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Editor: Thomas U. Lineham, Jr., 1508 Lake Shore Drive, Orlando, Florida 32803-1305.

Editorial Advisory Board: David H. Benzing, Gregory K. Brown, Harry E. Luther, Robert W. Read, Walter Till.

Cover photographs. Front: *Tillandsia ionantha* var. *ionantha*. Pamela Koide describes the species, varieties, forms, and cultivars on pages 160–164. Back: *Tillandsia kolbii* may look like a variation of *T. ionantha* but taxonomists have determined that it is different in both form and structure. It used to be called *T. ionantha* var. *scaposa*. Photographs by the author.

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In Search of the New One

H. Heidt

On the 26th of February 1990 around 10 o'clock in the morning, it was almost 40 degrees Celsius (about 100 degrees Fahrenheit) in Rio de Janeiro. We were happy to arrive in the shade of the bus station. There, everything was hectic as hundreds of people from all parts of that huge country bustled about. At the counters of the individual bus companies, people pushed forward, everybody wanting a ticket. In the modern, fully air conditioned buses there could be no standing room.

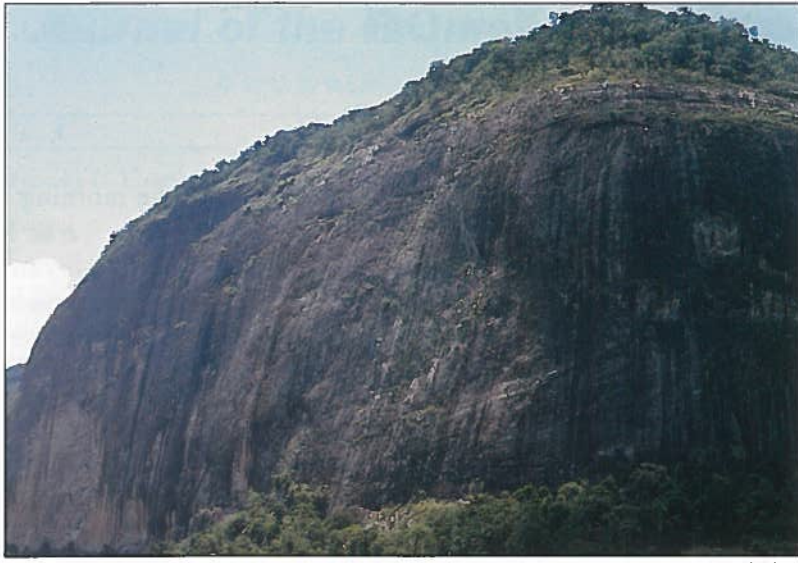
When we started out for Campos promptly at 11, our bus had every free space filled. Someone had palmed off the seats over the front axle on my friend, Reinhard, and me. That would have made no difference as long as there were no holes in the road, but should there be a stretch of gravel instead of pavement it was bad luck if one had a slipped disk or the need to urinate. The road, the physical problems, and the unuseable bus lavatory made the last several kilometers of the four-hour trip hellish.

On arrival in Campos, we changed buses to go to Morro do Coco. That trip took yet another one and a half hours, but on arrival, we found a double room with mosquito netting at the price of 8 DM, or US \$4.50, including breakfast.

Reinhard had been there years ago. On the rocks in the area he had found something similar to *Tillandsia araujei* or *T. tenuifolia* and he wanted to collect a few more of them. Since we had arrived late in the day, we just lazed around. Without intending to do so, we went almost automatically in the direction of the rock formation. Before dark we could catch a glimpse of the mountains in the distance.

Early the next morning, we set off but made it only to the grocery store on the next corner. There we supplied ourselves with water and learned from the owner about a man in the village who took people around in his car. Because we weren't really keen to walk seven or eight kilometers (I prefer an uncomfortable ride to a comfortable march), we decided to get a ride. But amigo had gone somewhere else and did not reappear until about an hour later.

As the track came to an end, we got out facing three steep rock formations (figure 1). On two of them, all vegetation was burned up. Brown and black they rose from the green meadow into the blue sky. The third, thank goodness, had been spared from the fire so we concentrated our interest on it. In order to reach it, we had to cross a field and then a space covered with



Author

Figure 1.

One of three such rock formations investigated by the author in the vicinity of Morro do Coca. Note the cave-like holes in the rock face and the great blocks that have broken loose lying at the base.

bushes and a few tall trees. Great bromeliads, orchids, and strophocactus were growing on that vegetation but no tillandsias.

On reaching the bare rocks we saw plants of the unidentified species that some said were *Tillandsia araujei*, others *T. tenuifolia*. As Reinhard told me, there had been thousands of this species on both of the burned rocks. As so often happens when one is disappointed, we almost lost interest in tillandsias. We both just looked around apathetically. It then happened that my friend went to the right side and I went left along the rock. In addition to the unknown species of *Tillandsia* there were two other unrecognized species of bromeliads on the rocks. Here and there a cactus grew in a crack. I noticed that there were no tillandsias of the kind that grew on the rocks growing on the trees, which sometimes stood right next to them.

So, in nature, *Tillandsia nuptialis*, *T. grazielae*, *T. araujei*, *T. sucrei*, *T. brachyphylla*, and *T. reclinata* refuse to populate trees. Why should that be? Why don't the seeds of those species germinate on trees instead of on stones? An area for research?

After crawling around this rock for a while and searching eagerly, I could find nothing special so I took a break. Completely sweat-stained and exhausted, I spread my wet shirt over a bush to dry and then sat on a chunk of rock. Tired out, I was staring aimlessly at the dirt when a big tarantula



Author

Figure 2.

Tillandsia thiekenii, named for the author's travelling companion and described here. The petals appear purple-violet in the photograph but are much more pink.

Figure 3.
Tillandsia sprengeliana Klotzsch
ex Mez. In the description that
follows, Renate Ehlers compares the
new *T. thiekenii* with this species.



Sue Sill

came in sight. I watched it for a while and remembered how another friend had begged me to get a tarantula for him. As if the spider could read my thoughts, it took flight. It ran toward a ledge that had broken away from and slid down the mountain and was now leaning against the base of my rock.

Once more it seemed as if the tarantula knew what I was thinking because after reaching a height of about three meters on the ledge it stood still. Again he escaped and climbed fast but, as I was about to overtake him, he crawled under a large, fallen leaf. I was concentrating so hard on the beast that not until I lifted the leaf did I discover the tillandsia that was lying close to it.

My first thought was, "what is an ionantha doing here?" After taking a closer look I saw that it just looked like an ionantha and that the heart had been eaten out of it. After a longer search on that platform and turning over every leaf, I discovered three more specimens. They were still young plants, completely healthy and undamaged. They looked like the coastal form of *T. sprengeliana*.

After searching for a long time along the entire rock face and finding nothing, I found a kind of cavern where the ledge had broken free; some 15 meters above me I saw something that looked similar to this new plant. So I slid quickly down the rock to get the field glasses that were in my rucksack. Then I saw a whole pile of those tillandsias that had been invisible before because of the shadow of the overhang. By searching other caves, I discovered even more plants. They all grew in shaded areas, never exposed to the full sun. What I noticed was that they were growing upside down and also that plants loosened from the rock for any reason fell invariably on a ledge and that was the reason for my finding the first specimen. Despite an intensive search I could not find any more. That day it was impossible to gather more of this species. Only with the help of a mountaineer could we procure further plants. When I took a closer look, I could see that the heart had been eaten out of all adult specimens. Only on one plant could I see an old, withered inflorescence. All young plants were more or less undamaged.

The culprit was a maggot that I discovered on the leafy base of an adult plant. It dropped into layers of leaves that lay on the ground and out of sight. So, for the moment, it is not possible to learn what insect lays its eggs in this tillandsia. On further examination, I discovered that a round hole had been eaten through the leaves straight into the middle of the plant.

In my opinion, this insect constitutes a great threat to this primarily endemic species because it cannot propagate when unable to form an inflorescence and bloom. In most of the plants that I have in culture the middle is growing out again slowly. I hope that some of them will soon flower. Then we shall see it if is an unidentified species. Should that come about I would

like to name it after my friend, Reinhard Thieken, who took me to many scarcely known locations of tillandsias. Without him I surely would not have had some of the experiences that I did.

Oh! yes, in all the excitement I completely forgot about the tarantula.

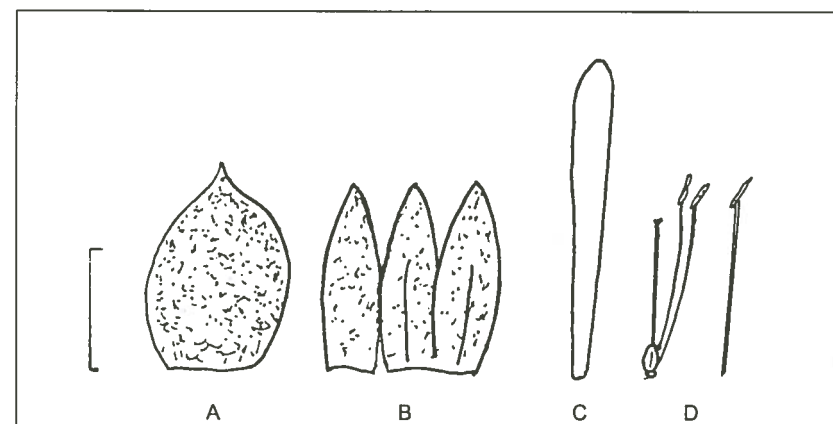
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789 Waldshut-Tiengen 1, Germany

Tillandsia thiekenii R. Ehlers sp. nov.

A *T. sprengeliana* Klotzsch ex Mez in Martius rosulis deorsum crescentibus, foliis solum paulo subsecundis, succulentioribus, bracteis florigeris pallide rosaceis dense subpruinose lepidotis, sepalis lepidotis et petalis longioribus rosaceis laminibus patentibus differt (figures 2 and 3).

Typus. Brasilia: Rio de Janeiro, Morro do Coco, in rupibus fere verticalibus una cum *Tillandsia* spec. aff. *araujei* Mez in Martius et *Vriesea* spec., leg. R. Thieken s.n., Maio 1991 (holotypus WU).

Plant stemless, flowering 6–10 cm high. *Leaves* many in a dense, erect rosette growing pendent (upside down) on steep cliffs, forming a pseudobulb, 3–5 cm long, thick, subsucculent, covered with coarse, spreading, cinereous scales, the margins with a dense border of asymmetric trichomes. *Sheaths* elliptic, 5–12 mm wide, flat, violet-brown, merging with the blade. *Leaf blades* green, narrowly triangular, acuminate or acute, involute. *Scape* erect, to 3 cm long, hidden in the rosette, pale green; *Scape bracts* laxly imbricate, leaving the scape visible, pale green, elliptic, the lower ones with short, narrowly triangular,



R. Ehlers

Figure 4.

Tillandsia thiekenii R. Ehlers.

A, floral bract; B, sepals; C, petal; D, reproductive organs. The scale indicates 1 cm.

(continued on page 179)

A New *Guzmania* from Northwestern Ecuador

Harry E. Luther¹ and Ron O. Determann²

Guzmania albescens Luther & Determann, sp. nov.

Type: Ecuador, Esmeraldas: At km 16 on Lita—Alto Tambo road, 700 m elev., 9 Jan. 1990, R. Determann & Atlanta Bot. Garden s.n. legit. Flowered in cultivation at the Marie Selby Botanical Gardens, 13 October 1992, H.E. Luther 2901. (holotype, SEL; isotypes, QCA, QCNE, WU).

A *G. scherziana* Mez et *G. alborosea* Luther, quibus affinis, sepalis petalisque minoribus differt; a *G. hitchcockiana* L.B. Smith, cui affinis similisque, inflorescentia omnino glabra differt.

Plant flowering 30–65 cm tall, clustering. *Leaves* densely rosulate, laxly spreading, 40–60 cm long, inconspicuously appressed punctate lepidote,



Vern Sawyer for Selby Gardens

Figure 5.
Guzmania albescens.
Inflorescence at early anthesis.

¹ Marie Selby Botanical Gardens, 811 S. Palm Ave., Sarasota, FL 34236.

² Atlanta Botanical Garden, P.O. Box 77246, Atlanta, GA 30357.

especially abaxially. *Leaf sheaths* elliptic, 7–11 x 5–6 cm, castaneous toward the base especially abaxially. *Leaf blades* lingulate, acute to attenuate, 23–40 mm wide, bright green, inconspicuously red striate toward the sheaths abaxially. *Scape* erect, 20–30 cm x 5–8 mm, green. *Scape bracts* erect, densely imbricate, much exceeding the internodes, elliptic, attenuate, green or white tinged green. *Inflorescence* bipinnate, 10–20 x 8–12 cm with 2 to 8 branches. *Primary bracts* elliptic, attenuate, equalling to slightly exceeding the naked, sterile bases of the branches, pale green to white. *Branches* spreading at 45–60 degrees from the branch axis at anthesis with a naked base 1–2 cm long, 4–12 flowered. *Floral bracts* elliptic, obtuse, 16–19 mm long, thin coriaceous, even to slightly nerved, glabrous, pale green to white tinged green or white. *Flowers* with a stout pedicel, 4–5 mm long, completely glabrous, spreading at 45–60 degrees from the branch axis at anthesis, opening at night with a slightly unpleasant odor. *Sepals* elliptic, obtuse, 18–19 mm long, thin coriaceous, connate for 5–6 mm, the adaxial pair carinate, white tinged green or white. Corolla with widely spreading to recurving lobes. *Petals* oblanceolate, obtuse, 25–28 mm long, conglutinated for 15–20 mm, white to cream.

This new species differs from *Guzmania scherziana* and *G. alborosea* by having shorter sepals (18–19 mm) and petals (25–28 mm vs. 30–35 mm), and a white and green, not red and yellow (*G. scherziana*) or pink and white (*G. alborosea*) inflorescence. The similar and closely related *G. hitchcockiana*, also night flowering, can easily be distinguished because of its densely brown lepidote inflorescence.

A large population of *Guzmania albescens* was grown from field-collected seed and distributed by the Atlanta Botanical Garden and the Marie Selby Botanical Gardens in the fall of 1992.

This new species is relatively vigorous and easily cultivated. It may have potential use in the production of pastel-colored horticultural hybrids.

In the January–February issue of this year we wrote “A Note to All Members” about reporting any problems with late copy, empty envelopes, and mentioned the possibility of blank pages. It happened. Some unknown number of copies of the March–April issue had nine blank pages, if you can imagine that many. We have received two reports to date and have sent replacement copies. We now have a new printer—Ed.

Comments on the Responsibilities of Taxonomists

Gregory K. Brown,¹ Harry E. Luther,² and W. John Kress³

Plant taxonomy is the branch of botanical science dealing with the identification, naming, and classification of plants. A principal goal for the modern plant taxonomist is to improve and refine classification systems with the ultimate goal being to develop a system that reflects evolutionary relationships. Since we will never know the true evolutionary relationships within a large group of organisms like Bromeliaceae, we will never know the single, true classification for that group. Consequently, all classifications represent hypotheses of evolutionary relationships, for example, that the species within genus "X" are more closely related to each other than they are to the species in the genus "Y." In the case of competing or alternative hypotheses, the best classification is the one that is most natural (monophyletic); that is, the hypothesis that best reflects evolutionary or genealogical relationships. In short, the modern plant taxonomist strives to identify natural taxonomic units including species, genera, subfamilies, and families and their relationships.

What sorts of data are used to generate and support classification hypotheses? The answer is: the characters of the taxonomic units being considered. Never before has the taxonomic community had such a diversity of research tools and types of data, for example, morphological, anatomical, chromosomal, chemical, developmental, molecular, genetic, ecological, and biogeographical, for use in reevaluating classifications, or for formulating new and improved hypotheses.

What is the role of nomenclature in all this? Nomenclature is the mechanism through which a classification is communicated. For example, "Bromeliaceae" communicates a plant group that, according to all available data, appears to be natural. Consequently, as classifications are improved to more accurately reflect genealogical relationships, nomenclatures frequently require corresponding change. The reverse is true as well. It is change in nomenclature and, specifically, change unsupported by convincing data, that this commentary is about.

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There are formal rules describing how changes in nomenclature must be made in order to be considered legal. However, names of plants that are legitimately described are not absolute laws in themselves. We do not have to use them. For example, changes in taxonomic rank, such as removing a group of species from one genus to make a new genus, or sinking an old, smaller genus into a larger one, can be accepted or rejected by botanists and horticulturists regardless of how legally the names were published. But if the names are legitimately published, they cannot be ignored even if based on faulty taxonomic judgment. For this reason, new names should not be published in the absence of convincing scientific evidence.

The monumental monograph by Smith and Downs (1974, 1977, 1979) stands as an important synthesis of the taxonomy of Bromeliaceae. New insights, however, gained from current investigations of character distributions have made us recognize that there are some errors in the classification and nomenclature proposed in that work. They must be corrected after thorough scientific investigation.

Recent attempts to establish more natural groups from several obviously artificial taxa accepted in the Smith and Downs monograph have produced major nomenclatural (and thus classification) changes. For example, Smith and Kress (1989, 1990) believing that the genus *Aechmea* was an unnatural taxon, elevated eight subgenera to generic rank in order to provide smaller natural groups to indicate the evolution of the subfamily. They stated that this seemed, "...not only logical but also convenient..." Elton Leme (1992), however, pointed out that these nomenclatural changes were not supported by published data, or as he said, by "convincing, fresh arguments." Even though some of these new genera may be good groups, the nomenclatural changes proposed by Smith and Kress did not advance our knowledge of Bromeliaceae but certainly did increase the amount of taxonomic bookkeeping required to keep track of all the names. To complicate matters, those authors transferred several taxa misplaced at the subgeneric level within *Aechmea* to the wrong, newly created genus. We stress that proposed changes in classification must be accompanied by a thorough scientific reevaluation of all affected taxa.

A second example also concerns changes in the genus *Aechmea*. Smith and Spencer (1992) placed the genus *Streptocalyx* into synonymy under *Aechmea* because they decided that "...petal appendages have proven unacceptable as a delimiting generic character in Bromeliaceae...." Again, a major nomenclatural change not supported by a thorough taxonomic analysis. In the case of *Streptocalyx*, although petal appendages may not be a valid character on which to base a genus, the Smith and Spencer paper failed to establish this as a fact. The work documenting questionable reliability of petal appendages as a generic-

level character, as currently used in the Bromeliaceae, was done by Brown and Terry (1992). It did not prove that petal appendages are unacceptable as a delimiting generic character in all bromeliad genera but suggested only that this might be the case. Furthermore, Smith and Spencer did not provide data or valid arguments why *Streptocalyx* should be placed with *Aechmea*.

Again, the sinking of *Streptocalyx* was not preceded by a critical investigation of the species involved. For example, *Streptocalyx colombianus* var. *laxus*, a synonym of *Aechmea hoppii*, was superfluous from the beginning and should not have been transferred to *Aechmea*.

Explicit data and sound, scientific justifications to support proposed changes are essential. Bromeliad taxonomists must make concerted efforts to reevaluate characters and character correlations, identify new or under-utilized characters, and generate new data sets in an effort to produce better (i.e. natural) classifications. Unfortunately, this was not done in these examples. We must resist the urge to act simply on intuition and wait until a sound scientific study based on many characters is carried out. Only in this way can we improve on the Smith and Downs monograph.

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REDUCTION OF *STREPTOCALYX* (BROMELIACEAE: BROMELIOIDEAE)

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ABSTRACT

Streptocalyx is reduced to *Aechmea* and new combinations are provided where necessary.

KEY WORDS: *Aechmea*, *Streptocalyx*, Bromeliaceae

In *Flora Neotropica* Monograph No. 14 (Smith & Downs 1979), the genera *Aechmea* and *Streptocalyx* are distinguished from one another on the basis of the presence or absence, respectively, of petal appendages. More recently, petal appendages have proven unacceptable as a delimiting generic character in Bromeliaceae where groups of closely related species are segregated solely on the basis of this character. An example is *Streptocalyx*, which in all other respects is identical to *Aechmea* sensu Smith & Kress (1989). Baker (1889) was the first to comment on the artificiality of *Aechmea* versus *Streptocalyx*, and considered them “scarcely worth separating.” We agree completely with Baker and here reduce *Streptocalyx* to synonymy. The appropriate names in *Aechmea* for taxa previously treated as *Streptocalyx* follow.

Aechmea Ruiz & Pavon, *Fl. Peruv. Prodr.* 47. 1793, *nomen conservandum*, *Streptocalyx* Beer, *Flora* 37:348. 1854. *syn. nov.*

Aechmea arenaria (Ule) Smith & Spencer, *comb. nov.* BASIONYM: *Streptocalyx arenarius* Ule, *Verh. Bot. Brandenb.* 48:134. 1907. TYPE: PERU. *Ule* 6335 (HOLOTYPE: B; Isotype: MG).

Aechmea biflora (L. B. Smith) Smith & Spencer, *comb. nov.* BASIONYM: *Streptocalyx biflorus* L.B. Smith, *Phytologia* 24:448, pl. 5, figs. 15, 16. 1972. TYPE: ECUADOR. *Dodson & Thien* 2070 (HOLOTYPE: WIS).

Aechmea beeriana Smith & Spencer, *nom. nov.* Based on: *Streptocalyx poeppigii* Beer, *Bromel.* 141. 1856; non *Aechmea poeppigii* Baker, *Handb. Bromel.* 37. 1889. TYPE: BRAZIL. *Poeppig s.n.* (LECTOTYPE: B).

Aechmea brachystachya (Harms) Smith & Spencer, *comb. nov.* BASIONYM: *Streptocalyx brachystachys* Harms, *Notizbl. Bot. Gart. Berlin* 9:1152. 1927. TYPE: PERU. *Tessmann* 4645 (HOLOTYPE: B).

- Aechmea colombiana** (L.B. Smith) Smith & Spencer, *comb. nov.* BASIONYM: *Streptocalyx colombianus* L.B. Smith, *Caldasia* [1], No. 5:9, fig. 5. 1942. TYPE: COLOMBIA. *Cuatrecasas 6863* (HOLOTYPE: US; Isotype: COL).
- Aechmea colombiana** (L.B. Smith) Smith & Spencer var. **laxa** (E. Gross) Smith & Spencer, *comb. nov.* BASIONYM: *Streptocalyx colombianus* L.B. Smith var. *laxus* E. Gross, *Trop. Subtrop. Pflanzenwelt* 65:72, figs. 44, 45. 1989. TYPE: COLOMBIA. *Rauh 37422* (HOLOTYPE: HEID).
- Aechmea curranii** (L.B. Smith) Smith & Spencer, *comb. nov.* BASIONYM: *Streptocalyx curranii* L.B. Smith, *Contr. Gray Herb.* 95:44, pl. 11, figs. 7–9. 1931. TYPE: BRAZIL. *Curran 143* (HOLOTYPE: US).
- Aechmea floribunda** Martius ex Schultes f. in Roemer & Schultes, *Syst.* 7(2):1271. 1830. TYPE: BRAZIL. *Martius s.n.* (HOLOTYPE: M). *Streptocalyx floribundus* (Martius ex Schultes f.) Mez in Martius, *Fl. Bras.* 3(3):284. 1892.
- Aechmea fuerstenbergii** E. Morren & Wittmack, *Belg. Hort.* 29:42, pl. 2. 1879. TYPE: BRAZIL. *Porte s.n.* (HOLOTYPE: LG). *Streptocalyx fuerstenbergii* (E. Morren & Wittmack) E. Morren, *Belg. Hort.* 33:16. 1883.
- Aechmea geminiflora** (Harms) Smith & Spencer, *comb. nov.* BASIONYM: *Streptocalyx geminiflorus* Harms, *Notizbl. Bot. Gart. Berlin* 12:527. 1935. TYPE: ECUADOR. *Diels 1109* (HOLOTYPE: B).
- Aechmea kentii** (Luther) Smith & Spencer, *comb. nov.* BASIONYM: *Streptocalyx kentii* Luther, *Selbyana* 12:83, 86, fig. 14. 1992. TYPE: ECUADOR. *Kent s.n.* (HOLOTYPE: SEL; Isotype: QCA).
- Aechmea lanata** (L.B. Smith) Smith & Spencer, *comb. nov.* BASIONYM: *Streptocalyx lanatus* L.B. Smith, *Contr. Gray Herb.* 95:45, pl. 11, figs. 4, 5. 1931. TYPE: BRAZIL. *Curran 138* (HOLOTYPE: US).
- Aechmea longifolia** (Rudge) Smith & Spencer, *comb. nov.* BASIONYM: *Bromelia longifolia* Rudge, *Guyan.* 1:31, pl. 49. 1805. TYPE: FRENCH GUIANA. *Martin s.n.* (HOLOTYPE: BM). *Streptocalyx longifolius* (Rudge) Baker, *Handb. Bromel.* 31. 1889.
- Aechmea lugoi** (Gilmartin & Luther) Smith & Spencer, *comb. nov.* BASIONYM: *Streptocalyx lugoi* Gilmartin & Luther, *J. Brom. Soc.* 40(5):208, fig. 8. 1990. TYPE: ECUADOR. *Lugo 308* (HOLOTYPE: S; Isotype: MO).
- Aechmea murcae** (L.B. Smith) Smith & Spencer, *comb. nov.* BASIONYM: *Streptocalyx murcae* L.B. Smith, *Phytologia* 7:110, pl. 1, figs. 20–24. 1960. TYPE: BRAZIL. *Murca-Pires 951* (HOLOTYPE: IAN).

- Aechmea napoensis** Smith & Spencer, *nom. nov.* Based on: *Streptocalyx pallidus* Luther, *J. Brom. Soc.* 30(6): 256–258, fig. 1980; non *Aechmea pallida* L.B. Smith, *Mem. New York Bot. Gard.* 10:40, fig. 1964. TYPE: ECUADOR. *Luther s.n.* (HOLOTYPE: SEL).

- Aechmea poitaei** (Baker) Smith & Spencer, *comb. nov.* BASIONYM: *Streptocalyx poitaei* Baker, *Handb. Bromel.* 31. 1889. TYPE: FRENCH GUIANA. *Poiteau s.n.* (HOLOTYPE: K).

- Aechmea seidelii** (Leme) Smith & Spencer, *comb. nov.* BASIONYM: *Streptocalyx seidelii* Leme, *Bradea* 4(39):313. 1987. TYPE: BRAZIL. *Seidel 1056* (HOLOTYPE: HB).

- Aechmea williamsii** (L.B. Smith) Smith & Spencer, *comb. nov.* BASIONYM: *Streptocalyx williamsii* L. B. Smith, *Contr. Gray Herb.* 98:14, pl. 4, fig. 7. 1932. TYPE: PERU. *Williams 2722* (HOLOTYPE: F).

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Tillandsia ionantha; Its Varieties, Forms, and Cultivars

Pamela Koide

Photos by the author

Tillandsia ionantha is one of the most common and interesting species of the genus *Tillandsia*. One of the most delightful of the miniatures, its tufting, silvery rosette reaches only 1½ to 4 inches in height. The leaves, covered with silvery scales, are seldom over 2 inches long. It is rather easy to grow and adapts well to our outdoor southern California climate. If left to grow into a cluster, this species will form a large ball in a very short time. Some people have grown these clumps to the size of a basketball, a spectacle when the whole cluster blushes red at bloom time. The common name for this species is "Blushing Bride," referring to the red blush during anthesis. Although several forms and varieties are available to the collector, there are only two varieties recognized in Harry Luther's AN ALPHABETICAL LIST OF BROMELIAD BINOMIALS, but three in Lloyd Kiff's A DISTRIBUTIONAL CHECK-LIST OF THE GENUS *TILLANDSIA*. Descriptions of the varieties, forms, and cultivars follow:

Tillandsia ionantha var. *ionantha* (front cover) is the most common and available variety. It was described in 1855 by Jules Emile Planchon. This variety is the most widespread, growing from Mexico to Costa Rica at altitudes of 450 to 5,000 feet. It varies somewhat in appearance from country to country, as well as within each country. It grows in dense masses in moist forests, as well as on exposed deciduous trees and rocks in arid regions. It can vary from silvery color with thin leaves, to green and lush, with thick, succulent-type leaves. When it starts to flower, the entire plant turns a brilliant rosy red. The narrow, tubular flowers are large for the size of the plant, topping the foliage by 1 to 1½ inches. The petals are vivid purple.

Tillandsia ionantha var. *vanhyningii* (figure 6), was described by Mulford Foster in 1957.¹ It is endemic to one region in the state of Chiapas in southern Mexico. It is lithophytic, growing on vertical limestone cliffs overhanging Rio Grijalva. This variety is caulescent (with distinct stems). The leaf color is a silvery pale green to white. In habitat, it produces large mats of rosettes. When the plant blooms, the foliage will flush bright pink, and produce the same vivid purple flowers as variety *ionantha*. Pups emerge from the base of the old mature leaves to form new leads. As this species is geographically isolated and morphologically and ecologically distinct, it fits Luther's criteria of a subspecies.²

Tillandsia ionantha var. *zebrina*, the third variety listed in Kiff's book, was described by Bert Foster in 1982.³ Harry Luther thinks that this should be considered a form and not a true botanical variety. It was collected in Guatemala and differs from the typical species in its beautifully banded leaf blades.



Figure 6.

Tillandsia ionantha var. *vanhyningii*. This caulescent variety was named for Oather C. Van Hyning who collected the plant with Mulford Foster in 1957.



Figure 7.

Tillandsia ionantha var. *stricta*. The formal description and name proposed in this article recognize what has been an unofficial variety.

Tillandsia ionantha var. *scaposa* is the synonym of the species *Tillandsia kolbii*.⁴ *T. kolbii* (back cover) was described by Walter Till and Stefan Schatzl, in 1981.⁵ The species has little in common morphologically with the species *T. ionantha*. It occurs at much higher elevations in pine-oak cloud forests.⁶ It is characterized by a scapose, occasionally compound inflorescence. Although the type locality is Oaxaca, Mexico, it is found most commonly in Guatemala.

Tillandsia ionantha 'Druid' was introduced in 1984.⁷ This is a Mexican variation of *T. ionantha* var. *ionantha* that appears normal until it blooms. It then turns an unusual yellow color and produces flowers with white petals. I have seen numerous examples of this phenomenon in the genus *Tillandsia* and have always considered them to represent an albino form. Every generation of offsets continues to produce the same colorless inflorescence and flowers, indicating a fixed genetic trait.

T. ionantha 'Rosita', 'Peanut', and 'Apretado' are cultivars mentioned in Paul Isley's book *TILLANDSIA*. The plant referred to as 'Rosita' is the same as *T. ionantha* "Stricta," so called by several commercial tillandsia nurseries. This variation is endemic to one region in Oaxaca, Mexico. It is an isolated population found growing on oak trees at approximately 6500 feet elevation with *T. fuchsii* var. *fuchsii*. Other plants growing in the vicinity are the peach form of *T. capitata*, *T. fasciculata*, *T. leucolepis*, and the orchid *Epidendrum parkinsonianum*. It is red during its entire life, and has very narrow, nearly filiform leaf blades. During anthesis, it turns a brighter, brilliant red, and the flower petals are purple. I consider this a distinct variety and propose the name *T. ionantha* var. *stricta* (figure 7).

***T. ionantha* var. *stricta* hort. ex Koide, var. nov.**

A typo *T. ionantha* Planchon sed cui similis foliis pertenuibus et perpetuo rubris differt.

Type: Mexico: Oaxaca; 6 km east of El Camaron, elev. ca. 2000 m. Epiphytic on *Quercus* sp. Koide & Schuster s.n. legit., April 1982. Flowered in cultivation, P. Koide s.n. (SEL, holotype; US, MEXU, isotypes).

T. ionantha 'Peanut' is actually a form of the above-mentioned variety. It grows within the population of *T. ionantha* var. *stricta* and appears rather randomly. It, too, is red throughout its life, but morphologically different. Instead of growing onto an open rosette, its leaves stay erect, close together, and very tight. This characteristic is continued in offspring as well as in young seedlings. On account of its distinctive growth habit it is described below as forma *fastigiata*. According to H. Luther a "forma" is used to designate biologically trivial variations of a species that occur sporadically within a natural population. If these variants occur in a cultivated population, they should be designated a cultivar.

***T. ionantha* var. *stricta* forma *fastigiata*, Koide, forma nov.⁸**

A typo *T. ionantha* var. *stricta* Koide sed cui similis foliis fastigiatis differt.

Type: Mexico: Oaxaca; 6 km east of El Camaron, elev. ca. 2000 m. Epiphytic on *Quercus* sp., growing intermingled with typical *T. ionantha* var. *stricta*, Koide & Schuster s.n. legit., April 1982. Flowered in cultivation, P. Koide s.n. (SEL, holotype; US, MEXU, isotypes).

The last named, 'Apretado', appears to be a variation of the Mexican *T. ionantha* var. *ionantha*. I have on occasion, found specimens of it growing in Mexico. They seem to grow larger than the typical species, and the leaves are succulent, slightly stiffer and more erect. They grow quite large as they are reluctant to bloom.

OTHER CULTIVARS

T. ionantha 'Rubra'. This name is used to describe a cultivar sold by Guatemalan nurseries. It has semisucculent green leaves, which recurve from an open rosette. When it blooms it turns a light pink-rose color, and has purple flowers. I do not know the exact distribution of this plant.

T. ionantha 'Fuego'. Another variation sold by Guatemalan nurseries, is red throughout its life, but differs from the Mexican *T. ionantha* var. *stricta* in that the leaf blades are somewhat stiffer and more upright. The rosette is closed. It has purple flowers. I do not know its distribution.

T. ionantha 'Huamelula' was recently brought into cultivation from Mexico. It grows on lava rocks on the west coast of Oaxaca. The plants are very large in comparison to the typical species. A single specimen can be 3–4 inches in diameter. It has beautiful green leaves, forming a symmetrical rosette. During anthesis it turns a vivid pink-orange color, and produces large purple flowers.

T. ionantha 'Peach' is a variation found near Taxco, Mexico. It is more typical of the species *T. ionantha* var. *ionantha* in size. The leaves are pale green until the plant blooms. Then they turn peach. The leaves are also softer than the typical species. It also produces purple flowers.

T. ionantha 'Hand Grenade' is a very large form which resembles a hand grenade. According to Dennis Cathcart, this form is from Honduras and appears to have indeterminate growth. It is a sparse bloomer and occasionally will crest.

T. ionantha 'Cone Head' – is another large cultivar. Its origin is not known to me.

To summarize, we can agree that the species *Tillandsia ionantha* is not only attractive but variable. As the species appearance changes, individuals have applied various names to distinguish one type from another and in so doing have created a nomenclatural nightmare. I hope that the names of these cultivars, varieties, and forms can be clarified before it becomes an impossible task.

ACKNOWLEDGMENTS:

I would like to thank Harry Luther for reviewing and commenting on the original article as it appeared in the North County [California] Bromeliad Society newsletter, October 1992. I thank him also for the Latin diagnosis of the variety *stricta* and forma *fastigiata*.

END NOTES:

1. Bromeliad Society Bulletin 7:71; 1957.
2. According to Mr. Luther, "a subspecies is generally used to designate a population of a species that has a distinct geographic distribution and significant morphological and/or ecological attributes that can be used to distinguish it from all other populations of the species. Subspecies may be thought of as "baby" or incipient species. Cryptanthus Society Journal 7(3):11; 1992.
3. J. Brom. Soc. 32:164, col. photo; 1982.
4. J. Brom. Soc. 38:74-75 and 165, col. photos; 1988.
5. Plant Systematics and Evolution 138:259-262; 1981.
6. H.E. Luther states: "Collectors who acquire this plant (under either name) should be advised that conditions suitable to *T. ionantha* may be fatal to *T. kolbii*. Keep it damper and cooler."
7. J. Brom. Soc. 34:19, col. photo; 1984.
8. J. Brom. Soc. 35:[144], col. photo; 1985. Labeled "*T. ionantha* var. *stricta* (unofficial variety)."

THINK INTERNATIONAL. Readers of affiliated society newsletters have often seen references to The Bromeliad Society, Incorporated, as the "national" or sometimes "the U.S. society," but not damyankee. So why fuss? We are international. We have members in 52 countries. Maybe we should change our name to B(romeliad S(ociety) I(nternational), or, The International Bromeliad Society, Incorporated. Would you like that? Tell your elected directors to propose the change.—Ed.

The many purchasers of back issues of the BULLETIN/JOURNAL 1951-1980 might like to be reminded that Dr. Clyde F. Reed's CUMULATIVE INDEX TO THE BULLETIN AND JOURNAL OF THE BROMELIAD SOCIETY is still available. His address is 1222 Main Street, Darlington, Maryland 21034. Write to him for prices of single and multiple copies. He offers a 20% discount for orders of 10 or more. Ask for a list of other publications dealing with bromeliads.

LES BROMÉLIACÉES BRÉSILIENNES DÉCOUVERTES EN 1879

PENDANT LE VOYAGE
DES PRINCES AUGUSTE ET FERDINAND DE SAXE-COBOURG

ET DÉCRITES PAR

M. LE D^R HENRI WAWRA DE FERNSEE,

PRÉCÉDÉ

D'UNE NOTICE BIOGRAPHIQUE ET D'UNE RELATION DE SES VOYAGES

PAR

MM. ÉD. MORREN ET H. FONSNY



LIÉGE
BOVERIE, N° 1

1881



DR. HEINRICH WAWRA, RITTER VON FERNSEE,
1831–1887,
from Österreich. Bot. Zeitschrift, January 1867.

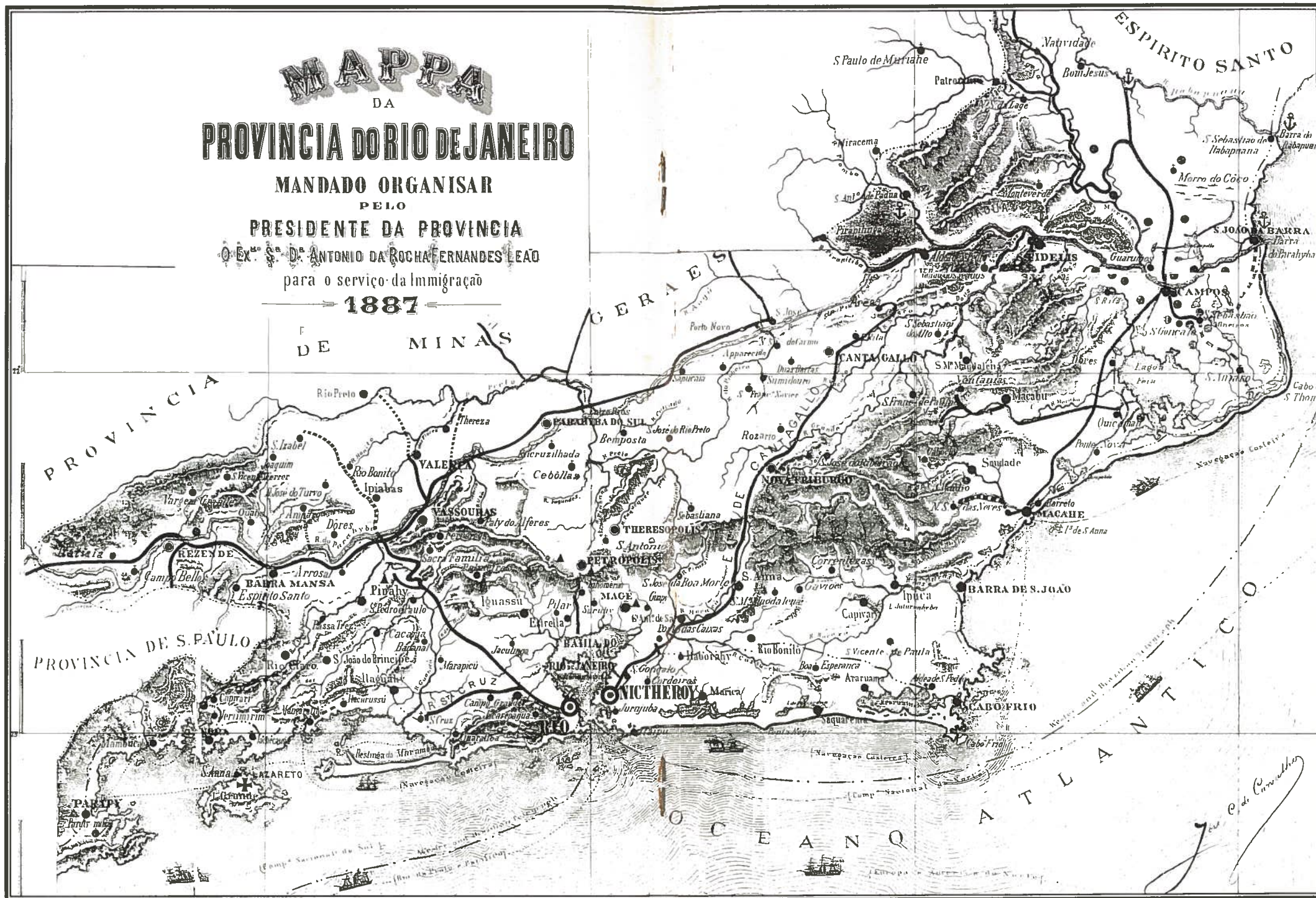
In his words, the journal published "my biography together with a bad reproduction of an excellent photograph."

THE BRAZILIAN BROMELIADS
DISCOVERED IN 1879
During the Journey of
The Princes Auguste and Ferdinand of Saxe-Cobourg
and described by
DR. HENRI WAWRA OF FERNSEE

TRANSLATOR'S FOREWORD

This translation of Heinrich Wawra's report of a trip to Brazil in 1879 was made because the report is interesting as history, and information about Dr. Wawra is not easy to find. We had seen the name Wawra many times in the Smith and Downs monograph but knew nothing about him until Elton Leme provided a copy of Edouard Morren's edition of the report. We have published reproductions of plates from Wawra's books but lacked access to the original publications. Marcel Lecoufle made up for that want, in part, by providing 23 color photographs of the plates. I plan to publish this work in three parts and to illustrate it with as many of the plates as possible.

The translation includes, in addition to Prof. Morren's preface, Dr. Wawra's report, and a list of the bromeliads that he collected. There are two major omissions: Dr. Wawra's short autobiography (that he ended in 1878) and his descriptions of the plants collected during this trip. The autobiography has little to do with bromeliads but has many pages describing his trip around the world in 1872–1873. The plant descriptions have been revised and published in later times. I shall add only that Heinrich Wawra was born in Brünn (now Brno, Czech Republic) when it was the capital of the Austrian crownland of Moravia. He died at the age of 56 in 1887.



Map sources courtesy of Geography & Map Div., U.S. Library of Congress

This map of the Province of Rio de Janeiro has been greatly modified to show the railroad routes as they were at the time of Dr. Wawra's visit in 1879.

The map scale is approximately 1" to 22 statute miles or 35.4 kilometers.

The form of personal names presented a problem because Edouard Morren's translator transposed the German forms and spelling to French and this translation has involved both Morren's own preface and Wawra's text. The solution was to use the French form when Morren is speaking but to use the German in all other cases. For that reason, August appears as Auguste and Heinrich as Henri, among other variations. Place names have been changed only to conform with those shown in the accompanying map.

T.U. Lineham

ACKNOWLEDGMENTS:

Our frequent contributor, Elton M.C. Leme provided the text copy from which this translation was made. Honorary Trustee Marcel Lecoufle photographed and supplied the 23 plates from Wawra sources. Dr. Doris Löve, noted botanist and translator, reviewed this translation and made many useful suggestions to improve its accuracy. Mr. Harry Luther, director of the M.B. Foster Bromeliad Identification Center at Selby Gardens, reviewed and corrected the plant names both in the text and in the accompanying list.

In addition, Mr. Robert S. McGonigal, assistant editor, *TRAINS* magazine located information about the Cantagallo railway and the Fell locomotive in *BRAZILIAN STEAM ALBUM, VOL. II: UP OVER THE HILL*, by Carlheinz Hahmann and Charles S. Small. Mr. Robert C. Morris, senior reference librarian, Geography and Map Division, The Library of Congress, provided copies of the contemporary maps on which the accompanying, somewhat modified copy is based. Dr. Walter Till, a member of the Botanical Institute and Botanical Garden of the University of Vienna, a member of the *JOURNAL* Editorial Advisory Board, and a frequent contributor, provided the Wawra portrait.

I am very grateful to these friends for their contributions.-TUL

PREFACE

Dr. Henri Wawra, Chevalier de Fernsee, formerly a physician in the grade of major of the Imperial and Royal Navy, Vienna, is well known among botanists for the excellent descriptions of new plants that he has discovered during his many travels in almost all parts of the world. After an initial trip aboard the corvette *Carolina* to South America and along the western coast of Africa during 1857–58, Dr. Wawra returned to Brazil in 1859–60 as a member of the court of His Imperial Highness the Archduke Maximilien. The botanical results of that trip were published in a magnificent work that appeared in 1866.¹ During 1864 and 1865, Dr. Wawra was present aboard the *Novara*, which carried the Emperor Maximilien to Mexico. In 1868, he visited Asia as far as the Far East; during 1872–73, he accompanied Prince Philippe of Saxe-Cobourg and his brother, Prince Auguste, son-in-law of the Emperor of Brazil during their voyage around

¹ [Botanische Ergebnisse der Reise Seiner Majestät des Kaisers von Mexiko Maximilian I. nach Brasilien (1859–60)... von Dr. Heinrich Wawra... Wien, C. Gerold's Sohn, 1866.]

the world. Finally, in 1879, he was once more selected to return to Brazil with the same Prince Auguste of Saxe-Cobourg and his young brother Prince Ferdinand. Thus he had the opportunity of making several excursions into the interior of Brazil during which he paid special attention to bromeliads. He collected many plants of this family, most of them new to science.

Dr. Wawra was pleased to acquaint me with his notes and descriptions of his bromeliad collection. This work has appeared in the Austrian journal of botany.² We provide here a carefully revised French edition. At our request, Dr. Wawra graciously supplied us with a general account of his travels... and a detailed report of his last trip to Brazil with the princes Auguste and Ferdinand of Saxe-Cobourg.³ These documents have been translated into French in the best possible manner by M.H. Fonsny, doctor of the natural sciences, with as much attention to the form or style as to the content. Reading them seems to us to be both as interesting as instructive.

The biographical account furnishes lively and fresh impressions of a spontaneous and determined vocation devoted to the botanical sciences. It paints the life of Austrian students and their relation to their teachers in vivid colors. Among these professors, Dr. Wawra had the good luck of counting on our old friends Fenzl and Unger.... Wawra himself describes his feelings and impressions with the grace of an Austrian and the candor of a seafarer.

A mere naturalist, he blended into lofty events and lived on familiar terms with princes closely related to our own august royal family. With the princes Auguste and Ferdinand, distinguished souls and determined travellers, Dr. Wawra was able to penetrate to the heart of Brazilian flora, to observe it as a scientist, and to describe it as an artist.

The description of his herborizing in "Entre Rios," in the Organ Mountains, and on the highlands of Itatiaia are like animated photographs that seize nature in the act. Bromeliads, which are of particular interest to us, are also his preference. He brought back more than 40 species, 19 of which are new and, while collecting, he was able to make useful, carefully worded, keen observations on the spot. We might add that M. Wawra brought home the seeds of many of the species that he discovered; they have germinated and will soon decorate European glasshouses; and finally, that he is preparing a large, illustrated work on the botanical outcomes of his trip, which will soon appear under the auspices of the Duke of Cobourg.

Ed. Morren
Liège, 20 December 1881

² Die Bromeliaceen-Ausbeute von der Reise der Prinzen August und Ferdinand von Sachsen-Coburg nach Brasilien, 1879, von Dr. Heinrich Wawra. Oesterreichische Botanische Zeitung, XXX, Vienne, 1880, pp. 70–73, 111–118, 148–151, 182–187, 218–225.

³ Reise Ihrer Königlichen Hoheiten, der Prinzen August und Ferdinand von Sachsen-Coburg nach Brasilien, 1879, von Dr. H. Wawra. Oesterr. Bot. Zeitschrift, XXXI; Vienne, 1881, p. 83–90, 116–122.

THE TRIP MADE BY THEIR ROYAL HIGHNESSES,
THE PRINCES AUGUST AND FERDINAND OF SAXE-COBURG,
TO BRAZIL IN 1879
BY DR. WAWRA

PART I

In which Dr. Wawra and the princes August and Ferdinand travel to Brazil, make an excursion to Petrópolis and the area called Entre-Rios in the central region of the Province of Rio de Janeiro and return to Rio (11–21 June 1879).

Although my health was somewhat uncertain, I could scarcely refuse the invitation by their highnesses to accompany them on a trip to Brazil. Seven years earlier, during an excursion around the world made with Prince August and his elder brother Prince Philip, I learned to value my travelling companions whose friendliness and scientific interest had made the travel both pleasant and fruitful for me. This time, the goal of our excursion was Brazil. Family matters called Prince August to Rio, and his young brother, Prince Ferdinand, was bound to avail himself of the chance to undertake his first transatlantic voyage. Twice before, I had had the good luck to visit Brazil—in 1857 aboard the royal corvette *Carolina*, and in 1860 aboard the steamer *Elizabeth* in the company of his Imperial Highness Archduke Ferdinand Maximilian. In spite of that, or perhaps for that reason, I snatched at the chance of a third visit since Brazil, despite numerous and fruitful explorations, is and remains in spite of everything the promised land of botanists, and the unsteadiness of my health seemed to me to be able to adapt or even to improve during a vacation of several months under the enchanting tropical sky.

The scientific results of my two explorations will be the subject of a work now in preparation; the description of a few of the species newly discovered in this country has just been published elsewhere; I shall limit myself here to a plain trip report and try to forget the fastidious minutiae of scientific classifications. In this way, I shall not forget the splendors unfolded before astonished eyes by these regions favored by Heaven.

We left Vienna on the 12th of May and embarked on the 20th at Bordeaux on board the *Niger*, an attractive, speedy steamboat of the Messagerie Maritime. We touched enroute at Vigo, Lisbon, and Dakar, and arrived on the 4th of June at Recife and on the 6th at Bahia, which we left after a few hours to anchor in a rough sea outside Rio de Janeiro at daybreak on the 9th. The steamer slowly entered the narrow channel with its innumerable reefs and little by little the placid bay opened its vast surface, looking like a gigantic mirror before our enchanted eyes.

Their majesties, the emperor and empress, were waiting at the debarkation point for Prince August, their son-in-law, and his brother; we left immediately for Cristóvão, the summer residence of the court, and took up our quarters in Prince August's palace located immediately adjacent.

The brevity of our sojourn in Brazil—the entire trip had to be accomplished in three months—compelled us to make the best possible use of the time available. As a result, the many railroads that criss-crossed the country as well as all other kinds of resources were placed at the service of the princes allowing us to proceed without difficulty. But these facilities applied only to excursions, which were a little daring, but in which their highnesses were happy to take part. Any objective of a rest was soon put aside thanks to the enterprising character of the princes. One was inclined toward hunting, the other preferred bird study. They were both so taken with the attractions of the excursions that neither was interested in respite or rest. Our entire stay in Brazil was a continuous succession of trips through the provinces within reach. For our explorations, we decided on using the railroads, which would carry us into the interior; then one or another station would become our departure point towards the territory where there was something to see or report.



Marcel Lecoufle

Figure 8.
Portea petropolitana
var. *noettigii* Wawra.²
One of many bromeliads
collected in Brazil and
described by Dr. Wawra
(see page 180).

Accordingly, we arranged three long excursions: the first (11–21 June) through Petrópolis, around Entre-Rios embracing Paraíba and Paraíbunha. The second (28 June to 4 July), from Nictheroi to Cantagallo, then from there by way of Nova Friburgo to Teresópolis in the Organ Mountains; the third (9–13 July) to Itatiaia, the highest mountain in Brazil (2700 m.) in the province of Minas Geraes. Other trips of lesser importance would be made to Corcovado (24 June), to Gávea (25 June), to Tijuca (26 and 28 June), and the last to Santa Cruz (6–8 July). Besides, Rio was of no great importance to us. The few days we spent there between outings were scarcely sufficient for us to complete one trip and to prepare for the next one. And then, the plants we collected were in an odd condition: they obstinately refused to dry in this warm and humid atmosphere. It was necessary to divide them into small bundles that I used to decorate all the rooms in the palace of the Duke of Saxe during our absences. That was done to the great despair of the servants and in particular that of “Signor Major-domo” who shook his gray head with deep sadness upon hearing Prince August authorize us to make use of the superb folio volumes of the ducal library to press our botanical specimens.

The weather was all that we could wish for during our entire stay. It was the dry season, coinciding with the winter months of this country.

We tarried several days in Petrópolis. I knew Petrópolis in 1857 when it was just a German colony. But since then, the well-to-do of Rio had built their country houses there, and from the bosom of a miserable village a superb city had arisen where the German colonists felt out of place and from which they emigrated towards the interior to search for a new refuge.

The climate of Petrópolis is mild in summer but somewhat rigorous in winter. The forests, even to the extent spared by the first German colonists established in the country, were lacking, denying the area the luxuriance of verdure characteristic of the virgin forests of the more remote or more southerly regions. With few exceptions, only the ravines are protected from the southerly and easterly winds, at Benod for example, where the vegetation resumes this forceful exuberance represented by the gigantic *Vriesea regina*, which I have always considered the type par excellence of the energy of tropical vegetable life.

Not less interesting, as much from the botanical point of view as from the beauty of the location, is the Itamarati valley, especially the course of that river where it flows through the still-remaining part of the virgin forest. Trees, not very tall, but as old as the world, adorn its banks and form green arcades above its waters. Their sturdy trunks are strewn with countless parasitic cryptograms; bromeliads and orchids of dazzling and varied tints adorn the thick foliage up to the very top. Fantastic vines hang from their branches, dipping their interlaced garlands in the fresh and limpid waves. Farther down, the Itamarati forms the famous Falls of Petrópolis.

After spending six days in Petrópolis, we left by express mail for Entre-Rios. The exceptionally well-constructed road leading to that area is continually down hill across a picturesque valley bounded everywhere with black, granitic mountains. The dark sides of

[continued on page 180]

Population Dynamics of Some Native Florida Epiphytes

Meg Lowman¹ and Susanne Doblecki²

INTRODUCTION

A long-term project to monitor the growth and survival of Florida epiphytes was started during early 1993 on a coastal site that has been conserved as part of a development at Longboat Key, Sarasota County. The aims of the project are to examine growth, survival, longevity, and succession of an epiphyte community in a tree canopy.

The St. James condominium development, which is being constructed in the town of Longboat Key, is located in the remnants of a coastal cedar hammock that once extended throughout the island. As the result of building construction, the ecosystem being monitored is limited to a plot slightly larger than two acres. Under the guidance of the St. James Company and Dr. John Morrill of New College in Sarasota, that space is being restored to a native plant community typical of such a hammock. Selby Gardens was offered collaborative use of the site with New College to study canopy plants. The construction and other development on the hammock may, however, produce interesting variations on the growth of vegetation, particularly the epiphytes. Both bromeliads and orchids are represented among those epiphytes. They include *Tillandsia utriculata*, *T. recurvata*, *T. usneoides*, and the single orchid species, *Encyclia tampensis*. All of these species are present in southern red cedar trees (*Juniperus silicola*) both inside and outside the hammock formation.

METHODS

We counted the epiphyte populations of three large and three small trees in both open and wooded areas. The “open” trees were observed to have grown unrestricted and unassociated with the canopies of other trees. The “wooded” trees were surrounded by other trees and shrubs with canopies more heavily shaded.

We tagged each epiphyte with yellow flagging tape on monofilament line tied loosely about the base of the plant. We recorded the location by numbering and lettering successive divisions of the branches from the base, progressing around the tree clockwise from the northernmost trunk division.

¹ Director of Research, Selby Botanical Gardens, Sarasota, FL 34236.

² Williams College, Williamstown, MA 01267.



Figure 9.
Tillandsia utriculata in cedar at
St. James site on Longboat Key.

Photos by Jennifer Whitfield



Figure 10.
Encyclia tampensis in the
canopy of a red cedar tree.

We reached the upper branches with a ladder or by climbing when possible, or used binoculars to count the highest plants. The size and species, as well as the location of each epiphyte, were recorded. The size was determined in *T. utriculata* and *T. recurvata* by the length of the longest green leaf. Individual plants with leaves less than 25 mm long were excluded. For *T. usneoides*, the length of the clump was recorded as size and the density was noted. One clump counted as one individual. In the case of *Encyclia tampensis*, we counted the number of bulbs with leaves in order to approximate the size of the group.

RESULTS

To date, epiphytes have been marked, but long-term information on growth and mortality is not yet available. Two large trees contained 232 and 150 epiphytes, respectively, with an average of 40% orchids and 60% bromeliads. Sizes ranged from juvenile bromeliads less than 1 cm to mature *T. utriculata* with leaves greater than 1 m. We also counted epiphytes in some trees without marking individual plants and found that some canopies, approximately 12 m high, contained more than 700 epiphytes.

As the construction progresses, we hope to quantify epiphyte survival. Since most Florida hammocks are affected by encroaching development, we hope that our results will provide information on the future of local epiphyte populations.

CONGRATULATIONS TO TWO OF OUR SENIOR, AFFILIATED SOCIETIES:

The Bromeliad Society of New Zealand, Incorporated celebrated its 30th anniversary recently with dinner attended by many of the members including four of the 23 charter members. The four included Bea Hanson, now patron and life member after having served as editor of their newsletter for 26 years. We quote frequently her knowledgeable and highly readable articles; Harry Martin our honorary trustee from that country; and Laurie Dephoff, who is now historian of the society. We are sorry that we don't know the fourth member who surely must be as hospitable and friendly as the three named.

The Bromeliad Society/Houston is celebrating its Silver Anniversary this year. The April 1993 issue of the society newsletter included a large, silver-colored badge announcing the event. This year, the group will produce its 25th annual show and sale, always a test of the enthusiasm and endurance of the members. In 1974, Houston donated an expensive infrared gas analyzer to the College of Agriculture at Texas A&M University. The society was host to the 1990 World Bromeliad Conference and contributed generously from the proceeds to the Victoria Padilla Research Fund of the BSI. Three of its members are officers of the BSI and one is a newly elected director and committee chairman.

Our best wishes to the officers and members of both societies.—Ed.

San Diego World Bromeliad Conference, 1994 – *Bromeliads In Paradise,* Update #2

Jack Percival and Ken Sanders



In these updates, we shall keep members informed of Conference information and San Diego activities to enhance your stay with us come June 1994. Perhaps you would like to clip these information sheets (or, even better, xerox them) to make a tour kit for yourself. Please remember that the Conference welcomes plants for the Plant Show. We encourage all to enter the Show and share your joy and treasured plants. A future Update will tell you how to meet California Department of Agriculture requirements.

We continue here to tell you more of what to see while in San Diego. An excellent carefree method to see San Diego in general and for an overview is the Old Town Trolley. It provides a two-hour tour covering over 100 points of interest. Free re-boarding is permitted. You may get off as many times as you like as you make one complete loop. The trolley makes a stop at the conference hotel, the Hanalei, every half hour.

SHORT SIDE TRIPS

- EMBARCADERO, the waterfront area at San Diego Bay, includes the old ferry *Berkeley*, now a maritime museum; the *Star of India*, an ancient steel-hulled sailing vessel and now a museum; a harbor cruise that provides an excellent orientation of the city from the water; the old ferry that linked the city with Coronado, a charming community and home of the famous Hotel Del Coronado. Also along the waterfront is Seaport Village, a massive collection of interesting shops and restaurants right on the bay.
- POINT LOMA is a peninsula located between San Diego Bay and Mission Bay. There, the lighthouse at Cabrillo Monument allows a view of Coronado, the city, and neighboring Mexico. It is reported to attract more visitors than the Statue of Liberty. Shelter Island and Harbor Island have an assortment of fine hotels and restaurants, also with views of the city. There is a fishing pier for youngsters at Shelter Island.
- MISSION BAY AREA is famous for miles of sand and smooth water for swimmers and sunbathers. Sea World has aquatic life exhibits and acts. The Belmont Park roller coaster, original and rare, was renovated recently.

- PACIFIC BEACH and LA JOLLA are both within the San Diego city limits. Pacific Beach has great ocean beaches, several interesting night clubs and the original Crystal Pier Motel, located on a pier above the Pacific Ocean. La Jolla also has fine beaches. It is the home of the University of California, San Diego. The new and just-opened Birch Aquarium displays over 3,000 fish. It is the largest oceanographic exhibit in the United States.
- MAJOR PLANT NURSERIES in the immediate area of San Diego are the Anderson, Evergreen, and Nurseryland. We shall write more about them and nearby bromeliad specialists.

HOTEL RESERVATIONS. Please see the hotel reservation form enclosed with this issue of the JOURNAL, fill it in, and mail it directly to the Hanalei Hotel as soon as possible.

San Diego, California

Tillandsia thiekenii R. Ehlers (continued from page 151)

obtuse, involute blade, the upper ones cuspidate, abaxial densely subpruinose lepidote. *Inflorescence* 3–3.5 cm long, subdensely polystichous-flowered, 4–8 sessile flowers, the green rachis at anthesis partly visible, elliptic to subglobose. *Floral bracts* 1.5–1.7 cm long, 1.2–1.4 cm wide, ovate, cuspidate, inflated, exceeding the sepals, thin-membranaceous subtranslucent with hyaline margins, pale pink covered with coarse, spreading, white scales, nerved. *Sepals* 1.3–1.5 cm long, 5 mm wide, lanceolate, acute, membranaceous, pale pink, whitish towards base, obscurely nerved, lepidote, the posterior ones very short (2 mm) connate and subcarinate towards base. *Petals* 2.5 cm long, 4 mm (2 mm at the base), linear with rounded, spreading blades, rose-pink (#38 rose), white towards base. *Stamens* included. *Style* 1.1 cm long, shorter than the filaments, white; *stigma* small, white, lobes somewhat spreading. *Filaments* 1.4 cm long, thread-like, straight, equal in length, white; *anthers* 2 mm long, linear, subbasifixed, dark yellow, pollen egg yolk yellow. *Ovary* 3 mm high, 2.5 mm wide, subglobose, light green.

Holotype. WU (Univ. of Vienna), leg. Reinhold Thieken s.n., May 1991, Brazil, State of Rio de Janeiro, Morro do Coco, growing on steep rock walls with *Tillandsia* species allied to *T. araujei* Mez and *Vriesea* species.

The plant is named for Reinhold Thieken of Tübingen, who collected a number of very interesting plants during trips to Brazil and Colombia.

Renate Ehlers
Herrenberger-Strasse 14
W 7000 Stuttgart 80, Germany

The Brazilian Bromeliads

(continued from page 174)

the rocks are covered with whitish stains, one might say from afar looking like nipples. In reality they are only clusters of the dead leaves of *Aechmea ramosissima*.¹ Gradually, as the descent continued, the tropical character of the vegetation became more and more pronounced and finally prevailed in the Paraíba valley.

Entre-Rios consists of scarcely more than a station and a few houses, but its location, which is in fact the junction of two important railroads (the Paraíba and the Paraíbaíba [sic] lines), suggests a bright future and the promise of becoming a rich commercial city in a few years.

We spent the night there in order to undertake an excursion as early as possible to the neighboring forest, an outing for which, unfortunately, we had reserved only half of one day. In the valleys of this hilly and rough district, the vegetation assumed the majestic appearance of tropical countries; on the high ground especially there is bamboo, which in Brazil tends to take the upper hand over its neighboring plants and to stifle the flora where it grows. Botanists should, for that reason, take care to avoid such areas. In the wooded and deep gorges we found the graceful *Aechmea Nöttigii*.² That very evening we set off toward Juiz de Fora.

Juiz de Fora is a little town inhabited chiefly by German colonists—Tyrolians for the most part. The surrounding fields are under cultivation. Accompanied by a German guide, a Tyrolian, I undertook a sortie toward the forest that was within reach on horseback. Unfortunately, the dull mind of my Tyrolian could not imagine a botanical trip as any more than a stroll through the nearby farms. For that reason he led me through what might be called the cultivated areas not forgetting to stop at the houses scattered here and there to have a little chat with his compatriots. I finally had enough, turned my horse and galloped towards the nearest woods. My guide followed willy-nilly and at last I experienced the happiness of reaching the promised land, the tropical forest with its exuberant vegetation, its richness, and its beauty.

True virgin forests in Brazil tend to disappear daily. That is true especially where there are colonists. They set fires and, unattended, the flames destroy immense expanses of splendid forest. Of this vast and desolate area, the colonist cultivates only a miniscule portion, just enough for subsistence; the rest becomes another wasteland, that is, becomes covered with a jumble of weeds, most of them not native, and dry thickets, hideous to see, which overgrow the denuded soil and make spontaneous self-seeding impossible.

Our forest, located on the mountain slope, formed only a kind of narrow band between the deforested ground at the base and the bamboo of the top. As a result, I directed my investigations not along the horizontal but following the vertical; in other words, I used my guide's axe to mark certain trees that I would later examine carefully for epiphytes, without forgetting the flowers or the fruits of the trees themselves. The reason being the lack of knowledge about the natural classification of the trees of that

area. This was, moreover, a unique opportunity, considering the relative thinness of this particular forest. In a real virgin forest with thick growth it is far from easy to pick the flowers and fruits of these robust residents. For when one has reached the top of these gigantic trees—a job that the botanist must do by himself for there is no use in counting on the help of the local guides who are little accustomed to such exercise—it is almost impossible to find one's way in the middle of the inextricable tangle of branches and interlaced vines and to get hold of the flowers or fruit belonging to the tree being explored. On the other hand, it is hardly possible to cut the tree down because of its enormous circumference and, in particular because once the trunk is separated it would remain suspended by its top against the neighboring trees or be left hanging thanks to the vines and other parasitic plants that in superabundance form a continuous vault over the entire forest. At the same time, one could resort to cutting only in forests that are less dense, without vines, being careful to attack the trees only from an oblique direction because their weight, helped by a few blows of the axe, often is enough to drag them to earth. Even climbing in the crown of trees thus overturned is not an easy task. The very great weight of the slippery branches covered with damp moss and all kinds of parasites creates painful and dangerous work. That was how I found *Vriesea augustocoburgii*³ and some other extremely interesting bromeliads. Orchids in that area are less richly represented. I found, however, by way of compensation, a splendid collection of native orchids being cultivated in our hostess's garden, a fine woman originally from Switzerland, who gives her favorite flowers the most assiduous and intelligent care.

The next day, I devoted the few hours of the morning that remained before our departure to a short outing toward the neighboring waterfall. The surrounding vegetation is that of the deforested land; I discovered there, however, some interesting products, among others a plant until then considered doubtful as a native of Brazil and known only from pitiful greenhouse specimens, *Tillandsia pulchella*.⁴

Our journey along the coast led us through the famous coffee district of Brazil. The luxuriant vegetation became increasingly sparse in the vicinity of Rio and finally ended in a region made arid, sterile, and exhausted by the cultivation of coffee, incapable from this time on of providing sustenance to any growing thing. And from the area of those abandoned plantations have arisen towns and flourishing villages linked nowadays by the railroads. On the 20th of June we returned to Rio.

[To be continued]

END NOTES:

1. Probably *Aechmea ramosa* Mart. ex Schult. f.
2. *Portea petropolitana* var. *noettigii* (Wawra) L.B. Smith. Plate 24 of Wawra's *Itinera Principum S. Coburgi*...Wien, C. Gerold's Sohn, 1883–88.
3. *Quesnelia augustocoburgii* Wawra.
4. *Tillandsia tenuifolia* Linnaeus.

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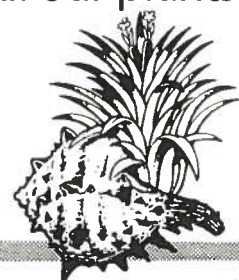
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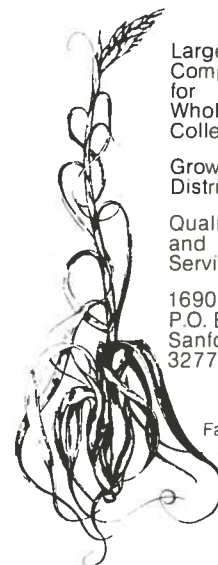
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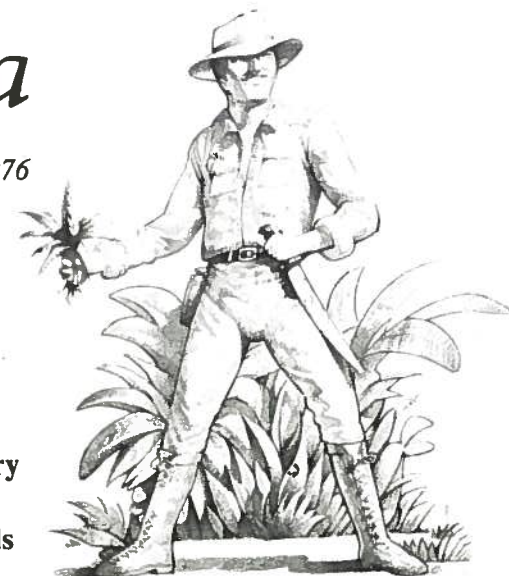
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P. Koide

Tillandsia kolbii W. Till & Schatzel. Known until 1981 as *T. ionantha* var. *scaposa* L.B.Smith (see pages 160–164), this species was then described as a new, entirely unrelated species. It is named for D. Rudolf Kolb to honor his services to the Botanical Garden, Linz, Austria.

Calendar

- 31 July–1 Aug. South Bay Bromeliad Associates 26th Annual Show and Sale. South Coast Botanic Garden, 26300 S. Crenshaw Blvd., Palos Verdes, CA 90274. Saturday, noon–4:30 p.m.; Sunday, 10 a.m.–4:30 p.m. Judged show open to all amateur bromeliad growers, demonstrations. Member and commercial sales. Admission \$3.00, students and seniors over 61 \$1.50. Philip A. Fetchko, 3918 W. 148th St., Hawthorne, CA 90250; 310.644.6164.
- 20–22 August Bromeliad Society of Greater Chicago 9th Annual Show and Sale. Chicago Botanic Garden, Lake Cook Rd., Glencoe, IL.
- 21 August Florida Council Annual One Day Extravaganza following an all day plant sale and exhibition at Earl Brown Recreational Park in Deland, FL. Dinner, program, and rare plant auction. Seminole Bromeliad Society hosts, Arthur Hyland. 904.775.9919.
- 2–5 September 4th International Cryptanthus Show and Plant Sale held in conjunction with The Sooner State Bromeliad Study Group 9th Annual Show. Plant entries Thursday, 1–9 p.m. Late entries Friday, 8 a.m.; Judging 8 a.m. Friday, Show and Sale open to public 1 p.m. Friday, Saturday 10 a.m.–5 p.m. and Sunday 10 a.m.–4 p.m. Debbie Goddard 918.835.6080 or Georgia Waggoner 918.733.4602.
- 18–19 Sept. Seminole Bromeliad Society 1st Standard Bromeliad Show. Seminole County Ag Center auditorium, Sanford, FL. Judging on Sat. Show will be open to the public from 1–6 p.m. on Sat. and 9 a.m.–5 p.m. Sunday. No plant sales. Elaine Sizer, 904.734.9436.

The deadline for articles, ads, calendar, and other notices for the September–October issue of the JOURNAL is 1 July 1993.