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Cover photographs. Front: *Aechmea penduliflora* a form very similar to the Prinsler introduction but from Limón Cocha in eastern Ecuador. Please see page 167 for discussion. Photo by Bob Wands. Back: An eight-year old specimen of *Tillandsia straminea* with eighteen spikes is described by its grower J. J. Wright on page 178. Photo by the author.

CONTENTS

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An Addition to the Genus *Wittrockia*

Elton M.C. Leme

Charles Jacques Edouard Morren was the first to portray this species. In September 1885, through his delicate painting, he recorded the name *Nidularium leucophoeum.* He neither described it, however, nor indicated any element of its natural origin. In 1889, based exclusively on Morren's painting, J.G. Baker then described *Karatas leucophoea,* which C. Mez was to transfer to the genus *Aregelia* in 1896. Finally, in 1939, Lyman B. Smith moved it to the genus *Neoregelia.* This is how we know it today: *Neoregelia leucophoea* (leucophaeus, meaning dark gray). To this point, nothing more is known about the species except for brief references by L.B. Smith in a 1984 article in this journal with a reproduction of the lovely painting by Morren (fig. 1).

In 1986, in the southern part of the State of Rio de Janeiro known as Serra da Bocaina, R. Menescal, R. Bello, and L.C. Araujo collected an interesting bromeliad with an appearance typical of *Neoregelia.* At first glance, the general aspect of the plant drew our attention because of its close similarity to the specimen identified in the Morren painting as *Nidularium leucophoeum.*

Our specimen, collected right at the start of the development of the inflorescence, completed the flowering stage in cultivation. It showed, at first sight, a typical *Neoregelia* inflorescence deeply positioned in the leaf-tank, simple, umbellate, with distinctly pedicellate flowers (fig. 2). Nevertheless, the petals, always erect, had an apex slightly emarginate, and a couple of vigorous, well-developed appendages on the top of the basal tube formed in common with the filaments. It thus could not be a neoregelia, whose petals are always unappendaged.

In order to assess this problem better, we went to the exact place where the first specimen was collected. There we found other examples of this curious bromeliad, some of which were also in flower, on a large, fallen tree trunk (fig. 3). These new samples confirmed the unusual characteristics noted previously.

Shortly afterwards, while we were investigating forest redoubts near the mountain town of Petrópolis, also in the State of Rio de Janeiro, we were surprised to encounter considerable populations of this very peculiar bromeliad. Once again, its floral characteristics were confirmed. In every case, both the strong tube formed between filaments and petals and the protuberant appendages were present.

We, therefore, considered the possibility of being faced with a new genus. This hypothesis, although feasible, ran up against the prospect of alteration—after necessary revision—of the conceptual limits of related genera such as

Figure 1
Dr. L.B. Smith photographed this watercolor of *Neoregelia leucophoea* in the Morren collection at Kew Gardens and wrote about that species in *Journal* volume 34, number 2 in 1984. In this article, the author determines that the species belongs to the genus *Wittrockia.*

Neoregelia, Wittrockia, Canistrum and *Nidularium.* We consulted Dr. Robert W. Read on this matter. He concluded after analysis of the species under study: "I'd keep it in *Wittrockia* for now. Although I still have problems with such a variable genus comprising such anomalous species and distinguished by characters not fitting the key or generic diagnosis."[1] With that, we abandoned the hypothesis at least until development of studies and revision of the related genera allowed. Instead, we started to compare this species with others of the genus *Wittrockia.*

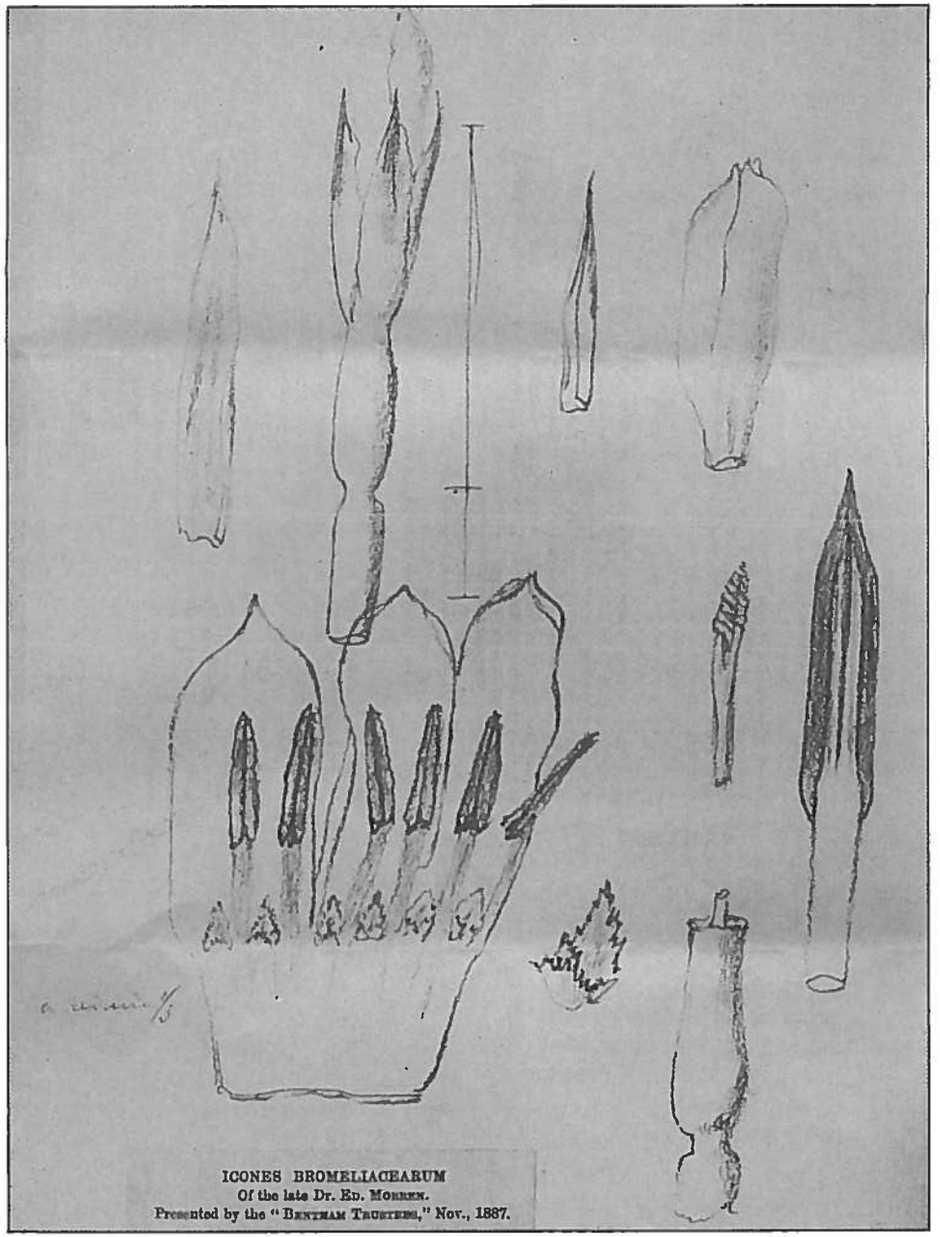
In describing *Wittrockia* in 1891 on the basis of *Wittrockia superba,* C.A. M. Lindman commented[2] that *Nidularium leucophoeum* described in the J.G. Baker Handbook belongs in the genus *Wittrockia* because the petal tube of the species has scales between the filaments as shown in Morren's drawing, which he had seen in the Kew Herbarium.[3]

These facts led us to the certainty that the great similarity between our recently collected specimens and the Morren painting was not purely coincidental. However, historic proof was still lacking—in this case a single drawing that confirmed the categorical statement of Lindman. This proof was obtained only recently from a previously unpublished drawing of the floral details by Morren (fig. 4). It confirmed the presence of the petal appendages of *N. leucophoea* and enabled us to include this species in the genus *Wittrockia.*

Fig. 2
The close resemblance of this specimen to the Morren painting shown in figure 1 attracted the author's attention. The inflorescence is shown at any early stage with the leaves splashed with patches of an intense, purple-red.

Photographs by the author

Fig. 3
A second visit to the habitat of the first specimen (fig. 2) was rewarded with finding additional specimens.



Sketch by E. Morren

Figure 4

This previously unpublished sketch found at Kew Gardens confirms, according to the author, the identity of the plant as a member of the genus *Wittrockia*.

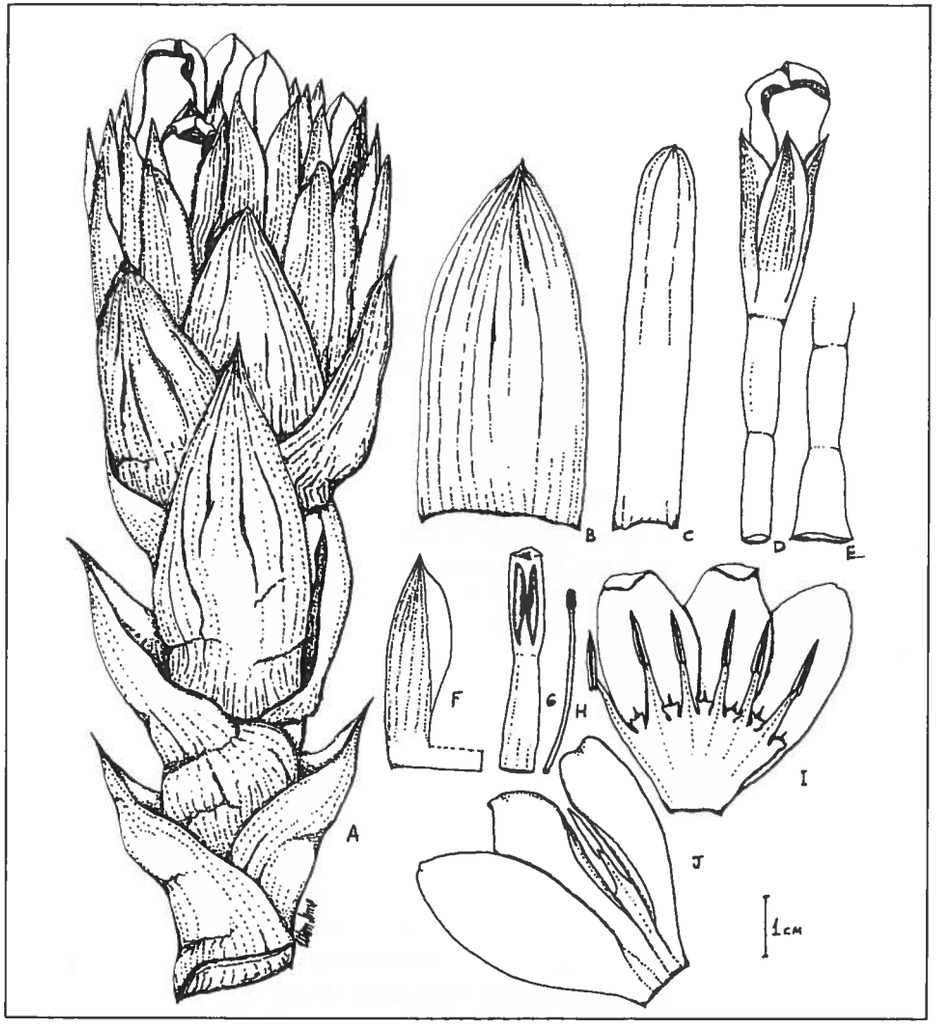


Figure 5

Wittrockia leucophoea (Baker) Leme (Leme 1107). a) inflorescence; b) involucral bract; c) floral bract; d) flower; e) outer pedicel; f) sepals; g) cross-section of ovary; h) style; i) petals (inside); j) petals (outside).

Now, on the basis of the flower details presented by Morren, identical with the specimens we collected, it seems clear to us that available descriptions of the species are, at least with regard to the petals, imprecise, and that characteristics have been added that are not confirmed either in the original painting or in Baker's description. This being the case we offer the following new proposition:

***Wittrockia leucophoea* (Baker) Leme, comb nov.** (fig. 5)
Basionym: *Karatas leucophoea* Baker, Hand. Bromel. 7. 1889.

Synonyms:

Nidularium leucophoeum E. Morren ex Baker, Handb. Bromel. 7. 1889; nomen.

Andrea spectabilis hort. ex Baker, Handb. Bromel. 7. 1889; nomen.

Aregelia leucophoea (Baker) Mez, DC Monogr. Phan. 9:77. 1896.

Neoregelia leucophoea (Baker) L.B. Smith, Contr. Gray Herb. 124:9; 1939.

Plant epiphytic or terrestrial, propagating by short stolons of 20 mm in diameter. *Leaves* 8–12, suberect, rosulate, subcoriaceous, forming a funnelform rosette; *leaf sheaths* elliptic, 15–20 cm long, ca. 10 cm wide, densely brown lepidote on both surfaces, dark brown or purple towards the base, greenish or with dark purple cross-bands or spots towards the apex; *leaf blades* linear, 20–85 cm long 5.5–8 cm wide, white lepidote on both surfaces, green, mottled with irregular spots of dark green or with dark purple cross-bands or spots towards the base, margins laxly serrulate, spines 0.5–1 mm long, apex rounded or obtuse and apiculate. *Scape* 5–7 cm long, 1.8–2 cm in diameter, white, subglabrous. *Scape bracts* ovate, 3–6 cm long, membranous, suberect, entire or obscurely denticulate near the apex, rounded and apiculate, lepidote on both sides, hyaline or dark reddish purple towards the apex. *Inflorescence* simple, umbellate, sunk in the rosette, cylindric, 6–8 cm long, 3–5 cm in diameter; *floral bracts:* the outer similar to the involucral (scape) bracts but narrower, the inner linear, 45–65 mm long, 7–17 mm wide, membranous, entire, dark reddish purple toward apex, finely nervate, lepidote on both surfaces, apex rounded or obtuse and apiculate, to 3/4 equaling the sepals, ecarinate. *Flowers* 18–28, 6–8.5 cm long, slightly fragrant, pedicels very distinct, the outer complanate, 10–15 mm long, to 10 mm wide at base, the inner ones to 25 mm long, subcylindric; *sepals* strongly asymmetric, apex acute and apiculate, 29–37 mm long, ca. 12 mm wide, connate at base for 2–4 mm, membranous, lepidote inside, ecarinate, dark reddish purple; *petals* narrowly obovate, 38–45 mm long, to 17 mm wide, white, obtuse-emarginate but appearing acute by the inrolling of the margins, connate at base in a common tube with the filaments for 15–17 mm, remaining erect and incurved toward the apex at anthesis but disclosing the included stamens through lateral openings, after anthesis strongly enrolled, bearing 2 cupular appendages, these flaring, entire to scalloped or substellate 5–17 mm above the base; *filaments* equally free above the common tube with the petals; *anthers* sublinear, base sagittate, apex apiculate, ca. 8 mm long, dorsifixed near the base; *ovary* narrowly oblong-elliptic, subcomplanate to subtrigonous, ca. 17 mm long, ca. 6 mm in diameter, glabrous, white; *epigynous tube* almost lacking; *placentae* from central to apical; *ovules* many, obtuse.

Type: Morren painting and sketch drawing of floral details made in Sept. 1885. **Holotype:** K.

Distribution: Brazil. Rio de Janeiro: County of Parati, Bocaina, *R. Menescal, R. Bello, & L.C. Araujo s/n,* September 1986 (HB); ibidem, *E.M.C. Leme 1075, R. Menescal & R. Bello,* December 1986 (HB); County of Petrópolis, Rocio, *E.M.C. Leme 1107,* April 1987 (HB, RB). County of Teresópolis, Serre dos Orgãos National Park, way to Pedra do Sino, *E.M.C. Leme 1699 & A.L. Toscano de Brito*, March 10, 1991 (RB).

Wittrockia leucophoea is a typical inhabitant of the Atlantic Forest in the State of Rio de Janeiro. It can be found at altitudes of over 1,000 meters. In the Serra de Bocaina region, its population is mainly epiphytic, preferring the level nearest to the forest canopy. The most ornamental members come from there: medium-sized, leaves splashed with patches of intense purplish red.

Although the preferred altitude of populations in the Petrópolis region is identical, they may be encountered sometimes as epiphytes but more often as terrestrials where the forest ground is better illuminated. They are larger and the color of their leaves is incomparably more distinct than the specimen from Bocaina. Still, in the Serra dos Orgãos region, more particularly in the National Park near Teresópolis, we noted a large quantity of this species some time ago. It was only recently, however, that we were successful in finding a blooming specimen for accurate identification.

We believe that *Wittrockia leucophoea* has been wrapped in total taxonomic obscurity for over a century for one simple reason. In nature, its flowers have not been noted by even the most attentive observer. In contrast to *Neoregelia* species and *W. superba* itself, the leaves of *W. leucophoea,* even when in full bloom, invariably remain suberect in a position no more arched than normal. As a result, they do not indicate the presence of an inflorescence. In turn, the inflorescence, located right at the bottom of the leaf rosette, remains hidden by a thick layer of organic detritus. Perhaps this peculiar set of conditions has contributed to the development of the uncommon floral characteristics of this species whose flowers barely open.

There is not doubt that the floral features of *Wittrockia leocophoea* are extremely curious and differ greatly from the typical standards conceived originally for the genus *Wittrockia.* However, following the example of the precedents represented by species of this genus that also feature certain discrepancies (such as *W. bragarum* Pereira & Smith, *W. spiralipetala* Leme, and *W. paradoxa* Leme), the inclusion of yet another offbeat member does not run counter to common sense, in view of the current level of available botanical knowledge.

Rio de Janeiro

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Smith, L.B. Studies in the Bromeliaceae–IX, Contr. Gray Herb., Harvard Univ. 124:9; 1939.
_____. Morren's painting, II. J. Brom. Soc. 34:52; 1984.
_____; Downs, R.J. Bromelioideae. Flora Neotropica 14, part 3: 1578; 1979.

NOTES:

1. Personal communication, R.W. Read.

2. "Ad hoc idem genus sine dubio pertinet *Nidularium leucophoeum* E. Morren (Baker. Hdk. pag. 7 sub nomine *Karatas leucophoea)* secundum figuram a Morrenio delineatam, quam in Herb. Kew vidi, corollae tubo intus inter filamenta squamulato; stigmata ejus capitato-contorta videntur."

3. Baker explained in the preface of his Handbook: "In 1887 the Bentham Trustees purchased and presented to the Kew library the magnificent series of water-colour drawings with very few exceptions being made from living cultivated plants, and accompanied by dissections and notes, which latter, however, did not reach Kew till late in 1888, after this Handbook was all written out."

ACKNOWLEDGMENT:

I wish to thank Dr. Robert W. Read for his valuable analyses of the botanical material and for his comments and suggestions; Royal Botanic Gardens, Kew for providing copies of Morren's painting; Prof. Antonio Toscano de Brito and Dr. D. Philcox for their valuable help in searching in Kew for the unedited sketch drawing by Morren.

The Victoria Padilla Memorial Bromeliad Research Fund Continues to Grow

The Bromeliad Society/Houston, Inc. has made a very generous donation of $7,500 to the Padilla Fund. We are happy to receive this money and to see to its dedicated use. Through the efforts of many people, the research, education, and knowledge of bromeliads will continue.

Many thanks to the Houston Bromeliad Society.

Jack Burton Grubb
President, The Bromeliad Society, Inc.

We are grateful to Grace M. Barnes of Mission Viejo, California, for her thoughtful gift to the *Journal* Color Fund. Such evidences of interest and support are always very welcome.—TUL

The Care of My Tillandsias

Peter Johnson

To start this article I will describe the location of my glasshouse at Paraparaumu, about 50 miles northeast of Wellington. My section is situated on the lower ridge of a hill about three miles from the sea. On a clear day I can look out to Kapiti Island and Mt. Egmont.

My glasshouse runs north/south and is 16′ x 8′, it is dug into the hillside and on a 4′ concrete wall. Access is gained from the south end by walking down some car tyre steps. The bank is retained by car tyres. Years ago I planted trees around the house, elm, birch, oak, crab apple and banksia, these are now quite tall and form a windbreak. During the summer they give shade, and in the winter since they are deciduous they let through plenty of light. Being on a hillside we seldom get a frost, though the temperature drops very close to freezing. During this period I do very little watering.

Inside the glasshouse I have run seven wires either side of the peak, and I hang my plants from these wires. The plants are mounted on driftwood and hang by nylon line. There is enough room between each mobile for air movement, sunlight, and for them to turn as I water. All sides of the wood have tillandsias on them so it is important for them to turn. On the right side of the glasshouse I have a bench of untreated timber 4″ wide and ½″ thick with a couple of inches spacing between. On this I have potted tillandsias: *hamaleana, multicaulis, lampropoda, tricolor, bulbosa, leiboldiana,* and some potted shade-liking tillandsias (mesic).

One foot above this bench I have a 5″-wide shelf on which I put wooden baskets of orchid species and tillandsias. From the front of this shelf I hang small pieces of driftwood with tillandsia seedlings 1½″ to 2″ tall, their first movement from the tillandsia germinating sticks.[1] On the underside of the bench there are five spaced wires running the length of the house. These carry another 1,000 or so tillandsia seedlings hung on driftwood.

On the left-hand side of the glasshouse I have run another five wires down the length of the house 4′ above the ground. On these wires hang semimesic tillandsias and larger seedlings.

On both sides of the glasshouse there are beds of untreated sawdust in which I have sunk larger potted tillandsias and some vrieseas.

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[1] *See* his "From the tillandsia man," J. Brom. Soc. 39:82–85; 1989.

Author

Figure 6

The entrance to Mr. Johnson's greenhouse showing how he adapted the structure to available space and terrain. His potting shed, the four-sided structure attached to the glasshouse, is a recent addition.

Two years ago as space was running out and I had replaced the guttering on my house, I put a length of guttering on the east side of the glasshouse to catch the water off the roof. I drilled holes 6″ apart, put in wire hooks, and hung more tillandsias. I then took out the wire clips from the gutter brackets and screwed these to the glasshouse frame. Below the tillandsias hanging from the gutter, where I took out the gutter clips, I threaded a wire through and hung more tillandsia mobiles. In all I got three levels and have 600 or so plants hanging outside. These plants are there summer and winter and do very well. I seldom water them or feed them, as they live by the elements.

My next problem once again was a lack of space, so to overcome this I built a shade house on the north end of the glasshouse. This is of an odd shape because the ground on the west side is 8′ long and 2′ on the east side by 8′ high. It is built of demolition 4″ x 2″ timber with shade cloth sides and 2″ roofing mesh on top. This now houses several thousand tillandsias. They look after themselves as they get all the rain and sun. Even when it has rained for days I have had little or no loss as there is plenty of air movement, and this is the crucial factor with growing tillandsias. I have had to be selective with the plants I have put outside, a case of trial with very little error.

When I put up the wall for the glasshouse I made provision for a potting shed on the south end. This is now built, not very big, but it is better than what I had. I used to work on a small space of the glasshouse bench, but I required that room for plants.

My potting shed is also of an interesting shape. To make more room I put in bay windows on the south and west sides. The windows are louvres so I can control air movement through shed and glasshouse to shade house. By putting in these bay windows I now have a foot-wide bench on those sides for pot or basket plants. Above these benches two more wires are run on which I can hang the driftwood and mobiles I am working on. I have a bench on the west side, and the door is on the east side. The door can be left open with a screen door in the opening for greater air movement and keeping the animals out.

Growing methods

I spend all of my spare time with my plants, making observations and trying to improve my growing as one plant lost can seldom be obtained again. I am not talking about a particular species such as *gardneri, juncea,* or *bulbosa* but a subspecies from a small area, plants of the same species but from a different area. These must react differently to one's growing conditions.

I work by observation and reading what literature is available. I can react only to what I see happening to my plants in my conditions, and if a certain plant is not doing well in the position I have it in then its position is changed. This practice applies basically to newly obtained plants as they require a settling-in period which could be from six months to a year, but constant observation is what is needed.

As a specific example, *Tillandsia filifolia* and *lampropoda* were grown from seed obtained from the seed fund. After growing on Dr. Oeser seed sticks to a reasonable size, some were potted and some were grown as epiphytes. Those potted grew quicker and flowered three years earlier than those grown as epiphytes. Since more moisture was retained by those in pots, I conclude that those grown as epiphytes could be given a lot more water. On the other hand, since I have had *filifolia* get water damage in both pot and epiphyte conditions, I must conclude that I over-watered those plants when the weather changed. Any tillandsia can be grown in pot or basket provided that light and water are adjusted correctly.

Seed culture

I have been getting the BSI seed list for 18 years. The seed available has not increased, this is not a criticism but just another observation. I am very pleased to get my seed lists. If seed is not becoming available, then what is happening to those plants that are being collected? Are they dying out?

I would rather get a tillandsia of which I have only one clone than another species because I need, in most cases, two clones of the same species to get viable seed. Even in the case of tillandsias grown from seed, two plants in flower at the same time from the same seed parents will probably not set viable seed. This seed production is more important to me than how many tillandsias I have because it is giving back what the collectors have taken and cut-and-burn has destroyed forever.

Reprinted from the Bromeliad Society of New Zealand Bulletin, *October 1990, with permission and from a personal communication.*

The first revision of the *Luther List of Bromeliad Binomials* is available as described in the May–June issue. The author has added for the benefit of specialist users the name of the author (or authors) following the specific and subspecific names. He has also made numerous additions and changes. The price per copy is:

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CORRECTION: Please correct your copy of the 1991 *Buyer's Guide* to show that the address of MICHAEL'S BROMELIADS is 1365 Canterbury Road, N., St. Petersburg, FL 33710 and the telephone 813-347-0349 (evenings).

The Hawaii Bromeliad Society Newsletter for October 1990 noted in its report of the executive committee unanimous approval to modify its name to: Hawai'i Bromeliad Society.

Terrestrial Bromeliads in Adelaide Botanic Garden

T.J. Christensen[1]

Major specialised collections of terrestrial bromeliads are quite rare in Australia. Collectors grow only a few species because of their size and the amount of space required while botanic gardens usually incorporate a small number of species into other collections, for instance with cacti and succulents. For this reason, the collection at the Adelaide Botanic Garden can be considered unique. The aim is to develop a reference collection of terrestrial bromeliads, and predominantly from the subfamily Pitcairnioideae. This collection is in contrast to the more traditional collection of epiphytic bromeliads growing under glass. In developing this terrestrial collection, the aim has been, wherever possible, to display large clumps of a species rather than individual plants; to produce a massed effect nearer to how species may be found in nature.

In Bromeliaceae as a whole, less than half of the species are terrestrials, the greatest representation being in the subfamily Pitcairnoioideae, which is almost totally terrestrial. The subfamily Bromelioideae, while mostly epiphytic, contains a number of generally terrestrial genera including *Bromelia, Greigia, Ochagavia.* The genera of subfamily Tillandsioideae, on the other hand, are virtually always epiphytic, although some species of the subgenus *Tillandsia* are "terrestrial" in that they lie on the ground but have no functional roots (Smith & Downs, 1974).

Subfamily Pitcairnioideae contains 13 genera, of which there are currently representatives from six in the terrestrial collection as well as representatives of two other genera *(Pitcairnia* and *Fosterella)* in the glasshouse collection. A complete list of species comprising the terrestrial collection is included in Table 1.

Adelaide has a "Mediterranean" climate with cold, wet winters and hot, dry summers. Minimum winter temperatures, however, rarely fall below 2 degrees Centigrade and summer maxima may go as high as 42 C. Annual rainfall is approximately 525 mm (21 inches). Soils on the Adelaide plains are generally alkaline clay loams (vertisols), which is the case at Adelaide Botanic Garden, with pH being in the range of 8–9.

The collection began in 1984, initially by bringing together in one area species that had been grown in many different situations at the garden, ranging from the rock garden to systematic beds. Since then the collection has developed

1. Senior Technical Officer, The Botanic Gardens of Adelaide and State Herbarium, Adelaide, South Australia.

through the addition of species obtained from seed from other botanical institutions and plants from local bromeliad enthusiasts.

Located adjacent to a range of low glasshouses, on both the northern and eastern sides, most of the collection is in full sun for most of the day. Some areas become shaded late in the day by large trees on the western side and by the glasshouses themselves. The glasshouses and shrub beds in the vicinity provide some protection from the cold, southwesterly winds in winter. The soil surface is mulched with pine chips to reduce weed growth in bare areas. Summer watering is by overhead sprinklers and until recently has been on a 1–2 week frequency depending on weather conditions. As the collection is now better established, this frequency will be reduced.

A large part of the collection is devoted to the genus *Puya*. *Puya chilensis* has been grown in the garden since 1963 on the rock garden amongst cacti. A very large clump has developed, which flowers regularly every two years. In 1984, a large division of this clump was removed to a new site where it became established quickly and began to flower again. It is interesting to note that the flowering of this division is limited, however, in alternate years to the parent clump. Year-old seedlings of the related *P. alpestris* were added to the collection in 1985. It is surprising that one plant in the group flowered in the spring of 1987 with an inflorescence approximately one metre high. This species has continued to flower each year since, with the large, metallic blue-green flowers being a considerable attraction to staff and public alike. Honeyeater birds find the flowers of both species highly attractive. The birds are a source of great enjoyment to watch as they work the individual flowers from the perches of the inflorescence. These perches are actually the sterile ends of the branches of the inflorescence, the number of which varies greatly between *P. chilensis* and *P. alpestris*.

Puya berteroniana was planted in 1984 and has grown extremely well, although it has not as yet reached flowering stage. The leaves of this species provide an interesting contrast to those of *P. chilensis* because the heavy covering of white scales on the underside of the leaves gives the entire plant a distinct, silvery appearance.

One of the most impressive species in the collection is *Puya spathacea*. It consists of a large, expanding clump of plants that flowers prolifically each year with dozens of inflorescences. The contrast between the glossy green leaves and the abundant, bright red inflorescence is quite spectacular. The flowers are dark and insignificant, the attractiveness being from the red bracts and scape of the inflorescence. This is one of the original plantings of the collection, having existed in the garden for a long time in a shaded locality where flowering was extremely sparse.

All of these species are worthy of use in a garden setting provided adequate space is available to accommodate their inhospitable leaves and continued spread. They all have very striking inflorescences and could form interesting backdrops or features in many garden designs.

Plants of *Puya ferruginea* flowered first in 1988, having been originally planted in 1984. In contrast to the others, this species flowers almost continuously throughout the year making it a very valuable part of the collection, although possibly not as eye-catching as some others.

Puya mirabilis, a fast-growing and early-flowering species, has been used as a temporary planting to fill spaces until other permanent material is available. This species forms grass-like clumps and flowers in its second year from seed. After two to three years, it begins to decline and then is removed and replaced by new plants of the same or permanent species. Replacements are propagated from seed from our own plants. This plant would make a very worthy addition to many gardens especially to fill in small spaces quickly and easily.

Other *Puya* species of particular interest in the collection include *P. laxa* and *P. raimondii*. *P. laxa* with its densely tomentose, silvery leaves adds to the vegetative diversity of the collection while *P. raimondii* will interest future generations when finally attaining flowering age. That species may take approximately 100 years to reach maturity and flower. Its only methods of propagation from seed as it does not produce offsets.

Dyckia species also form a large part of the collection with 18 species represented at present. A spectacular effect is created each year when all species tend to flower at the same time, producing a massed display of yellow and orange inflorescences throughout the area.

The dark, glossy green, impenetrable *Dyckia encholirioides* always stands out from the rest because of its size and number of inflorescences produced, while *D. microcalyx*, with its large, clear yellow flowers is arguably the most attractive of all. *D. fosteriana* and *D. platyphylla* as they develop further will be of particular interest because of the attractively spined leaf margins. *D. choristaminea* is a very small-growing, fine leaved species with potential for use in rock gardens. *D. remotiflora* forms a dense mat of small rosettes, with 20–30 cm, simple inflorescences. Although it may be insignificant in a collection such as ours, it has possible use as a small rock garden species. *D. tubiflora* is also insignificant, but the bright orange flowers are conspicuous when present. The outstanding *Dyckia* from a foliage viewpoint is *D. velascana* with heavily silvered leaves making it distinct from all others in the collection.

Most *Dyckia* species in the collection were grown from the seed of our own plants. It is unfortunate that a few plantings appear to be intermediate in

Figure 7
Part of the terrestrial collection, Adeliade Botanic Garden, with flowering plants of *Hechtia stenopetala* in the foreground.

Photos by Author

Figure 8
A brilliant display of *Puya spathacea* inflorescences, Adelaide Botanic Garden.

character between known species and may, therefore, be hybrids. Unless such individuals can be satisfactorily determined, they will be removed eventually to make way for authentic species. We are trying to select worthwhile forms from this progeny to grow on as possible cultivars. At present, two or three have been selected on the basis of distinctive leaf colouration.

The genus *Hechtia* now has only a small representation, there being difficulty in obtaining accurately named material. The best representative of this group is *H. stenopetala* (planted 1985, flowered 1988), which has glossy reddish green leaves with attractively spined margins. Although only small at present, *H. marnier-lapostollei* with its silver-lepidote leaves, stands out as a species of considerable promise and value.

Other taxa of Pitcairnioideae that add variety include *Deuterocohnia longipetala* and *Abromeitiella brevifolia,* the latter being of particular interest because of the small size of the individual rosettes and the tight mound formation. Although these species are of botanic interest they do not have significant features to warrant their use as garden specimens.

The subfamily Bromelioideae is also represented although on a much smaller scale than Pitcairnioideae. Major representatives include *Aechmea distichantha,* which flowers freely in either full sun or shade, *Bromelia balansae* and *Fascicularia bicolor.* It appears that our conditions may not be dry or sunny enough to induce flowering of *Fascicularia,* which has vigorous vegetative growth. *Bromelia balansae* has grown in the Adelaide Botanic Garden for approximately 30 years. In its original location it has been allowed to spread unchecked and has formed an impenetrable clump 4–5 metres in diameter, flowering regularly each year. In the terrestrial collection it has been used as a boundary planting on one side and as such its spread has to be checked to prevent encroachment on the main collection. It is evident that some other species in the collection will also need to be reduced in size periodically.

Although not strictly terrestrial, *Aechmea distichantha, Billbergia nutans* and *B. vittata* grow happily in a semishaded locality as terrestrials. *A. distichantha,* which in nature grows as either an epiphyte or terrestrial, is very attractive when in flower with bright pink inflorescences. This species, however, has extremely hard, pungent leaf tips that are very unpleasant for anyone working nearby. *B. nutans* is an epiphyte widely grown in South Australian gardens. The low, grass-like habit and prolific flowering make it a popular addition to many gardens. *B. vittata,* an epiphytic or saxicolous species, is the only tank-forming bromeliad currently growing as a terrestrial and as such is in direct contrast to all other species in the collection.

Development of this collection will see the addition of new genera and species. We envisage that it will gain even greater significance to the garden,

by serving, amongst other things, as a major comparison with the epiphytic collection grown nearby under glass. Many species are already established and growing well and when in flower in spring provide a spectacular display. These factors, as well as the obvious educational value of the botanical diversity of the display point to this being an important and successful collection demonstrating the versatility and suitability of terrestrial bromeliads in a Mediterranean climate.

Table 1
Terrestrial Species in Cultivation at Adelaide Botanic Garden

Subfamily Pitcairnioideae		Subfamily Bromelioideae
Abromeitiella brevifolia	*D. tuberosa*	*Aechmea distichantha*
Deuterocohnia longipetala	*D. velascana*	*Billbergia nutans*
Dyckia argentea	*Enchlorium sp.*	*B. vittata*
D. brevifolia	*Hechtia sp.*	*Bromelia agavifolia*
D. choristaminea	*H. macdougalii*	*B. balansae*
D. distachya	*H. marnier-lapostollei*	*B. serra*
D. encholirioides	*H. stenopetala*	*Fascicularia bicolor*
var. *encholirioides*	*Puya sp.*	*Greigia sphacelata*
D. ferox	*P. alpestris*	*Ochagavia carnea*
D. floribunda	*P. berteroniana*	*Pseudananas sagenarius*
D. fosteriana	*P. chilensis*	
D. frigida	*P. coerulea* var. *coerulea*	
D. goiana	*P. ferruginea*	
D. leptostachya	*P. floccosa*	
D. microcalyx	*P. laxa*	
D. niederleinii	*P. mirabilis*	
D. platyphylla	*P. raimondii*	
D. rariflora	*P. spathacea*	
D. remotiflora	*P. venusta*	

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Benzing, D.H. The biology of the bromeliads. Eureka, CA: Mad River Press; 1980.

Rauh, W. Bromeliads for home, garden and greenhouse. Poole, Dorset: Blandford Press; 1979.

Smith, L.B.; Downs, R.J. [Bromeliaceae]. Flora Neotropica; monograph no. 14, pts. 1–3. New York: Hafner Press, etc.; 1974–1979.

Puya Doris Coleman

Andrew Flower

I intended, back in 1974 when the opportunity to make the cross came, to produce a dwarf version of *Puya alpestris* that might retain the wonderful inflorescence of *alpestris* whilst achieving a more manageable sized plant. The occasion for this experiment came when a small *Puya,* no more than 30 cm in diameter, flowered in a ten-inch pot. The dwarf was labelled *Puya spathacea* and had a fairly lax inflorescence with a nice red stem.

It was our misfortune that we could not find a *Puya alpestris* in flower anywhere in Wellington. My mother-in-law, Doris Coleman came to the rescue by finding one blooming in a garden in her home town of Levin, some 65 miles north of Wellington. We packed *P. spathacea* into the car and took it up to Levin and successfully impregnated *P. alpestris.*

All of this took place before our copy of Padilla[1] arrived and dashed the dream of producing a dwarf. The revealed truth was that *P. spathacea* is, when not restricted to a small pot, somewhat larger than *P. alpestris*! Nevertheless, the offspring have been allowed to mature and now they are blooming I have decided to name them in honor of the keen gardener who found the mother-plant in Levin.

The flowering plants of *Puya* Doris Coleman are 2.5 m tall, with a compond inflorescence carried on a 80 cm scape. The inflorescence comprises 40 spikes, most of which are 30 cm long and carrying 32 to 44 flowers on a 1.5 m rachis. Leaves measure 6 cm across the base and are up to 1 m long.

Flowering commenced on December 20, 1990 and continued for eight weeks. I hand pollinated between the two plants, and bees and wasps were very busy devouring the nectar and also doing a fine distribution job. One of the plants has set seed, the other appears doubtful at the time of writing. Should the seed prove to be viable it will be made available to the BSI seed fund (probably around June or July 1991). Being F2 (second generation) seed it is likely to produce plants with some variation in the characteristics inherited from the original parents, the extent of variation depending on the amount of genetic linkage involved.

One thing I have noticed with puyas is that they seem quite happy growing on in pots, which keeps them retarded in size. I still have some *Puya* Doris Coleman growing in the original 5 cm seedling punnets they were transplanted into in 1975. They range in size from 15 to 30 cm diameter, compared to the planted-out flowering clumps that are already over 2 m across. The downside is

Bob Lucas

Figure 9
Puya hybrid Doris Coleman, the product of *P. alpestris* crossed with *P. spathacea*, was an attempt at making a dwarf with the deep blue flowers and yellow anthers of *alpestris*.

that flowering is also likely to be severely retarded. But if you like nice little prickly rosettes, there seems to be no reason why you should not grow pot-puyas. And if you are prepared to wait 20 years or so, you, too, might have a dwarf flowering in a pot!

Wellington, New Zealand

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1. Victoria Padilla, Bromeliads, *New York: Crown; 1973.*

Misnamed Bromeliads, No. 8

Harry E. Luther

***Aechmea penduliflora* André.**

This commonly cultivated aechmea has a wide distribution in tropical America from Nicaragua south to Peru and Brazil. Several now-synonymous names have been applied to various populations with one, *Aechmea schultesiana,* still occasionally used for cultivated plants.

The most commonly grown form of *Aechmea penduliflora* is apparently of Colombian origin. These plants have relatively thin, very sparsely serrate, reddish leaves. The inflorescence is unimpressive.

Bob Wands for Selby Gardens

Figure 10.
Aechmea servitensis var. *exigua.*

In the mid-1970s a bright green, spiney-leafed plant from eastern Ecuador was introduced by the German horticulturist Hermann Prinsler.[1] This "new" bromeliad quickly became very popular because of its rapid growth and brilliantly colored inflorescence. It was eventually identified as *Aechmea servitensis* var. *exigua* by Wilhelm Weber.[2] It has become very common under this name in American and possibly Australian collections. It is not *A. servitensis* var. *exigua,* unfortunately. The correct name is *A. penduliflora.* Perhaps a cultivar name should be given to the Ecuadorian plant to distinguish it from its less beautiful relatives. The front cover photograph shows a form very similar to the Prinsler introduction but from Limón Cocha in eastern Ecuador.

True *Aechmea servitensis* var. *exigua* (fig. 10) is very rare in cultivation. In Florida it is difficult to grow well as it dislikes high temperatures and is prone to leaf spotting. It is native to southeast Colombia and northeast Ecuador generally above 1000 m elevation. In contrast, *A. penduliflora,* in all its myriad forms, rarely grows above 500 m. elevation.

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

NOTES:

1. J. Brom. Soc. 29:24–26; 1979.

2. J. Brom. Soc. 31:17; 1981.

Don Beadle, whose superior color photographs have appeared frequently in the *Journal* and whose slide shows have earned the admiration of hundreds of viewers has sent a warning about the use of the old-style acetate slide pages. Some of his developed oily spots that have affected the film emulsion. He does not know the cause. It might be relatively long-term storage under high humidity conditions or chemical breakdown of the plastic, but these are just guesses. Don suggests changing to archival safety, PVC-free photo pages. One catalog describes these as "polypropylene, 125 micron. . . safe for long term storage." Better to examine your slide pages now than to grieve later.

A Chilean Bromeliad Genus of the Temperate Zone

Otto Zöllner[1] and Eduardo Oyanedel[2]

Most of the known members of the family Bromeliaceae grow in the tropics and subtropics of Central- and South America but several genera grow along the Chilean coast or in the coastal range, desert regions and zones with abundant rains. They are: *Greigia, Fascicularia, Tillandsia, Deuterocohnia, Puya,* and *Ochagavia.*[3 4]

The genus *Ochagavia* was established by R.A. Philippi (1856), who recognized five species of the Chilean area. In 1896, Mez reduced the number of species and in the modern revision Smith (1979) accepted only three species. In our investigation, however, we find that five species of *Ochagavia* may be distinguished: *O. carnea, O. grandiflora, O. litoralis* (fig. 11), *O. lindleyana, O. chamissonis,* and an insular species *O. elegans.*

The geographical distribution of this genus reaches from Valparaiso (Lat. 33 degrees 03'S, long. 71 degrees 35'W) to Linares (35 degrees 51'S, long. 71 degrees 35'W) and Juan Fernandez Island (lat. 35 degrees 40'S, long. 79 degrees 00'W). That is the central area of Chile. Nevertheless, this genus is not very well known.

These plants grow in hidden places, in deep ravines of the coastal range covered with tall trees, on vertical rock walls with a southern exposure (shadowy places) or crags near the coast, but never on the sunny side. The precipitation where *Ochagavia* lives varies from 460 to 1,000 mm per year, and the temperatures fluctuate between 4–12 degrees C in winter to 10–30 degrees C in summer. This bromeliad can withstand several degrees below 0 degrees C in winter.

General characteristics of *Ochagavia.*

Saxicolous plants, not taller than 50 cm, often with short creeping stems; stem cylindric covered with bases of leaves. Leaves in rosette, linear, attenuate, pungent with spinose-serrate margins; covered with trichomes on the abaxial side of Bromelioideae or Pitcairnioideae type, depending on species and leaf part considered. A short scape in the center of the rosettes if 5–10 cm long, covered with bracts. Inflorescence compressed, spiciform 5 x 5 cm, formed by 20–70 flowers, pink, surrounding by several whorls of bracts. Each flower subtended by a short bract. Flowers formed by 3 short external tepals (sepals) of rose colour and 3 internal tepals (sepals), which form a tube of 30–60 mm in lengths. Six stamens have the length of the internal tepals, with yellow anthers. The fruit is fleshy, a 3-locular berry, very desirable for insects and birds. The pollen grain is

Raul Araya

Figure 11
Ochagavia litoralis inflorescence. Pichilemu, Chile.

elliptical, biconvex, with an irregular surface and one longitudinal crevice (observed with electron scanning microscopy (SEM) (fig. 12). Dimensions measured with optical microscopy are 24 x 65 x 42 micrometers.

The rosette produces one inflorescence in its life and then dies, sometimes producing one or more new shoots at its base.

Flowering time: February to May (autumn in the southern hemisphere).

REFERENCES:

Mez, C. 1896. Bromeliaceae. Monographiae Fanerogamarum, IX: 335–339. Masson.

Philippi, R.A. 1856. Bot. Ziet. 14:647.

_____. 1856. Anales de la Universidad de Chile 13:168.

Smith, L.B.; Downs, R.J. 1979. Bromelioideae. Flora Neotropica 14(3). New York: Hafner Press: 1529–1533.

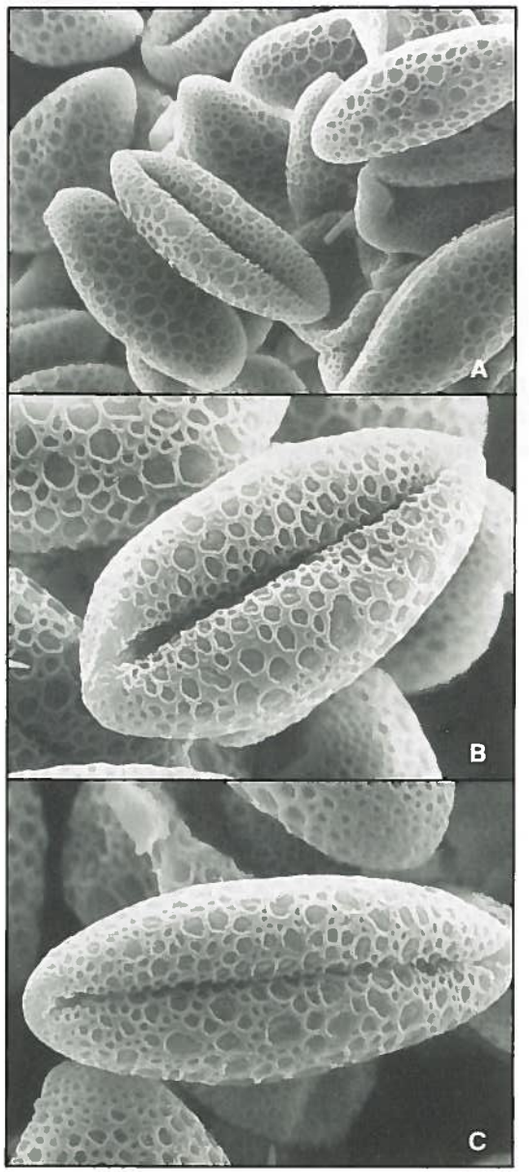
NOTES:

1. Laboratorio de Fanerogamia, Instituto de Biologia, Universidad Católica de Valparaiso, Casilla 4059, Valparaiso, Chile.

2. Facultad de Agronomia, Universidad Católica de Valparaiso, Casilla 4-D, Quillota, Chile.

3. [See also: Werner Rauh, Chile and its bromeliads, J. Brom. Soc. 35:159–166; 208–214.]

4. [The authors propose three species not currently recognized: *O. grandiflora, O. litoralis* (fig. 11), and *O. lindleyana*. They state that they are preparing descriptions of all *Ochagavia* species and will provide photographs and a key.]



Author

Figure 12
Pollen grain of *Ochagavia carnea,* SEM photographs: A) 1,000 micrometers, B) 2,000 micrometers, C) same.

A Portrait of *Ronnbergia petersii* With Some Remarkable Features

Elvira Gross

The genus *Ronnbergia* (subfamily Bromelioideae) includes only 11 species distributed in Panama, Costa Rica, Colombia, Brasil, Peru, and Ecuador.

Ronnbergia petersii was described by L.B. Smith in 1973. The plant is native to Panama in the region of the Cerro Jefe at an altitude of about 750 m. It is named after its collector Kurt Peters.

The few leaves form a small funnelform rosette of more or less 30 cm in height. The sheaths are not finely purple-spotted as stated in the original diagnosis[1] but solid green underneath and dark brown-violet above. The flowers show some very remarkable features. The sepals are strongly asymmetric, green, with a brown mucro. They are covered with a white tomentum. If we examine this tomentum with an ordinary magnifying glass we can see many glands and some scales (fig. 13). We do not know the purpose of such glands although there are similar glands present in the genus *Deuterocohnia* (subfamily Pitcairnioideae).[2]

The petal blades are horizontally spreading (fig. 14) and not erect as in figure 472 in the Smith & Downs monograph.[3] The flower pictures there must be in postfloral state. The petals have a light lavender to whitish color that after flowering turns a light lavender and then the blades become erect (fig. 16). The second series of the stamens in adnate to the petals.

The stigma is of the conduplicate-spiral type (fig. 15) that is common within the subfamily Bromelioideae. The placentation is apical and the numerous ovules are obtuse (fig. 18).

Ronnbergia petersii seems to be self-fertile in the course of very rich fruit bearing. The fruit is orange, pear-shaped berries crowned by the mucros of the sepals (fig. 17). One berry contains about 100 seeds. Here we have another curiosity of this species: sometimes the seeds germinate in the fruit (fig. 19). The reddish brown seeds have no appendages and the testa is of a mucous condition.

All of these remarkable characteristics of *Ronnbergia petersii* can be determined with a magnifying glass. Identification of this species, therefore, will be very easy.

Cultivation of this species is not difficult. It flowers and fruits every year.

[*The illustrations and notes follow on the next several pages.*]

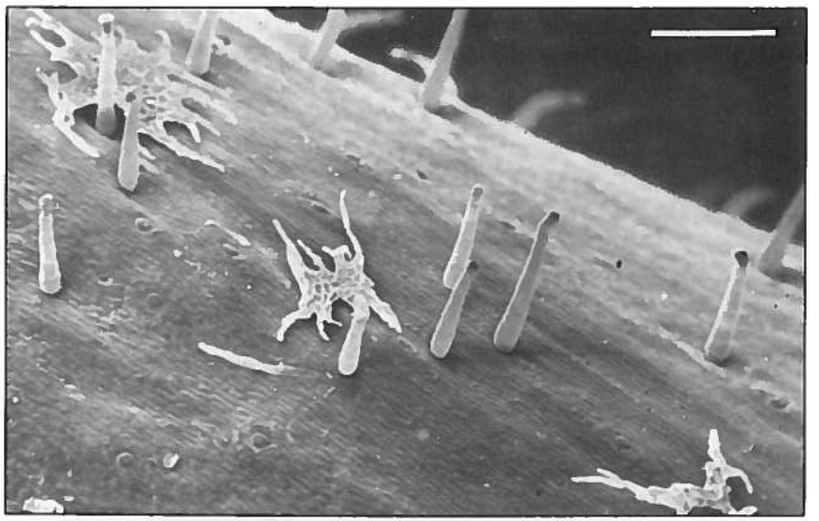


Figure 13
Ronnbergia petersii sepal with glands and some scales (scale bar = 200 micrometers).

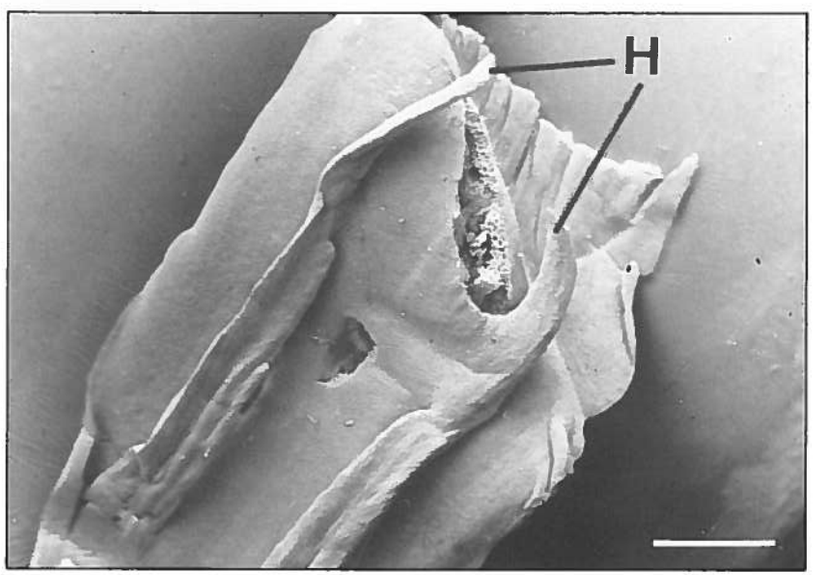


Figure 14
Inner side of the petal with the folds that end in small horns (H) (scale bar = 1 micrometer).

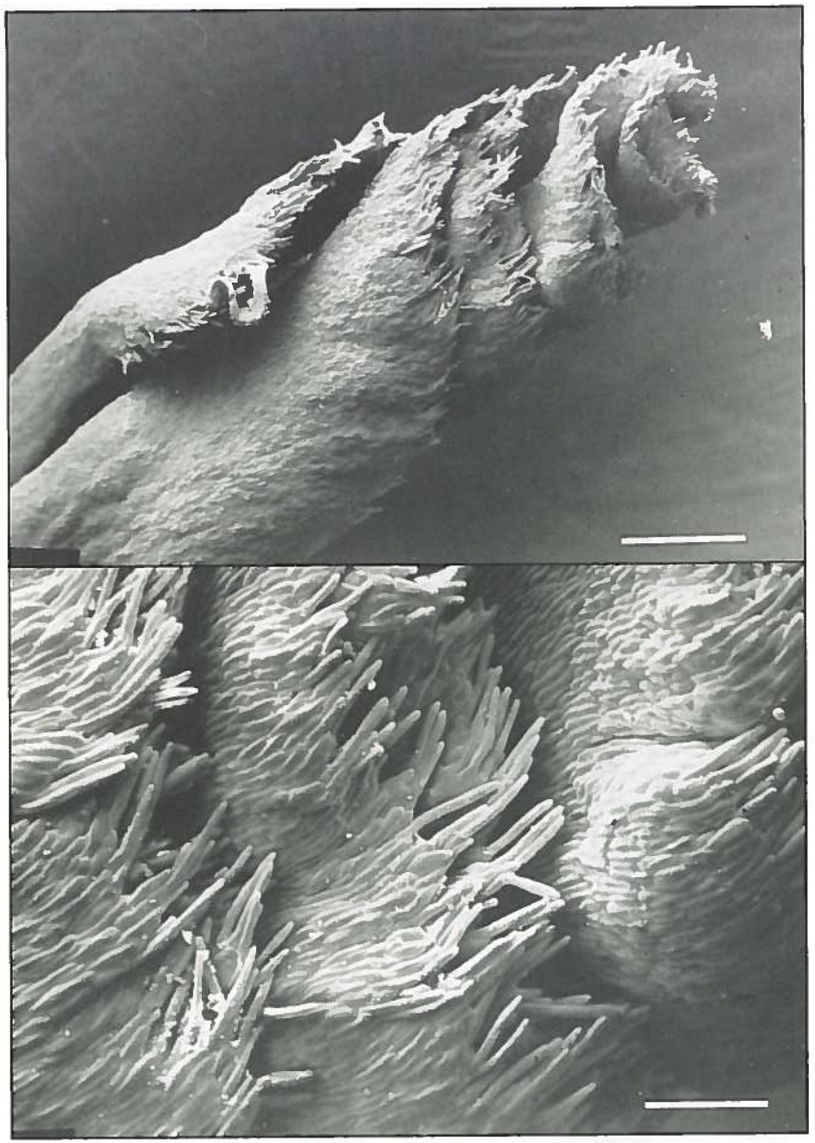


Figure 15
Above: stigma of the conduplicate-spiral type (scale bar = 400 micrometers). Beneath: magnification of the papillae (scale bar = 100 micrometers).

Figure 16
Ronnbergia petersii inflorescence with one open flower.

Figure 17
Ronnbergia petersii
fruiting plant.

Photos by W. Rauh

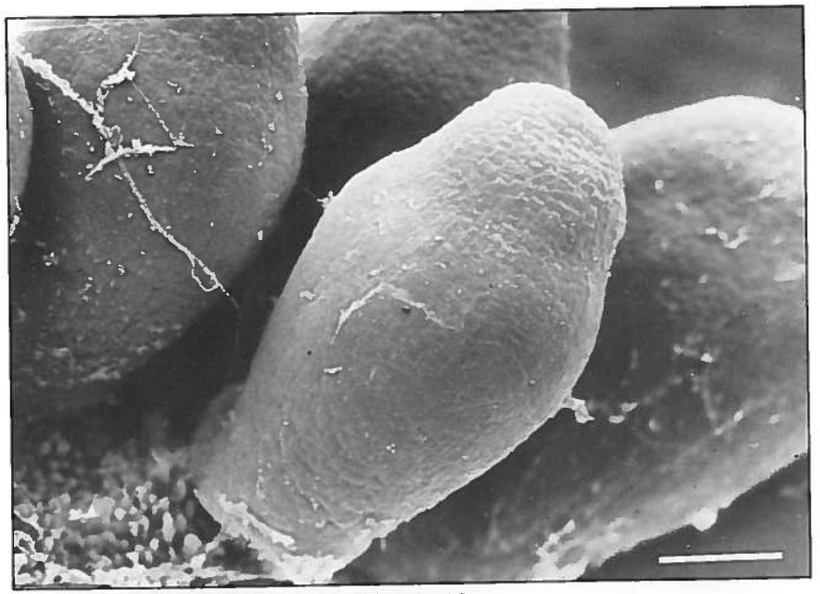


Figure 18
Obtuse ovules at anthesis (scale bar = 100 micrometers).

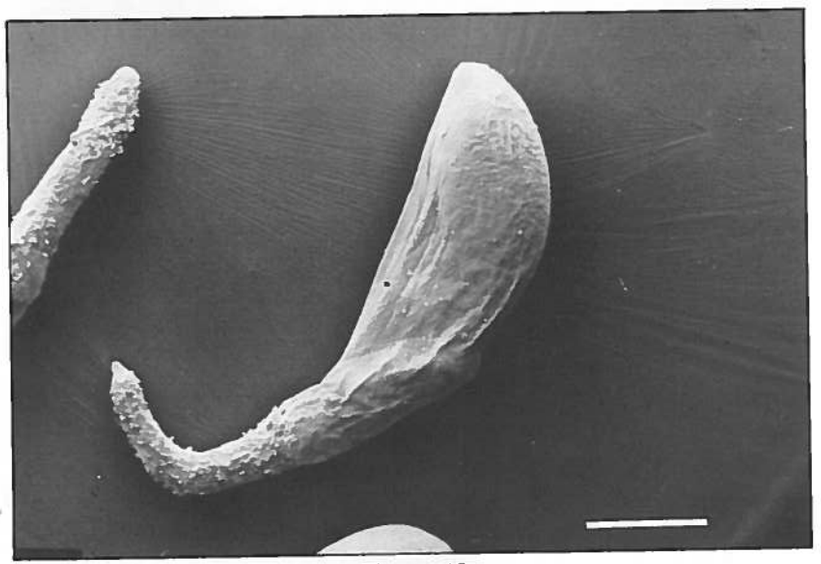


Figure 19
Seed that has germinated in the fruit (scale bar = 1 mm).

Heidelberg, Federal Republic of Germany

END NOTES:

1. J. Brom. Soc. 23:46–48; 1973.

2. E. Gross, "Deuterocohnia glandulosa." In: Bromelienstudien, 21. Mitteilung. Trop. subtrop. Pfanzenwelt 75; 1990.

3. L.B. Smith & R.J. Downs, Bromelioideae. Flora Neotropica, v. 14, pt. 3:1501; 1979.

Book Reviews

Hybridist's Handbook and Checklist of Australian Bromeliad Hybrids and Cultivars. 3rd ed. Compiled by Derek Butcher. 102 pages, 21 cm. Price: Australian $7.50 surface mail, A$9.50 airmail; five or more copies A$5.00 each plus postage. Please make checks or international money orders payable in Australian dollars to Bromeliad Society of South Australia, Inc. Send orders to Derek Butcher, 25 Crace Road, Fulham, South Australia 4024, Australia.

The third edition of Mr. Butcher's *Handbook and Checklist* comes to us five years after its predecessor. It has 30 more pages of listed information. Fancy names and formulas are interfiled in alphabetical order with occasional historical notes and references to related names. The numerous access points provide quick reference. The first 19 pages include information from the *International Code of Nomenclature for Cultivated Plants* such as a list of intergeneric hybrids, how to name hybrids and cultivars, and the definition of the term "cultivar." There is a new discussion about sports and a mention of variegation.

If there is some other source of collected information about what bromeliad hybridizing is all about and the responsibilities of the hybridizer, this is useful repetition. If not, the reader will find thought-provoking information here. In addition, Bill Morris, a BSI honorary trustee and well-known hybridizer, has contributed a cautionary essay, "Problems with Breeding and Interpreting Results."

This compilation is the result of dedication to the cause of historical accuracy as opposed to folklore. To the extent that it is limited to the Australian hybrids and cultivars the compiler is by himself and that is too bad. The task of assembling a register of bromeliad hybrids and cultivars is almost unbelievably complex as shown by the several attempts at compiling a new BSI checklist.

We wish that there were evidence of coordination between Mr. Butcher and the BSI registrar. The lack is not to Derek's discredit. We just wonder if this edition could have been improved through such coordination. Surely the BSI registrar is pages ahead because of Derek's work.

Is this a worthwhile product? All such information is valuable because it is irreplaceable. All hobbyists and commercial growers will find this checklist useful. We also recommend it for all bromeliad society libraries.—TUL.

Success with *Tillandsia straminea*

James J. Wright

The *Tillandsia straminea* shown on the back cover produced eighteen spikes this season. When this photo was taken, the plant had been in flower for a month. Shortly after it started to flower, we had a severe cold spell with a 30 degree F low in my garden. It was a relief to learn that *T. straminea* is not only hardy but a prolific bloomer and that cold weather seems to have no effect on blooms. The inflorescences have lasted two months and the individual flowers are fragrant.

I started this specimen on cork oak bark with a single plant about eight years ago. Other bromeliad enthusiasts have told me that they have had difficulty growing and flowering this plant; however, I have found its culture to be relatively easy. The basic steps include: 1) giving adequate light. My *T. straminea* are in full sun for 4–5 hours in the morning with strong light the rest of the day (I live in the second zone coastal exposure). 2) watering every other day or every day if warm and dry or windy. 3) fertilizing with 7-7-7 every second week throughout the year.

The plant was held to the cork base with 30-lb test monofilament but now it has grown enough roots to hold firmly.

San Diego, California

Calendar of Shows *(continued from back cover)*

13 October	Sarasota Bromeliad Society 11th Annual Show and Sale. Marie Selby Botanical Gardens, 811 South Palm Avenue, Sarasota, FL. Wally Berg. 813-924-0060
26–27 October	Southwest Bromeliad Guild Show. Zilker Park Garden Center, Austin, Texas.
11–14 June	1992 World Bromeliad Conference sponsored by The Bromeliad Guild of Tampa Bay, Inc., The Florida Council of Bromeliad Societies, Inc., and The Bromeliad Society, Inc.. Saddlebrook, Tampa, Florida. Tom Wolfe, General Chairman, 813-961-1475.

Please send 1991 show and related notices to reach the editor on or before 9 September, and 4 November (for January–February 1992).

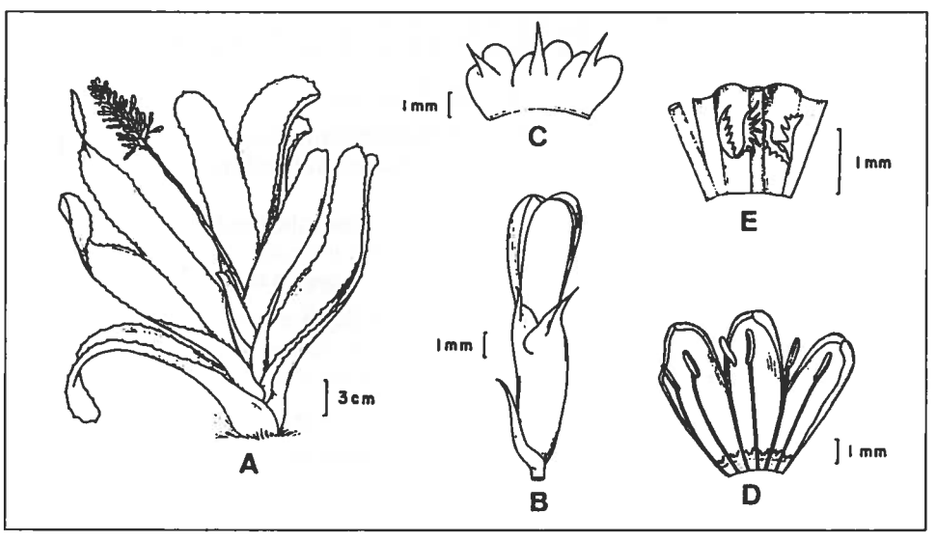
Who Wrote That Tag?

Carol M. Johnson

I acquired this aechmea with the purchase of the Korsakov collection (Jacksonville, Florida) in 1972. It was supposed to be *Aechmea calyculata* but every time it bloomed it was obvious to me that it was misnamed. I sent a plant, eventually, to Harry Luther at BIC and when it bloomed for him he identified it as *A. winkleri.*

Aechmea winkleri was described by Fr. Raulino Reitz in Sellowia, no. 26:1:63, pl. 1, 1975. The description appears in the Smith and Downs monograph on pages 1872 and 1873 with the notation: "known from the type collection only." So here is another plant that has been in my collection since before it was officially reported. It is a member of *Aechmea* subgenera *Ortgiesiae,* along with *A. calyculata, A. recurvata, A. blumenavii,* to mention a few. The plant has survived incredible mistreatment on my part, been given up for dead and then survived for all the 18 years it has been in my possession. Yet, every year, it produces its yellow blooms and follows that with shiny black berries. It is a small, nearly spineless, green plant. It should be underpotted and allowed to clump. It is a good specimen for mounting. Now that it has a name it will get better treatment at my hands.

Longwood, Florida



From Smith & Downs monograph p. 1873, fig. 635A

Figure 20

Aechmea winkleri is a relatively small plant (to 35 cm high) with green leaves, yellow petals, the fruit forming as shiny black berries.

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J.J. Wright

An eight-year old specimen of *Tillandsia straminea* with eighteen spikes. See story on page 178.

Calendar of Shows

20–21 July	San Diego Bromeliad Society 20th Annual Show and Sale: "Bromeliads of the Americas," Casa del Prado, rm. 101, Balboa Park, San Diego, CA. Saturday, 1:00–5:00 p.m.; Sunday, 10:00 a.m.–4:00 p.m. Open to the public. Joyce Brehm, 619-277-1030; Ken Sanders, 619-724-1893
3 August	Florida Council of Bromeliad Societies and Bromeliad Guild of Tampa Bay 1991 Bromeliad Extravaganza "Bromeliads by the Bay." Tampa Garden Center, 2629 Bayshore Boulevard, Tampa, FL. 10:00 a.m.–10:00 p.m., displays, exhibits, sales, workshops, speakers, dinner and rare plant auction. Dinner $6 per person, reservations required before 31 July: Dottie Meyers, 8720 Dexter Ave., Tampa, FL 33604. 813-932-1417
3–4 August	Bromeliad Society of Greater Chicago 7th Annual Standard Show and Sale. Chicago Botanic Garden, Glencoe, IL. Saturday, noon to 5:00 p.m.; Sunday, 10:00 a.m.–5:00 p.m. Visitors are welcome. BSGC is affiliated with The Bromeliad Society, Inc., the Garden Club of Illinois, and the Cryptanthus Society. Dana Field, 1008 Sarasota Lane, Crystal Lake, IL 60014, 815-455-0177.
3–4 August	South Bay Bromeliad Associates 24th Annual Bromeliad Show and Sale. South Coast Botanic Garden, 26300 South Crenshaw Blvd., Palos Verdes Peninsula, CA. Saturday, noon to 4:30 p.m.; Sunday, 10:00 a.m.–4:30 p.m.; plant sales both days, 10:00 a.m.–4:30 p.m. Admission to gardens: regular–$3.00, students & seniors–$1.50. Philip Fetchko 213-644-6164.
28–29 Sept.	River Ridge Bromeliad Society annual show and sale. City Park Botanical Gardens, 200 Victory Avenue, New Orleans, LA. Sale hours: 10:00 a.m.–5:00 p.m., Saturday & Sunday; Show Hours: 1:00–5:00 p.m. Saturday and 10:00 a.m.–5:00 p.m. Sunday. Pat & Joe Chaisson 504-764-6693.

(continued on page 178)