

Far North Coast Bromeliad Study Group N.S.W.

Study Group meets the third Thursday of each month

Next meeting 18th January 2016 at 11 a.m.

Venue: PineGrove Bromeliad Nursery

114 Pine Street Wardell 2477

Phone (02) 6683 4188

Discussion: December 2017

Christmas Get Together



Editorial Team:

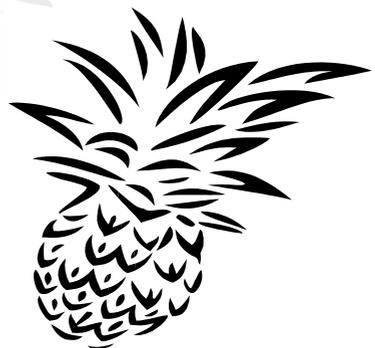
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Meeting 16th November 2017

The meeting was opened at approximately 11.00 am
The 16 members present were welcomed.
A total of two apologies were received.

General Business

Ross reported on his holiday to Lord Howe Island which is situated 600 km east of Port Macquarie, NSW, Australia. Always on the look-out for Bromeliads he saw plenty growing in private gardens, only seven different varieties were seen e.g. *Billbergia pyramidalis*, both forms had finished flowering so he was unable to check the colours of the petals for the elusive var. concolor. Others seen were *Aechmea gamosepala*, *Aechmea weilbachii*, *Alcantarea imperialis* (red form), *Billbergia zebrina* and a *Neoregelia marmorata* hybrid. After chatting to residents and receiving some feedback all indications are that Bromeliads were introduced to the island about 40 years ago and shared with other keen gardeners.

Attention was drawn to the Hybridising for Variegation article compiled by Ross and also the article on p.6 by David Benzing in our November Newsletter, both very interesting reading. Hopefully these articles will assist in answering some questions raised this past year on how to achieve these results.

Show, Tell and Ask!

There was a short discussion on viruses – how they're transmitted and how to tell if a plant has a virus. This is a subject to be looked at in greater detail in another issue.

Ross showed the leaf pressings that were done earlier in the year with *Aechmea fasciata*, the very white broad margins of *Ae.* 'Supernova' were still recognisable but the other three pressings were unidentifiable. This illustrated the difficulty to identify plants with coloured leaves or variegation from herbarium specimens (sheets) unless there is a detailed description of petal and leaf colours to accompany them. Even with drawings and paintings of old there appears to be a lot of artistic licence and some colours are completely wrong.

Ross almost missed the flowering of his *Quesnelia* 'Tim Plowman', displaying multiple inflorescences it was still good enough to impress us all.
He also showed a *Sincoraea burlemarxii* beginning to colour-up with flowers not far away.

Les discussed meiosis and sexual reproduction of plants, refer to his notes p.4.

Trish showed her *Neoregelia* 'Pink Spider' to help clarify an answer to the question that John had asked last month about the pups looking so different to the mother plant. (photo p.9)

John had a *Hechtia texensis* with very dainty flowers. He grows it under 50% shade cloth but feels it needs a lot more sun to achieve the brilliant red colour he has seen in pictures. His is a male plant and he is hoping the other one he has at home is a female as they are dioecious plants. (photo p.9)
He also had a *Guzmania sanguinea* in spectacular colour, Ross commented that it was the best coloured *Guz. sanguinea* he had seen in years. (photo p.10)

We were shown a *Sincoraea navioides* and *Sincoraea mucugensis*. The *Sinc. navioides* has longer floral bracts and leaves. At the time of flowering the leaves flatten out and after flowering is a good time to remove pups as at this time the offsets usually have some roots. They take a long time to develop roots if you take them off too early. *Sincoraeas* are all from one general area in central eastern Brazil where the maximum daytime temperature is around 30 degrees for most of the year. Don't let them sit in water and put them under cover during extended wet periods as the plant will rot if too wet. They also seem to flower better if the pot is restricted in size. They do well in the garden if you have soil that drains well. (photos p.10)

We were also shown an *Encholirium heloisae* which look like *Dyckia* but has a terminal inflorescence whereas *Dyckia* flowers grow from the side (lateral). Most *Encholirium* flowers are not spectacular but *Enc. heloisae* has flowers which look superficially like *Dyckia* except they are green rather than orange or yellow. Some *Encholiriums* can grow quite large but *Enc. heloisae* is one of the dwarf species which grows fairly slowly. Some plants of this species have spines whereas others don't. The plant we were shown would grow into clumps in the garden rather than the plant itself growing bigger. Lastly we saw two species of *Orthophytums* which produce flowers at the top of the stem – *Orth. schulzianum* and *Orth. diamantinense*. *Orthophytum schulzianum* looks similar to a dozen or so other silvery-leaved *Orthophytums* but there are subtle differences when they flower. (photos p.10)

Ross gave a brief discussion on what a grex is, he showed plants from one grex that were very different from each other. They were grown from seed collected several years ago from a marmorata type *Neoregelia*. The exercise was to see how much variation we'd get from an uncontrolled pollination. If one is wishing to grow true to type species, for best results the plants to be pollinated need to be completely isolated to minimize the risk of pollen contamination.

Grex: a group of species or hybrids; applied collectively to the offspring of a given cross from the one seed pod; literally a flock or swarm. (BSI Glossary)

Meiosis

by Les Higgins November 2017

Recently Ross talked about flower pollination, the October Newsletter carried the article Plant Breeding, our November Newsletter has Genetics. The intention of this talk is to extend last month's talk and combine it with the two articles.

A plant is composed of cells each containing a nucleus holding a specific number of paired chromosomes. Each pair is identical in shape and size but not necessarily have the same gene content. Most plant characteristics are the result of several pairs of chromosomes.

The stigma, style and ovary is commonly called the **Pistil**. I prefer the name **Gynoecium** (from the Greek, meaning "The women's part of the house").

The ovary contains megaspore gametes (ovules) that are single chromosomes, replicas of one of the nuclei pair. The colour/shape/size of the hybrid depends upon the genes of that one chromosome combined with the genes of one chromosome from the anther.

Anther and filament are known as the **Stamen**. I prefer **Androecium** (man's part of the house). The anther has gametes as microspore pollen grains. When the anther is below the stigma the plant is self-sterile. At senescence the anther falls away from the gynoecium. Anthers above the gynoecium make a self-fertile plant. The anther collapses onto the style and if the flower is unfertilised it 'selfs'.

During meiosis (sexual reproduction) the one gamete from each parent makes a **zygote** that ultimately becomes the seed. The chromosomes never fuse, remaining separate and distinct from each other.

There is a strange flower known as cleistogamous, examples include *Aechmea bracteata*, a monocot and Port Wine Magnolia, a dicot. Cleistogamous flowers self-pollinate while the petals are unopened.

The genetic code when cross pollinating a yellow homozygous flowering plant and a purple homozygous flowering plant is:

The yellow plants nucleus has two chromosomes and the purple plants nucleus has two chromosomes. The yellow flower has one chromosome and the purple flower has one chromosome. There is a random choice of different genes on either of the two chromosomes.

YY pp (nuclei chromosomes with perhaps different genes)

Y p (gynoecium and androecium gametes)

Yp (F1 Heterozygous hybrid)

F1's when cross pollinated: Yp x Yp gives four possible variants of gametes.

YY Yp pY pp

A capital letter indicates Dominant and a lower case letter is recessive. Only when the Dominant is absent can the recessive be expressed. The F1 progeny is four: 1 Yellow, 1 purple and 2 yellow / purple with yellow predominant.

For those contemplating Plant Breeding: The parentage of both plants should be known. Check the register (BCR) to see if the projected hybrid is already in existence, no guarantee as there are many unregistered hybrids, huge amounts of seedlings are necessary to explore all possible hybrid forms. Choose only the most desirable seedling(s) and dump the rest. Crosses and back crosses are used to develop the desired results in self-fertile plants.

Before embarking on a hybridising programme consider what outcome is required. Perhaps what is desired is a transfer of colour and/or altering the leaf size. If the purple flower has a large leaf (BB) and the yellow flower has a small leaf (bb), the genetic code is:

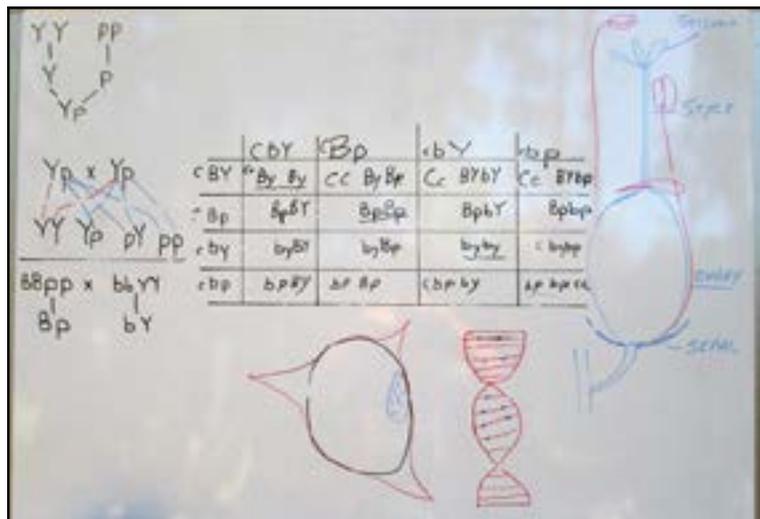
BBpp x bbYY (two nuclei chromosome pair)
 Bp x bY (individual gynoecium and androecium gametes)
 BpY (participating gametes)
 BY Bp bY bp (reproductive gametes)

Determining the expected hybrid progeny requires a checker-board to show possible variations of the gametes. The gametes of one parent is listed horizontally and the gametes of the other parent is written vertically.

	BY	Bp	bY	bp
BY	BYBY	BYBp	BYbY	BYbp
Bp	BpBY	BpBp	BpbY	Bpbp
bY	bYBY	bYBp	bYbY	bYbp
bp	bpBY	bpBp	bpbY	bpbp

Homozygous plants are: BYBY is a large leaf yellow flower, bpbp is a small leaf purple flower. BpBp the original purple big leaf parent. bYbY is the original small leaf yellow parent.

Heterozygous seedlings are unstable, they could be lineated, variegated, spotted etc. To explain colour forms it is postulated that flower colour is controlled by two additional genes, (CC added to the checker-board) this makes a more enlightened guess of the variegations. (*Neoregelia* 'Bottoms Up' etc.) Recessive phases may show as pastel shades even Alba and Semi-alba can appear.



CC added to the checker board chart

Because of the difference in the genes on each flower's chromosome every flower in an inflorescence can produce a different hybrid. There is always the possibility of an ancestral feature appearing or an undesirable gene combination. Inevitably some seedlings will be less attractive than their siblings — Don't give them a name and sell them — DUMP every one.

Some months ago Keryn brought in *Cryptanthus* 'Mottled Green'. Trish recognised the spoon shaped leaves and identified one of the parents as *Crypt. beuckeri*, a C3 plant. The other parent is *Crypt. 'Florence'*. Parents of 'Florence' are *Crypt. 'Racinae'* x *marginatus*, *Cryptanthus marginatus* is a C4 plant. A C3 x C4 is not a good combination. I purchased 'Mottled Green', "Jade" and 'Pale Jade' not knowing they are the same grex.

Crypt. beuckeri a C3 that thrives in a cool moist environment. Summer heat impacts badly upon *Crypt. beuckeri* in my collection. This is expressed in a **Phenotype** (genome modified by the environment) of pink suffusion although the pink mostly disappears during cooler weather. *Crypt. marginatus* is a C4 that thrives in my warm environment.

Cryptanthus beuckeri and *Cryptanthus marginatus* make 75% of the parentage of the three hybrids. This cross pollination has produced inferior hybrids. The Phenotype of all three hybrids developed the pink flush making them identical plants with three different labels and all very similar to *Crypt. beuckeri*. The three hybrids and 'Florence' were dumped on the compost heap.

A FNCBSG NSW Newsletter June 2012 published an article titled *Orthophytum 'What'* (x*Orthotanthus* 'What' *Crypt. 'It'* x *Orth. saxicola* 'Red' (rubra)). 500 seeds with *Orthophytum* as pod parent produced many "dogs". *Cryptanthus 'It'* as pod parent to 500 seeds produced white seedlings and all died.

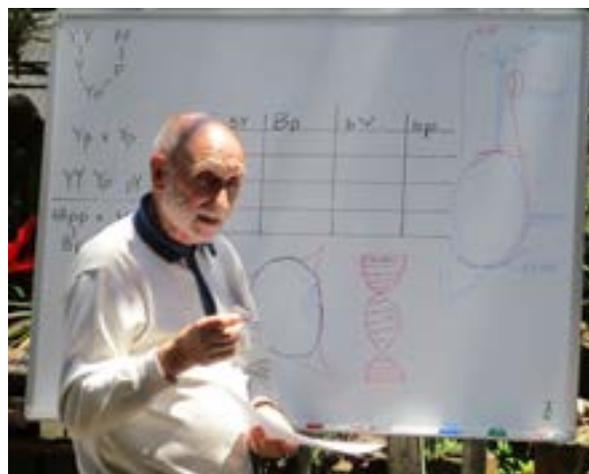


Orthophytum 'What'
photo - Leonard Dolatowski

Cryptanthus 'It' is a large colourful flat rosette mutant (60cm diameter). *Orthophytum saxicola* is a small flat rosette 15cm diameter? *Orthophytum saxicola* is a species of many leaves and it offsets similarly to a *Cryptanthus*. Both are exclusively terrestrial. On show was a juvenile 'It' (photo p.10) a 60cm plant for one to imagine this crossed with a 15cm dense rosette of predominantly green leaves.

Hybridising plants of dissimilar size conforms to "geometrical means" indicating a 30 centimetre diameter (15 x 60 = 900, square root = 30). The potential is for a medium sized many leaved colourful rosette hybrid. *Cryptanthus 'It'* is a mutant and mutants have parts of their Genetic Code missing or deformed. Cross pollination with a mutant parent is a failure.

Success with inter-generic plant breeding is always very poor. Probably the chromosome homology is low resulting in the formation of too few viable

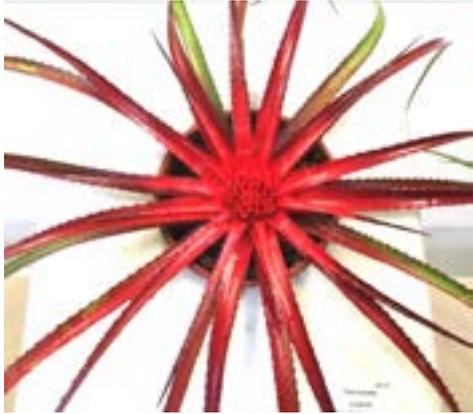


Les presenting the discussion on Meiosis

gametes. When successful the hybrid is almost certain to be sterile.

A closely related subject is mitosis that is the asexual reproduction of plants including sterile hybrids. The only time the chromosome pair come side by side and only for a brief period is during mitosis.

This is another subject for some time in the future.



Sincoraea burlemarxii
1st Open John Crawford



Neoregelia hybrid ???
1st Novice Dave Boudier



'Till Christmas'
by Keryn Simpson



'Tea for Two'
by John Crawford



Vriesea gigantea
1st Judges Choice Trish Kelly



'Christmas Crypts'
1st Decorative Helen Clewett



Neoregelia 'Pink Spider' grown by Trish Kelly



Hectia texensis
grown by John Crawford



Cryptanthus 'Silver Zones'
grown by Les Higgins



Aechmea 'Rajah'
grown by Keryn Simpson



'sTill a Log' by Dave Boudier

Photos supplied by: Ross Little



Guzmania sanguinea
grown by John Crawford



Orthophytum diamantinense
grown by Doug Binns



Sincoraea navioides



Sincoraea mucugensis

grown by Doug Binns



Grown by Les Higgins *Cryptanthus* 'Ti' and 'It'
and *Cryptanthus marginatus* and *beuckeri*



Encholirium heloisae
grown by Doug Binns



Nidularium 'Rutilan Regel'

by Derek Butcher Oct 2017

To the *Nidularium* grower these two words will sound familiar and will be the registered name for an old survivor which went by the illegal name of *Nidularium regelioides variegata* or *Nidularium rutilans variegata*. It has been around for over 40 years but nobody has reported when or where it sported/mutated.

The Taxonomist needs to know who collected a plant in the wild and where, before he considers it worthwhile to make a herbarium specimen and formally describe it.

The Cultonomist also likes to know where a plant originated! And recorded.

The Grower in many cases, takes the easy way out by using quasi-botanical names.

Plants evolve in the wild where it is mostly, survival of the fittest. Plants in cultivation face a different sort of survival depending on the whims and fancies of growers. When the BCR was first published in 1998 there were a few *Neoregelia* names published with the comment "Grace Goode indicated that she felt this plant was not still in cultivation". The problem here was that when I was Registrar after 1998 I came across some that had actually survived. In other words nobody knows where or how selected plants survive in captivity. The more you read the BCR entries the more you realise that some of them are seemingly extinct after only a short space of time i.e. 5 years whereas others have survived. In this case it has survived since the 1980's. In fact it got a mention in New Standardized Cultivar Names by Nat De Leon, BSI Hybrid Registrar in Journ Brom Soc 35(1): 34-37, 1985 but regrettably not according to the ICNCP rules on variegated plants. I quote "*Nidularium regelioides* 'Variegata' (syn. *rutilans variegata*)"

I put my query to Ross Little and he confirmed he had this plant alive and had been popular with the Buchanan's when they owned Pinegrove Nursery. Their records showed they had received the plant from various sources as follows BBK #350, *Nidularium rutilans* variegated, 4/83 Schaefer, 4/85 Sax, 8/85 Goode, Schaefer, 1/86 Wasley, 6/86 Gleeson. None had claimed being the first to notice the variegation so it would appear it originated in either Europe or the USA. I did consider Brazil but Seidel does not have it in their catalogues. It is in Kent's 1979 catalogue under *Nid. rutilans variegata* and in 1981 Tropiflora under *Nid. regelioides variegata*. Sometimes the primary bracts can be variegated too.



Orthophytum 'Roberto Menescal'

by Derek Butcher Oct 2017

It must have been over 30 years ago when my wife Margaret and I called on Keith Golinski at Palmwoods in Queensland and saw his display area for the first time. There was this large clump of plants cascading over a large rock. Keith informed us it was *Orthophytum vagans* BUT the leaves were variegated with whitish margins. We even brought a plant back to Adelaide but it never grew as luxuriantly as at Palmwoods. It did not take long to realise that the taxonomists only recognised the non-variegated plant which I did find easier to grow.



It was only in the last few years that I have realised that taxonomists are not interested in variegation leaving them to be named as cultivars. In my current search for whether it had been named in the past but not recorded I found that Constantino Gastaldi in his 'Dyckia' website had coined the name *Orthophytum 'Roberto Menescal'* for such a plant in April 2017 but not registered. I am proposing that we register this name in the BCR for such a striking plant despite the fact that it has been in Australia for such a long time. It would seem that the plant called *Orthophytum vagans variegata* growing in the collection of Roberto Menescal had been found in the wild by an unknown collector about 2000 so we are probably talking about a separate sporting/mutation. The source of the Australian grown plant remains unknown but if anyone can advise details this will be added to the records.

It is disappointing that some Brazilian Bromeliad growers do not see the significance of the BCR.



Photos:
Vic Przetocki
and
Ross Little

Tillandsia 'Leiboldiana Median'

by Derek Butcher Oct 2017

This is yet another variegated plant that is grown in collections but has no formal name. It would be nice to have named it after the first person who had this mutation but alas. We can only assume that it occurred in the USA but is not on the current lists of the larger US nurseries. There are references in the 1980's to a pendant inflorescence form but this seems to have gone out of fashion. There are also references to a spotted leaf form that was known as var. *guttata* until Harry Luther considered it unnecessary in DeRebus I 1994, p.29, you rarely see this spotted form in cultivation and nobody has considered that it might need a cultivar name.



Variegation could only have occurred fairly recently because it is not on Nat DeLeon's list in 1985. Searches of catalogues as held in the BCR do not reveal any clues either and yet if you search 'Google' anyone would think the quasi-name *Tillandsia leiboldiana variegata* was very common. To me it is very rare and is another example of selection by horticulturists without recording its existence. If we read about *Tillandsia leiboldiana* in Smith & Downs we will see that it was a favourite plant with taxonomists in the 1800's with the number of names given but now treated as synonyms and none refer to variegation. In fact we read "**Leaves** many in a crateriform rosette, 1-3 dm long; concolourous green or spotted" and "All doubtful cases are referred to this the typical variety subject to later correction. The difference of coloration of the leaf-blade has not shown any significance yet, but it could correspond to habitat as in *Vriesea sintenisii* (Baker) Smith & Pittendrigh or geography as in *Tillandsia spiculosa* Grisebach."

While checking with Ross Little for his views on a problem nobody has written about before, this was his comment:

The "spotted" form is not so 'rare' in our east coast collections just not as prized as some of its fancier counterparts, unfortunately we have to say the same for the "pendant" form. The variegated form came to Australia via Peter Tristram ex Chester Skotak around 1990, it has had its ups and downs regards popularity too but all three still sell reasonably well among avid collectors.

Chester has advised that this plant may have originated in Europe, unfortunately European leads haven't shed any further light on the problem. If anybody can give any additional information please advise Derek or the editors of FNCBSG.

Breeding / Hybridising for Variegation Part 2

Graeme Barclay from New Zealand being one of our **Eagle-eyed Observers** has offered some additional tips on what traits to look for when selecting a plant to breed with:- to be the seed bearing plant (mother).

“This info used to be a ‘secret’ but is now widely shared by all on Face Book etc. It’s what everyone wants to know!.. To get variegated hybrid seedlings, generally a striated mother plant must always be used. These often also have striated (pin striped) sepals supporting the flowers (look closely when blooming) which in turn also means the striation extends down into the ovary. Therefore, seed and the forthcoming seedlings from such a plant will often have a reasonable percentage of variegates, but also a number of plain green and albino seedlings (the white albinos will die). The variegates can then be selected and grown on, some will be striated too, but many will develop stable central or marginated variegation, which is normally the hybridizer’s goal.

If you start with using a medio-variegate as the seed mother, you will normally get ALL green seedlings and NO variegates. If you start with an albomarginated seed mother, you will normally get ALL albino seedlings and a few green seedlings, and NO variegates, so these options should generally not be attempted.

The secret is to start with a striated-sepal mother plant and test its transmitting properties to the seedlings”.

Glossary:

Medio-variegate — centrally striped

Albomarginated — having white edges or border.

Striated — striped, marked with longitudinal lines.

Before you set out on your creative exercise of hybridising give some serious thought about what you want to achieve. Be sure what you have in mind may give a distinctly different result to what is already available, if your creation will just blend in with the myriad of other look-a-likes then change your direction. A great new hybrid is one that will always be distinctive from any others. Don’t be an **opportunistic hybridiser**: a person who can’t help themselves, have flower must tickle it, with no real regards to the end result and must keep everything. If your hybridising is all about “**getting your name up in lights**” make sure all the effort is worth it and will be something sort after for many many years to come.

Only name and register with the BCR the very best, cull the rest.

An Often Asked Question After the Disaster

Many times I have heard or read about the after effects of using treated pine to build a shade structure. As our collections grow we suddenly get this urge to improve our growing conditions to help us grow that perfect looking Bromeliad to help show off their extraordinary beauty. Many of our beloved plants are very well suited to growing in our gardens as landscape specimens however some do need that bit of extra protection. This is especially so if living in areas of adverse weather conditions and no natural shade protection which is when we resort to shade structures. Careful consideration should be given to building materials to be used. A steel frame will last for many years, if using new galvanised pipe allow it to weather for a short period of time to clean any anti-oxidising agents off the galvanising. Hard wood timber is safe to use and lasts well but NOT that dreaded treated pine. So I asked one of Australia’s leading Bromeliad experts, Jacob Koning who just happened to be a painter by trade just how best to deal with the treated pine problem regards sealing it.

The Importance of Painting CCA Treated Pine by Jacob Koning

CCA or Copper, Chromium, Arsenic, treated timbers is a treatment design to make timbers very durable against rotting and termite/ borer attack however this solution (which is water based) and applied under great pressure for penetrating into the timber has a downside and that is, it is very destructive to Bromeliads of every type, it is not just the copper, the chromium and the arsenate are also a problem to Bromeliads and in combination with the copper can certainly spell death.

The best and easiest way to prevent this from happening is to paint the timbers used in construction of the growing houses/buildings, paint all surfaces INCLUDING any cuts etc. before assembly, you need a good quality Acrylic paint like Dulux weather shield or similar (DO NOT USE CHEAP PAINT, will not work).

Only one good coat is needed but it’s up to the individual if a second coat is applied, the treatment of the CCA timber is water based and so a water based paint locks it up very well without affecting the durability of the treatment, I have always done it this way and have never had a problem, do not thin the paint more than specified on the tin.

Also use only galvanised nails and screws etc.

I personally cannot stress the importance of painting all timbers/surfaces/cuts enough, a bit of extra care/expense will save your plants and your money in the long run.

Novice Popular Vote

1st	Dave Boudier	<i>Neoregelia</i> hybrid ???
2nd	Keryn Simpson	<i>Aechmea</i> 'Rajah'
3rd	-----	-----

Open Popular Vote

1st	John Crawford	<i>Sincoraea burlemarxii</i>
2nd	Trish Kelly	<i>Vriesea gigantea</i>
3rd	Les Higgins	<i>Cryptanthus</i> 'Silver Zones'

Judges Choice

1st	Trish Kelly	<i>Vriesea gigantea</i>
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Decorative

1st	Helen Clewett	'Christmas Crypts'
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Seasons Greetings, Happy Holidays and Thanks to ALL

Les's final article of the series '**A Brief Study into How Plants Function**' is in the November Newsletter, we thank Les for all his contributions during the year. Thank you also to all those who supplied articles, photos, other donations including catering supplies and their time during the past year. Without your help your Group will not function, so thanks from all of us.

We are again appealing to readers for articles and snippets of information for next year's Newsletters. Putting a Newsletter together, trying to think of what information you wish us to acquire to help you learn and answering all your queries is very tiring work as you can see in the photo below. So all the help we can get from regarding input appreciated.



readers
is greatly
Thank You.

