

JOURNAL

OF THE BROMELIAD SOCIETY

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SEPTEMBER - OCTOBER 2012



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Front Cover: x Wittmea 'Twilight Zone'.
Story on page 230



Back Cover: Shadehouse at David Shiigi's
nursery. Story on pg. 202

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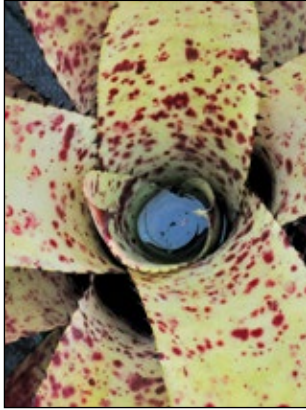
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PAGE 202



PAGE 204



PAGE 208



PAGE 214



PAGE 230

CONTENTS

The Power Of Legacy	196
<i>Evan Bartholomew</i>	
Conference Corner	197
<i>Bonnie Boutwell</i>	
Bromeliads In Paradise Event Schedule	198
<i>Bonnie Boutwell</i>	
Bromeliads In Paradise Registration Form	200
<i>Bonnie Boutwell</i>	
David Shiigi Bromeliads	202
<i>David Shiigi</i>	
<i>Wittrockia</i> 'Leopardinum'	204
<i>Peter Tristram</i>	
Bromeliad Spots	208
<i>Bill Morris</i>	
Revisiting T.L. Mead's Contribution to Early Bromeliad Hybridization	214
<i>Paul Butler</i>	
Remembering Dutch Vandervort	224
<i>Evan Bartholomew</i>	
New Bigeneric Genus: x <i>Wittmea</i>	230
<i>Geoff Lawn</i>	
x <i>Wittmea</i> 'Twilight Zone'	231
<i>Geoff Lawn</i>	

The Power of Legacy

Evan Bartholomew



The bromeliad world has recently lost two important and passionate members, Harry Luther & Dutch Vandervort. In this issue I include an interview that I had previously done with Dutch in late 2011 for the now defunct Bromeliopolis website, and we are devoting the next issue as a special memorial issue to Harry Luther.

Also included in this issue is an article on early bromeliad pioneer Theodore Mead, and there is an excellent manuscript on the life of Mulford Foster which will begin running in the next volume.

As I've been going through these materials and laying them out, I have been struck by the concept of legacy, and the incredible lasting power of the knowledge and expertise that has been contributed by lovers of bromeliads over the last century. It would be worth considering that without the tireless work of many individuals living and moved on, our access to information, photographs and plants would be much smaller than it is.

Though we are moving into a digital age, and the future of communication is changing, we can't forget the path that was laid by passionate plant lovers hacking their way through humid tropical forests to find the amazing and inspiring beauties that we are growing in our collection. We are truly blessed that new plants are only a society meeting or website away! Let's not forget to thank the innovators and explorers who are still out there discovering new species and making them available to the general public, as well as the kaleidoscopic new hybrids that are constantly appearing.

There is only one issue left in my second volume as editor of the journal, and though it's been a bumpy road to get caught up (almost there!), I find solace in the fact that I am a part of something which is a living legacy, a publication which has been running for over 60 years. I hope that in my time as editor, I can inspire a new generation of people as well as continuing to serve those who have already made their lives about bromeliads.

I hope to give more space in the journal to interviewing, remembering, and highlighting the personalities that have made the bromeliad world what it is through conservation, collecting, and the delicacies of the hybridizers brush. I would love to hear any ideas you may have for people that deserve to be honored in this publication.

The next World Bromeliad Conference is coming to Hawaii, something I am very excited about as it will give me the opportunity to meet a lot of you and share this land that I love. There will be some teaser photos and interviews published to give you an idea of some of the beautiful work being done here, including some photos graciously donated by David Shiigi at the last minute for this issue.

Mark your calendars, work on your suntans, and break out the Hawaiian shirts, as I have a feeling this is going to be a really special conference.

Wishing you many blessings and a great beginning to 2013.

Conference Corner

Bonnie Boutwell

Aloha,

We look forward to welcoming you to the 21st BSI World Bromeliad Conference, hosted by the Hawaii Bromeliad Society.

Included in this issue:

The Registration form – Please read it carefully. Remember, you are entitled to the only discounted rate that will be offered for this conference if you supported the 2012 Orlandiana event. Take advantage of the savings and remit your registration before March 15, 2013.

The tentative Schedule of Events – Please understand that times and events may change over the next year, but we believe that the schedule will be an educational, entertaining and exciting week of beautiful Bromeliads in Paradise.

Here's the Highlights:

An entire day of International Speakers
Home & Garden Tours on Oahu, including Sharon Petersen's Nursery
Plant Sale Participation in the Honolulu Saturday Morning Farmer's Market

We have included a variety of Optional Tours in the schedule. Here are tentative prices and tours. We are not taking reservations or payments for the tours at this time; we will give you the details and payment instructions in a few months via the new BSI website and the Conference Corner in the Journal.

Wednesday Evening – Paradise Cove Luau
The Ultimate Hawaiian Experience - \$105.00 per person

All Day Saturday – Dole Plantation & Polynesian Cultural Center
A beautiful day on Oahu – includes Lunch - \$115.00 per person

All Day Sunday – Fly to Hilo - Visit David Fell's Hawaiian Sunshine Nursery, David Shiigi's Bromeliads Hawaii and the famous volcanos of the Big Island – Airfare, Breakfast & Lunch included - \$225.00 per person.

We have selected the Ala Moana Hotel as conference headquarters and hope that you support our decision. Room rates range from \$145 - \$165 and reservations will be available thru the hotel web site very soon, please continue to monitor the new BSI web site for further instructions.

Please know that BSI appreciates your support and looks forward to seeing you in Hawaii.

Mahalo,
Bonnie



Bromeliads In Paradise Event Schedule

Bonnie Boutwell

BROMELIADS IN PARADISE

Ala Moana Hotel - Honolulu, Hawaii

Bromeliad Society International - World Conference

September 8 - 14, 2014

Monday Sept. 8

Arrivals / Hotel Check-in

Tuesday Sept. 9

8 am - 9 am

Board Registrations & Continental Breakfast

9 am - 9:30 am

BSI Annual General Meeting

9:30 am - 5 pm

BSI Annual Board Meeting

9 am - 5 pm

Judges School #2

12 - 1 pm

BSI Board & Judges School Luncheon

Afternoon

City Tour - Included in Registration

6:30 pm

Board Cocktails & Dinner

Wednesday Sept. 10

8 am - 5 pm

Conference Registration, Hospitality & Raffles

8 am - 3 pm

Plant Sale Vendor Set-up

9:30 - 10 am

Welcome Address: Jay Thurrott, President

10 am - 3 pm

Plant Show Entries Accepted

10 am - 11 am

Seminar #1

11 am - 12 pm

Seminar #2

12 - 1 pm

Box Lunch - All Registrants

1 pm - 2 pm

Seminar #3

2 pm - 3 pm

Seminar #4

4 pm - 'til

Evening Optional Tours - Additional Cost to Registrants

Thursday Sept. 11

8 am - 5 pm

Conference Registration, Hospitality & Raffles

8 am - 2 pm

Plant Sale Vendor Set-up

8 am - 9 am

Plant Show Late Entry Classification & Placement

9 am - 12 pm

Judges & Clerks Continental Breakfast

9 am - 5 pm

Home/Garden Tours - Included in Registration

12 pm - 2 pm

Plant Show Judging

Afternoon

Luncheon - All Registrants

2 pm - 9 pm

City Tour - Included in Registration

7 pm - 9 pm

Plant Sale Open to Registrants Only

Plant Show Opens to Registrants Only

Friday Sept. 12

8 am - 5 pm

Conference Registration, Hospitality & Raffles

9 am - 5 pm

Plant Show Open to the Public

9 am - 5 pm

Plant Sale Open to the Public

9 am – 5 pm

Secure Auction Holding & Packing Room Available to Registrants

9 am – 10 am

BSI: Website & Journal - Evan Bartholomew

10 am – 12 pm

Poster Sessions: Bromeliads - Hawaiian Style

12 – 1 pm

Box Lunch – All Registrants

1 pm – 5 pm

Garden /Home Tours – Included in Registration

1 pm – 5 pm

Auction Items Accepted & Set-up

6 pm – 7 pm

Auction Preview – Cash Bar

7 pm – 10 pm

Rare Plant Auction

Saturday Sept. 13

8 am – 12 pm

Farmers Market Plant Sale – Open to the Public

9 am – 3 pm

Plant Show - Open to the Public

9 am – 3 pm

Plant Sale - Open to the Public

9 am – 5 pm

Secure Plant Holding & Packing - Phyto Certificates Issued

9 am – 4 pm

All Day Optional Tour – Additional Cost to Registrants

6 pm – 10 pm

Cash Bar & Banquet

Sunday Sept. 14

All Day Optional Tour to Hilo – Additional Cost to Registrants



Figure 1. *Neoregelia* 'Victoria's Secret'. Sharon Peterson hybrid

Bromeliads In Paradise Registration Form

Bonnie Boutwell



BROMELIADS IN PARADISE

SEPTEMBER 8-14, 2014

ALA MOANA HOTEL
410 ATKINSON DRIVE
HONOLULU, HI 96814

Registration Fee: (in United States Dollars)

BSI Members who registered for the BSI 2012 Orlando Conference:

- ☐ \$225.00 if postmarked on or before March 15, 2013

BSI Members who did not register for the BSI 2012 Orlando Conference:

- ☐ \$250.00 if postmarked on or before December 31, 2013
☐ \$275.00 if postmarked between January 1, 2014 through August 15, 2014

BSI reserves the right to establish the registration fee for those who register after August 15, 2014 or registrations paid at the door.

If you are not a current BSI member, your annual membership fee (below) must be added to the conference registration fee.

- ☐ USA residents add \$45 single and \$60 dual membership (add \$10 for 1st class delivery)
- ☐ Other countries add \$50 single and \$65 dual membership (includes airmail delivery)
- ☐ You will automatically become BSI members with the added fee.
- ☐ For status of your membership please contact the BSI Membership Secretary.

Please Print Clearly Below:

Name(s): _____

Address: _____

City: _____ State: _____ Country: _____ Zip: _____

Telephone: _____ Fax: _____ E-mail: _____

Name on Badges (membership will be verified) _____

BSI affiliate (if any) _____ Amount due: _____

Payment by check in U.S. dollars to WBC 2014 – or – Credit Card: Visa or MasterCard

Credit Card # _____/_____/_____/_____ Expiration date :____/____(mm/yy)

Name as it appears on credit card (print): _____

Signature: _____ Today's date: _____

Refunds of 1/2 the Registration Fee are available thru 2013. After Jan. 1, 2014 refunds will be given only in the event of illness or death.

Please mail to: Annette Dominguez, BSI Membership Secretary 8117 Shenandoah Drive - Austin, TX 78753-5734

Membership status inquiries to: annette.dominguez@att.net or Phone: 512-619-2750.

David Shiigi Bromeliads

Photos courtesy of David Shiigi

David Shiigi is an award winning and world renowned hybridizer. He has kindly offered a garden tour during WBC 2014 in Hawaii, and shared some teaser photos with us to get you excited! Known for his otherworldly Vriesea hybrids, his nursery and collection is quite spectacular.



Figure 1. Royanne Shiigi in one of the Vriesea houses



Figure 2. *Werauhia sanguinolenta* cv. 'Memoria Edna Shiigi'



Figure 3. Assorted bromeliads

Wittrockia 'Leopardinum'

Peter Tristram



Figure 1. *Wittrockia* 'Leopardinum' in my collection. Photo by Peter Tristram

Much has been said and written about this gorgeous plant for over a hundred years. Little, if anything, has been documented about growing its seed.

I had originally obtained a specimen from a collector in Queensland in the late 1970s (as *Canistrum leopardinum*) but lost the maturing clump to a renegade bulldozer when a new area for a new greenhouse was being cleared. Finally, after many years of searching, about ten years ago a replacement 'leopardinum' was found from my good friends, Garry and Angela Flemming, who live a few hours to the south. It was potted and well fertilised and responded by blooming in 2005/6. Derek Butcher had written a detailed historical and taxonomic article on this plant in 2003 (easily accessed on the Bromeliad Cultivar Register at <http://registry.bsi.org>), including information from the examination of flowering plants in California and New Zealand, with the eventual conclusion that the plant conforms enough with *Wittrockia gigantea* to be listed as *Wittrockia* 'Leopardinum', a cultivar of *W. gigantea*. Nothing was mentioned about the fact that it self-sets seed, however. This fact must have been observed at some time in the century or so since its horticultural debut. 2006 must have also been a good year for *Wittrockia* as I also saw some *W.* 'Leopardinum' blooming to the north, in Queensland in the collection of Mike Symonds. I also found out later about one to the south (mentioned below) and my *W. superba* and 2 forms of *W. cyathiformis* also bloomed.

While photographing the blooming inflorescence, I noticed many ants visiting the flowers. Time passed, until an inspection of the inflorescence revealed many swollen seed capsules – could the ants have been the pollen carriers? Whether these inadvertently transferred pollen



Figure 2. *Wittrockia* 'Leopardinum' in a QLD collection. Photo by Peter Tristram



Figure 3. *Wittrockia* 'Leopardinum' inflorescence with ants. Photo by Peter Tristram



Figure 4. *Wittrockia* 'Leopardinum' maturing seedlings. Photo by Peter Tristram

or another selfing mechanism was at play, I do not know, though, with so many pods, I suspect the latter. When ripe, the seeds were squeezed out, cleaned with the kitchen egg beater and dried. (Hopefully the mess was cleaned up before my wife found out!) With berry fruits, ripe pods can often be identified by being easily removed – just a gentle wiggle and they pop out. Some also change colour, especially to purple or red. Usually, in cultivation, the progeny will be hybrid, but, when there are many pods, the chances are that the seed will be self-set by one process or another.

Bruce Dunstan, “seed raiser extraordinaire” and I germinated the seed and grew on the seedlings. His grew at many times the speed of mine! The uniformity of the seedlings, his large and mine small, as consistent as cloning, indicates that *Wittrockia* 'Leopardinum' is indeed a species and a very stable one at that. Around the same time, Garry and Angela also bloomed a plant and also grew on much of the self-set seed from it. When compared, the batches of seedlings looked identical

During a trip to Europe in 2009, I noticed some lovely large specimens of what looked like the same plant in the public display at the Berlin Botanic Garden. These were labelled *Wittrockia gigantea* x *Canistrum lindenii* var. *roseum*. There was also a plant that had bloomed, with the same purplish, flat, somewhat sunken inflorescence, confirming my suspicion that this was also *Wittrockia* 'Leopardinum'. It wasn't close enough to check for swollen seed pods though. According to the records, the plant has been in collections in Europe for well over a century so it is not surprising to find it in a very old botanic garden.

For a long time this plant has remained quite rare and difficult to obtain in Australia, however, with the knowledge that it can easily be grown from self-set seed, it should now become more available. Rumour has it that some Kiwis have also had the same experience reaching the same conclusions. I am, however, unaware of a seedling plant having yet bloomed, though the largest seedlings should be mature enough to be ready to reproduce. I imagine they will look just like mum and just as beautiful.



Figure 5. *Wittrockia* 'Leopardinum' in Berlin Botanic Garden. Photo by Peter Tristram

Bromeliad Spots

Bill Morris



Figure 1. *Neoregelia* 'Splatter'

The photographs, taken by Peter Tristram, are representative of the types of 'spots' that the author is referring to.

I have been interested in spots and patterns in flowers for quite a few years and recently I decided to examine more closely spots in bromeliads.

In flowers, spots are explained, in general, as due to the excision of transposons from a gene in the chemical pathway leading to the production of anthocyanin pigments. This pathway is in the genome within each cell of a plant and has been made non functional by the earlier insertion of the transposon into an earlier generation of the cell (either in a seed or in a cell during tissue culture).

Later on as that cell develops into a mature plant some of the cells become activated and the transposon then excises from the gene (removes itself) and starts producing anthocyanin pigment again.

As this cell continues to multiply during plant growth a spot eventually appears. In bromeliads the spot is usually present in the leaves and inflorescence - and only occasionally in the petals.

Transposons are segments (lengths) of DNA and are a type of what is called "mobile DNA". They are frequently called "Jumping Genes" as they can "jump into" and "jump out of" other genes.

Genes that are mutated by radiation or chemicals, or errors in copying the DNA during cell division usually only affect a single nucleotide (the individual chemical units that make up the DNA molecule) and frequently (mostly) have no effect on the gene's ability to carry out its function.

However, transposons are often the size of a gene (and as the “Jumping Gene” label suggests they are genes themselves) they have a major effect on the gene they insert themselves into, usually rendering it unable to function. Therefore, if the affected gene is part of a visible end result (e.g. such as colour, shape, size etc of a plant, leaf, flower etc) then it is obvious to an observer. Very often the result is not visible but is still present and may affect the biochemistry of the living plant, the rate of growth of the plant, the viability of the plant and many other factors that affect the plant).

This whole matter has a huge literature – and I suggest anyone who wants to know more about transposons should simply look it up on Google and go further.

However, to go back to spots on bromeliads or even spots in general – the first thing I realised was that the spots appeared in different colours. And, as I mentioned above, some were in anthocyanin colours. Being interested in pigments in plants. I had a reasonable idea of the different pigment types – and to generalise – the spot colours come in two types: anthocyanin types and plastid types.

Anthocyanins are usually red, pink, orange, blue or purple, or a combination of these colours.



Figure 2. *Neoregelia* species

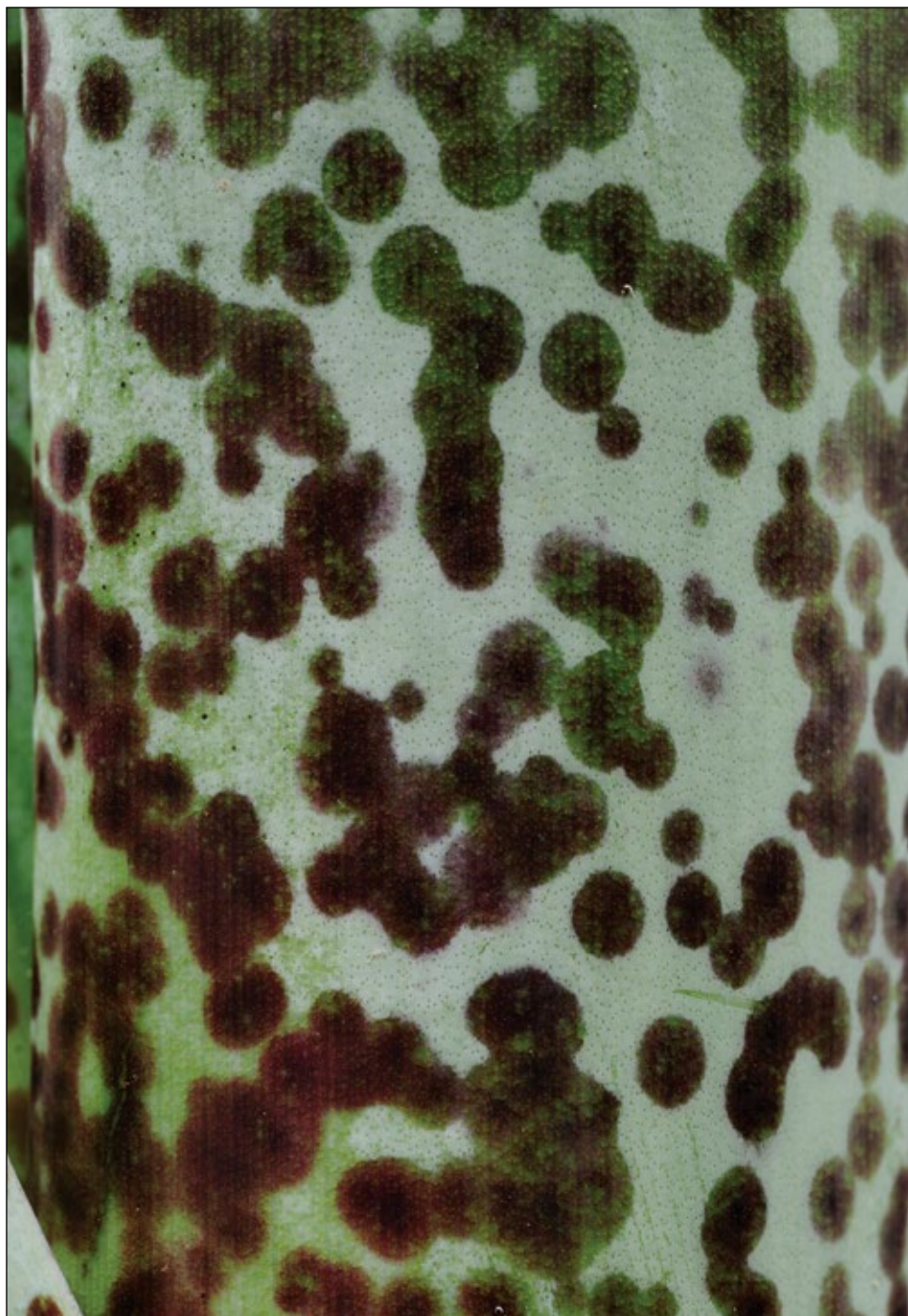


Figure 3. *Tillandsia brenneri*

Plastids are very small particle-like units, within cells such as chloroplasts (green), chromoplasts (usually yellow, occasionally orange, rarely red) leucoplasts (uncoloured) of which amyloplasts are white (starch). The general name of these particles (or organelles) is plastids (as above) and give rise to colours in some flowers, leaves etc.

Betalains, which are often listed as plant pigments can be ignored by non-botanists as they occur in only 1% – 2% of flowering plants. The other 98% – 99% of plants contain the other two types. The only group that contains betalains throughout are cacti. (A few other types of plants are also coloured by them).

In bromeliads it was apparent that the *Neoregelias* had both anthocyanin and plastid spots whereas *Billbergias* had mainly plastid spots. In *Neoregelias* it is often difficult to decide if the spots are green on a red leaf or red spots on a green leaf. In *Billbergias* the spots are commonly white spots or patches, sometime yellow, on a green or green plus anthocyanin background (usually brownish).

In the case of anthocyanin spots, anthocyanins are usually produced in the epidermal surface layer of the plant only (the top or bottom surface of a leaf, the front or back surface of a petal, etc). This layer is usually only one cell thick. Between these two surfaces is the internal tissue of the leaf or flower, the mesophyll. The cells of the mesophyll are where the plastids occur and the plastids colour these cells green, yellow or white.

Albino flowers are now defined as flowers which are unable to form anthocyanin pigments. Thus, albinos can be green, yellow or white because of the absence of anthocyanins in the epidermal cells, then underlying mesophyll cells and their plastid colours are visible. In orchids, cymbidium albino flowers (usually called “pure colour cymbidiums”) are green, yellow or white – or a combination of these colours. *Cattleyas* and *Paphiopedilums* are the same and these genera are the best examples, as they show all three colours.

Spots are due to the excision of transposons in the case of anthocyanins, but in the case of white, green or yellow spots they are due to either windows or holes in the overlying anthocyanin pigmented epidermal layer (skin) allowing the underlying mesophyll colours to be seen. In bromeliad leaves both types of spots can be seen while in flowers (orchids as an example), most spots are the anthocyanin (transposon) type.

To understand the origin of the white spots and patches of white, the most striking example is *Billbergia* “*Domingos Martins*”. This plant appears to be a mutation of *B. vittata* which is a well known South American (Brazilian) species of *Billbergia* which appears to be an easily grown, somewhat variable species. ‘*Domingos Martins*’ was originally wild collected, possibly as a single plant. The old *B. vittata* as grown in Australia was a green to greyish, tight tube with marked white to silvery barring. As normally grown it appeared without spots, just a green plant with white bars.

However, if grown hard in good light it became somewhat pigmented – appearing a purplish grey colour. In contrast, ‘*Domingos Martins*’ appears smaller (a half to two-thirds as large), with four leaves, a tighter tube and more pigmented. As well, it is highly spotted with large white spots (8 – 10mm) and large patches of white up to 100mm x 30mm in size, or larger.



Figure 4. *Vriesea saundersii*

This spotting and the large patches of white are inherited in its hybrids, but so far (to my knowledge) no detailed record of its offspring have been reported. Some, totally dark (almost spot free) have been obtained, but named or registered offspring are almost all the white-marked types. The parent and its very white offspring require strong light and often high temperatures – and according to some growers, little water (e.g. hung high or watered only in the tube) to produce heavily white plants. This suggested to me that the white areas may be produced similarly to sunburn. That is, the epidermis may be destroyed by the high light and temperature of its environment and, perhaps, water shortage could cause a lack of nutrients (nitrogen shortage).

The production of anthocyanin pigment is controlled by a number of factors of which sugar (sucrose), light and lack of nitrogen seems to be the most important. They all can act independently or together – and as well as affecting pigmentation can also affect the epidermal surface layer. One important thing that is also affected by light, temperature and nitrogen availability is chlorophyll. Both chlorophyll and anthocyanins do not form in the dark. There appears to be an exception in some bromeliads such as *B. vittata* as it is strongly pigmented internally but not externally. This is easily seen deep within the tube and also between the tightly overlapping part of the leaves.

Chlorophyll is formed by a chemical pathway containing some 18 different enzyme-driver steps. Enzymes have a restricted temperature range over which they are active and the range for the production of chlorophyll is roughly 5 – 30 degrees C. Thus, under high light and hung or placed close to the roof in a plastic or glass house the temperature can often be too high for the production of chlorophyll. Naturally, this markedly slows growth (as in ‘Domingos Martins’) and the mesophyll is often white rather than green.

This is further compounded by the fact that the green chloroplasts in bromeliads are in the lower half of the leaf rather than clustered immediately below the upper epidermis.

As well, the high light and temperature on the upper epidermis causes sun burning (death of the cells) causing the destruction of the cells and the appearance of the spots, blotches etc.

Although light can cause the formation of anthocyanin pigment, too much and particularly UV light can destroy anthocyanins.

The breakdown of the epidermis is probably due to the breakdown of the external wall of the cells that make up this surface. This structure is complex and consists of 3 layers of cellulose fibres. These are set in a matrix of other complex polysaccharides (complex sugars) and these are put together by other enzymes which are likewise unable to carry out their function properly because of the difficult environmental conditions (high light, high temperature, nutrient deficiency, etc) that the plants are exposed to. Thus the genetic background leads to the environmental sensitivity of 'Domingos Martins' and to a lesser degree in many other plants which develop plastid coloured spots in their leaves.

It is likely that a loss of function mutation in one of the enzymes involved in the cell wall construction has made 'Domingos Martins' more sensitive to the environmental conditions it is exposed to. Such plants are rare in the wild because they usually do not survive long enough to reproduce.

In summary, spots are due to the excision of transposons in the case of anthocyanins – but in the case of green, yellow or white spots, these are due to either windows or holes in the overlying anthocyanin pigmented epidermal layer (skin) allowing the underlying mesophyll colours to be seen. A third cause of the plastid coloured spots gives rise to a chimera (a plant which has a mixture of two different types of tissues) which arises when the destroyed cells are repaired by the mesophyll cells from the tissue below the epidermis, instead of being repaired by epidermal cells. In flowers most spots are the anthocyanin (transposon) type.

In the plastid types, heavily marked plants may be caused by a mutation in the surface cells' walls causing them to be more easily damaged by environmental conditions. It has also been shown that the spot concentration in transposon excision types is temperature sensitive while spot size and position is often due to the time of excision during the growth of the flower.

Sometimes there are at least two phases of spot formation. There are many more complexities such as shape, number and times of spot formation as well as extra genes involved, but all of the above will suffice for the introduction to the origin of spots.

CORRESPONDENCE:

Forward email to garrymurphie@yahoo.com
and messages will be passed on to Bill Morris.

Revisiting T.L. Mead's Contribution to Early American Bromeliad Hybridization

Paul Butler



Figure 1. Theodore Mead in 1927 surrounded by examples of his orchid hybridisation work and holding flowers of one of his gladioli creations. Five years earlier, a month away from his 70th birthday, he had crossed his first bromeliad.

Florida's role in the development and popularization of the bromeliad is an important one but one that did not begin with the enthusiastic and dominant figure of Mulford Foster. Before him, two great pioneers of Florida horticulture, Theodore Mead and Henry Nehrling collected, grew and hybridized bromeliads for more than 30 years between them, and were in truth the two people who between 1900 and 1936, brought the bromeliad to initial prominence in North America.

Although Nehrling's contribution to bromeliad culture has been documented¹, Mead's story remains largely untold. Recently, research into Mead's life and times by the author has led to the discovery in various Orlando libraries of notes, letters and records of his horticultural achievements, resulting in the Wikipedia entry "Theodore Luqueer Mead."²

Originally these two great collaborators, neither in the least bit commercially minded, had lived close-by in Central Florida; Nehrling at 'Palm Cottage' in Gotha and Mead at 'Wait-a-Bit Cottage' in Oviedo, near Lake Charm, a mere 30 miles way. Early plant exchanges were of amaryllis, caladium, palm and bamboo. In 1917 Nehrling moved 200 miles south to Naples, Florida, following devastating plant losses at Gotha in the previous winter's freeze, taking all his moveable plants with him, including his first bromeliad, a

Tillandsia ionantha he got from Mead. Over the next few years, both developed extensive naturalized collections of native and non-native Tillandsias in oak trees around their properties. Nehrling became more and more interested in collecting and growing other bromeliads at his new home, and sourced these from all over the world. Over the next years he would send bromeliads and pollen to Mead for his various hybridization experiments in exchange for other plants.

There is no evidence that Nehrling himself ever crossed a bromeliad. He was a keen collector and grower of bromeliads but was content to rely on his great friend Mead to do the hybridizing. "You are the great hybridizer" he told Mead in a letter dated 1924, and in his writings described Mead as a more skilled hybridizer than even the famous Luther Burbank. The first recorded event took place in January 1922, when Nehrling sent flower spikes from *B. zebrina* and *B. saundersii*, the pollen of which Mead used to cross his *Billbergia nutans*.

At this point in his life, Mead was turning 70 but no stranger to plant hybridization, having spent more than 30 years crossing that most difficult of species, the orchid. He had crossed his first orchid in 1891 and spent the next 30 years crossing thousands of orchids, and from 1910 to 1920 hybridizing amaryllis, caladium, crinum, gladioli, daylilies and various cacti and succulents. Following postgraduate work in botany at Cornell, his initial hands-on scientific training had been in entomology, specifically butterflies. This had instilled in him the importance of patience, observation and careful recording, dating and labeling of samples, and it was this rigorous scientific approach that he brought to all his plant work. He captured his orchid efforts in his orchid 'stud book', preserved in the University of Central Florida library's Michael A. Spencer Bromeliad Research Collection³. It is legible and detailed and from 1922 onwards this same notebook was used to record his work with bromeliads.

As a hybridist, Mead recognized the importance of labeling and naming as well as keeping accurate written records. For his orchid crossing he had used zinc labels on which he inscribed names using a metal stylus. He had started with zinc but found the corrosion products eventually led to illegibility so switched to the use of thin soft copper sheet, finding that even after many years the green patina could be polished away to leave the inscription still visible. To try to ensure that future generations could trace parentage without too much difficulty, Mead also invented a nomenclature of labeling involving forming a hybrid name from parts of the names of the parents. So his first two crosses with *B. nutans* as a mother were labeled nu-ze and nu-sau.

As a further aid to hybrid traceability, Mead had in 1905 started photographing his best orchid hybrids and meticulously hand-coloring the resulting prints. More than 70 prints have survived in his orchid album in the archives of Rollins College, Winter Park, Florida. Unfortunately he came late to bromeliad hybridization, and only two hand-colored prints of his many bromeliad crosses appear to have survived, one of *B. nutans* x *B. saundersii*, the other of *B. nutans* x *C. Beuckeri*, the first recorded bigeneric bromeliad cross.

Mead's notebook records him receiving *C. Beuckeri* from the Brooklyn Botanical Garden in September 1925 and the cross, and reverse cross, with *B. nutans* taking place in January 1926. Seeds ripened and were planted over that summer, and twenty-one mature plants were transplanted into a box in April 1928, producing flowers in August 1928. Mead



Figure 2. A hand-colored photographic print entitled "Billcroyta nutans – Beuckeri" of what is considered to be the world's first bigeneric bromeliad created in 1926 and photographed by T. L. Mead in August 1928. The pollen plant sits below. Source: Department of College Archives and Special Collections, Olin Library, Rollins College, Winter Park, Florida.

photographed "*Billcrypta nutans-beuckeri*" with a *C. Beuckeri* in front for comparison purposes, and hand-colored the resultant print (Figure 2). The world's first bigeneric bromeliad thus appears to have been a *Biltanthus*, with the reverse cross to produce a *Cryptbergia* made shortly thereafter.

By 1925, Mead had flowering plants of nu-sau, nu-ze, nu-vitt and nu-spec (*speciosa*, now *amoena*). He continued to hybridize the *billbergia* genus extensively, creating many secondary and tertiary hybrids using the species *nutans*, *saundersii*, *zebrina*, *vittata*, *speciosa* (*amoena*), *pyramidalis*, *pallescens* (*amoena*), *thyrsoidea* (*pyramidalis*), *Porteana*, *Lietzei*, *Liboniana* (now *Quesnelia liboniana*), *Leopoldi* (*brasiliensis*) and *Burchelli* (*distachia*), and the hybrid, *Bruanti* (*pallescens* x *decora*), which was believed to be a species at the time.

His notebook spans 45 pages of bromeliad activity in the 1922 to 1936 period, representing hundreds of crosses. An example of one of his pages is shown in Figure 3. More than 40 different *billbergia* hybrids were created; in addition he experimented with other genera, particularly *cryptanthus*, *nidularium* and *aechmea*.

The process of trying to make sense of all this activity over a 12 year period invites the question as to why he hybridized so much, and what happened subsequently to all his hybrids. The short answer to the first part of the question is that we don't know since he never told us what quality improvements he was searching for. Unlike the orchid world with its well-developed journal, to which he contributed regularly, and the orchid register which recognized and recorded his hybrids, there was no equivalent outlet to write about and record his bromeliad achievements in the 1920's and 30's. Even in his autobiography⁴ he is uncharacteristically terse in his description of this part of his life: "The bromeliads interested me greatly and over the years I introduced many representatives of several genera, viz., *Aechmea*, *Ananas*, *Billbergia*, *Cryptanthus*, *Guzmania*, *Hohenbergia*, *Nidularium*, and *Tillandsia*. Work with these gave many interesting crosses of rare beauty in leaf forms and markings and in their gorgeous flower spikes".



Figure 3. A typical page from Mead's studbook for year 1932/1933. Source: Michael A. Spencer Bromeliad Research Collection, Special Collections and University Archives, University of Central Florida, Orlando, Florida.

However we can be pretty sure from an understanding of the character of the man himself and knowledge of his approach to other new plant creations of what did not



Figure 4. *Billbergia nutans* x *saundersii*, taken November 1924. Source: Department of College Archives and Special Collections, Olin Library, Rollins College, Winter Park, Florida.

drive him to hybridize. He was not driven by financial gain, nor by self-glorification. He was a modest man and 'old school' in his thinking. He would never have dreamed of naming any of his creations after himself. Such self-promotion was foreign to him and he was content to let other experts recognize his achievements if they thought fit. His stated philosophy in plant breeding was to strive to create new types of plants of sufficient novelty or improved characteristics to make them worthy of commercial introduction. For example, in his work with amaryllis, it had taken him more than 10 years in search of an all-white hybrid, which he finally succeeded in creating, but a white cross with just a regular thin red rim around each flower petal eluded him for almost two decades.

Mead also had no interest in duplicating plant crosses that other people had already made, but his knowledge of what European growers had already accomplished was limited, so some of his crosses, new to him, and in many cases new to America, turned out later to be possible remakes of old European ones. For example, nu-vitt had been created in 1891 and named *B. leodiensis*; nu-sau as *B. Hoelscheriana* by Kittel sometime around 1889. Mead's only other surviving hand-colored print, taken in November 1924, is of nu-sau (see Figure 4).

With respect to the second part of the question concerning the fate of his hybrids, a picture of what may have happened following his death in 1936 can be pieced together from established facts in the historical records and a few reasonable and educated assumptions.

We know from Mead's notebook that throughout the second half of the 1920's he had given away, exchanged or sold many examples of his hybrids to the Brooklyn Botanic Gardens, to Nehrling, to Reasoner and to many other Florida growers and collectors. Also during this time, Mulford Foster, still in his cacti and succulent phase of plant growing in the early 1920's, visited Mead at Oviedo and by 1931 was exchanging bromeliads with him. Foster must have been a frequent visitor, living only 12 miles away, and we know he acquired many of Mead's billbergia hybrids. He also acquired his cryptbergias which he listed without credit in his plant catalog. Mead had hundreds of bromeliads of all types by this time, including about 60 species, and the visits must have acted as an important stimulus to Foster's future vocation.

Since his orchid days Mead had also exchanged plants with California growers, and by the early 1930's his hybrids had arrived there. Mead's notebook records him sending nu-sau, nu-ze and nu-ze x vitt to E.O. Orpet of Santa Barbara in 1931, and exchanging plants with W I Beecroft of Escondido in 1932. Subsequent letters record Mead asking Beecroft to market his bigeneric "billcryptas" in California. In 1934, Orpet reports Mead's billbergia hybrids as being in high demand, and pleads for more, particularly those with zebrina blood. A further letter talks of Mead's hybrid nu-vitt flowering well and adds the comment "*It is a wonderful example of what may be done with the genus.*"

No doubt the Southern California regional growers such as Atkinson, Giridlian, Orpet and Beecroft met frequently in the 1930's to exchange plants, particularly any that were new and popular with customers. It is a reasonable assumption that by the 1940's, Mead's billbergia hybrids were common amongst these growers and throughout that part of California. This view is supported by Victoria Padilla's various comments in archived issues of the BSI Journal^{5,6}.



Figure 5. E. O. Orpet in his garden at Santa Barbara, California. He exchanged plants with Mead for over 30 years, initially orchids and then bromeliads, including his hybrid billbergias, one of which he christened *B. xMeadii*. Source: Michael A. Spencer Bromeliad Research Collection, Special Collections and University Archives, University of Central Florida, Orlando, Florida.

However, Mead's billbergia labeling nomenclature, although appropriate for the dedicated hybridist, would not have impressed the growers as an aid to commercial selling in California. Alternative names would almost certainly have been sought. Maybe had Mead stuck to F1 hybrids, nu-spec, nu-sau and nu-ze might still be labeled as such today, but nu-sau x thyr-s nu-spec (one of Mead's more complex creations) must have been crying out for an alternative name in most people's minds - much better to rename it a "Mead hybrid", or "xMeadii", and leave it at that!

According to Padilla⁷, it was Orpet who attached the name xMeadii to a Mead billbergia creation. Padilla also confirmed⁸, from this plant's flowering period, that it differed from another billbergia renamed "Mead hybrid", presumably also available for commercial sale in California at that time. xMeadii was identified as *B. Porteana x nutans* by Mulford Foster in 1940, and photographed by Racine Foster⁹. Mead's notebook does not record this exact cross but does record *B. Porteana x nu-vitt* (and reverse cross) as small plants in Mead's nursery in August 1932.

A further recorded renaming took place around the late 1940's, when James Giridlian of Oakhurst Gardens decided to honor the great man by taking one of his hybrids and calling it "T. L. Mead". His 1950 catalog (see Figure 6) lists *"Theodore L Meade (sic): A lovely variety produced by this well known Florida horticulturist but although widely grown all over Southern California has never had a name. We are taking the liberty of naming it after the breeder. A luxurious grower with low spreading shiny foliage and huge pendant spikes of flowers. Pink bracts and green and blue flowers. Superb plant for hanging basket culture. Everblooming habit."* The problem was he did not tell us the parentage, although nutans is likely to have been the mother. A *nutans x zebrina* hybrid would look very similar to the plant "Theodore L. Mead" as we know it today¹⁰, and this would also align with Orpet's plead for more hybrids *"particularly those with zebrina blood"*. However, whether or not this was the same hybrid as Padilla's "Mead hybrid" is not known, but would appear likely.

Other Mead billbergia hybrids may have received a similar treatment, and further research into this possibility is planned. Eventually some clarity may emerge regarding

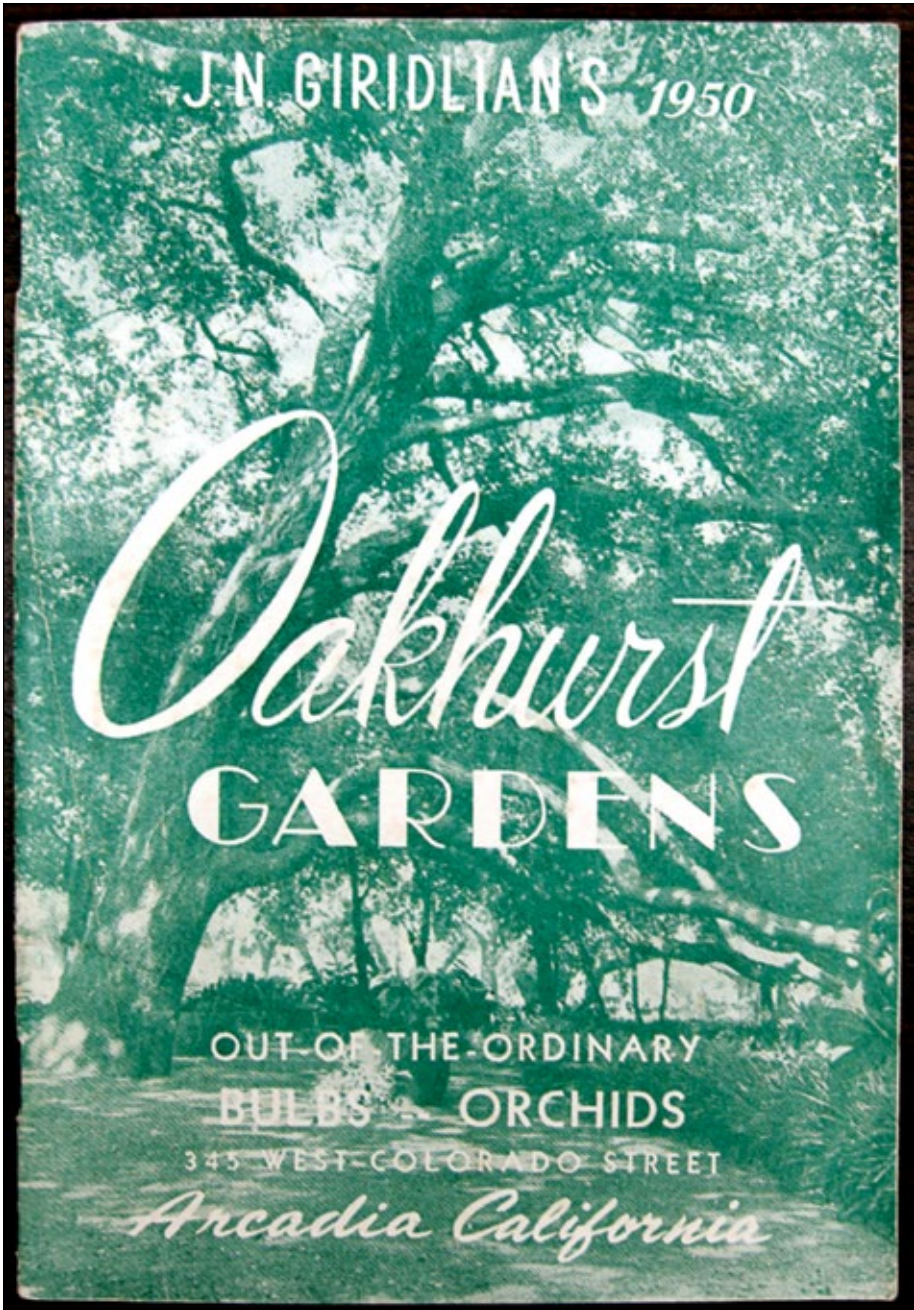


Figure 6. James Giridlian of Oakhurst Gardens decided to rename one of Mead's hybrid billbergias "Theodore L. Mead". By the 1950's it was appearing in grower's catalogs all over Southern California. The parentage now appears most likely to have been *nutans* x *zebrina*. Source: Michael A. Spencer Bromeliad Research Collection, Special Collections and University Archives, University of Central Florida, Orlando, Florida.



Figure 7. Julian Nally at Henry Nehrling's old home in Gotha among the neoregelia children of Theodore Mead's old hybrids. Source: Michael A. Spencer Bromeliad Research Collection, Special Collections and University Archives, University of Central Florida, Orlando, Florida.

the American origin of hybrids such as “Rubro-cyanea” and “Elvenia Slosson”, both of which could have originated from Mead.

By the 1940's, Mead's cryptbergias were also being sold and widely distributed in Florida, California and in other parts of the USA. They were listed in all of Giridlian's catalogs that have so far been uncovered (1946, 1950 to 1955, and 1960), in Cecil Houdyshel's 1953 listing, in Foster's 1949/1950 list of plants for sale and in Julius Roehrs 'Exotics' catalog of 1947 under 'Biltanthus beuckeri'.

The fate of Mead's other hybrids is far more difficult to determine and the chance of any surviving to this day is probably slim. We know from the notebook that in May 1929, Mead had successfully crossed *Nidularium marmoratum* (now *Neoregelia marmorata*) with *Aregelia spectabilis* (now *Neoregelia spectabilis*). This hybrid appears in later years at Foster's Bromelia nursery as *Neoregelia xMarcon*, and was claimed by Foster as one of his hybrids¹¹. One of Mead's last notebook entries was on April 14th 1936 and records the first flowering of a *xNidumea* cross between *Nidularium fulgens* x *Aechmea hystrix* (now *ornata*), just a few weeks before he died. The fate of this hybrid is unknown.

Sometime before his death, the bulk of Mead's bromeliad collection was sold to Harry Smith, a nurseryman in nearby Winter Garden, Florida. In the summer of 1938 Julian Nally purchased from Smith a large part of this collection, consisting of over 300 bromeliads, mostly *N. spectabilis* and *N. marmorata* hybrids, together with a sprinkling of *Billbergia* species and hybrids¹². Nally had bought the old 'Palm Cottage' Nehrling property in Gotha

in 1935, and used the Mead collection as the basis to expand his bromeliad activities, growing them by the acre¹³. Traces of Mead's hybridization efforts therefore lived on at Gotha and were acknowledged and recognized by Nally.

Mead's notebook ended up in the collection of Mulford Foster, as did many of his *billbergia* hybrids and his *cryptbergias*. Unfortunately Foster's trajectory was the future and not the past, and although Foster was a prolific author on every aspect of the bromeliad, neither Mead nor Nehrling's early contributions were mentioned or received any credit in his writings. As a result, Mead and Nehrling's legacy has been largely forgotten, and replaced by the incorrect assumption in the mind of many that serious bromeliad collecting and hybridizing only started in the United States post-1940 with the arrival of Mulford Foster.

ACKNOWLEDGEMENTS

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Remembering Dutch Vandervort

Evan Bartholomew



Figure 1. Dutch Vandervort in 2005

Editors note: I was very sad to hear of Dutch Vandervort's passing in Dec. 2012. Dutch was extremely knowledgeable, passionate about bromeliads, and provided tons of direction and support when I began publishing online about bromeliads. This interview is reprinted from the Bromeliopolis website, the first interview I did when I was exploring the world of bromeliad culture. Dutch Vandervort was a great contributor to bromeliad culture in general, and terrestrial culture specifically. I know that he touched many people and inspired them to love the "spinies". Rest In Peace Dutch, you will be missed.

Can you tell me a bit about yourself and where you are currently based? When did you first get interested in bromeliads and what is your history with them?

I was brought up as a nomad. My father was a career Army Artilleryman. We moved almost every year. I went to 13 different schools before graduating from high school - no kindergarten, and I

never repeated a grade. Since my dad was almost always away winning a war -- he did WWII, Korea and Vietnam, my maternal grandfather was major stabilizing influence in my life. He was a gardener and a farmer. I followed his lead. The really good part about my dad's career was that we lived all over the country and all over the world. We lived in Germany, Japan, Hawaii, Virginia, Maryland and Washington (near the Pentagon). We lived in Kansas, Oklahoma, Massachusetts, Ohio and God knows where else. It was a rounding lifestyle and I shaved off a lot of rough edges!

I was a college student at UCLA in the 1960's when someone my wife worked with gave us a bromeliad. I did not know what it was then, but now I can tell you now that it was *Bilbergia* 'Theodore Meade'.

I lost that plant when I moved back to Washington DC. Several years later I returned to California and rediscovered outdoor gardening. I was into delicate ferns, especially adiantums and platyceriums, but every time I got an out of town job assignment they would die back or die off on me. Along the way I encountered Fuchsialand, a one man nursery in the Culver City suburb of Los Angeles run by Mike Kashkin.

Mike would sell like crazy for 8 months or so, clean everything up in October and then go traveling in Central and South America for a month or two, return to the nursery and open it back up for business. He would propagate the new stuff like crazy and eventually have enough to sell off in future years. A knowledgeable buyer could find species and

varieties of plants at Mike's that were just unavailable elsewhere. His prices were steep and I was on a tight budget, so tight that I could only afford about 1 plant per month. This forced me to be very selective and even though I would only buy 1 plant, I would make sure it was distinctive.

A fringe benefit of this buying discipline is that each month I would buy a blooming plant, or a pup of a blooming plant. I very quickly ended up with a small collection of plants that always had something in bloom. Obviously I had moved on from ferns. I bought something tougher, *Bilbergia nutans*, a really common plant, but this was a miniature variety with thick, succulent bronze leaves, short spike and full sized, perfectly formed flowers. I found out it was a bromeliad and for quite some time I bought only bromeliads, mostly tillandsias, then I found a bromeliad club, then they had a show and I was hooked. When I learned there were only 2500 or so species of bromeliad, and only 40 or so genera I had a goal!



Figure 2. Terrestrial bromeliads in Dutch's collection

My general philosophy is that people without obsessions are not worth knowing. I was obsessed. I found my way to the Santa Monica library where they had some reference material on bromeliads. They had *Exotica* and later *Tropica*, the plant encyclopedias by A.B. Graf. After I had memorized as much as I could of these I moved back to the UCLA Bio-medical library where I found more sources, then I started buying my own books and subscribing to the *Bromeliad Society Journal*.

Less than a year into bromeliads I learned that the genera included serious terrestrial plants with succulent leaves and spines, and I had never seen these in nurseries or in shows or in the gardens of friends. A bromeliad show I attended had categories for *aechmea*, *bilbergia*, *neoregelia*, *tillandsia* and *vriesea* and so on. Then they had a class called "Dyckia, Hechtia, Puya and other." I observed that this classification had no entries and quickly calculated that if I entered one of these that I could win a prize. The hunt was on!

I got my first terrestrial at Mike Kashkin's Fuschialand. He carved off a pup of *Puya laxa*. I knew it to be a desert species from Peru. I was told that it despised water. The leaves were so covered with water absorbing scales that they appeared to be fur covered. I put it in a dry corner and checked it in a week, in two, in a month, in three months. It was not making roots. It had only 7 or 8 leaves but they were not shriveling. They were still green. I put it on the roof in full Los Angeles sun. Months later it had still not rooted. We moved to Ventura where we were to live for 33 years. The *Puya laxa* got shuffled into



Figure 3. Dutch Vandervort's nursery

the background where it was accidentally getting water, lots of water as it was under a rack of Tillandsias. In no time at all it grew roots!

Under my arid conditions it did not need roots, it maintained itself on mist and dew. Only under rather constant watering did it “bother” to send out roots. Meanwhile I was still hunting.

I bought and grew seed from the BSI seed bank. I found hechtias and dyckias one at a time in Cactus nurseries. I traveled to Mexico

and collected hechtias in the wild, tillandsias too. Within a couple years my obsession brought me to the point where I had more terrestrial bromeliads than could be found in just about any other private collection in the United States. More than in a lot of botanic gardens. I was corresponding and trading with people and botanic gardens all over the country and all over the world. And this was just 1980, less that 5 years into the hobby!

As my bromeliad collection was exceeding the limits of my Ventura yard, I announced that I was looking for a greenhouse and land to put it on in the area. One friend noticed a 400 square foot greenhouse for sale in the newspaper classifieds. Another said go see Uncle David for land. I called Uncle David and he seemed insistent that I come look right away. I thought I had higher priorities and tried to make a later date but he insisted I come and look “now”, and I reluctantly trekked over to his place. He lived in farm country and his place was about 3 acres. David's house was on the front 2/3 of the property and he had a level field behind the house, screened off by a windbreak of trees which was ideal for my greenhouse. When I asked about the rent, he said, “How about free?” It seems he just wanted some activity around the place to provide a little extra security. My evening and weekend hours and irregular daytime hours free from my regular work as a boat and ship electrician and my irregular comings and goings would give the little farm the kind of security screen David was looking for.

With 400 feet of glass house space I had just the propagation space I needed. Then David dropped the bomb. He was thinking of selling the place. I went into a funk at first and then started thinking the situation over. Maybe it would be hard to sell. I cheered up, moved the greenhouse in, and was there 7 years



Figure 4. Nursery damage after Santa Ana winds

before David finally found a buyer.

Four years into the stay the World Bromeliad Conference came to Los Angeles - 1984. I had been a local grower and seller. Most of the world had never seen what I was growing. I had to drive from Los Angeles to Ventura 4 times over the weekend to resupply my little booth. My plants were selling like hotcakes! In the midst of showing plants in competition, formally entering them, setting up my booth, meeting and greeting customers, the show manager came to me and said he was desperate for someone to man the registration desk. I was fully occupied but he was desperate and I agreed to do the job for a couple of hours. No sooner had I settled into the desk than a lady came up and asked if I knew anybody who wanted to buy the complete set of Bromeliad Journals from day 1 to present, about 15 years worth. I had \$75.00 in my pocket and offered that and she accepted the deal! If I hadn't been such a pushover do to the Registration job, I never would have made that score! It never hurts to volunteer!



Figure 5. A field collected hechtia from Mexico. Perhaps related to *H. glauca*

A number of the dyckias and hechtias I had entered in the show were things I had grown to great size, in full sun in my yard in Ventura. I was not the least bit anxious to return them to Ventura. Just as I was thinking about loading up my van a guy came to me and asked if I knew anyone who wanted to sell show plants. I took him into the show room and showed him what I had. He was blown away and offered thousands of dollars for them and I immediately accepted his offer. He was landscaping a large estate and my full sized, blooming hechtias, dyckias and puyas made just the impact he was looking for and I was able to go home in 1 trip instead of 3.



Figure 6. *Bromelia flemingii* from Venezuela

larger nursery spaces. My last was a couple acres of which a half acre was under plastic and glass. My emphasis slowly spread to include cycads and palms and general exotics but always centered on the bromeliads. Somehow I managed to control all this with occasional help and one really dedicated Mexican helper, Martin.

Through my world show contacts and through my mobile boat repair business and the specialty work that went with it I was able to work in and explore Mexico, Costa Rica, Brazil and Venezuela. I spent nearly a year in Venezuela over a period of 4 years. I met fascinating people wherever I went and traded plants with abandon. David sold his house and I rented larger and



Figure 7. Dutch's favorite bromeliad, *Orthophytum amoenum*. Photo courtesy of Oscar at Bromeliario Imperialis, Brazil.

All good things come to an end. My end was a huge Santa Ana wind, the Southern California phenomenon where high atmospheric pressure builds up over the desert and swoops down to the coast. Mine took the half acre greenhouse with it, crushing the plants underneath. Then the landlord sold the land out from under me and I liquidated. The disappointment was enough, but retirement age and retirement thinking overwhelmed me and I sold everything and ran off to Mexico where I am trying to figure out what to do for the rest of my life. As I plan I am growing seed and trading plants here and around Mexico, tending my personal garden and generally kicking back.

I know it's hard to choose, but do you have a favorite species?

Favorite species would be *Orthophytum amoenum*. It is rare and hard to find.

Do you have any preference for species or hybrids, or thoughts about this?

I generally prefer species to hybrids, however some hybrids are so spectacular that individually they must be acknowledged. Also, some species seem to be self sterile and it requires a second clone to produce viable seed. If one has but one clone hybrids are necessary for further propagation. At heart, I am a propagator.

Has the culture of bromeliad growers changed much since you first started out?

When I started growing and collecting bromeliad clubs were vital, commercial growers

hard to find. Personal relationships with fellow enthusiasts were essential to obtain species, varieties and even hybrids which were all rare in cultivation and “in the trade” even though they may have been quite common in nature. Trading was the primary way to obtain new material. Many of the folks I met this way have been lifelong friends.

Today most nurseries, garden centers and home centers have a wide variety of plants on sale. Mail order sources are common. Clubs and social contact are less important. I kind of liked the old style better. However, today a novice and non-academic fan has a much better chance of finding interesting plants.

I lived through the tail end of the Great Age of Bromeliad Discovery -- People like Mulford and Racine Foster, Lyman Smith, Ed Hummel, Bill Paylen and Charles Wiley were still living. Today the emphasis of research and discovery has moved to people in Latin America (virtually all Bromeliads are native only to North, Central and South America with concentration of species in the south). I know a number of the up and coming botanists and it is fun to go visit them.

Do you have any advice for people that are new to the world of bromeliads and building collections?

Here in a nutshell is my theory of plants. If you like them, grow them. Some folks just like the flowers or the leaves or both. Some, like me, want to know all about them, where they are found in nature, what language the locals speak, what kind of weather, soil and water abound in the region. I am kind of a numbers guy. It matters to me how many genera are in the family, how many species are in the genus, how many petals are in the flower and so forth. I am drawn to rarity and to contrast. I like to grow extreme forms of the same plant by manipulating their environment. Some shade plants can survive in full sun, some succulents and even cactus can thrive in deep shade. Some Orchids look more like succulents and some plants look like extraterrestrials. I appreciate them for their oddity and for the surprises they bring me. Do what pleases you!

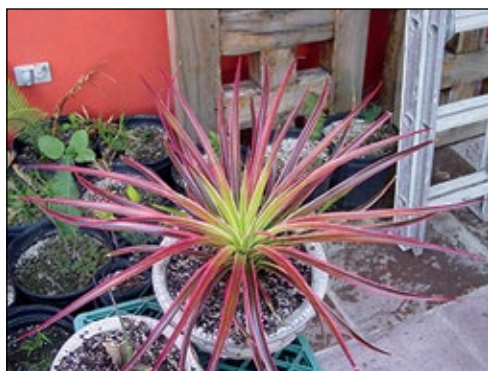


Figure 8. x Neophytum 'Galactic Warrior' growing in full sun in Dutch's yard in San Miguel de Allende

What's next for you Dutch?

Today my wife asked what I was going to do. I said “nothing”. She said, “That's what you did yesterday”. I said, “That's right, I am not done yet.” Mostly I putter in the garden and hunt for new plants and garden supplies.

New Bigeneric Genus: \times *Wittmea*

Geoff Lawn, BSI Cultivar Registrar



Figure 1. \times *Wittmea* 'Twilight Zone' in Costa Rica.

In June, 2012 the nothogenus \times *Wittmea* (*Wittrockia* \times *Aechmea*) was first recorded in the BSI's Bromeliad Cultivar Register under ICN Rules (Melbourne Code 2011). Its breeder is Chester Skotak of Dura Flor nursery in Palmares, Costa Rica who created this cross in 2006. The cultivar was registered by Eloise Beach of Apopka, Florida who also coined this new bigeneric genus name \times *Wittmea*.

Seed parent: *Wittrockia gigantea* (Baker) Leme: Canistrum--Bromeliads of the Atlantic Forest. pp.70-72. 1997.(formerly *Canistrum giganteum*).

Pollen parent: hybrid of: *Aechmea biflora* \times *Aechmea nidularioides*.

Aechmea biflora (L. B. Smith) L. B. Smith & M. A. Spencer: Phytologia 72. pp.96-98. 1992. (formerly *Streptocalyx biflorus*)

Aechmea nidularioides L. B. Smith : Phytologia 4:356, pl.1, figs.7-11. 1953.

Photographs shown here and in the following article are all by Eloise Beach, who named this hybrid \times *Wittmea* 'Twilight Zone', as grown in both Florida and Costa Rica (Figure 1).

x Wittmea 'Twilight Zone'

Geoff Lawn, BSI Cultivar Registrar

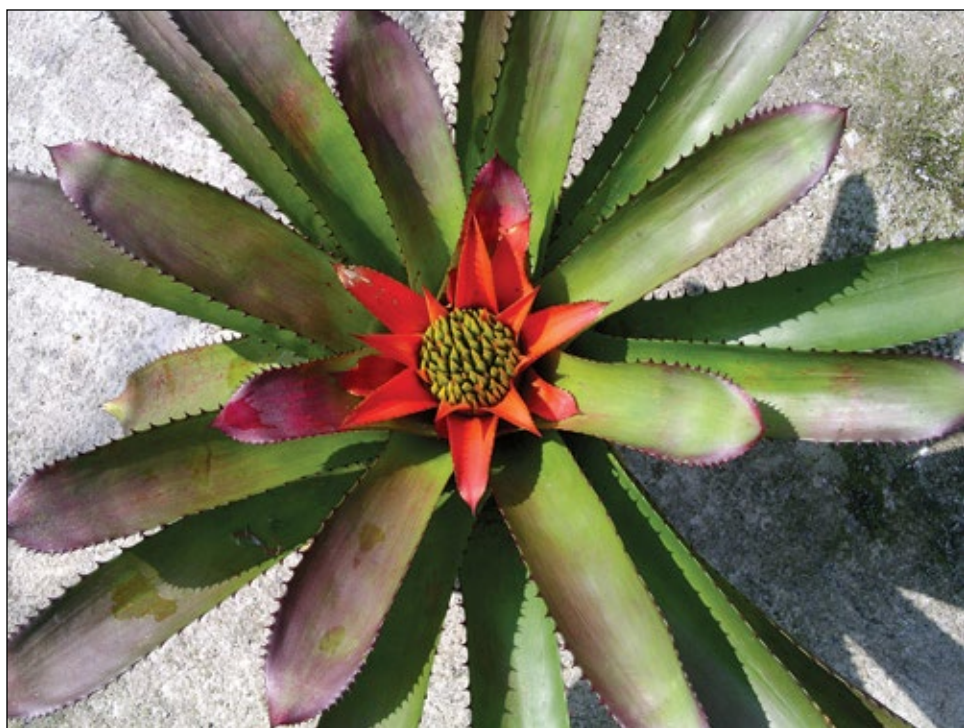


Figure 1. *x Wittmea* 'Twilight Zone' in Florida.

As with many bigenerics where species are crossed with species or a primary hybrid (species \times species), the parents are quite evident in *x Wittmea* 'Twilight Zone', bred by Chester Skotak in Costa Rica in 2006. 'Twilight Zone' is a crateriform compact rosette to 55 cm (22 in) diameter (larger if regularly fertilised) with leathery, broad, green or bronzed red leaves each 5 cm (2 in) wide, margined with prominent brown spines (Figure 1). The foliage reverse features red longitudinal striations which stay to maturity providing the plant is not overfed nor given less than strong light (Figure 2). In lowland Florida the foliage in non-flowering specimens turns red over the cool Spring but Summer heat drains this colour, which returns in Autumn. By contrast, in Palmares, Costa Rica (altitude 1017 metres), the thinner air, higher ultraviolet light levels and cooler nights enhance foliage colours over the seasonal changes. Blooming imminent, the sunken pincushion-like inflorescence is surrounded by scarlet red floral bracts which remain decorative for several months post-anthesis (Figure 3). Propagation is by basal pups produced tightly to the parental rosette.

The seed parent used, *Wittrockia gigantea*, is a forest epiphyte and terrestrial from Minas Gerais State, Brazil, specifically Serra do Pica (type locality). The funnel-form spiny green rosette, flecked bronze, has reddish central scape bracts surrounding the recessed pincushion inflorescence of yellow petals.



Figure 2. x *Wittmea* 'Twilight Zone', foliage reverse.

The pollen parent, *Aechmea biflora* x *nidularioides* (= 'Cracker Night'), is Chester Skotak's own hybrid. *Ae. biflora* is a tropical rainforest epiphyte from along Rio Topo, Ecuador (1300 m. alt.) which flaunts a blooming nest of scarlet leaves and a yellow-bracted star-

like cluster holding violet flowers *Ae. nidularioides* is a flamboyant large epiphyte endemic to southern Colombia through to northern Peru at 100-1200m. altitude. The long-leaved bronze green/red open rosette cradles a raised rose-like inflorescence of brick red floral bracts tipped white and with white petals. This particular clone of *Ae. nidularioides* originally from Pineapple Place Nursery, Florida tends to redden intensely even in medium light.

Such a combination of choice parents has produced in this new bigeneric genus an attractive hybrid which justifiably could be described as "simply beautiful".

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Figure 3. x *Wittmea* 'Twilight Zone', post-floral inflorescence.

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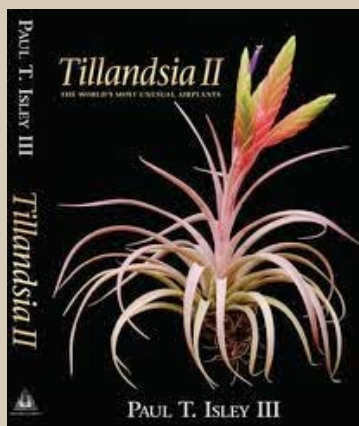
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