer. We left Vilcabamba for Loja, and then on to Zamora by the new road. Little by little the road climbs higher on the Western chain of mountains, going through Podocarpus National Park, where cloudy, humid, sub-tropical forests still remain intact. We drove past the park, which stands out from the surrounding countryside that is no longer forested. Extensive pastures have replaced it. In a small remnant forest we found our *Guzmania sibundoyorum* L.B. Smith and *Racinaea seemannii* (Baker) MA Spencer, but we could not find *Mezobromelia fulgens* L.B. Smith. In this area we also observed *Tillandsia compacta* Grisebach and prepared a herbarium specimen of a nice *Vriesea sp. nov.* with hanging spikes of a light orange color. I am currently studying it to determine its identity.

As we advanced, we regretted seeing fewer trees and therefore fewer bromeliads. We observed *Pitcairnia alata* L.B. Smith and *Pitcairnia* cf. *lehmannii* Baker, both flowering in road cuts. We finally arrived in Zamora where we wanted to find *Vriesea cathcartii* H. Luther. We were looking for a road aptly called "NO WAY", On the first try we missed it and came to the entrance to the Podocarpus National Park. After returning to Zamora, we eventually located it. On this road, 13 kilometers from the bridge over the Zamora River, we found a specimen in fruit, which allowed us to prepare a magnificent herbarium specimen for the QCNE.

We drove on to Yanzatza where we spent the night so that we could be as close as possible to the entrance to the Condor mountains, our destination for the next day.

On April 11, we left for the Condor Mountains a little discouraged. It had rained all night and continued into the early morning. The mountains were shrouded in fog and undergoing a slight rain. We had prepared an ambitious list of plants to find in this area as result of previous trips by Jerry and Betty. Included on the list was *Ronnbergia campanulata* Gilmartin & H. Luther and *Pitcairnia hirtziii* H. Luther. They were important to me because they are not represented in the QCNE.

The first specimen collected for the herbarium was *Pitcairnia hitchcockiana* L.B. Smith at 32.8 kilometers from Yanzatza. On road cuts in this same area we also found *Pitcairnia* cf. *lehmannii* Baker, *Mezobromelia bicolor* L.B. Smith and

Figure 5: Photograph by Betty Girko
Puya retrorsa Gilmartin, in the background is Chimborazo 6.310 mts.

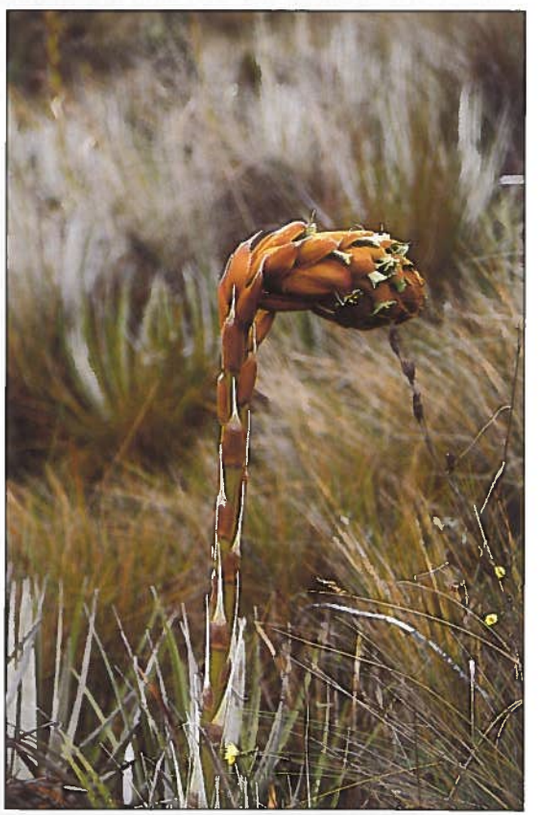

Figure 6:
Puya nutans L.B. Smith, in the Nude de Portete y Tinajillas.
Photograph by Jose Manzanares

Figure 7: Photograph by Jose Manzanares
Puya lanata (Kunth) Schult. f. in the valley of Oña.

Photograph by Jose Manzanares

Figure 8:
Tillandsia demissa L.B. Smith in the rocks.

Guzmania asplundii L.B. Smith, all of which were in flower. Two kilometers further on, we observed a large specimen of *Aechmea* cf. *biflora* (L.B. Smith) L.B. Smith & M.A. Spencer with a red inflorescence with violet flowers mounted on a red scape.

One kilometer further on we saw another *Aechmea* cf. *biflora* (figure 11). By now Mónica was not thinking of orchids but bromeliads, and at her insistence we decided to take a closer look at it. We were surprised to find that it was a compact specimen of extraordinary beauty. Monica had developed a good eye for bromeliads on this trip and thanks to her we all learned a lot about the orchids. We also found *Pitcairnia brittoniana* Mez with yellow flowers, *Tillandsia platyrhachis* Mez and *Tillandsia hirtzii* Rauh. These last two were impossible to reach since they were growing in the upper branches of a big tree. For Ed, Mónica and I it was the first time we had seen *Tillandsia platyrhachis* flowering, so it was a great spectacle with its 1-meter inflorescence of pink 20-centimeter spikes standing out amidst the green of the jungle. The flowers are violet and are pollinated by hummingbirds. In this same area we also observed some great specimens of *Guzmania alcantareoides* H. Luther flowering. However they were also impossible to reach.

We continued climbing and found a specimen of *Tillandsia platyrhachis* close enough to reach. We stopped to press it for the herbarium. In this same area we also prepared herbaria sheets for *Guzmania paniculata* Mez, *Mezobromelia capituligera* (Grisebach) J.R. Grant, *Mezobromelia pleiosticha* (Grisebach) Utley & H. Luther and *Tillandsia laminata* L.B. Smith. When we reached 1.360 meters above sea level, we observed *Guzmania hirtzii* H. Luther. At midday we stopped to have lunch and in the surroundings on some fallen trees we found *Racinaea contorta* (Mez) M.A. Spencer & L.B. Smith, *Racinaea undulifolia* (Mez) H. Luther, and growing terrestrially, *Pitcairnia bakeri* (André) André ex Mez and *Guzmania paniculata* Mez.

Despite the forest continually inviting us to stop, we kept climbing higher since our destination was located at 1,500 meters. We soon entered a colder zone with a little rain. When we finally arrived we found *Tillandsia asplundii* L.B. Smith, *Guzmania garciaensis* Rauh and *Vriesea rubrobracteata* Rauh. Unfortunately we could not find *Ronnbergia campanulata* Gilmartin & H. Luther and *Pitcairnia hirtzii* H. Luther. Unfortunately the day was too short and night fell before we reached Yanzatza.

On April 12, we decided to explore the forest across the river near Numbaine, an area previously visited by Betty. We left for Chumchumbeltza, located 55 kilometers north of Yanzatzg where the road leads to the Manchiraza River. At the river, we had to wait for the barge to come to take us to the other side, where the road continues on to Numbaine and the Condor Mountains. A few kilometers after passing Nubaime, we encountered a military checkpoint. We were asked to identify ourselves and show our permits, and were taken to the

headquarters to talk to the lieutenant in charge. He advised us that we could not continue to the Condor Mountains by road because mines had been planted by the Peruvians. He suggested a safer way that paralleled the Quimi River.

Resuming our journey on the suggested route, we came across pastures with a few solitary trees left standing from the clearing of the forest. On these trees we collected *Racinaea spiculosa* var. *ustulata* (Reitz) M.A. Spencer & L.B. Smith. In a small remnant of the primary forest we collected *Guzmania* cf. *acutispica* E. Gross, with green-yellow spikes and white flowers. We finally made our way back to the Manchiraza River where the barge was waiting to return us to the other side. Had we waited any longer, we would not have made it across because the river was rising and the currant was very strong. Good fortune seemed to smile on us for the whole trip.

As was our habit, we arrived in Limon as it was getting dark, after driving 114 kilometers from Chuchunbletza on a road that was in very bad condition thanks to the strong rains of the previous days.

In Limon, we stayed at a hotel operated by Mrs. Luisa Serrano, a friend of Betty's. The next morning we viewed her Orchid collection along with some bromeliads. She presented us with a gift of *Guzmania madisonii* H. Luther and *Tillandsia platyrhachis* Mez. Regrettably the latter died on the trip back to Quito. After saying good bye, we left for Gualaceo across the western mountains at 4,200 meters, and then going down through the valley of the Paute River, an 85 kilometer trip in all.

On April 12, we collected *Vriesea* cf. *olmosana* L.B. Smith and *Greigia* cf. *amazonica* L.B. Smith. Seven kilometers further on we made our first stop to collect *Neoregelia aculeatosepala* Rauh and found a specimen of *Vriesea* cf. *olmosana* L.B. Smith, although it was not flowering. After passing the military checkpoint we started climbing back up into the majestic mountains. 18 kilometers past Limon, we stopped again to collect herbarium specimens of *Pitcairnia dodsonii* H. Luther (back cover), *Guzmania densiflora* Mez and also searched for *Greigia* cf. *amazonica* L.B. Smith, which was flowering with an inflorescence of white flowers.

At kilometer 20 beyond Limon we took the TV Tower road, where we explored a wonderland. What a fantastic place! The dominant species in the area is *Guzmania mosquerae* (Wittm.) Mez, totally covering the ground and the low part of trees, with most of them in flower. Growing among the *Guzmania mosquerae* we found *Guzmania garciaensis* Rauh and *Guzmania paniculata* Mez. Unfortunately they were not flowering. In the top branches of the trees we did find two specimens of *Racinae* flowering, the first one *Racinaea dielsii* (Harms) H. Luther and the second one *Racinaea* cf. *euryelytra* J. R. Grant.

Approximately 30 kilometers from Limon, Jerry found a wall totally covered by *Guzmania gracilior* (André) Mez. There were thousands of plants, many of

Figure 9:
Puya roseana L.B. Smith
in Saraguro.

Photograph by Jose Manzanares

Figure 10:
Tillandsia compacta Grisebach
in Nude de Sabanillas

Photograph by Jose Manzanares

Figure 11: Photograph by Betty Girko
The beautiful compact form of *Aechmea* cf. *biflora* (L.B. Smith) L.B Smith & M.A. Spencer forma *compacta.*

Figure 12: Photograph by Betty Girko
L. to R.: Mónica de Navarro, Jerry Raack, Padre Andreete, Betty Girko, Ed Doherty, José Manzanares.

them flowering, so we prepared some splendid herbarium specimens.

We hurried to reach 2,800 meters where we hoped to find *Mezobromelia brownii* H. Luther, described by Harry Luther in 1990. In three previous trips I had not seen it in flower. Unfortunately, by the time we arrived, it was already dark and we were unable to see it again. As I always say "maybe during the next trip".

Late in the evening we arrived in Gualaceo where we stayed the night at a beautiful hotel.

On Monday, April 14, before leaving for Quito we visited Father Andreetta at his mission in Paute, where more than 40 poor children are educated. One of the teaching areas is the garden. We visited the greenhouses constructed in an old factory with hundreds of orchids, and of course bromeliads. Father Andreetta has widely traveled around the country since his arrival from his native Italy in 1939. His great passion for orchids and bromeliads, and his research work involving them, has been recognized worldwide. Various species immortalize his name, like Guzmania andreettae Rauh and Vriesea andreettae Rauh. Father Andreetta very kindly made gifts of various specimens of bromeliads, among which was Aechmea aciculosa Mez & Sodiro found by Mr. Strobel close to Molleturo. We were also presented with beautiful specimens of Tillandsia lindenii Regel, Tillandsia umbellata André, which has been one of the most sought after by me, and a natural hybrid between Guzmania lingulata (L.) Mez and Guzmania wittmackii (André) André ex Mez. The plant is under study currently and will be published later.

It was with a great deal of regret that we left him. Our plan called for us to visit Mrs. Elizabeth Strobel, whose husband was a lover and collector of orchids and bromeliads throughout his life. Part of his collection can be seen in his garden. I was looking for one species among the hundreds of bromeliads. Betty had shown me the plant in a slide. It adheres to trees and forms a stem 2 meters long. I could not find it, so Betty showed me the way and after various turns I found a specimen flowering. What a surprise! *Racinaea sp. nov.* joined the growing pile of other unknown plants currently being studied for later identification.

As we had with Father Andreetta, we regretted saying good bye to Mrs. Strobel, but finally left and pressed on for Quito, where we arrived past midnight.

I had to say goodbye to my friends Betty, Jerry and Ed, since they were travelling on Wednesday and I had some pending matters to attend and would not be able to see them again on this trip.

Our journey had produced 110 new herbarium specimens. There was enough material to make duplicates of each collection so we actually ended up with a total of 220 herbarium specimens in all.

[continued on page 135]

In Search Of *Tillandsia Raackii* (Again)

Jerry Raack

In April 1997, I had the honor to join a collecting trip with Betty Girko and Ed Doherty of Dallas, Texas, and José Manzanares and Monica Navarro of Quito, Ecuador. Jose Manzanares led our group as we headed to southeastern Ecuador. One of the plants we dearly wanted to find was *Tillandsia raackii* H. Luther, a plant I had collected in January of 1990 with Jeffery Kent. I reviewed my notes and the slides taken around the area and was convinced that I could "easily" find the spot again. My notes said it was 59 km south of Vilcabamba on the road heading toward Valladolid in the province of Loja at 1900 meters in elevation. Well, anyone who has ever collected knows that 59 km is a long way to measure from any point, but especially in this area. There must be a million things to grab your attention in that length of road; especially since it is prime country for bromeliads of all types. Once you stop, then back up, move forward and repeat this quite a few times, the 59 km quickly becomes an approximate distance!

However, I could still picture the place where it should be. I remembered that the plant was found on a ridge, which went down from the road to the right as the road made a left hand turn. I knew the area was fairly steep, as is most of the area in this part of the country. I also knew that we had not been able to see the plant from the road, but that it had occurred not far off it growing in trees from 2 to 7 meters off the ground. It was an area that is wet as is typical around this part of Loja. Of course, my biggest concern was that in the 7 years since I had originally collected it, the area might have been logged and devastated; there were no guarantees. Adding to the mystery was the fact that Harry Luther had informed me that no one since had reported having seen the plant.

It was mid-afternoon when we arrived in the area. We had kept accurate records (as best we could) as to how far from Vilcabamba we had traveled. As we got closer, all of the left hand bends in the road started looking alike. We stopped at one and started searching. We did not find *T. raackii,* but did find another plant I had also wanted to re-collect: *Guzmania besseae* H. Luther with its brilliant red inflorescence and bright white flowers. But still I wanted to locate *T. raackii.* We tried another bend, but again we could not find the plant. The group decided to have lunch. I was possessed at this point and continued to walk down the road to the next bend, and then the next.

Finally, I climbed a small bank where the road had cut through and started down a muddy path used by the native people. It was steep, but looking out, I spied what I had been looking for...*T. raackii.* It was in bloom about 20 feet up in a tree in plain sight. I was excited, but could not get to this particular plant. I searched a bit more and found another one within reach of a pole I had cut. When I got it down, I raced back to the others still engaged in the last of their

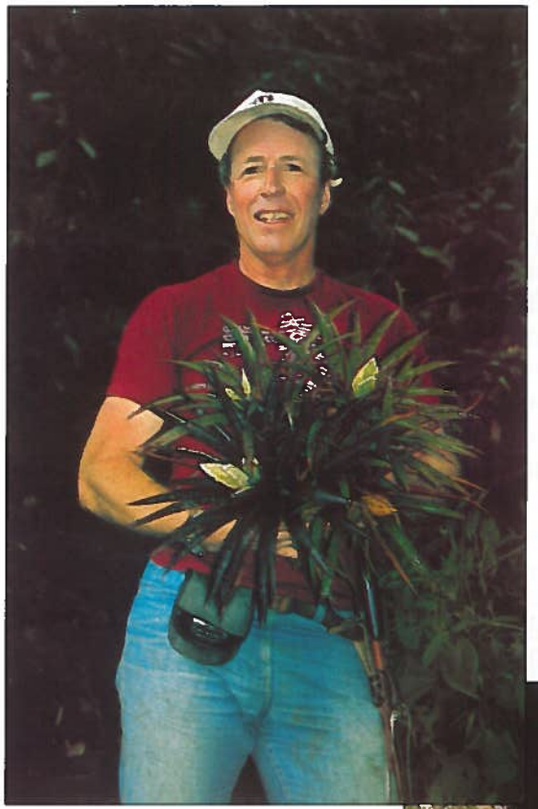

Figure 13
Jerry Raack holding a specimen of *Tillandsia raackii* with red foliage.

Photograph by José Manzanares

Figure 14
Tillandsia raackii in habitat

Photograph by Jerry Raack

lunch. Excitedly I showed them my prize and within minutes we were packing up getting ready to move down a couple of km to where I had marked the spot.

When we arrived, we eagerly made our way down the steep muddy path. We all spied plants in the trees. It was quite dark in the dense forest as the sun was blocked from view by clouds. The inflorescence of the plant is nearly white, contrasting sharply against the dark wine-red foliage at time of bloom (Figure 13). We were fortunate enough to see one of the *T. raackii* in bloom being visited by an unknown hummingbird. This is likely the natural pollinator of this species whose flowers do not open.

When you first see it, this soft-leafed tillandsia looks just like a vriesea (Figure 14). The plant turns a wonderful reddish color on the top surface of the leaves, sometimes being spotted, and are somewhat discolorous beneath, which in addition to the waxy substance on some leaves provides a wonderful patina. The wax is more prevalent on plants grown in my greenhouse than those collected in habitat. The inflorescence has 3 to 7 flattened vriesea-like feathered branches 3 cm wide and 7 to 8 cm long, each bearing from 14 to 20 flowers with white petals which remain closed at the tip. The stamen and pistil remain entirely inside the closed flower petals. The flattened spikes appear to be bursting straight from the cup center. However, the spikes are actually attached to a stem about 3 to 4 cm long. All spikes are clustered from very near the same spot on the stem in a radiating fashion with no apparent pattern. In all, the plant is quite unique. Harry Luther first described this plant in SELBYANA, Volume 12, pages 86-87 in 1991.

So where were we when we found the plant? We were 38 km south of Yangana and at 1900 to 1950 meters in elevation. While we searched several of the ridges on either side of this one, we were unable to find the plant elsewhere. The range appears to be quite narrow being confined to this one location. However, other bromeliads have started out in this fashion only to be found in other locales. In fact, I may have found one specimen in the Condor Mountains near Los Encuentros on the same trip. Time will tell whether it is the same species or not. Regardless, this plant from Los Encuentros will always be treasured by me.

I have grown *T. raackii* well since collecting it 8 years ago. I have placed a few of these plants into the hands of others in the hopes that dissemination will provide a better chance of keeping it going in case something should happen to its native habitat in the future. I have had no particular difficulty in raising this plant after the first year of acclimation to my greenhouse habitat. It flowers regularly for me when mature, but most often in the period from November through March. It provides 2 to 3 pups after flowering, but in cultivation it does not produce the grass-like pups at the base that it does in its native habitat. It takes 2 years in my greenhouse to reach maturity and bloom. I grow it in a moist humid environment under rather cool conditions. I keep it in the greenhouse year

[continued on page 129]

Studies on *Dyckia* from Brazil - I

Elton M. C. Leme & Eddie Esteves Pereira

This paper is the first of a series with the purpose of contributing to the study of *Dyckia,* one of the most taxonomically confused genus in Bromeliaceae. Considering that one of the authors (E. Esteves) lives in Goiânia, Goiás State, Central Brazil, a region very rich in species, we are concentrating our studies on taxa mainly found in that vast area. From time to time, it will be necessary to deal with dyckias from other regions, but closely related to species from the Brazilian Central Plateau like this huge Bahian species described below.

Dyckia hohenbergioides **Leme & Esteves, sp. nov. (Figures 15-17).**

A *D. beateae* E. Gross & Rauh, cui affinis, foliis per anthesim erectis (haud arcuato-patentibus), latioribus et longioribus; inflorescentia plus laxa, distincte longiora; ramulis subsessilibus; floribus majoribus; petalis subcordatis, truncatis (haud suborbicularibus et obtusis) differt.

TYPE: Bahia State, road to Seabra, *Eddie Esteves Pereira E-385,* fl. cult. Aug. 1997, *E. Leme 1959.* (Holotype: HB. Isotype: RB).

PLANT terrestrial, flowering 1.80–2 m tall; LEAVES ca. 30 in number, rosulate, suberect, very narrowly triangulate, attenuate toward apex, acuminate ending in a pungent spine, ca. 60 cm long, 4–5 cm wide at base, very rigid, succulent, greenish, finely nervate, densely white-lepidote on both sides, laxly spinose, spines triangular-uncinate, densely white-lepidote, 5–9 mm long, 3–5 mm wide at base; SCAPE 80–100 cm long, ca. 1.3 cm in diameter at base, white-sublanate but soon glabrous, green, sulcate; SCAPE BRACTS triangular, acuminate-caudate, 5–10 x 2–3 cm, finely nervate, greenish to paleaceous, ecarinate, white-lepidote to glabrescent, erect, the basal ones laxly serrulate toward apex, equaling to slightly exceeding the internodes, the upper ones entire, shorter than the internodes. INFLORESCENCE lateral, erect, laxly compound, bipinnate at base and apex, tripinnate at middle, ca. 70 cm long, white-sublanate at anthesis but glabrescent with age; PRIMARY BRACTS like the upper scape bracts but gradually reduced toward the inflorescence's apex, strongly plicate at base transversally, distinctly shorter than the branches; BRANCHES ca. 10 in number, subsessiles, densely strobilate-digitate, 7–10 x 2 cm, erect to suberect, the basal and upper ones borne singly on the main axis, the medium ones 2 to 4 in fascicles on the main axis, axis white-lanate; FLORAL BRACTS suborbiculate to triangular, apex acuminate, minutely denticulate-crenulate to entire, suberect with disclosed margins, 10–14 x 13–15 mm, paleaceous toward apex, concave, ecarinate to slightly carinate near the apex, white-lanate at base but becoming glabrous with age. FLOWERS densely arranged, suberect at anthesis, 16–17 mm long, odorless, pedicels undistinct, stout, ca. 2.5 mm long, ca. 6 mm in diameter at apex; SEPALS suborbiculate, subobtuse to slightly

emmarginate, very minutely mucronulate, entire, ecarinate, 7–8 x 9 mm, sparsely sublanate to glabrescent, orange-red; PETALS subcordate, truncate-emarginate, connate at base for ca. 1.5 mm in a common tube with the filaments, ecarinate, 13 x 11–12 mm, erect at anthesis and forming a tubular corolla, orange-red, glabrous; STAMENS slightly exserted for ca. 2/3 of the anthers length; FILAMENTS complanate, 10 x 2 mm, sometimes connate for ca. 1.5 mm above the common tube with the petals; ANTHERS 3–4 mm long, strongly recurved toward apex, base saggitate, apex apiculate, fixed near the base; PISTIL ca. 9 mm long, shorter than the anthers, yellow; STYLE indistinct; STIGMA conduplicate-spiral, orange, blades ca. 1.5 mm long, margins irregularly scalloped; OVARY narrowly subpyramidate, ca. 6 mm long; OVULES suborbiculate and complanate, exapendiculate.

This new species is very closely related to *D. beateae* Rauh & Gross, 1991), but differs from it by its leaves erect at anthesis (not arcuate-spreading), broader and longer, the inflorescence more laxly branched and distinctly longer, flowers larger, and by the petals subcordate and truncate (not suborbiculate and obtuse). Also, the branches of *D. hohenbergioides* are nearly sessile, contrasting with the branches of *D. beatae* which can be shortly but distinctly pedunculate with peduncles 10 to 15 mm long, according to specimens collected at its type locality.

The name of this huge ornamental species is a clear reference to the general appearence of its inflorescence, which resembles, due to its unusual densely strobilate-digitate branches, a species of the bromelioid genus *Hohenbergia.*

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Rio de Janeiro, Brazil

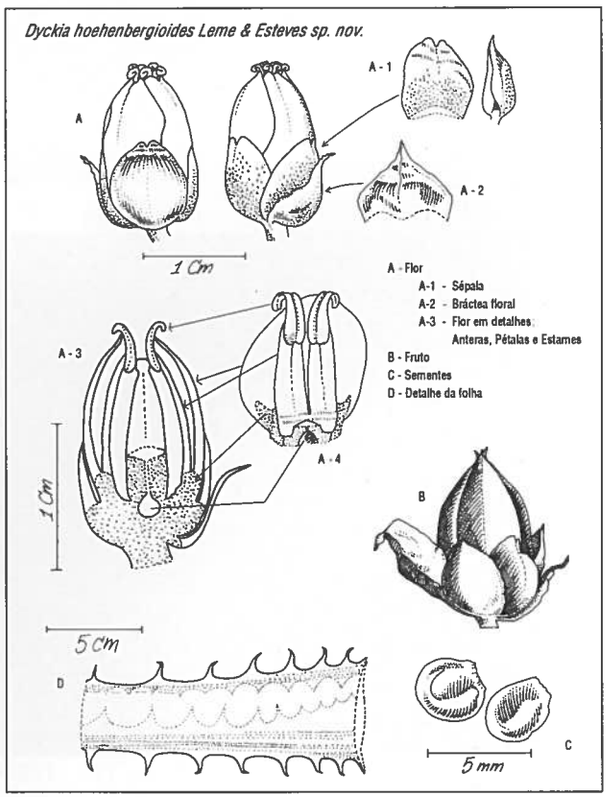

Figure 15
Dyckia hohenbergioides

Figure 16
Dyckia hohenbergioides
in cultivation

Photograph by Elton Leme

Figure 17 Photograph by E. Esteves
Dyckia hohenbergioides on left with larger flower. On the right is the flower of Dyckia beateae

A Beautiful New *Aechmea* from Bahia, Brazil

Harry E. Luther[1] and Elton M.C. Leme[2]

***Aechmea andersonii* H.Luther and Leme, sp. nov.** (Figure 18).

A *A. fulgens* Brongniart similis affinisque sed planta minore (30 cm non 40–60 cm alto), inflorescentia perminore (8–10 x 4–5 cm non 15–20 x 6–7 cm), flores minoribus (15–20 mm non 22–25 mm longis), sepalis base 2 mm connatis differt.

Type. BRAZIL. Prov. Bahia: vic. Nazaré, moist restinga forest, Aug. 1997. *J. Anderson & W. Berg BAB197* legit. Flowered in cultivation 15 Dec. 1997. J. Anderson s.n. (Holotype: HE; Isotype: SEL)

Plant an epiphyte, flowering 20–30 cm tall, spreading by 6–15 cm x 5–8 mm stolons. **Leaves** laxly spreading, 18–30 cm long, 10 to 12 in number, thin-coriaceous, bright green overall or reddish-purple abaxially, somewhat glaucose abaxially. **Leaf sheaths** elliptic, 6–8 x 3–4 cm, somewhat nerved, brown punctate-lepidote especially adaxially, concolorous with the blades. **Leaf blades** sublingulate to lanceolate, acute and apiculate, 18–60 mm wide, conspicuously channeled immediately above the sheath, very laxly serrate with 0.5 mm long antrorse spines, inconspicuously pale punctate-lepidote throughout. **Scape** erect, 20–25 cm x 3–4 mm, sparsely pale floccose, reddish. **Scape bracts** erect, imbricate, narrowly elliptic, 4–5 cm x 6–10 mm, very thin, nerved, entire, green tinged reddish to bright

Photograph by John Anderson

Figure 18
The type collection of *Aechmea andersonii* flowering in the greenhouse of John Anderson.

[1] Marie Selby Botanical Gardens, Sarasota, Florida, USA.
[2] Herbarium Bradeanum, Rio de Janeiro, Brazil.

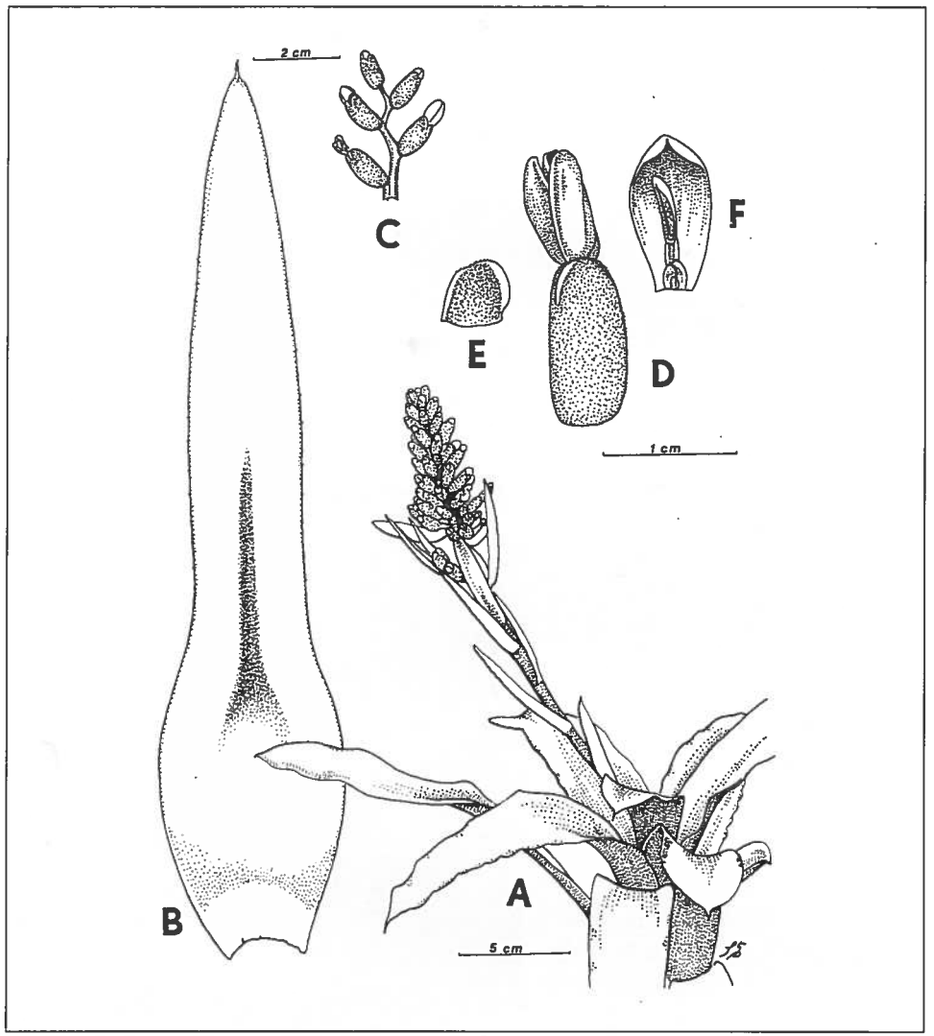

Figure 19 Drawing by Stig Dalstrom

Aechmea andersonii (drawn from the holotype). A, habit. B, leaf. C, branch of inflorescence. D, flower. E, sepal. F, petal and stamen.

rose. **Inflorescence** bipinnate, 8–10 x 4–5 cm, the lower 1/3 with 5 to 7 polystichously arranged branches. **Primary bracts** like the scape bracts but abruptly reduced toward the apex, the lowest much exceeding the lateral branches, bright rose. **Branches** with a 2–4 mm long naked sterile base, the rachis very slender and geniculate, distichously 2-to 5-flowered; the terminal spike densely polystichously many-flowered; the axis sparsely pale floccose, bright rose. **Floral bracts** minute and ovate or completely lacking. **Flowers** sessile, spreading at 45° from the axis. **Sepals** obovate, very asymmetrical, 5–7 mm long, connate for ca. 2 mm, unarmed, minutely papillose, sparsely pale floccose, somewhat rugose when dried, bright rose. **Corolla** erect, tubular. **Petals**

elliptic, obtuse, 9–12 x 3-4 mm, cucullate, each with a pair of oblong 1–2 mm long denticulate basal appendages, lavender-blue with a darker apex and a white margin. **Ovary** ellipsoid, 5–8 mm long, somewhat rugose when dried, bright rose. Placentation apical. **Ovules** caudate.

PARATYPE: BRAZIL. Brazil: Wenceslau Guimaraes, epiphyte in wet Atlantic Forest, Mar. 1996. S. Linhares s.n. legit. Flowered in cultivation Feb. 1998. E. Leme 3349 (HB)

This beautiful new species resembles *A. fulgens* Brongniart from the state of Pernambuco, Brazil but is shorter (flowering 20–30 cm vs. 40 to 60 cm tall), with a smaller inflorescence (8–10 x 4–5 cm vs. 15–20 x 6–7 cm) with smaller flowers (15–20 mm vs. 22–25 mm long). In addition, the inflorescence of *A. fulgens* is bright red with blue-purple petals.

We refrain from describing the paratype collection as a "variety discolor" as nearly all taxa of *Aechmea* subgenus *Lamprococcus* are polymorphic for foliage color, sometimes within a single population (e.g.: *A. farinosa* (Regel) L.B.Smith; H.E.L., pers. obs.)

Shrinkage after drying approaches 20%, perhaps due to the delicate nature of this plant. The description takes into account these changes; the illustration is based on fresh material.

It is with pleasure that we dedicate this attractive new species to John Anderson of Corpus Christi, Texas, who has had a long-standing interest in the genus *Aechmea.*

Bromeliad Identification Center
Marie Selby Botanical Gardens
Sarasota, Florida

In Search Of *Tillandsia Raackii* (Again)

[continued from page 123]

around even though I summer most other bromeliads outside. The reason for keeping it in the greenhouse is that the greenhouse stays cooler in summer than the air outside (I will have an article on this in a future issue of the *Journal*).

For those of you interested in owning a specimen of this plant, I will be donating one to the Rare Plant Auction at the World Bromeliad Conference in Houston, Texas in July of 1998. So come prepared and see this wonderful plant for yourself. Hopefully, in the near future, it will be popular and appear in many collections where it will rightly deserves a place among other fine bromeliads.

Pataskala, Ohio

Book Review

Chet Blackburn

Red Flowered Tillandsias From Brazil (Die rotblühenden brasilianischen Tillands*ien*). Renate Ehlers. English translation by Derek Butcher. Published by Herausgeber, Deutsche Bromelien-Gesellschaft e. V. (the German Bromeliad Society), Frankfurt am Main, Germany. Wolfgang Tittelbach, editor. Card cover, 23 × 16 cm (9 × 6.5 inches), 66 pages, including 29 color photographs and 21 line drawings.

This is a thorough treatment of 15 tillandsia species and their varieties from Brazil, all of which have red or reddish flowers. The species covered are *Tillandsia paraensis, T. globosa, T. geminiflora, T. gardneri, T. chapetiensis, T. grazielae, T. reclinata, T. sucrei, T. brachyphylla, T. heubergeri, T. thickenii, T. sprengeliana, T. kautskyi, T. organensis, and T. roseiflora.* Three of them are newly described in this work (*T. heubergeri, T. organensis,* and *T. roseiflora*), and three others are so endangered as to appear on the CITES list (*T. sprengeliana, T. kautskyi,* and T. sucrei). They are all choice plants and most are both difficult to find and difficult to grow.

Text is in German but with English translation in columns to the right of the German text. The photographs alone are sufficient to recommend this book. The best reason for the serious grower to obtain it however, is that it covers a group about which there remains confusion because of past mislabeling. The concise descriptions coupled with the photographs and line drawings should resolve this confusion.

The book will be available at the World Bromeliad Conference in Houston at a cost of $24.50. After the conference it may be obtained through BSI Publications, c/o Sally Thompson, 29275 N.E. Putnam Rd., Newberg, OR 97132, for $24.50 plus postage. The book may also be obtained from Deutsche Bromelien-Gesellschaft, Klause Sasse * Schatzmeister, Askulapweg 26, D-44801 Bochum, Germany. In Australia, it is available through Derek Butcher, 25 Crace Road, Fulham, SA 5024, at a cost of $A23 postpaid.

It is especially recommended for *Tillandsia* enthusiasts, but anyone interested in bromeliads will regard it as a valuable addition to their library

Auburn, California.

Bromeliad Roundup

Allyn Pearlman

Howdy Partner,

The rush is on! Time is runnin' out for lassoin' up your fun at the "Bromeliad Roundup'. Yee haw! It's comin' all together and we'll keep your boots a hoppin' with things to do, places to go, and folks to listen to at this lucky 13th

World Bromeliad Conference.

Don't fret my friends, you don't need to rob a bank to have all this fun. Those smart folks in Houston are takin' that plastic money for registration, tours and the sellin' of those pretty plants called bromeliads. Rumor has it from the hills that them folks are goin' to be selling some real pretty bromeliad artwork, bromeliad stained glass and plants. Don't be frettin', 'cause it ain't too late.

The good Southern hospitality will be aflowin' with people havin' you come to their private ranches and look at them pretty, little plants growing in them things called greenhouses. Some of them folks even have them growin' outside of them greenhouses.. Yee doggies! All this is free just for comin' to our 'Bromeliad Roundup'.

We got some stagecoaches on reserve to take you good folks on some eye opener sights to see around the big city, You won't need to haggle about the prices 'cause these stagecoaches will only charge you $13.50 per body. You can see 1-2-3 or 4 fun-filled places around the Houston Museum of Natural Science and it will only cost you 10 little doggies. (I know a little secret. You will be getting a $1.00-off coupon in your registration packet from that nice Nancy Grieg at the Cockrell Butterfly Center).

That other stagecoach will be hcadin' down towards Ga!veston Island to Moody Gardens with that fun filled 'Tropical Rainforest, Discovery Pyramid and Imax 3D Theater and much, much more. You won't be leavin' any arm or leg behind 'cause this stagecoach is only $13.50 per body and you can see one or all six attractions for 5 doggies to 28 doggies. In Texas, we all know that a doggie equals $1.00

Them real smart people will he talkin' about all kinds of things regarding them bromeliads. You gonna have a real hard time decidin'. You might be pickin' straws to see who you gonna go hear. Just listen to the names of these City Slickers who are gonna tell all; John Anderson, John Arden, Don Beadle, Dorothy Byer, Dennis Cathcart, Maurice De Proft, Betty Girko, Bruce Holst, Elton Leme, Harry Luthcr, José M. Manzanares, Francisco Oliva-Esteve, Jerry Raack and Michael Young. You gonna learn a lot from these people.

Remember now, if: your gonna bring your bromeliads, them nice folks want you to have them there by Wednesday, July 1st because they'll be pickin' the winners on Thursday, Jul1y 2nd. Some of us will be two-steppin' when our bromeliads win them awards. Better hurry, them good ol' special prices for staying at the Wyndham Greenspoint Ranch ends on June 15th. If you got yourself a telephone, call 1-800-996-3426 or 261-875-2222 to guarantee your room. Better register now for the 'Bromeliad Roundup'. After June 15th, you might not have your name badge ready and waitin' for you.

Don't forget to bring a new pair of blue jeans for the Saturday night fling and any friends you think might enjoy this 'Bromeliad Roundup'. "Happy trails to you: until we meet again"! Y'all come now!

Houston, Texas

Yaxha Lagoon

Chet Blackburn **Photographs by the author**

Once visited only be archeologists, biologists, and adventurers, the site of the spectacular Mayan ruins at Tikal in recent years has become one of Guatamala's most popular tourist attractions. It is now an easy half-hour flight from Guatamala City to Flores, where busses wait to whisk arriving passengers off to the ruins on a well-paved highway. It has become so easy, in fact, that many people fly into Tikal in the morning, explore the ruins, and fly back to Guatamala City all in the same day. Most are unaware that there are numerous other ruins in the area. Tikal is bustling now, but there are many backwoods parts of the Peten jungle still left mostly to the archeologists, biologists, and adventurers. One of these places is Yaxha Lagoon.

Yaxha is one of the largest, and is the wildest, of a series of lagoons (shallow lakes) that lie between Tikal and the Guatamalan border at Belize. The paved road ends outside of Tikal, but a badly rutted dirt road (or more precisely, a mud road filled with potholes that at times almost qualify as chasms) continues on to Cuidad Melchor de Mencos at the border.

In 1993, my wife Jean and I, along with Ted and Jo Groll, spent a couple of pleasant days at Yaxha ogling the plants and wildlife that abound there. We had made arrangements to stay at the Sombrero Lodge on the shore of the Lake. It is not the type of place that one can simply drop in unannounced to register and spend the night. Advance notice must be given so that food and drink is available for the length of your stay, not to mention the fact that some arrangements need to be made just to get there. The lagoon is located about ten kilometers off the rough Tikal-Melchor de Mencos road on a side road that makes that one look like the Autobahn. It is usually accessible only by four-wheel drive and/or high clearance vehicles.

We had spent the week before in the Cayo district of Belize. When we left San Ignacio in Belize we took a taxi to the Guatamalan border, cleared customs, and walked across the border to check in to a small hotel named the "Palace Melchor de Mencos." My dictionary defines "palace" as "any splendid residence or stately building". They obviously were not using the same dictionary here. The tiny little hotel had only four Spartan rooms, and was located on the banks of a river that was surging from the previous night's downpour. We were the only occupants in residence. It was, in fact, exactly the kind of place I like to stumble on to, much to Jean's chagrin.

We were to meet Juan de La Hoz, the owner of the Sombrero Lodge in the morning, and when he arrived, he arrived with two vehicles, a van and a large truck. At the time that seemed like overkill, since there were only four of us with light luggage. We threw what little baggage we had into the truck and climbed

into the van and headed west. Once we turned off the highway on to the road to Yaxha Lagoon however, we quickly found out why there were two vehicles. The van was for our comfort driving as far as it would go. Once we entered the side road, the bed of which had the look and consistency of vanilla pudding, the van was abandoned and we all loaded into the back of the truck, swaying back and forth and dodging vegetation as we mucked our way onward for the rest of the journey.

The lagoon is remote, and wildlife abounds. On the way in we stirred up several noisy flocks of chachalacas and our bouncing around sent numerous kingfishers into flight from the nesting holes they had made in the soft limestone banks lining the road.

The lodge is in an idyllic setting on the banks of the lagoon. Juan and his family acquired 4,000 hectares (about 8,000 acres) around the lagoon in 1971. After years of living in relative isolation, and having to cope with only hardships such as jaguars making off with livestock, Juan was now being put upon almost daily as "progress" began to arrive in the Peten. First, Mayan ruins were discovered on an island he had owned in the lagoon (the Topoxte ruins). The government thereby confiscated it as an archeological site. Shortly after his arrival, he had planted mahogany trees for use as a logging plantation, which, now that they were reaching maturity, the government has refused to let him harvest. His apiary business had recently been all but wiped out by chemical spraying at the border in the war on drugs, and armed squatters were moving onto the fringes of his land. The Sombrero Lodge was his latest venture. In spite of its remote location and shortage of creature comforts (no electricity, for example), he had been attracting occasional ecotourist groups, but now he was worried about that continuing. A few weeks before our arrival, one of the members of a European tour group had been attacked and almost killed by a 12 foot Morelet's Crocodile while swimming in front of the lodge. As if the sensationalism of the rare attack was not enough in itself, the tourist turned out to be Royal Baker for the queen of the Netherlands. The resulting headline in the English language Guatamala News[1], for example proclaimed "Croc Gobbles Baker." Juan was concerned about the possible public relations damage done in attracting other tour groups. I hope his luck has since changed.

The Morelet's Crocodile, incidentally, is highly endangered … even more so than swimming Dutch tourists. It is indigenous to southern Mexico, the Peten and Belize. Only about 80 of them were known to exist in the Peten at the time, and even fewer in Mexico. About half of the ones in Peten live in Yaxha Lagoon.

Across the lake from the lodge is Yaxha National Park, site of the third largest Mayan ruins in Guatamala (after El Mirador and Tikal). Archeological work has been going on there for more than 40 years, but few tourists seek it out.

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1 The Guatamala News, Vol.39, September 17, 1993.

Figure 20
Yaxha Lagoon, Guatamala

Figure 21
Tillandsia festucoides

Because of the heavy rains the night before, no work was going on at either Yaxha or Topoxte when we were there and we had both archeological sites to ourselves (along with a troop of perturbed spider monkeys). We also had the lodge to ourselves during our stay.

Troops of howler monkeys serenaded us in the evening and a flock of keel-billed toucans visited the trees outside our cabin every morning, Spider monkeys threw twigs, fruit and unmentionable items at us as we walked through the forest, and the cry of ospreys echoed around the lake. Violet green swallows were everywhere patrolling the shoreline, wading birds proliferated, and we caught our first glimpses of a collared aracari, and masked tityra. Wildlife occurring there that we did not see includes tapir, jaguar, margay, brocket deer, whitetail deer, agouti, kinkajou, coati, peccary, coendu and even the ubiquitous coyote. Birds are prolific in both numbers and species.

But most importantly, there are bromeliads! The most conspicuous and most abundant species was *Tillandsia festucoides,* but *T. schiediana, T. usneoides, T. brachycaulos, Tillandsia polystachya, Tillandsia variabilis, Tillandsia juncea,* and *T. balbisiana* were also everywhere to be found. *Aechmea bracteata* was common and I came across a single specimen of *Aechmea lueddemaniana* along the road.

Yaxha or Yaxja (pronounced Yah-sha) means "green water" and is so named because of the jade-green appearance of the lake. It is only another 60 to 90 minutes from Tikal and well worth the extra couple of days it would add to a Tikal trip.

Auburn, California

Exploring for Ecuadorian Bromeliads

[continued from page 120]

A collection will be kept at the QCNE, where anyone can review it under the names of: José M. Manzanares, B. Girko, J. Raack, E. Doherty and M. Navarro with the number of the collection. The duplicate set will be donated by the QCNE to another herbarium.

It was an incredibly fruitful and enjoyable trip for all involved.

ACKNOWLEDGEMENTS

I wish to thank Jerry Raack, Ed Doherty, Elizabeth Patterson Girko and Mónica de Navarro, for their help with this bromeliad study. Special thanks to Jerry and Betty for the contribution of the slides to the study of Bromeliaceae of Ecuador. Thanks to Cristina Barrera for the translation to English the original Spanish manuscript. Thanks to Betty for revision of the manuscript.

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Affiliates in Action

Gene Schmidt

A milestone was reached by the South Bay Bromeliad Associates (Calif.) in celebrating their 30th year of BSI association at their Christmas luncheon in December. Leslie Walker gave a speech marking the occasion that included the presentation of the original charter. After her speech, Leslie was presented with a crystal plaque for her 30 years of service to the South Bay Bromeliad Associates. Congratulations to her and the SBBA! (reprinted from the January '98 SBBA Newsletter)

Congratulations also go to the Bromeliad Society of Central Florida, which celebrated its 25th anniversary as a society in October of 1997. Many of the U.S. bromeliad pioneers belonged to the BSCF, and of the 51 original charter members, 11 are still members. The BSCF has hosted two World Conferences, the 1980 conference, and more recently the ëOrlandiana 96 conference. (reprinted from the October '97 BSCF newsletter)

Richard Sedlak of the Bromeliad Society of Broward County won the gift certificate good for a one-year free membership to the BSI at their societyís Christmas party. This society also provides an added incentive for joining the BSI. When members purchase raffle tickets and can submit proof of BSI membership, they will receive chances on special, rare bromeliads (reprinted from The Commentary, BSBC Newsletter, Jan '97)

The Bromeliad Society of Greater Chicago presented the awards for their thirteenth annual show at their November meeting. The show included 157 entries from 24 exhibitors. Jack Reilly and his wife Ardie, co-chairs for the show, are to be commended on a job well done. (Reprinted from the BSGC News, October '97)

The Bromeliad Society of South Florida is proud to have added another 18 members for 1997. They also added another 50 names to their mailing list after their colorful bromeliad display at the Fairchild Tropical Garden Ramble. Peniel Romanelli made up some very attractive and informative folders for the public. The BSSF is also sad to announce the death of Dr. Milton E. Lesser, a highly regarded cardiologist and Internist in the Miami area. Milt had been a member since 1988 and served as a director and show chairman. The society will be making a donation to charity in Milt's memory. (Reprinted from the Bromeliadvisory, BSSF Newsletter, January '98)

The Bromeliad Society of Australia has announced the date for its 10th Australian Bromeliad Conference. It will be held 27-30 August 1999. It will be hosted by the Cairns Bromeliad Study Group in Cairns, Queensland. Please contact Secretary Jim Wait (07) 40537863 or Conference Convenor Lynn Hudson (07) 40533913 for further details. We encourage those of you who can to attend. (Reprinted from the Jan/Feb '98 issue of the Bromeletter, Journal of the Bromeliad Society of Australia Inc.)

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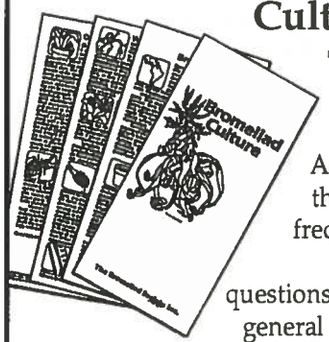

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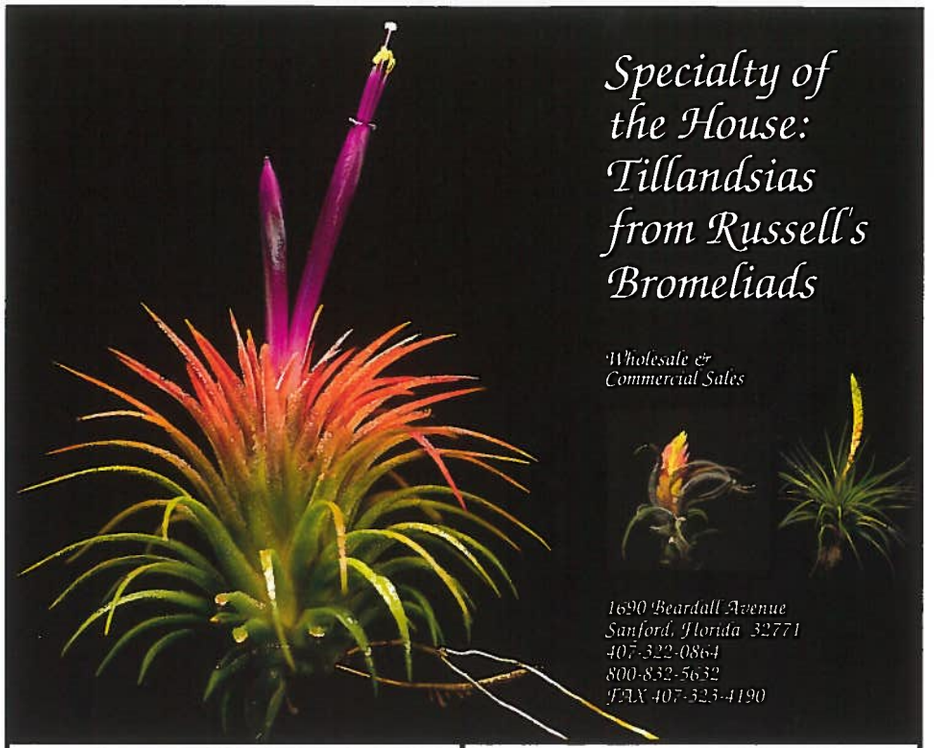

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The Bromeliad Society International

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

Pitcairnia dodsonii H. Luther, in habitat near Limon, Ecuador. Photograph by Jose Manzanares. This is one of many plants found on a recent collecting trip to Ecuador discussed in text beginninig on page 108.

Calendar

8-10 May	The Bromeliad Society of Greater Mobile's 21st Annual Bromeliad Show and Sale will be held at the Belaire Mall, on Airport Blvd. at the intersection of I-6t in Mobile, Alabama. Hours are Friday: noon to 9 p.m., Saturday: 9 a.m. to 9 p.m., and Sunday from noon to 5 p.m. Contact: Sherry or Rodney Garcia, 6670 Havenpark Lane, Wilmer, AL 36587. Telephone 334-649-9254.
16-17 May	The Greater New Orleans Bromeliad Society's 26th annual show will be held at the Lakeside Mall, Metairie, LA. Hours are 1:00 p.m. to 6:00 p.m. on Saturday, and 11:00 a.m. to 4:00 p.m. on Sunday. Contact: Carol Hertz 504-486-8190.
30-31 May	The Shreveport Bromeliad Society annual show and sale at the Barnwell Garden and Art Center, 501 Clyde Fant Pkwy., Shreveport, LA. Hours 1:00 p.m. to 5:00 p.m. on Saturday, noon to 5:00 p.m. on Sunday. Contact: Harvey C. Beltz. 318-635-4580.
13-14 June	The San Francisco Bromeliad Society Show and Sale will be held at the County Fair Building in Golden Gate Park at the corner of 9th Avenue and Lincoln Way. Hours are 9 a.m. to 5 p.m. both days.
20-21 June	The Sacramento Bromeliad Society's annual show and sale will be held at Shepard Garden and Arts Center, 3330 McKinley, Blvd., in Sacramento, California. Hours are 10 a.m. to 5 p.m. on both days. Contact: Keith Smith 916-885-0203
1-5 July	"Bromeliad Roundup", the 13th World Bromeliad Conference will be held in Houston, Texas at the Wyndham Greenspoint Hotel. Contact Don & Betty Garrison, 1119 Lisa Lane, Kingwood, TX, USA, 77339-3429. Telephone 281-358-2641; Fax 281-359-1446. e-mail don betty@nhmced.campus.mci.net.