40th Anniversary Volume

Journal of The Bromeliad Society

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Cover photographs. Front: A tray of *Tillandsia stricta* blooming after 3½ years of growth, photographed by Dr. M.A. Dimmitt. His article begins on page 17. Back: *Ananas* presented in the form of a pendant. Photograph by Dr. Ir.G. Samyn. Text is on page 27.

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Historical Notes

Fig. 1

Here, gathered for dinner at the Foster's Bromel-La near Orlando, Florida, are friends whose names are well known to most bromeliad fanciers. Mrs. Foster thinks that the date was sometime in 1964. We are grateful to Mrs. Van Hyning for lending the picture taken by her husband Oather. From left to right: Althea Van Hyning, Maggie and Julian Nally, Mable and Ed Ensign, Racine and Mulford Foster.

The photograph of *Tillandsia grandis* reproduced on the first *Bulletin cover* (next page) is the same one used for the original printing. Mrs. Foster supplied it from her files.

The BROMELIAD SOCIETY BULLETIN

VOL. 1 JANUARY - FEBRUARY, 1951 No. 1

The giant *Tillandsia Grandis,* flowering in the garden of the Society's president. Native of Mexico, it flowers when about thirty-five years of age. The flower stalk is eleven feet high.

Fig. 2

The Fortieth Anniversary of The Bromeliad Society, Incorporated

The society will be forty years old on September the seventeenth of this year and the *Journal* begins volume 40 with this issue. Forty is not such a bad age (39 might be better) because it implies a degree of maturity and experience. It indicates, also, determination to survive and few will argue against that trait. During my seven years as editor I have concentrated my attention on meeting deadlines with as much material of both general and scientific interest as has become available. Except for an introductory statement, I have refrained from writing messages and editorials but this 40th year needs a review.

Mulford B. Foster, the first president of the society, wrote in *The Bromeliad Society Bulletin,* volume 1, number 1, January–February 1951, that a preliminary meeting was held in Los Angeles, California, by local bromeliad fanciers on May 21, 1950. They decided to hold an organizational meeting on September 17, 1950 and did so. Within three months of the September meeting there were nearly one hundred charter members from eleven countries.

The founders lost no time in creating this organization or in stating "objectives and aims" in that first issue of the *Bulletin.* Let's review them in the order in which they were originally stated and see if we are making progress.

1. Then, as now, **conservation** was the primary concern. The Conservation Committee is one of the standing committees and has made itself known by publishing a statement of goals and a code of conduct for growers and collectors just as the founders hoped. That document and related work by the committee have served well in recent discussions about the possibility of adding bromeliads to lists of endangered species. We hope that will not happen. Considering the aggressiveness of the destroyers, we should become even more active as conservers by collecting only those species that have a chance of surviving local conditions, encouraging seed culture, and careful growing practices.

2. **Hybridizing.** In this matter, from which Mr. Foster derived almost as much of his reputation as from his success as a collector, there is little doubt that significant work has been done and is continuing. In the early years of this century, European hybridizers were active, but since World War II hybridizers all over the world have become known. The problem now is not how to interest those capable of developing hybridization programs within this great family but how to keep accurate records in accordance with the International Code. We need also to emphasize critical assessment of hybridizing activities.

3. **Publications.** Mr. Foster wrote: "Our *Bulletin* and our society will die aborning unless we breath life into them." His words apply without change. He

emphasized the need for members to contribute articles about personal experience, questions, and photographs. He also declared the *Bulletin* (now the *Journal*) the society publication of record for describing and registering new hybrids. He encouraged publication plans for all kinds of technical material relating to bromeliads. The pattern was clearly set during the thirty years of editorship of Mulford and Racine Foster, Frank Overton, Maria Wilkes, and Victoria Padilla. It is not necessarily a contradiction that the *Journal* tries to serve both hobbyists and scientists. There is limited space, but by balancing the material in each issue, both communities can be served provided that the hobbyists contribute. We have right now, for example, more than twice as many scientific papers awaiting publication as general interest articles.

Affiliated society newsletters are valuable sources of information and we presume to reprint from them frequently. Newsletters, however, are the place for reports of local accomplishments, not that they lack significance, but that the interests of the general membership are broader.

4. **Nomenclature.** On this subject, we note that Mulford Foster's hopes for a greater degree of standardization have been fulfilled by Lyman Smith's monograph. Now, taxonomists are increasing our knowledge of bromeliads on the basis of his magnificent work. Mr. Foster also suggested an identification service and offered to provide such a service. His offer and his memory are preserved in the Bromeliad Identification Center, a resource available to all but with a director badly in need of challenges with respect to patronage.

I don't know of any better way of concluding this anniversary editorial than by quoting Mulford again:

> I hope that each member can and will make every effort to send in at least one new member just as soon as possible. Remember, this society can breathe only through the life blood of its members. With enthusiasm, interest, and a desire to assist the other fellow our journey will be a success.

–TUL

Mayan Bromeliads

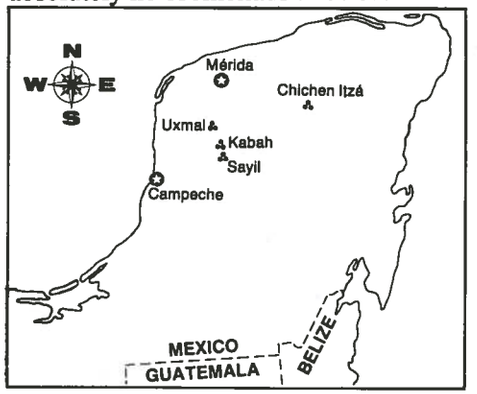
Sam Smith

Having always been fascinated by pre-Columbian Indians, I was very excited to have the opportunity to see the Mayan ruins in Yucatán first hand. The Maya are the most enigmatic of the three great pre-Columbian peoples. Whereas the Aztecs and the Incas were both large and wealthy nations when the Spanish arrived, the Mayan civilization had disintegrated hundreds of years earlier. Although many theories have been advanced, no one really knows the cause or causes of their downfall.

We arrived in Mérida on April 24 and the next day set out for Chichén Itzá. Passing through the entrance buildings, we headed straight for the ball court. Our guide explained the object of the game was to pass a hard rubber ball through a hoop on the side of the field. Rewards of the game: riches for the winners, perhaps death for the losers. We then proceeded to the house of skulls. Hey! What's that in that tree over there? It looks like a bromeliad! The four bromeliad bugs in the group gathered around the tree to identify several *Tillandsia brachycaulos* and a small clump of *T. schiedeana.* From then on we had one eye on the trees and one eye on the ruins. Our poor guide could not understand why we wanted to spend half our time staring at the trees with the ruins of the Mayas all around us.

In the area of the ruins we noted *Tillandsia fasciculata, T. balbisiana, T. paucifolia,* and *T. polystachya* along with *Aechmea bracteata* (fig. 3), as well as *Catopsis* and *Bromelia* species.

During the remainder of the week we toured Uxmal, Sayil, and Kabah. Continuing to keep one eye on the trees and one eye on the ruins, a pattern soon became apparent. While going between towns or between ruins there were absolutely no bromeliads to be seen. In the town squares and occasionally in dooryards a few trees would be loaded with bromeliads, mainly *T. brachycaulos.* The tamarind tree, *Tamarindus indica,* was by far the preferred host. The trees in the ruin sites also had epiphytes, both orchids and bromeliads.



Finally it was Friday. We had the morning to tour the museum but the afternoon was free. Our guide arranged a car and driver for us. We were assured by our driver he knew

Author

Fig. 3 ***Aechmea bracteata*** at ruin site. Note the amount of open space cleared around the site. Gene McKenzie, editor of the Caloosahatchee Bromeliad Society, Fort Myers, Florida, is shown holding an inflorescence.

what a bromeliad was and that he knew where there were many different species. With not a little skepticism we took off. After almost an hour we arrived at the town of Kanasin. Our driver announced that this was his hometown and that it was actually his father who knew where the bromeliads were. Leaving us in the car with the temperature of 105 degrees he went in search of this father. He returned in about 30 minutes unable to find his father but he did find out there were many bromeliads in the next town. After about 20 minutes, we arrived in an even smaller town. True to prediction there were many bromeliads, in the town square. At first we refused to take any of the plants, even with his sincere assurance that they were parasites and we would be doing the trees a favor. However, when we noticed workmen on the other side of the square burning a large pile of brachycaulos, we did take a few. It was getting late and we decided to head back to Mérida and a guayabera factory. Going back through Kanasin our driver picked up a passenger, his wife who had a doctor's appointment in Mérida. What a coincidence.

The next day we hired a Volkswagen van and driver. Since there seemed to be so few bromeliads inland we decided to go to the coast. We chose Celestun on the west coast of the Yucatán, north of the town of Campeche. The people of Celestun know one word common to both Spanish and English: flamingo. Apparently there is a large colony of these birds here and it is quite a tourist

attraction. Just before the beginning of the mangroves we found a small scrub oak thicket with a large mahogany-colored tillandsia growing both epiphytically and terrestrially. An old bloom spike suggested *T. utriculata.*

After an excellent seafood lunch we returned to the mangroves, stopping at a tree containing a large clump of the orchid *Schomburgkia tibicinis.* In spite of being badly burned there were several long bloom spikes with lovely purple flowers. Climbing through the mangroves to get a better look, I came upon a large vase-shaped tillandsia with a bulbous base the size of a softball. Being so intent on reaching it, I failed to notice that I was covered with ants from my waist down. Exiting the mangroves promptly, I did a war dance in the road. Much to my surprise and pleasure not a single ant decided to bite. Giving the schomburgkias a wide berth I managed to retrieve the tillandsia which was also full of ants. At another spot we found several more of these tillandsias, some with pups, but none with good bloom spikes.

Driving further inland we made one final stop at the junction of mangrove and oak scrub. This was the most inhospitable place I have ever seen. The temperature was about 110 degrees with no wind or clouds. The area had been burned several years before so there was no ground cover, only pure white sand. Most of the trees were dead and were simply bare sticks. There were several dead calabash trees, *Crescentea cujete.* High in the few branches were desiccated and twisted miniature specimens of *T. streptophylla.* Also present were *T. paucifolia, T. flexuosa* and, to our surprise, a green, soft-leaf tillandsia. About five minutes of this lovely place was all we could take so we headed back to Mérida to clean and pack our plants.

The Yucatán is a relatively flat, hot region with very distinct wet and dry seasons, with the dry period being much longer than the wet. It has been under cultivation for thousands of years, first by the Maya and most recently by sisal plantations. With the advent of synthetic material, the sisal industry collapsed and now most plantations are abandoned. Little farming now takes place. As soon as an area can support a fire it is burned. This certainly explains why epiphytes are found only in town squares, dooryards and parks. What purpose is served by burning a large clump of schomburgkia—especially one in the mangroves? "Why the constant burning?" we asked several people, but no one could give an answer. In spite of the vendetta against epiphytes, it is encouraging to see how they have adapted to the few enclaves remaining for them. Perhaps at some future time they may be permitted to venture out into the wilderness.

After spending two weeks in the inspection station our plants finally arrived home and to our amazement they were in excellent condition. Now, almost two months after our return, all are growing nicely. We still don't know what the large bulbous plant is. Harry Luther has suggested it may be *Tillandsia utriculata, T. limbata* or *T. dasyliriifolia.* We await a bloom spike.

Ft. Myers, Florida

Luis Ariza Julia, 1899–1989

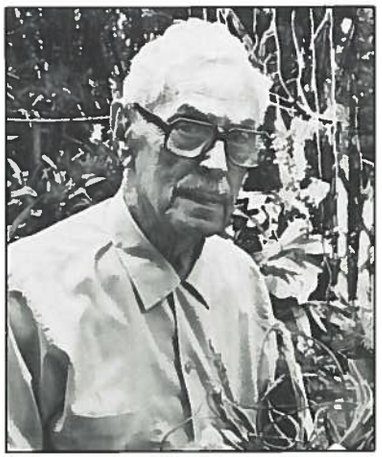


Fig. 4
Luis Ariza Julia

We are sorry to report that Luis Ariza Julia our honorary trustee from the Dominican Republic died on September 24, 1989.

Although active in several business enterprises, Sr. Ariza Julia became a student of botany. He stood out in this field and became well known among scientists as a collector and researcher of orchids and bromeliads. He contributed frequently some years ago to the *Bulletin* and *Journal.* We reported in the November-December 1986 issue that the Santo Domingo spring flower show was held in his honor and provided in that issue a list of his registered cultivars. We offer our sympathy to his wife and family.—TUL

BACK ISSUES OF THE BROMELIAD SOCIETY BULLETIN. A few complete sets of volumes 1–3 (1951-1953), all original with cumulative index are still available at $30.00 plus postage and insurance. Separate issues of volumes 1–8 (1951–1958) are also available. With the 40th anniversary of the *Bulletin/Journal* in 1990, you will want to be the owner of original copies. Write or call for information: Editor, BSI, 1508 Lake Shore Drive, Orlando, FL 32803; 407-896-3722.

LET US REMIND YOU THAT back issues of the *Bulletin* and *Journal* are always in demand by members including botanical garden and university libraries. Tell the editor if you have any issues of 1964–1975 available and we may be able to work out some arrangement. Do not let your collection of this publication be scattered or discarded. Specify in your will that you want it to go to a bromeliad organization and specify the name and address.

Plicate Staminal Filaments in *Tillandsia* subgenus *Anoplophytum*

Timothy M. Evans and Gregory K. Brown

Introduction

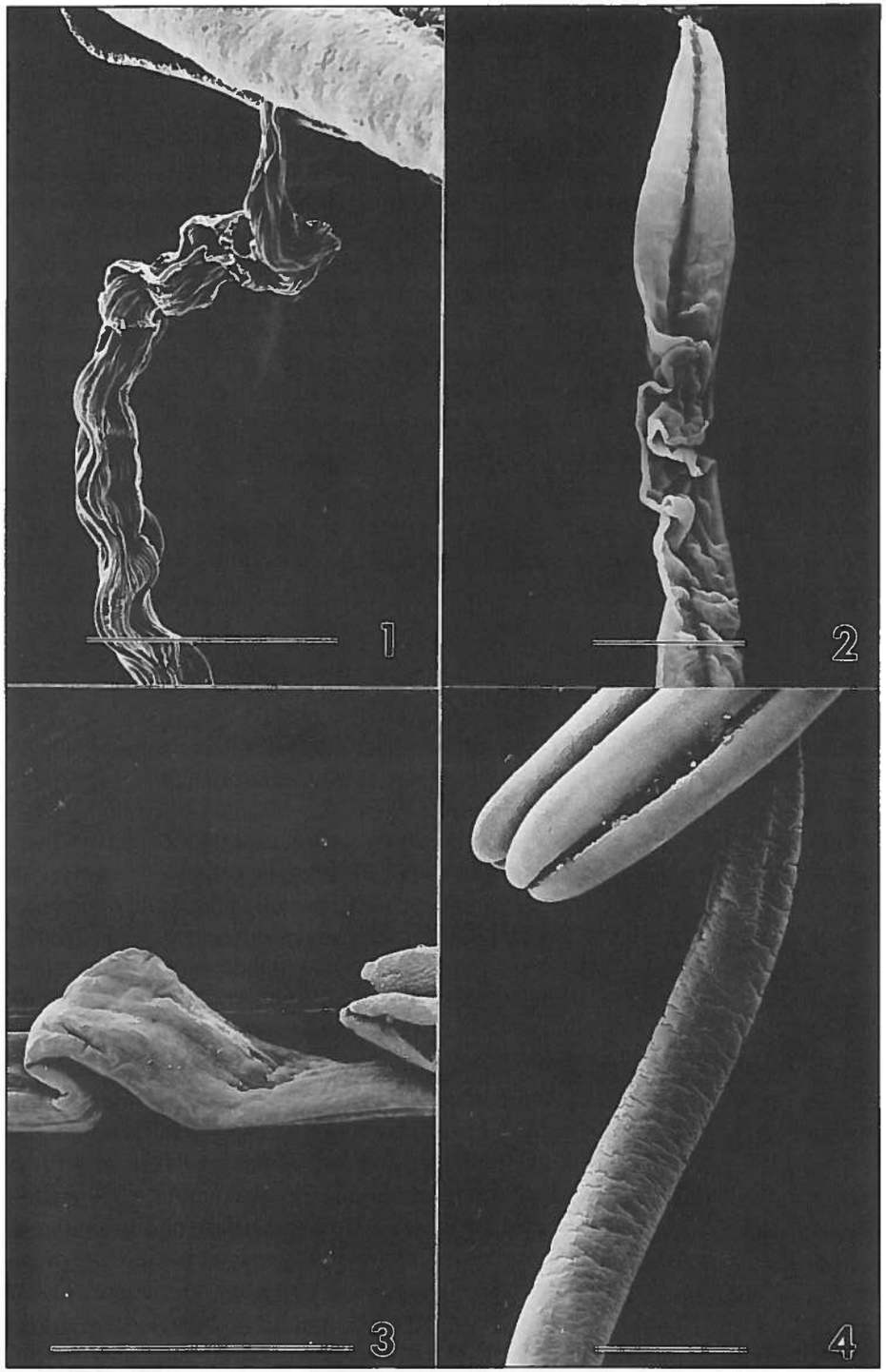
The occurrence of staminal filament plication (fig. 5-1) is currently one of the primary characters used to distinguish subgenus *Anoplophytum* from other subgenera within *Tillandsia* (Smith and Downs, 1977). Since the evolutionary unity of this subgenus is in doubt (Gilmartin, 1978; Brown, unpublished), we conducted an anatomical study of the plicate filaments in order to gain a better understanding of their systematic importance to this subgenus. We also considered the possible functional value of plicate filaments in pollination biology.

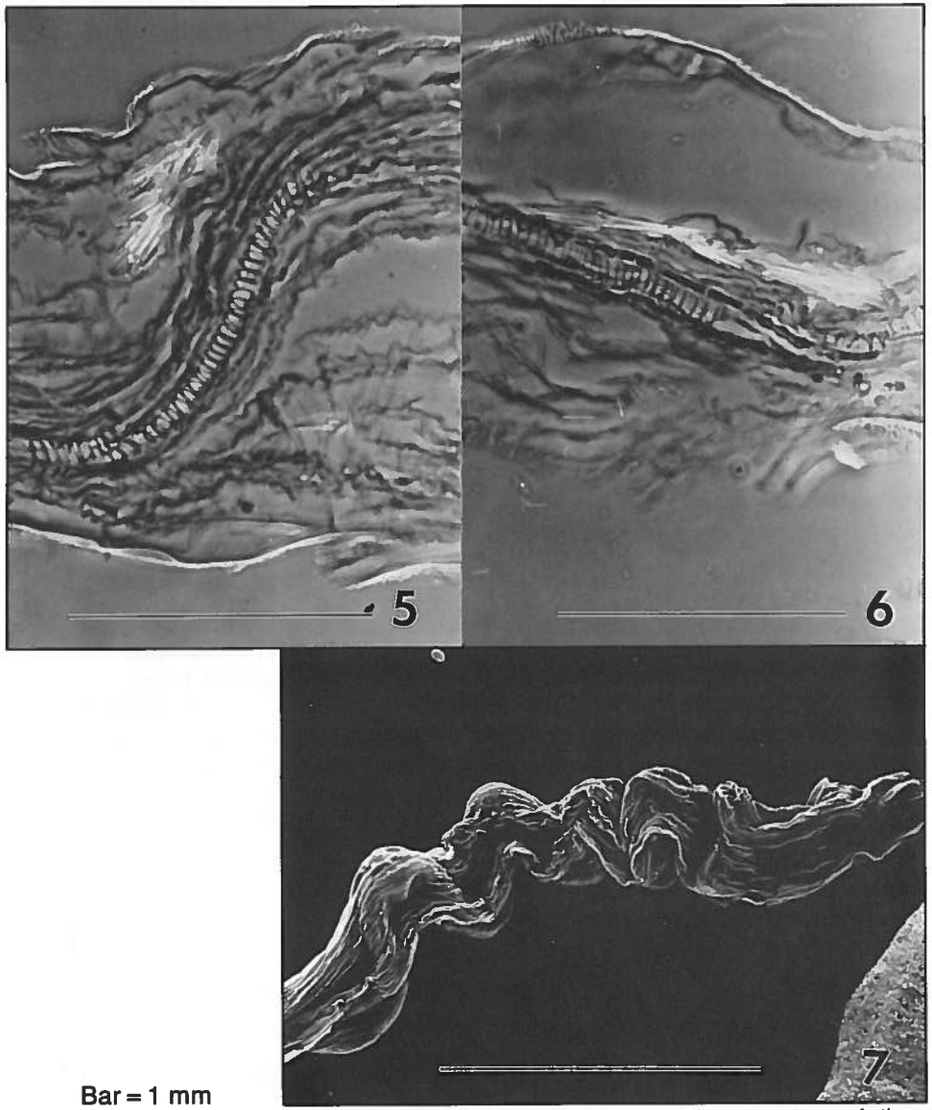
Results

Plicate filaments were found in species traditionally classified in subgenera *Tillandsia* and *Allardtia* as well as *Anoplophytum* (Table 1). The sequence of events leading to the formation of the plication appeared to be the same for each species regardless of the subgenus to which it belonged.

Table 1. *Tillandsia* species examined for plicate staminal filaments.

Species	Subgenus (Sensu Smith & Downs, 1977)	Voucher (where cultivated)
T. aequatorialis L.B. Smith	*Allardtia*	Cultivated, Denver Botanical Garden (RM)
T. butzii Mez	*Tillandsia*	Mexico, Edo. Chiapas Cultivated, Selby Botanical Garden (SEL 80-1598)
T. caput-medusa E. Morren	*Tillandsia*	Cultivated, Selby Botanical Garden (SEL s.n.)
T. gardneri Lindley	*Anoplophytum*	Brazil, Edo. Rio de Janeiro *Martinelli 11575* (WS)
T. sceptriformis Mez & Sodiro ex Mez	*Allardtia*	Ecuador, Prov. Pichincha *Bravo 870* (WS)
T. stricta Solander in Sims	*Anoplophytum*	Brazil Cultivated, Selby Botanical Garden (SEL 75-86-68)
T. xiphioides Ker-Gawler	*Anoplophytum*	Argentina, Prov. Salta *Palaci 207* (WS)





Bar = 1 mm

Authors

Fig. 5

1. Typical plicated filament. Note bends in vascular bundle and longitudinal wrinkles on surface.
2. Plicated *T. stricta* filament. Plicated area is 3 to 4 mm below anther.
3. Plicated *T. gardneri* filament. Plicated area is 1 to 2 mm below anther.
4. Early plication in *T. aequatorialis*. Plications first become visible as transverse wrinkles on surface.
5. Cell collapse beginning 3 to 4 cell layers from the vascular bundle.
6. Cell collapse in *T. butzii* is complete, leaving only the vascular bundle, the cuticle, and a few parenchyma cells intact.
7. Plicated *T. stricta* filament showing longitudinal wrinkles.

The position of the plicated region on the filaments varies. In some plants the plications form directly under the anther while in other plants they are 2 to 3 mm below the anther (fig. 5-2, 5-3).

The first external sign of filament plication is the formation of transverse wrinkles on the surface of the filament (fig. 5-4). These wrinkles are the result of collapsing cells about 3 to 4 cell layers from the vascular bundle (fig 5-5). As the cell walls perpendicular to the long axis of the filament collapse inward, those that are parallel to the long axis of the filament become folded like an accordion. The region of collapsing cells enlarges outward from around the vascular bundle and the bundle begins to bend. Cell collapse continues until only the sinuous vascular bundle, a few cells directly adjacent to the bundle, and the cuticle,[1] remain intact (fig. 5-6). By this time, the plication process is complete (fig. 5-7).

One might expect the overall length of a filament to decrease during the plication process but this is not the case. Instead, the total length of the filament increases during plication because the nonplicate region continues to elongate (Table 2). The plicated region itself, however, decreases in length.

Table 2. Effect of plication on filament length

Species	Total filament length	Bottom of plication to filament base
T. aequatorialis		
preplication	13.5	7.5
postplication	36.0	30.0
T. sceptriformis		
preplication	5.5	3.0
postplication	10.0	6.0
T. stricta		
preplication	8.0	4.0
postplication	13.0	8.0

Discussion

Before this study, it was hypothesized (Brown, unpublished) that filament plication might be a mechanism to insure self-pollination by pulling the anther back to the level of the stigma thereby depositing pollen on the stigmatic surface. Such does not appear to be the case. Since the filament actually elongates during plication (as shown in Table 2) the anther does not come into contact with the stigma.

Although the function of staminal filament plication is not known, our observations may provide some insight. One is that the plicate regions are notably elastic. When pulled out with forceps, they snap back upon release.

[1] A waxy covering on the surface of the filament.

Another is that the collective folds in the plicate filaments effectively plug the floral tube, possibly to prevent the evaporation of nectar.

The fact that there is variation in the occurrence of plication within the subgenus diminishes the systematic value of filament plication as an identifying feature for subgenus *Anoplophytum.* Head (1988) reports that plication was found in some samples of *Tillandsia bergeri* but was absent in others. Smith and Downs (1977) describe *T. xiphioides* as having "filaments filiform, straight," but our samples of the species contained plicate filaments.

The presence of plicate staminal filaments within other groups (Table 1) considerably weakens the value of plication as a diagnostic character. To be specific, the occurrence of plicate filaments within subgenus *Allardtia,* which is closely related to subgenus *Anoplophytum,* disrupts the traditional classification scheme causing us to believe that a reevaluation of both of those subgenera is in order.

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THE SARASOTA BROMELIAD SOCIETY has contributed $100.00 to the color separation fund in memory of James V. Elmore who died in October 1989. Mr. Elmore will be remembered by many as the editor of *Grande* magazine, as a hybridizer possessed of both skill and imagination, as a photographer, and as the author of a beautifully illustrated article about hybridizing in *Journal* volume 33 (1983). – TUL

A Postscript to *Guzmania sanguinea*

Harry E. Luther

While working with *Guzmania sanguinea* (*Journal* 39:197–199), I found an article about this species in *Journal* volume 23, page 156–158 (1973) with two color illustrations. The lower photograph by Henry Turner and part of the text on page 158 refer to *Guzmania nidularioides* L.B. Smith & R.W. Read that was published new in *Journal* volume 35 on page 251 (1985).

Bromeliad Internship Applications Are Invited

Harry E. Luther

The Bromeliad Society, Inc., in cooperation with the Marie Selby Botanical Gardens, invites applications for internships involving intensive study of bromeliads. College-level students who have demonstrated an interest in pursuing a career in horticulture, botany, or a related field are encouraged to apply.

Bromeliad Society and Selby Gardens representatives will screen applications for this work-and-study program consisting of 14 weeks of 40 hours at the garden in Sarasota, Florida. Successful candidates will be awarded a stipend of $10 per day ($70 a week) and living quarters. Intern sessions begin in February, May, and September.

The work portion will be assigned and supervised by the director of the Bromeliad Identification Center. A study portion should be devoted to a project mutually agreed upon by the intern and the director. A study proposal should accompany each application, and must be approved within the first two weeks of the program.

In order to complete the program satisfactorily, the intern is expected to prepare a project report of general interest and acceptable quality. The report will be forwarded to the *Journal* editor for possible publication.

The director of the Bromeliad Identification Center continues to welcome suggestions from society members for relevant projects.

Director, M.B. Foster Bromeliad Identification Center
Marie Selby Botanical Gardens, 811 South Palm Avenue
Sarasota, Florida 34236

Growing Atmospheric Tillandsias from Seed

Mark A. Dimmitt

[Bromeliads; A Cultural Handbook was published in 1953 only three years after the society was organized and a third edition was published twenty-four years later in 1977. We hope to revise several chapters of the third edition to state more current thinking and practice and to publish them in this 40th anniversary volume. If that proposal works out and when we can find the funds, we would like to publish a fourth edition.

Mark Dimmitt is widely known for his success with tillandsia seed culture and interesting hybrids. His experience with tillandsias is summarized in new discussions of basic culture, artificial pollination, selection of plant parents, and an analysis of results. We propose this material as an elaboration of *Cultural Handbook* chapters on seed culture and hybridization. We invite your comments.—TUL]

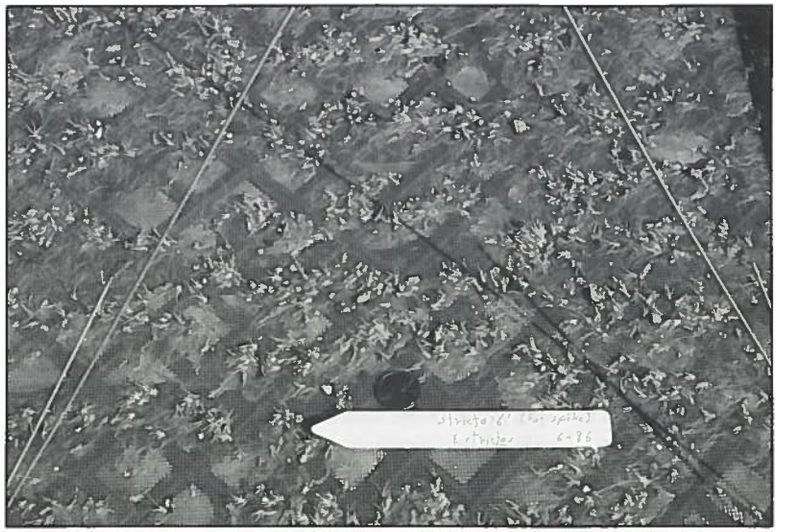
The genus *Tillandsia* has an undeserved reputation for being difficult to grow from seed. In fact, tillandsias are among the easiest plants in the world to grow. Most species also have a reputation for being very slow. Some are, but under generous cultural conditions many of the popular species can be grown to maturity in five years or less. This article describes tillandsia propagation from sowing of seed to maturity. A companion article will describe the details of pollination, and a strategy for selective breeding.

Sowing Seed

It is not always possible to tell if tillandsia seed is viable. In many species the seed begins to germinate before the capsule splits, indicated by a little green nubbin at the end of the coma (the tuft of hairs that carry the seed on the wind). In other species the seed looks brown and lifeless. It may still be good, so sow it.

Sow *Tillandsia* seed as soon as possible; it remains viable for only a few weeks under normal environmental conditions. It may be possible to freeze extra seed but I have not yet tried this experiment. Refrigerated seed keeps for at least a few months.

The seeds of atmospheric tillandsias need moisture, light, and good air circulation for germination and survival. A substrate which tends to remain soggy will develop a growth of algae which will suffocate the seed or seedlings. The same problem develops if the air is too humid and stagnant. I sow seeds on plastic window screen in open-mesh flats suspended in the air. Nylon stockings stretched over a wire frame also work well, as will chunks of tree fern fiber. Any airy substrate that will not decay for at least three years or so seems to be satisfactory.



Photos by the author

Fig. 6

Tillandsia stricta seedlings at 6 months illustrating a good sowing density; plants will not need separating until they are large enough to handle easily. This is one of the fastest growing species. The penny provides scale in this series of four photos.

Fig. 7

Tillandsia stricta seedlings at 18 months, they are about an inch in diameter but are nearly halfway to flowering in time. They are beginning accelerated growth and are ready to be separated.

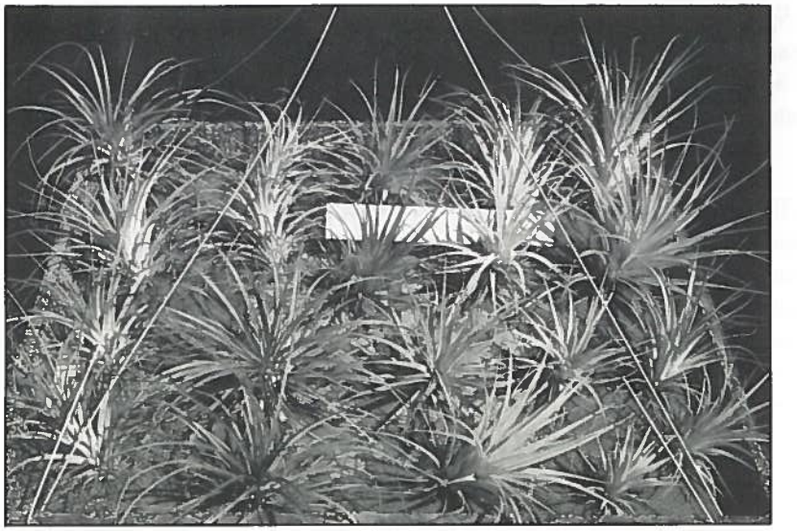


Fig. 8

Tillandsia stricta seedlings at 3 years. They were separated and placed 25 to a flat about a year previously. The photo was taken in summer; most will flower next winter. It is preferable not to use the screen at this stage if the seedlings are large enough not to fall through the mesh of the flat.

Fig. 9

Tillandsias can be grown efficiently in several layers. The bottom three layers in this greenhouse contain young seedlings and shade-loving species. The upper two contain mature plants of species needing bright growing conditions.

Spread the seeds thinly on the substrate so that you can see individual seeds instead of clumps. The more widely spaced they are, the longer it will be before they become crowded and require separation to prevent stunting. Larger seedlings are also much easier to handle without being damaged.

Care of Young Seedlings

The seedlings of most species of *Tillandsia* grow very slowly for the first two to three years. When they reach about an inch in height, growth speeds up dramatically, and continues to accelerate as the plants grow bigger (if they are not crowded). At this stage of growth, the seedlings need the same conditions as for germination: strong light (but less than mature plants of the same species prefer), high humidity, and good air circulation. They should be watered whenever they have no visible water on them. They respond well to regular feeding. I use about one-quarter the recommended strength of a 20-20-20 formula with micronutrients, and apply it almost every week. Higher concentrations do not harm the seedlings, but do not seem to do any more good. Frequent application *is* definitely beneficial; tillandsias do not seem able to store nutrients, and most do not grow on a medium (such as soil or a humus pocket) that would serve as a nutrient reservoir.

The most serious problem during the tiny seedling stage is suffocation by algae. The presence of algae indicates too much water, it can be alleviated by one or more of the following actions: reduce watering frequency, lower humidity, increase light, or increase air circulation. If algae has run rampant by the time you discover it, its hygroscopic nature keeps the mass soggy, and requires positive action. If the plants are large enough to handle, move them to a clean substrate in a drier location. If the plants have been covered with the goo, try an algicide such as Physan or Fore combined with a move to a drier location. Avoid copper compounds; they kill algae very well, but it is easy to poison the tillandsias too. Unfortunately, copper-free algicides do not work very well. They frequently damage seedlings also. Prevention is the best practice.

Growing On To First Flowering

If the seeds were sown at the proper density, they will need to be spread out at about the time they begin accelerated growth (approximately 1″ in height and two to four years of age). If they become crowded and are still too small to handle, do not try to separate them into individual plants. Instead, divide them into clumps of several plants each and spread them out onto new substrate.

When they are at least ½ inch in size, they are ready to separate into individual plants. Many species and hybrids have strong roots as small seedlings, making separation somewhat tricky. If you pull on the tops of the plants, you are likely to rip their hearts out. It is necessary to tease the clumps apart carefully until you can get your fingers between the plants, then to work the roots apart without crushing the fragile meristem near the base of the rosette. If the seeds

(continued on page 29)

Tillandsia rayonesensis, a New Species from Mexico

Renate Ehlers

During our trip to Mexico in March 1979, we spent two nights in Aramberri, a village in Nuevo León, close to the Sierra de Zaragossa in the northeastern part of the country. One evening in our small hotel we met a group of seven Germans who had been hunting for cactus. We spent a nice time together talking about plants. When one of the ladies heard that I was interested in tillandsias, she gave me two plants she had found. One of them looked like *Tillandsia karwinskyana,* the other one was caulescent, 5 cm in diameter and 15 cm long, with grey leaves. At first glance I thought it might be *T. albida.*

Two or three years later the first plant flowered and, as I had expected, it was *Tillandsia karwinskyana.* The second plant still looked like *T. albida* and I paid no more attention to it. Many years later, in the spring of 1987, one of the plants in my "latifolia corner" started to get an inflorescence entirely different from the others although it looked like a latifolia. When I looked at the label I was very surprised to read that it was the plant that I got in Aramberri. I watched the plant nearly every day until it finally bloomed and, to my surprise, it is a new species.

Not knowing where the plant had been collected or even the name of the collector, we finally found Mrs. Edeltraut Lauser, of Trasselberg, through another member of the group whose name we finally remembered. Mrs. Lauser remembered the exact location because of the many interesting endemic cactus they had been studying there: Rayones, Nuevo León. She found the specimen on trees close to a river, between Rayones and Montemorelos.

In the meantime, my plant had made four offsets, each of them caulescent and already 25 cm long. It is easy to cultivate. During the summer it hangs outside in our garden in full sun. In winter, it hangs in our cactus glass house at a minimum temperature of 8 degrees Centigrade. The description follows:

***Tillandsia rayonesensis* R. Ehlers sp. nov.**

A *Tillandsia roseoscapa* Matuda emend. Rauh, cui affinis, caule distincto, vaginis foliorum minoribus, laminis foliorum brevioribus, inflorescentia simplica, bracteis florigeris ecarinatis et sepalis aequaliter 2 mm connatis differt.

Typus: Mexico. Estado Nuevo Leon: prope urbam Rayones, 1979, col. *Edeltraut Lauser,* Trasselberg, BRD, cult. in coll. R. Ehlers, Stuttgart, BRD sub no. M 79139 (holotypus in WU).

Plant caulescent, flowering 70 cm, stem at least 50 cm, the basal part covered with the old leaves, the top forming an erect, dense rosette. *Leaves*

many, polystichous, up to 25 cm long, rigid, appearing grey. *Sheaths* inconspicuous, up to 5 cm long and 2.5–3 cm wide, both sides green-brown, adaxially with adpressed brownish scales, abaxially covered with fine, appressed grey scales. *Blades* to 20 cm long, triangular-lanceolate, attenuate, adaxially with pale cinereous adpressed scales, abaxially with densely cinereous scales, the basal ones recurved and secund, the tips curved or slightly curved, the upper erect with recurved tips. *Scape* 40 cm long, 6 mm in diameter, round, scarcely lepidote, erect to descending. *Scape bracts* densely imbricate, enfolding and concealing the scape, twice as long at the internodes, abaxially with cinereous scales, adaxially prominently nerved and finely lepidote, the basal ones long filiform attenuate, the upper ones only acute. *Inflorescence* much longer than the leaves, a simple spike 7 cm long, 2 cm wide, lanceolate, strongly complanate, with 7–9 sessile, distichous flowers. *Floral bracts* densely imbricate, concealing the rachis, elliptic, acute, 35 mm long, 14 mm wide, exceeding the sepals, nerved, ecarinate, adaxially glabrous, abaxially densely covered with fine, cinereous, pruinose scales. *Sepals* 28 mm long, 8 mm wide, lanceolate, acute, equally 2 mm connate, membranaceous, glabrous, the margins subhyaline, light green, the posterior ones rose-coloured, distinctly carinate. *Petals* 50 mm long, 7 mm wide, ligulate, forming an erect tube, the apex slightly rolled back, yellow-green, whitish at the base. *Stamens* exceeding the petals 10 mm. *Filaments* slightly twisted, very thin near apex then 1 mm in oval cross-section, flat and thin towards the base, 50 mm long, base 15 mm. *Anthers* dark brown, 3 mm long, 1 mm wide, dorsifixed ⅓ from the base. *Style* thin, the basal part very thin, concolorous with petals and filaments; *stigma* small, 1.3 mm in cross-section, lobes erect, scarcely spreading, somewhat papillose, green. *Ovary* 6 mm long, 3 mm wide, egg-shaped with flat sides.

Distribution. Northern Mexico. Nuevo León: Rayones, growing epiphytically near a river, about 500 m above sea level.

The plant belongs to the subgenus *Tillandsia* and, according to the classification of C.S. Gardner, to Group I, Subgroup I.

Tillandsia rayonesensis differs from *T. elizabethae* Rauh in the following characteristics: plant caulescent, inflorescence much longer than the leaves, scape 40 cm, floral bracts ecarinate, sepals longer and equally 2 mm connate, petals longer and yellow-green. Dr. W. Till compared *T. rayonesensis* with *T. exserta* Fernald and *T. parryi* Baker and found no similarity. The only tillandsia it shares some details with is *T. roseoscapa.*

Acknowledgment:

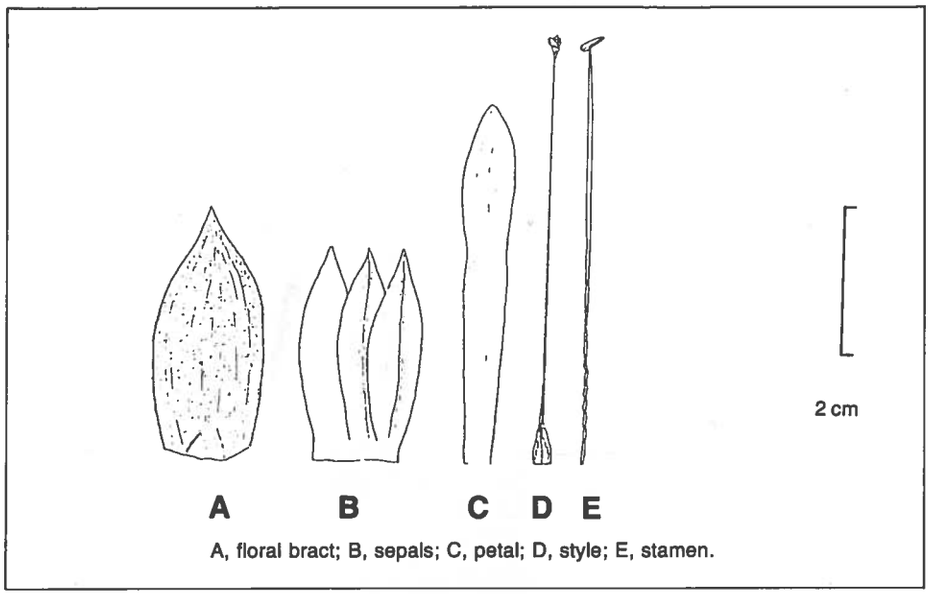
My very best thanks to Dr. Walter Till, University of Vienna, for his cooperation and for the Latin diagnosis.

Fig. 10
Tillandsia rayonesensis habit. A native of northeastern Mexico, collected near Rayones, and first thought to be *T. albida.* Now identified and described as a new species.

Author

Author

Fig. 11
Tillandsia rayonesensis inflorescence showing the heavily scurfed scape and floral bracts and the yellow-green petals.



A, floral bract; B, sepals; C, petal; D, style; E, stamen.

Fig. 12 Tillandsia rayonensis

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Stuttgart, West Germany

Correction for *Journal* volume 39, no. 5:

p. 218. The "Wine" and "Green" forms should be identified as figures 16 and 15 respectively.

Tillandsia juerg-rutschmannii Rauh is the name given to the unidentified plant illustrated on page 118 of the May–June 1984 *Journal.* Dr. Werner Rauh described it in *Tropische und subtropische Pflanzenwelt* 52 (1985), pages 54–56, and named it for Dr. Juerg Rutschmann of Basel.

Dyckia braunii, a New, Attractive Species

Werner Rauh

Plant stemless, somewhat bulbous at the base, growing singly or forming loose groups (fig. 13), flowering up to 70 cm high. *Leaves* few, forming a flat rosette up to 9 cm high and up to 20 cm, seldom 24 cm in diameter. *Sheaths* broad ovate, up to 2 cm high and 4 cm wide, white, brownish beneath. *Blades* narrow-triangular, 8–12 cm long, up to 3.5 cm wide at the base, tapering into a hard, pungent, brown tip, succulent, canaliculate, densely silver-gray lepidote on both sides, strongly nerved on the upper side, laxly serrate with curved, dark brown spines, up to 4 mm long; young blades erect, the elder ones curved back. *Scape* axillary, up to 50 cm long, reddish-brown, glabrous. *Scape bracts:* the basal ones subfoliate, the upper ones much shorter than the internodes, lanceolate, acute, soon drying off. *Inflorescence* 10–15 cm long, simple, rarely branched, with a glabrous, reddish-green rachis and 8–12 laxly arranged, sessile flowers. *Floral bracts* lanceolate, up to 4 mm long, acute, entire, greenish-brown, glabrous, much shorter than the *sepals;* these ecarinate, obtuse, up to 7 mm long, 3 mm wide, orange-yellow, green tipped. *Petals* up to 1 cm long, ecarinate, obtuse, erect, orange-yellow. *Stamens* and *style* included at anthesis; anthers postfloral exserted; filaments white, 8 mm long, free above the short common tube. *Style* distinct, 1.7 mm long, much shorter than the stamens. Flowers odorless.

Holotype: *Pierre Braun* and *Esteves Pereira Nr. 690* (9.7.1986)=B.G.H. 68 106, in Herb. Inst. System. Bot. Univ. Heidelberg (HEID).

Distribution: Southeastern Brazil: northern Serra Geral do Paraná, 1400 m, on open ground among grasses and low scrub, 1400 m.

A *Dyckia marnier-lapostolleo* L.B. Smith var. *lapostolleo* et var. *estevesio* Rauh differt characteribus sequentibus: *Planta* non dense pulvinata, sed laxe gregaria. *Rosulae* tantum usque ad 20, rarius 25 cm diamentientes. *Laminae* foliorum basi tantum usque ad 3.5 cm latae, utrimque metallice cano-argenteo-lepidotae, supra distincte canaliculatae. *Inflorescentiae* 30–70 cm longae. *Flores* tantum 1 cm longi, inodori, subanthesi tantum paulum aperti. *Antherae* tantum post anthesin exsertae.

Holotypus: *Pierre Braun* et *Esteves Pereira No. 690* (9.7.1986)=B.G.H. 68 106, in herb. inst. bot. system. univ. heidelb. (HEID).

Patria et distributio: Serra Geral do Paraná septentrionalis (Estado Goias) terricola apud 1400 m.s.m. inter gramines et suffrutices vel frutices humiles.

Dyckia braunii, named after Pierre Braun (Frechen, W. Germany), the explorer of the Brazilian cactus vegetation, is cultivated in the Botanical Garden of

Eddie Esteves

Fig. 13

Dyckia braunii is related to *D. marnier-lapostollei* but is smaller and with silver-gray, narrow leaves. Named for Pierre Braun, the explorer of Brazilian cactus, it is also from the state of Goias.

the University of Heidelberg under number 68 106. It is related to *Dyckia marnier-lapostollei,* which is also distributed in the state of Goias, and grows in similar localities. *D. braunii* differs from it in the following characteristics: Plant not forming dense cushions as *D. marnier-lapostollei,* only loose groups. Rosettes smaller, only up to 20 cm, seldom 24 cm in diameter. Blades narrow-triangular, at the base only up to 3.5 cm wide, densely silver-gray (not white grayish) lepidote on both sides and strongly nerved on the upper side. Inflorescence 30–70 cm long. Flowers smaller, only up to 1 cm long, orange-yellow, not bright orange, odorless (not reminiscent of Trimethylamin). Petals erect; anthers exserted only after flowering.

Heidelberg, West Germany

Kathy Dorr has written that she can no longer conduct the **Questions & Answers** column because of her husband's poor health and the amount of care that he requires. We are indeed sorry and have offered our sympathy. Because of her conscientious work we will be able to print at least two more columns while searching for her replacement. Kathy's address is: 6153 Hayter Avenue, Lakewood, CA 90712. She would appreciate hearing from you.—TUL

Belgian Bromeliad Culture and the Ghent Floralies 1990

G. Samyn

The Belgian Institute of Ornamental Plant Growing, an agency of the Ministry of Agriculture, has a research section specializing in bromeliad culture. For almost 20 years, an intensive breeding program developed by the researchers has produced various *Vriesea* and *Aechmea* genotypes that are now used in a new hybridizing program.

We think it essential to limit production to a few plants of exclusive characters attractive to the trade because of the slow growth of bromeliads and the high energy requirements in this part of Europe. Bromeliad culture has no benefits to derive from excessive mass production.

This year, on the occasion of the Ghent Floralies, the famous gathering held every five years, there will be a special event on April 20 to promote public interest in bromeliads and to assemble world-famous specialists of this plant family.

For this occasion, Octave Landuyt, one of the most famous modern artists of Belgium, has created a work of fine art. His works are held in several American private collections and modern art galleries. He was recently retained by the Leonardo Foundation, which selects artists for their ability to combine modern art and science.

Landuyt has created a round pendant, 6 cm in diameter representing a wild *Ananas*-type under the motto: "Tradition and Progress;" *Ananas* being the first *Bromelia* species introduced to Europe several centuries ago. *[Please see the back cover]*

Belgium has a long tradition of bromeliad breeding. Louis Van Houtte, for example, was the first to import *Aechmea fasciata* into Europe and to bring it to flower (in 1846). The talents of many breeders have made that species important among the many commercial varieties of Belgian origin being produced today. We will try to continue this tradition.

Institute of Ornamental Plant Growing
Caritasstraat, B-9230, Melle, Belgium

INSIGNIA OF THE BROMELIAD SOCIETY, INC.

The insignia of the Bromeliad Society as designed by Mulford B. Foster, first president of the Society. Victoria Padilla, a member of the original board of directors, the first secretary of the Society, and editor of the *Bulletin* and *Journal* from November 1960 through 1981, described the insignia in *Bulletin* volume 1, no. 1 as follows:

> This design is made up of significant parts of bromeliads. The outside circle with jagged edge represents the spiny margins found on the leaves of most of the genera of the two subfamilies called Pitcairnioideae and Bromelioideae, such as the genera *Billbergia, Ananas, Dyckia, Puya,* etc. The plain inner circle represents the smooth-edged leaves found in the subfamily Tillandsioideae such as the genera *Vriesia, Tillandsia, Guzmania,* etc. Two heavily inked spots on either side of the words "organized 1950" represent the microscopic peltate scales formed on the leaves of all bromeliads. In the center the epiphytic vriesia growing on a tree limb represents one of the most recurring types of inflorescence formation throughout the two largest genera of the family, *Vriesia* and *Tillandsia.*
>
> —TUL

Growing Atmospheric Tillandsias from Seed *(continued from page 20)*

were sown sparsely, this is less of a problem, although some species will root firmly to the substrate and cause the same difficulty. The larger the seedlings the easier they are to handle without damage.

In a few species, seedlings multiply into clumps of rosettes at a very early age; *Tillandsia ionantha* and *T. xiphioides* often do this. In such cases, do not try to separate them; just let them cluster, at least until they can be easily separated.

Once separated, it takes the least time (but more greenhouse room) to space the plants so that they can reach flowering size without being moved again. This ranges from 1–2 inches for *T. stricta* or *T. ixioides,* to 8 inches for *T. streptophylla* or *T. duratii.* It is easier said than done. Each square foot of *T. stricta* seed sown, for example, will expand to 12 square feet of mature plants if you save all the plants. Lack of space quickly creates a crisis!

As the plants shift into the faster growth phase and approach maturity, they need more light to develop their best form. I have four to five layers of benches in

Time from seed sowing to maturity (first flowering) of some *Tillandsia* species and hybrids cultivated under optimal conditions.

Species	Years to flower	Hybrids	Years to flower
T. aëranthos	4	*T.* × White Star	5
T. brachycaulos	4	*(T. meridionalis* × *ixioides)*	
T. bulbosa	5	*T. concolor* ×	4
T. cacticola	6	*T. streptophylla*	
T. caput-medusae	5	*T.* × Feather Duster	4.5
T. filifolia	6	*(T. stricta* × *gardneri)*	
T. flexuosa	4	*T.* × Houston	3.5
T. geminiflora	6	*(T. stricta* × *meridionalis)*	
T. ionantha	4	*T. stricta* × *duratii*	6
T. meridionalis	4.5	*T. albida* × *streptophylla*	4.5
T. paleacea	7*	*T. albida* × *paucifolia*	5.5
T. streptocarpa	4	*T. streptophylla* ×	5
T. streptophylla	6	*pseudobaileyi*	
T. stricta	3.5	*T. streptophylla* ×	5
T. xiphioides	? (½" at	*paucifolia* (proliferous)	
	6 years!)	*T. stricta* × *albertiana*	5

*This species is a shy bloomer; rosettes attained full size in about 5 years.

my tillandsia house. I grow young seedlings on the bottom two or three layers, larger seedlings and soft- or green-leafed species on the second layer, and mature plants of the hard- and gray-leafed species on the top layer.

[Dr. Dimmitt is curator of plants, Arizona-Sonora Desert Museum, 2021 N. Kinney Rd., Tucson, Arizona 85743.]

[To be continued]

Regional Reflections

Cultivation of Vrieseas

Olive Trevor

Vriesea hieroglyphica is known as the "King of Bromeliads," a fitting name for such a majestic plant. Vrieseas have been favourites for decades, true aristocrats of great beauty with their flaming red swords. Their brilliance lasts not for just a few days, but for months. Because they are aristocrats does not mean that they are difficult to grow, or need pampering. In fact, I have found that this is not so.

Vrieseas are the most hardy and rewarding members of the bromeliad family, if you give them the correct start. People could have trouble because of over-pampering and over-protecting. In my experience with vriesea growing I have found three basic things that they need for strong healthy growth, abundance of offsets, and larger flower spikes. They are: good drainage, good food, and good light.

Good Drainage

Because vrieseas are mainly epiphytes, they require a very open mixture, one that drains freely and dries out quickly. Avoid any ingredient that rots quickly as this can affect drainage of the root system. Good drainage can be achieved by using a combination of chunky materials.

Some ingredients for potting mixtures: pine bark, peanut or other nut shell, sunflower seed husk, rice hulls, tree fern fibre, coarse sand, gravel, charcoal, coarse ash, perlite, and vermiculite.

It is important that some peat moss be combined with these other materials, as it will provide the acidity that these epiphytes require. Rotting leaves or compost will also achieve the same effect, however these materials break down quickly and could affect the drainage of the mixture: peat moss, compost, leaf mould, and animal manures.

My favourite potting mix is 1 part pine bark, 1 part peanut shell, 2 parts peat moss, 1 part polystyrene granules. Special mix for seedlings: 1 part pine bark, 1 part peanut shell, 2 parts peat moss, 1 part vermiculite. Mixtures should be made up and used when fresh. If stored, avoid weathering as mixtures start to break down if exposed to sun and rain.

Good Food

Slow-release fertilizers may be added to the mixture or spread on top when potting. Make sure that the granules do not touch the plant or lodge between the leaves. This is especially so with seedlings. Liquid fertilizers are very important, and should be used at half strength. Seedlings should be fed on a regular basis. Green-leaved vrieseas, grown for their colourful inflorescence, depend on fertilizer for the size and colour of their flower spikes. In an experiment I did with two offsets of similar size from a well-grown plant, one was given fertilizer on a regular basis, the other none. The one given the fertilizer produced a magnificent flower spike with many branches, the other produced a simple inflorescence.

Foliage vrieseas (those with the beautifully marked leaves), should be fertilized regularly or growth will be slow. These plants also require more light, and most will do well under 50% shadecloth.

If you follow these rules—good drainage, good food, and good light you will grow beautiful healthy plants with an abundance of offsets and larger flower spikes.

Good Light

I used to grow my vrieseas under fairly shaded conditions, and here I must give a word of warning. Shaded conditions with plenty of warmth and humidity often result in poor air circulation. Vrieseas need good air circulation, therefore a balance must be reached. At this stage, I'd like to mention that some growers lose plants during the cold. Is this due to a drop in temperature, or to over-crowded conditions in an area with poor air circulation?

Let me now refer to the December, 1984 issue of the B.S.I. *Journal.* In his article, "Brazilian Vrieseas Prove to be Freeze Stalwarts," Ervin J. Wurthmann states, "While appearing to be delicate, many Brazilian vrieseas showed that they can tolerate sudden drops in temperature far below the expected range. . . some vrieseas put through the extreme stress of cold survived with a surprising defiance of their situation." Wurthmann then lists those plants that survived, and later into the article lists those plants that didn't survive. One must keep in mind that the temperatures were 20°F, or -5°C, which is extremely cold.

About two years ago, we built a large bush house west of where we now live. Temperatures there drop to zero on quite a few occasions, while 4°C-9°C is quite common during the winter months. The bush house is a large construction of pipe and shadecloth. The walls are shadecloth, no fibreglass or other materials are

used to keep out the cold. In the bush house, we grow a wide variety of foliage plants. Two years ago, I moved quite a lot of my vrieseas out to this area. Most of these are grown under the 70% shadecloth. I have also experimented with vrieseas under 50% shadecloth. All grew well, and coloured beautifully during the winter and spring, until summer when heat wave conditions sent temperatures soaring to 40°C.

Vrieseas grown under 50% shadecloth:

Plants that grew well:
V. schwackeana
V. fosteriana
V. fosteriana hybrid
V. gigantea
V. gigantea Nova
V. regina
V. regina Alba
V. platynema var. *rosea*
V. fenestralis
V. hieroglyphica
V. saundersii
V. philippocoburgii
V. imperialis

Plants with some leaf burn:
V. hieroglyphica
V. fenestralis
V. splendens
V. guttata
V. platynema var. *variegata*
Most green-leaved varieties

Plants that did not survive: *V. gigantea*

This experiment proved to me that most of the banded-leaf varieties grow extremely well under 50% shadecloth with perhaps an extra layer of shadecloth during extreme heat conditions.

Propagation

Propagation can be by offset or seed. Offsets should never be taken off too small. This is one of the most important things about growing vrieseas. Small offsets take a long time to root and become established. Never cut offsets, a large offset will come away from the mother plant easily, but a baby never wants to leave its mother. Offsets should be rooted in small pots before being given a larger pot to grow in.

Growing from seed can be fun, but it takes a long time. In 1979 I planted seeds from a plant with a beautiful branched flower spike, believed to be a hybrid. In 1984, approximately 20 of these flowered: some had lovely branched inflorescences; others had simple spikes.

I do not recommend that plants be grown on black plastic, as this material attracts the heat. If no benches are available, a weed mat should be used on the floor and plenty of space left for air circulation between the plants. Mesh benches are ideal as they allow maximum air circulation.

Good light and plenty of air circulation, combined with the previous ingredients of good drainage and good food, should produce excellent plants.

[Reprinted from Proceedings of Bromeliads III Conference; 1985, *April 5–8; Brisbane, Queensland: Bromeliad Society of Queensland. (n.d.) 85–87.]*

A Floating Tillandsia

Bea Hanson

This story was told to me by Jean Turtill who was going to write it up but lacking her copy I am passing it on to you as she told it to me.

She has a number of tillandsias growing on a ponga log fence[1] and they really look great. One day she was looking at them and noticed her favourite one was missing. She searched and searched and could find no sign of it. Very downcast she came to the conclusion that it was gone forever and felt very sad.

Four weeks later she decided the fish pond needed a cleaning and as she began taking out the water weeds she saw something coloured in the bottom of the pond. She couldn't see it properly so began fishing round and eventually got it out. Could it be–? Yes it was! Her long lost tillandsia. It had several heads and when she cleaned it she found each head had a flower spike.

You can imagine her joy. Not only had her plant been found, but in flower.

Maybe a new way to grow tillandsias?

[Reprinted from Bromeliad Society of New Zealand Bulletin *October 1988]*

Where Have All the Forests Gone?

Shirley Grubb

In 1819 Sir Stamford Raffles, British governor of Malaya, discovered Singapore and sailed up the Singapore River to claim the island for Great Britain. It was covered with jungle growth, but the Brits turned it into a strategic colony, complete with the familiar colonial trappings of government buildings, churches, and buildings for commerce. In July, Jack and I traveled there expecting to find an old colonial city surrounded by steamy jungles filled with orchids and other tropical plants. What we found was an island covered by concrete jungles and high rises and no surrounding countryside until you cross the causeway to Malaysia. But one legacy of British tradition remained: the botanical gardens, which include 125 hectares of the original jungle and wonderful palm and orchid areas. So, we could imagine what it must have looked like. Also, here was

1. Doesn't everybody understand "ponga log?"

the beginning of the Malaysian rubber industry, started from seeds from Kew Gardens to the Singapore Botanic Gardens, and transplanted to the plantations. Before this, rubber was available only from South America, where it is native. In this instance Kew Gardens did us all a good deed by spreading the plantings of rubber and improving the product.

In another recent instance, Kew Gardens' good intention may not have such good results. In the February 1989 article, "Bromeliads Threatened by Trade," by Mike Read in *Kew Magazine*, the suggestion is made that bromeliads be put on the endangered species list, which would mean no one would be allowed to bring the plants in. Fortunately, your BSI has a Conservation Committee that responded by pointing out that most bromeliads sold commercially are extremely abundant and that very little has been done to enumerate the population of bromeliads in the wild; therefore, we do not have scientific facts on their disappearance. In addition, once an imported supply is stocked, it is much cheaper for the commercial grower to propagate than to continue to collect, and this is the way most do it. Paul Isley told us in June when we visited his place that he hasn't had to collect plants in several years, that he propagates them. We even saw some of his plants and book in a department store in Singapore, which means that these were cultivated, not collected. . . .

Bromeliads are much more endangered from the destruction of the forests, which we deplore whether it be in Singapore or South and Central America, than from collectors. We hope that Kew Gardens will emphasize reforestation and recognize that the collectors may actually be the saviors of the plants.

[Reprinted from Potpourri *newsletter of the Greater New Orleans Bromeliad Society, Sept. 1989]*

EDITOR'S NOTES: 1) *Please see Mark Dimmitt's article, "Endangered Species, Another View,"* Journal *39:150–151, 175.* 2) *Harry Luther, director BIC, responded directly to the Read article by letter to the editor,* Kew Magazine. 3) *Several nurseries among our advertisers are now propagating instead of collecting bromeliads, especially tillandsias. They are, of course, in addition to the long-time producers of wholesale quantities of bromeliads for commercial use.*

A Rebuttal to the Recent Declaration that *Tillandsia* is King

Max L'Avicrep

As a grower of bromeliads, I'd like to go on record as opposing the recent tirade proclaiming the tillandsia King of Bromeliads and the author of that article the sole judge. I announce the *Vriesea* to be the rightful King, the Monarch, and the Supreme Sovereign of Bromeliads! To this end, I beg your indulgence.

I mean not this opinion to be boastful and vehement as the tillandsia's hysterical defender was in this column. I do propose to be precise, definite, and intelligent with compelling logic that the vriesea is without the slightest doubt

or question the real king. And I'll tell you why I feel this way by comparing it to the Big Five: the tillandsia, the neoregelia, the aechmea, and guzmania and the cryptanthus. Before I submit the comparisons, however, permit me to recount or review the countless delightful characteristics of this great emperor. Upon serious study of my list of the attributes of the vriesea, the reader will no doubt conclude with me that the vriesea, indeed, makes the other genera look rather inferior! From this point on, I shall refer to my favorite as the Real King.

Now to the superior qualities of the Real King. No other genus can compare or even come close to the lovely and varied foliage and the gorgeous bract, scape, and flower. The leaf is truly varied: banded, mottled, variegated, or just plain green, drooping or erect. Likewise, the inflorescence is varied: fish-shaped, singly or multiply branched; spike erect, pendant or reflexed; flower is yellow, green or white. The sizes of the species vary from plain tiny to gigantic. It may grow on the ground or in the tree. The foliage is beautiful, the flower outstanding. What variety! Nothing monotonous about the Real King.

Now to the interesting and very telling comparisons of the Real King and the Big Five.

• **Tillandsia.** Let's face it. The foliage, while interesting is not as colorful. The flower can't hold a candle to the beauty of the Real King and does not last as long. Some tillandsias look like dead twigs or a bunch of dried weeds.

• **Neoregelia.** Its tank becomes the collection center for the mosquito, frog, worm, scorpion, twig, and leaf. The water in the tank becomes stagnant and presents the inquisitor a pronounced violation of the nostril. To appreciate the minute flower, the viewer must have on hand two items: a pad to kneel on for a close look and a strong magnifying glass.

• **Aechmea.** This is the warrior genus as anyone with cut or scratched fingers, arms, and elbows (sometimes nose, forehead, ear, etc.) will testify. One has to admit, the spines are lethal. The record shows some have caused infection and some poor souls are actually allergic to this creature. Even its berries carry protective weapons. This plant one cannot very easily clean, cannot pet and, in fact, cannot trust.

• **Guzmania.** Here we have the softie of the bunch. Its leaves, while lovely to look at, are not to be touched—unless kid gloves are handy. The slightest mismove and BINGO the leaf is broken. This plant is temperamental and easily irritated.

• **Cryptanthus.** This earth-hugger has two strikes against it. One has great difficulty pronouncing it correctly and has further problems trying to remember how to spell it. The plant is fair game for the critic. Its foliage has a tendency to enjoy brown tips of the leaves. Its flowers are akin to the flowers of the neos: small, and not great on color. It really does not have much going for it and perhaps it should be relegated to a crypt.

From these not-so-gentle and critical observations, one must not think unkindly of this writer but certainly one has to conclude that the Big Five cannot be in the same class as the Real King, the vriesea. In summation. Let us review the splendiferous properties of the Real King by the use of the negative. It does not resemble dry weeds (compared to what?), does not smell (compared to what?), does not wound (compared to what?), and does not get easily irritated (compared to what?), and does not resemble an injured starfish out of water (guess the comparison?).

So, I rest my case. My candidate is the magnificent *Vriesea.* It deserves the crown as King and may I say meekly, the flourish of trumpets. **TA-DA!**

[Reprinted from the San Diego Bromeliad Society Newsletter, *September 1989.]*

Readers who are certain that they know how to pronounce *Neoregelia carcharodon* need read no further. *Carcharodon* (kar KAR o dun), from the Greek *karcharodon,* noun, a genus of sharks (family Lamnidae), comprising the man-eater and a number of extinct related forms having carcharodont (teeth of sharp, triangular, flattened form with finely serrated edges): *carcharos,* jagged; *odon,* tooth. Found in the bucolic Greek poet Theocritus (about 250 B.C.) and Babrius, Greek fabulist of the fables of Aesop (first century [?] A.D.). *See* for example the complete *Liddell and Scott Greek Dictionary,* the Webster and other English dictionaries.

[With many thanks to my classicist friend, Dr. Edgar C. Reinke.]—TUL

Letter to the Editor

Dear Sir,

As soon as I read *Neoregelias from Seed to Seed,* by Rutledge & Kendall in the July–August number of the *Journal,* I inspected my neoregelia. It was in flower.

Some months later, I collected the ripe seeds, and planted some of them, after sending two-thirds to the seed fund.

Lo and behold, more than *seventy* seedlings germinated within two weeks, on a sterile mix, covered by a polyethylene bag under fluorescent lights, and they are still flourishing, so the article is entirely correct.

Martin Tall, BSI member

Questions & Answers

Conducted by Kathy Dorr

All readers are invited to send their questions and observations about growing bromeliads as a hobby to the editor. Answers will be sent directly to you and some questions will be published.

Q. Should one use plastic or clay pots in growing bromeliads?

A. Bromeliads are not choosy, they will grow in either. It is a matter of your preference. If you water very heavily, I would suggest the clay pots as they dry out much faster than the plastic. Otherwise, I would suggest you use one or the other and don't mix them since the plastic holds water longer than the clay. It will make your watering habits much easier.

Q. Is it necessary to fertilize bromeliads—if so, what is the best method?

A. This is a very controversial subject and there are as many answers as there are fanciers of this plant family. To quote Walter Richter in *The Bromeliad Society Bulletin,* vol. 6, page 63, "No universally applicable instructions can be given and no recommended method is good under all conditions and in all locations; often methods practiced by some may mean possible failure with others under different conditions and localities."

Adda Abendroth in *Bulletin* vol. 7, p. 48, states in quoting from another source that scientists H. Witsch and J. Sieber "raised bromeliads from seed experimentally and found that young plants of *Nidularium innocentii* even died if roots were not kept in an atmosphere almost saturated with moisture, although water was sprinkled on the leaves. Their plantlets of *Nidularium innocentii* and of other bromeliads grew normally though, when the only means of obtaining nourishment was through the roots. A combination method of fertilizing both for leaf and root absorption gave best results. In the course of their experiments the investigators found further that nitrogen gets more readily absorbed through the leaves, while phosphoric acid and Kali (Kalium oxyd) [potash?] enters better by way of the roots."

July 20, 1985, I began an experiment using an orthophytum crossed with a cryptanthus. The *Orthophytum saxicola* was the seed-bearing plant and the plants, to all appearances, were more closely related to the seed plant. I chose four plants, each with three offsets, that were as identical as possible. The plants were planted in six-inch, light green pots containing a commercial camellia/azalea mix. The longest leaves on the plants were 1¼ inch long. The pots were placed side by side in the same area. The plants were all watered at the same time and with the same amount of water.

Pot #1 was never fertilized. Pot #2 was foliar fed ONLY (Peters 15-30-15). Pot #3 was fertilized with four fertilizer sticks (13-4-5). Pot #4

was fertilized with four fertilizer sticks and foliar feeding as well. Pot #2 was fed biweekly. Pots #3 and #4 were fed exactly every sixty days.

Reaction was almost immediate, and the results became successively more obvious as time passed. By the end of the first month, the race was certainly on. At the end of six months, pot #1 had leaves 1⅞ inch long. Pot #2 had leaves 2 inches long. Pots #3 and #4 had leaves 4¾ inches long and the color and texture on all the plants were excellent.

At the end of seventeen months, pot #1 was still very small with only a few very small offsets. Pot #2 was only slightly larger and again the offsets were only slightly larger than pot #1. There was no noticeable difference between pots #3 and #4. Their pots were overflowing with large, beautiful plants. #1 and #2 were not close to flowering whilte #3 and #4 were showing signs of oncoming inflorescences on a number of plants.

In the natural habitats of bromeliads, they appear to grow the year around, but it is impossible to duplicate the exact growing conditions. For this reason, I normally only feed through our growing season which begins near the end of February and ends with September. My plants are grown outside under shade cloth.

My preference for the terrestrials, dyckias, hechtias, orthophytums, cryptanthus, etc. is the fertilizer sticks. I have obtained better all-around results using this method. I will occasionally foliar feed along with these, but am very careful about not overfertilizing with the foliar feedings because the salts that accumulate by evaporation can cause considerable damage to the leaves of a plant.

For the tillandsias and other epiphytes, I prefer foliar feeding. Seedlings, in particular, need regular feedings for good, fast growth. Root feedings are of paramount importance, but the additional foliar feedings is also a stimulant to growth. Again, care must be used not to overfeed the foliage.

I never feed newly potted offsets until they begin to show some signs of growth.

On the other side of the coin, there are a number of hobbyists who have told me that they never fertilize and believe that it is not necessary. Perhaps it is not *necessary,* but I can testify that I can grow better, healthier, happier plants which give more offsets when I fed, rather than starve the plants. The amount of dust that accumulates on or in my plants does not satisfy their palates to the extent of producing the best appearance.

Q. I have a water softener for household use. Is this water safe to use in watering my bromeliads?

A. **NO.** Most water softeners use sodium or calcium and the water should never be used for bromeliads.

The Bromeliad Society, Inc.

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

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Dr. Ir. G. Samyn

This pendant, created by Octave Landuyt in celebration of Belgian contributions to bromeliad culture is 6 cm in diameter. The *Ananas* is in gold, cast by the lost-wax method, and set on a rare, green, translucent agate disc. It is embellished with Colombian emeralds. Please see page 27 for discussion.

Calendar of Shows

27 - 29 April	Bromeliad Society of Greater Mobile 13th Annual Show and Sale. Bel Air Mall, Airport Blvd., Mobile, Alabama. Friday, 1:00 p.m. to 9:00 p.m.; Saturday, 1:00 p.m. - 9:00 p.m.; Sunday, 1:00 p.m. - 6:00 p.m. Sherry Garcia 205-633-8360
6 - 10 June	Ninth World Conference, "Bromeliads in Space," Houston, Texas. Write to Betty Head, 7818 Braes Meadow, Houston, TX 77071. Call 713-774-7778 for information and registration form. (See ad on page 40).