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

Study Group meets the third Thursday of each month

Next meeting July 20th 2017 at 11 a.m.

Venue: PineGrove Bromeliad Nursery

114 Pine Street Wardell 2477

Phone (02) 6683 4188

Discussion: June 2017

General Discussion

Editorial Team:
Kay Daniels
Trish Kelly
Ross Little
Helen Clewett

pinegrovebromeliads@bigpond.com

Meeting 18th May 2017

The meeting was opened at approximately 11.00 am
The 15 members present were welcomed.
A total of four apologies were received.

General Business

Mail: the Group received Bromeletter, the Journal of the Bromeliad Society of Australia which will be placed in the library. Members were encouraged to make more use of the library.

Show, Tell and Ask!

Ross asked if anybody had given further thought about the two plants shown at our April meeting drawing attention to the 2 photos of *Neoregelia* 'Bottoms Up' on page 9 of our May Newsletter. The albomarginated plant on the left is the correct one as registered on the BCR, what should be done about the striated form that looks nothing like the registered plant. Ross would like members thoughts on this – should the striated form be thrown away (culled)?, put into the garden until it behaves or.... ? People are spending good money on their plants and want to get the form they have ordered not something that doesn't conform to the BCR registration. Discussions have been had with a number of collectors, the general feeling is that sellers need to be more accountable, and we as buyers should not accept a plant that we don't want just so that the seller can make more money. Both plants were purchased thinking they were different plants, perhaps the one on the right should have a descriptive term added after the name to distinguish it from the registered form if this were allowable within the rules. The lesson here is BUYER BEWARE.

At our May meeting a rather discerning "brom cop" noticed several small red Neoreglias on the raffle table with some 'labelling mix-ups'. A quick wander about the shade house by Ross to gather examples of *Neoregelia* 'Fireball', *Neo*. 'Fireball variegated', *Neo*. 'Rosy Fireball', *Neo*. 'Fallan' and *Neo*. 'Zoe' to show and explain the differences:
Neo. 'Fireball' - small red stoloniferous rosette.
Neo. 'Fireball variegated' as above with the addition of faint cream linear lines.
Neo. 'Rosy Fireball' - a small rosette to 20cms, flushes pinkish red.
Neo 'Fallan' - rosette to 150cms, fewer and narrower leaves than 'Rosy Fireball'.
Neo. 'Zoe' - dark red leaves with central red stripes or lines.
Growers are getting them confused, however the difference when they are all shown together is quite obvious. (photos p.9)

Ross commented on the article about *Aechmea nudicaulis* on page 10 of our FNCBSG NSW May Newsletter indicating to the various forms of *Ae. nudicaulis* that are now registered in the BCR, so a few labelling adjustments are required.

He also showed *Guzmania andreettae* - collected in 1981 by C. and S. LUER near Tena (Prov). Puyo (Ecuador), it was named to honour Father Andreetta of Cuenca, Ecuador. The plant is only in spike at the moment so we are all looking forward to seeing it with flowers. This is quite an attractive and relatively easy to grow plant with hieroglyphic markings on the leaves. Ross' plant has grown to around 120 cms across and only 63 cms high when in flower.

Keryn brought in a couple of plants for discussion needing to be identified:
The first one was easy being *Aechmea caudata*.
We didn't get an identification for the second being a little more difficult beyond the observation that it had *Neo. concentrica* in its parentage.

After lunch Les with the help of Keryn and Dave tested various potting mixes. For all samples they put 2 drops of the universal indicator on the mix, made it into a paste, then put on barium sulphate which changes the colour to show the pH of the sample when compared to the chart on page15 of our May Newsletter.

- Pinegrove potting mix – pH 6.
- Coral's potting mix pH 5.75 and her garden soil pH 6.5.
- Dave and Keryn's blend of pine bark added to Searles potting mix pH 5.75
  Brunnings potting mix pH 6.5.
  A potting mix supplied from the Gold Coast pH 5.
- Les – Rocky Point potting mix pH 5.75.
  Searles potting mix pH 5.5

The porosity of a potting mix is important so the roots can respire otherwise they will die. Les poured water into Ross' potting mix which was in a beaker. He made sure it was covered and all voids filled, it measured 6.5cms, when the water was tipped into another beaker it measured 2.2cms. From this it was calculated that the porosity of the mix was 33.8%. Les conducted the same test with Searles potting mix and the porosity was found to be 26.6%.

Les also showed us how he kept the roots moist on his Cryptanthus by putting a net pot within a normal pot that had a rag on the bottom. He showed us a plant that was in a premium potting mix that was very loose in the pot due to poor root growth. The potting mix had broken down and the roots were not stable.

Les has asked members to bring labels from fertilisers next month and he will show us how to make our own at a fraction of the cost.

Gloria asked why her *Aechmea chantinii* didn't flower ?
One suggestion was that if the plant was acquired from a tropical climate it may sulk for several years before settling and behaving 'normally'.
If seed is collected from plants growing in a tropical area, but germinated and grown in a subtropical area the resultant seedlings may acclimatise and perform quite well and not suffer from inclement conditions.
Another suggestion was to acquire plants from within ones own growing area that are proven to flower more regularly, are stable and weather tolerant.
Some of the *Aechmea chantinii* forms can be a little cold sensitive so best to move them under cover for winter, water them sparingly and hang them well above ground level especially in frost prone areas.

Gloria mentioned a *Neoregelia* 'Macho' that she had seen for sale which was very silver in colour. She commented that her *Neoregelia* 'Macho' was very red suggesting as to how variable this plant may be, some are silver and some have very big brown spines. Also look toward *Neo.* 'Spines' which shows similarities to Neo. 'Silver', check these on the BCR.

Notes from Chester Skotak May 2010.
Notes with adjustments taken from the BCR.

***Neoregelia* 'Macho'** was grown and collected by Luiz (Luis) Correia de Araujo. He had them growing in giant clay pots around the restaurant he owned at the time. Several people brought back pups in the 1990s, including me. The plant was found in Vargem Grande, Rio de Janeiro state.

***Neoregelia* 'Silver'** was being grown at Pedro Nahoum's nursery. I spoke with him recently about this Neoregelia and he told me he acquired the plant from Roberto Menescal. It was collected in Vargem Grande also.

These Neoregelia 'species' were sent to the U.S.A. by me in the 1990s to: Michael Kiehl, Dennis Cathcart, Wally Berg and Harry Luther.
They each received one plant of each new 'species'. Since they were all being called carcharodon at the time, I wanted to distribute these Neoregelias in hopes of getting a valid species name on them and also get them into collections. Maybe one day this group will be sorted out. It should also be noted that these species are usually not found in colonies but as individuals or only a few plants and seem to be quite rare where they are found, leaving one to wonder how they even manage to propagate in the wild.

A Note from the Editors: please feel free to forward any articles you feel may be of interest to others so that we may publish them here in your Newsletter.

An ECUADOR Adventure July 2015 - Part 1

by Lesley Baylis

I have wanted to travel to South America for most of my life but have always ended up in China or Africa or many other fascinating parts of the World - so I had great expectations! Ecuador could never disappoint - from the moment Ross and I landed to the sad goodbye there were the most incredible experiences everywhere. From the coastal city of Guayaquil with its ornate churches and the town of Las Peñas perched above, to the Botanical Gardens, to the massive monkey monitoring the motorists, to the iguanas living in the city square right outside our hotel.... every step gave a new delight.

As we settled into a new culture and a new language we had some apprehension about the trip we had planned to go up into the mountains for a very special train journey from Alausi. The only way to get there for us was by taxi, over 250 kilometres and we were "bags packed and on our way out of town" when the full realisation that our driver did not speak a word of English became very evident ....!!! Oooh la la ...!! That was when we realised the most important word in a Spanish - English Dictionary was "STOP" (please..!) and we didn't know it (my six week Spanish course was not bromeliad friendly). We had spotted in the mist, climbing up into the mountains, our very first

BROMELIAD
IN HABITAT...!!!
AND WE DID'NT KNOW
HOW TO GET OUR TAXI
TO STOP...!!!

Some arm flailing and a bit of groaning later we had invented a new signal and then we were off to photograph and drool over a *Guzmania monostachia*....!!

OK I know what you are thinking.... something a little rarer would have been worth getting excited about..!! We also had a little side trip planned to see the Ingapirca ruins which turned out to be absolutely fascinating. Ross, being a stonemason in a previous lifetime had to be dragged from the site - it is almost impossible to comprehend how these buildings were crafted so perfectly and with none of the machinery we take for granted.

Several hours later we arrived at the wonderful little town of Alausi that was in the midst of a rally - everyone was there, dressed in colourful clothes and having heated debate over political issues we couldn't quite understand so we squeezed through the crowds to the booking office to get our train tickets for the next day. We had been advised to travel on the early morning train as the clouds can come in by midday and visibility is then very limited. What a journey - it is only 12.5 km long and takes approximately one and half hours to get to the destination of Sibambe but wow.... as soon as we left Alausi we found we were clinging to the side of a mountain with

spectacular views of the valleys below.... but wait a minute - there's more.... the hillsides were literally covered in thousands of Bromeliads.... I thought I was hallucinating....you could even reach out of the train and almost touch them.... (Not really advisable – we heard that someone had had a bit of a nasty accident with their head becoming

disconnected a few years previously - I think that was the translation...!) The train uses a series of switchbacks to climb the over 500 metres elevation and at the Sibambe station we were treated to local dancing which was brilliant and we had a walk around to actually determine what some of the Bromeliads were..... *Tillandsia latifolia* by the millions, tank type Tillandsias by the thousands and many Puyas.

So we returned to Alausi wanting to do it all over again....but fortunately we were sidetracked by a very colourful clothes shop and got into buying the first of many alpaca shawls (amnesia sets in on holiday shopping I am sure... cos you get home and find three of everything...!!!) So with a happy smile we set off back to Guayaquil for the real start of our Bromeliad trip with the group we had yet to meet.....

Cryptanthus ‘Peurto Rico’
1st Open and Judges Choice
Les Higgins

Billbergia ’Jenny’s Delight’
1st Novice Keryn Simpson

‘Mum’s Treasure Chest’
1st Decorative Keryn Simpson

Tillandsia tectorum
grown by Laurie Mountford

‘Tribute to our Mum’s’
shown by Keryn Simpson

Neoregelia ‘Kilauea Fire’
grown by Coral McAteer

Bill. ‘Kolan Flashback’
grown by Michelle Hartwell

Aechmea caudata
grown by Dave Boudier

Vriesea michaelii
grown by Dave Boudier

Les, Keryn and Dave testing potting mix pH

Les showing his pot set-up

Neoregelia ‘Zoe’

Neoregelia ‘Rosy Fireball’ (left)
Neoregelia ‘Fallan’ (right)

Neoregelia
’Fireball variegated’

Photo’s supplied by: Ross Little

A Beginners Question

answered by Paul Turvey 2017

Why do some Bromeliads give you pups but has not come into flower and others flower and then give pups ?

Not a beginners question at all! The simple answer is that "well, some just do and some just don't" but that doesn't really address why.

The underlying reason will have to do with what a pup actually is. We tend to think of pups as "offspring", but they actually are not offspring at all. They are side branches of the original plant that we chop off and pot up separately. In Bromeliads, like many other plants, side branching is suppressed by hormones released by the growing tip of the main central stem. I won't go into full details here but if you are interested, have a look at the Wikipedia entry for "apical dominance". That's the technical term for what we're talking about here and googling it will bring up lots of other references as well.

So, if the growing tip of the main central stem is putting out plenty of this hormone it will tend to suppress the development of side branches, but when the tip of the main central stem stops putting out this hormone when flowering is finished or if the tip is killed, for example by rot or deliberately by a screwdriver, then this suppression is removed and the side branches, i.e. pups, start to develop.

From an evolutionary viewpoint it is likely that for some species of Bromeliads growing in their native environments, their ability to survive and reproduce will have been highest if they had strong apical dominance to suppress side-branching so that all available resources are put into the main central plant until it has produced seed. A classic example of this would probably be something like *Alcantarea imperialis*. Keeping a single gigantic Bromeliad like that stuck to a vertical cliff face at a single attachment point must be hard enough, but developing into a clump with a single attachment point could well mean it is much more likely to end up at the bottom of the cliff with greatly reduced likelihood of surviving to successfully disperse its seed. On the other hand, other species in other environments may have been more successful if they had weak apical dominance so they tended to branch and form clumps or mats before they start putting resources into producing seed.

Maybe this could enable them to climb up and over other plants to colonise areas where they would otherwise be quickly overgrown, or spread out over areas with a crumbling surface where they would otherwise have difficulty remaining attached. A classic example of this could be some of the smaller, rambling/climbing Neoregelias like *Neo. compacta*. No doubt there are a lot of other factors or situations that could have an effect as well, so we'd reasonably expect to get a fair bit of variation among wild species depending on how they have evolved.

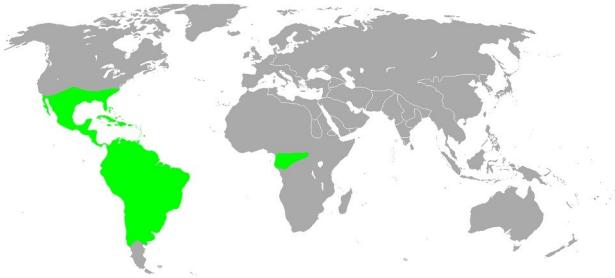
With regard to hybrids, it is very likely that regardless of the apical dominance and branching/pupping of the wild parents, the genetic makeup of hybrid offspring could well get so scrambled through different combinations of parents that some combinations of genes might produce strong apical dominance and little pupping while other combinations might result in weak apical dominance and lots of early branching/pupping - all within the same cross!

Sorry about my extended ramble, but I've always been fascinated by this sort of stuff. Hope it helps.

A Question Often Asked

Where do Bromeliads come from ?

Plants in the Bromeliaceae are widely represented in their natural climates across the Americas with the exception of one species which can be found in Africa. They can be found at altitudes from sea level to 4200 meters, from rainforests to deserts. Many of the species are epiphytes, some are lithophytes, and some are terrestrial. Accordingly, these plants can be found in the Andean highlands, from northern Chile to Colombia, in the Sechura Desert of coastal Peru, in the cloud forests of Central and South America, in southern United States from southern Virginia to Florida to Texas, and in far southern Arizona.



The largest bromeliad is:
Puya raimondii
It reaches 3 – 4 m tall in vegetative growth with a flower spike 9 – 10 m tall.
The smallest is
Tillandsia usneoides.

A Brief Study into How Plants Function
Part 5: Nutrient Manipulation.

by Les Higgins 2017

During the early 1900s the N.S.W Fertiliser Act became law.
Nitrogen, Phosphate and Potassium (NPK) were named “Major Nutrients” for direct application to plants.
Calcium, Magnesium and Sulphur are originally described “Minor Nutrients” for incorporation into soil. Trace Elements functioning as catalysts are Molybdenum, Copper, Zinc, Manganese, Iron and Boron. Over eighty beneficial elements are now known, most are only of academic interest and many are supplied by impurities.

Bromeliad NPK formulation has Potassium in greatest amount and Nitrogen is twice the amount of Phosphate. Trace elements are included. Mg, Ca and S are needed and usually satisfied with separate applications of Magnesium sulphate and Calcium-nitrate.

The writer makes nutrients and trace elements as Formulae **A** or **B** individually in 8 litre watering cans**.** Combining would result in Calcium, Phosphate and Sulphate insolubility and be seen as white flecks on the bottom of the container.

Formulae A: Potassium-nitrate (3/4 tea spoon)
Calcium-nitrate (1/4 tea spoon).

Formulae B: Mono-potassium-phosphate (3/4 tea spoon)
Magnesium-sulphate (1/4 teaspoon).
(Should Mono-potassium-phosphate be unavailable a suggested substitute is 3/4 tsp Ammonium-phosphate plus 1/2 tsp Potassium-sulphate [Bromeliads] or 1/2 tsp Potassium-chloride [Orchids]).

Seasol™ at pH10.5 contains powerful growth stimulants. To avoid distortion and marking apply below pH 7 and therefore best not used with tap water.

Nitrogen is paramount for growth. Potassium-nitrate makes good carbohydrate and sturdy growth. Make the solution pH6.5 - pH7.

REMEMBER: Nitrate is not absorbed on a dull day. Urea/Ammonium makes big soft growth at the expense of carbohydrate and can kill a plant growing in constant shade or cold.

Phosphate accelerates maturity and improves cold hardiness. Phosphate is vital for cellular functions. Mono-potassium phosphate increases a plants phosphate level. Make the solution pH5.6 - pH6.5

Nutrient uptake is dominated by pH and fertiliser chemicals do change substrate pH.

Lemon juice, vinegar or citric acid lowers pH. Acidity increases the solubility of Urea and Ammonium while locking-up Nitrate, Phosphate, Potassium, Sulphur, Calcium, Magnesium and Molybdenum. Iron becomes toxic. Acidity stimulates fungus.

Bi-carbonate of soda increases pH. Alkaline conditions make Iron and Manganese unavailable while Molybdenum becomes toxic. Insects prefer alkalinity.

Rock phosphate (Tri-calcium phosphate) requires Sulphuric acid processing. Farmers have spread superphos on their land followed by Lime. Within weeks recombination into Rock Phosphate occurs and the result is tonnes of insoluble phosphate in Australian soils. The same happens in potting mixes, Lime grabs Phosphate.

Consider using Soft-rock-phosphate in potting mixes.
Soft-rock-phosphate (Mono-calcium-phosphate) is unaffected by calcium.
Nutri-Tech Soft-rock-phosphate bags declare**:** “Acid-treated phosphates can become insoluble within 90 days. Soft-rock cannot suffer these lock-up problems. Every gram of Soft-rock will eventually be utilised as plant food”.

Plants will absorb Potassium in luxury amounts. Potassium promotes health, strong shoots and roots. Potassium-sulphate makes a good foliar application and increases colour. Potassium-sulphate and Epsom salt stimulate flowering. Add a pinch of Borax and make the solution pH6.
Nitrogen can suppress Potassium.

Foliar applications of Potassium-silica when regularly applied stiffen the sieve tubes and can prevent the proboscis of Mealy Bug, Aphids and Scale insects obtaining sap. Make the solution pH7.

High levels of Potassium, Magnesium and Sulphur within a plant can deter chewing insects. In food crops the combination improves palatability.

Epsom salt impurities are Strontium in Magnesium and Arsenic in Sulphur. Miniscule amounts of Strontium initiates the calcium skeleton but in excess prevents cell division. A minute amount of Arsenic is needed for life to exist while excess stops growth. Use food grade Epsom salt.

Calcium moves poorly within plant tissue and needs balancing with Potassium and Magnesium. Commercial Liquid Foliar Spray is recommended and applied at pH 6.5 - pH 7.

Citric acid is released from plant roots to make Iron soluble. When applying iron use Iron-sulphate and citric acid. (In excess the EDTA in Iron-chelate can cross bond preventing Calcium and Manganese up-take). Make the solution pH5.

Zinc helps convert products of photosynthesis into carbohydrates and govern leaf size. Copper and Zinc in minute amounts are essential catalysts. As containers or fungicides both metals damage Bromeliads.

Boron has potential to improve plant fertility.
Cobalt (Cobalt-chloride) “fixes” atmospheric nitrate.
Iodide is required in chloroplasts.
Selenium is a cuticle component.
Sodium and chloride (salt) balance the cell water in plants and animals.
Magnesium aids Phosphate up-take.
Molasses provides carbohydrate and trace elements.
Seaweed supplies many elements including iodide.
Zeolite in potting mix is an “on demand” source of Potassium.
Inorganics (chemicals) give quick results.
Organic molecules are too large to pass through the semi-permeable membrane. Organics feed micro-organisms whose waste is atoms of minerals resulting in a prolonged nutrient release.
Fusion fertilisers (organic + inorganic) have no nitrate (micro-organism waste) and therefore nitrate must be added.

For readers who dare enter the Mathematical Gymnasium here are percentage values of some popular fertilisers and the price per 25Kg bag:
Mono Ammonium-phosphate. (Water soluble Phosphate) N 12. P 27. = $23.20
Calcium-nitrate. Ca 24.42. N 17. = $25.00
Magnesium-sulphate (Epsom salt). Mg 20. S 27. Food grade = $22.00
Potassium chloride P 47. Cl 53. (chloride damages some genera).
Potassium-nitrate. K 38. N14. = $44.00
Potassium sulphate = $32.20
mono Potassium-phosphate. K 29. P 23. - pH4.45
di-Potassium-hydrogen-phosphate K45. P18. - pH 9.
Urea, prilled N 46. contains the deadly impurity Biuret.
Maximum Biuret in Ag grade is 1.5%,
Tech grade 1.0%,
Food grade 0.4%.
Soft rock phosphate P 10, Ca 24, Silica 25.9, iron 2, Cu 120ppm and Zn 325ppm. = $21.45

Full disclosure is written on every chemical bag.

The ‘Guaranteed Minimum Analysis’ on NPK packs may not be a complete analysis. Some manufacturers choose to protect their product by not making a total disclosure. The label reveals a selection from; Ammonium-phosphate, Urea, Potassium-chloride, Potassium-nitrate, mono-Potassium-phosphate and occasionally di-Potassium-hydrogen-phosphate. Trace elements are included.

Fertilizer	% Nutrient composition	pH*
Ammonium nitrate	34% N	A
Calcium nitrate	15.5% N, 19% Ca	B
Diammonium phosphate	16% N, 46% P_2O5 (20.1% P)	A
Monopotassium phosphate (MKP)	52% P_2O_5 (22.7% P), 34% K_2O (28.2% K)	B
Nitrate of soda potash	15% N, 14% K_2O (11.6% K)	B
Potassium chloride (muriate of potash)	60% K_2O (49.8% K)	N
Potassium nitrate	13.75% N, 44.5% K_2O, (36.9% K)	B
Sodium nitrate	16% N	
Urea	46% N	B

*A = Acidic (will lower soil pH); B = Basic (will raise soil pH); N = Neutral (no effect on soil pH).

Sample chart only

Determining the grams of a chemical in a commercial mix is simple arithmetic.
When a Guaranteed Minimum Analysis states:
Urea is 11.5% divide 11.5 by 46 = 0.25.
As 1kg is 1,000 grams multiply 0.25 X 1,000 = 250 grams of Urea in a 1kg pack.
For two part chemicals use the value of one not both elements.

Trace element total ratio is considered as 1kg per 100kg NPK. Formulation requires the atomic weight shown ( ). The usual ratio is one atom of Mo (97) to 100 atoms Cu (64), 200 atoms Zn (86), 1,000 atoms Mn (65), 3,000 atoms B (11). Unless Iron (Fe) is in chelate form it is not included in a mix 2,000 atoms Fe (67) Trace elements include Sulphate.

A theoretical fertiliser mix for a typical plant:
The ratios related to one atom of Mo is: 30,000 atoms S,
60,000 atoms P,
80,000 atoms Mg,
112,000 atoms C,
230,000 atoms K,
250,000 N.

See also FNCBSG NSW April 2016 Newsletter article**:**
Plants, Minerals and pH and Atomic Structure of Plant Nutrients

Novice Popular Vote

1st	Keryn Simpson	*Billbergia* 'Jenny's Delight'
2nd	Michelle Hartwell	*Billbergia* 'Kolan Flashback'
3rd	Coral McAteer	*Neoregelia* 'Kilauea Fire'
3rd	Dave Boudier	*Vriesea* 'Michaelii'

Open Popular Vote

1st	Les Higgins	*Cryptanthus* 'Puerto Rico'
2nd	Laurie Mountford	*Tillandsia tectorum*
3rd	- - - - - - - - - -	- - - - - - - - - -

Judges Choice

1st	Les Higgins	*Cryptanthus* 'Puerto Rico'

Decorative

1st	Keryn Simpson	'Mum's Treasure Chest'

A Growers Comment:

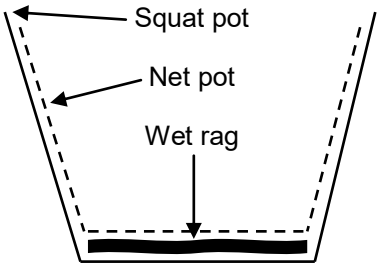
Cryptanthus 'Puerto Rico' was registered in 1978 as "parents unknown" with a suggestion that it came from Puerto Rico. I am inclined to believe it is a specie. It's certain to be a C4 plant and at +35° Celsius it glows.

The colour is unique in my collection.

Its colour and shape remain true regardless of how the environment changes.

It is easy to grow and is a prolific pupper.

My *Cryptanthus* 'Puerto Rico' is housed in a 200mm net pot that for most of the year is set inside a 200mm squat pot holding wet rag to maintain substrate humidity. (photo p.9)



Les Higgins

Where do I Find the Dates ?

www.bromeliad.org.au then click "Diary".

Check this site for regular updates of times, dates and addresses of meetings and shows in your area and around the country.