

Gem and Lapidary

News

May 2014

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The **Gem & Lapidary News** is the official publication of the GEM AND LAPIDARY COUNCIL OF NEW SOUTH WALES, INC, PO Box 4233, Londonderry 2753. The executive and workforce of the Council are entirely composed of delegates from member clubs. Council is NOT an autonomous body. The Gem & Lapidary Council is a member of AFLACA (Australian Federation of Lapidary and Allied Crafts Association).

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 Webmaster Alex Maitland (please send updated information)

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**COUNCIL MEETINGS**

EXECUTIVE: 4th Wednesday in the month  
 MONTHLY: 4th Wednesday in the month, at 1.00pm  
 The venue, unless otherwise stated,  
 is at the Clubrooms of Parramatta-Holroyd Lapidary Club,  
 73 Fullagar Rd, Wentworthville

**Visitors are welcome to attend Monthly Meetings**

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## Contents

- 1 Council News
- 2. Red Spinel
- 4 Angel in Jasper
- 6 Oldest Known Piece of Earth
- 8 Golden Years
- 9-10 Tsavorite Garnet
- 11-12 Mexican Fire Opal
- 13-14 Ants and Celestial
- 15 GEMKHANA
- 16 WWW

### NEXT COUNCIL MEETING

**Wednesday June 25th** at the clubrooms of the Parramatta-Holroyd Lapidary Club 73 Fullagar Rd, Wentworthville

Please do come, you will be made very welcome

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\* DEADLINE FOR COPY for  
June, 2014 issue \*  
Friday May 30th 2014

Club Editors; please add me to your mailing list to receive your Club newsletters. Ed.

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*Disclaimer:*

*Opinions expressed are those of the original authors and do not necessarily reflect those of the Editor, Gem & Lapidary Council or its members. Persons acting on any opinion, advice, fact or advertisement published in this issue does so at their own risk*

## GEMBOREE 2017 – LITHGOW Report

*Last month, I said I'd tell you what the organising jobs are – the ones we need to fill ASAP. Here are some, more will follow next month. In following months I'll tell you some of the jobs where you may be able to put in a little time, but don't require you to organise.*

*Following is a brief description of the positions that will form the Committee. Don't forget, some could be handled by a club, rather than an individual. If you, or your Club are willing to take on any of these jobs, you'll be given plenty of support.*

*Co-ordinator has overall charge, and co-ordinates the various sections. The Co-ordinator is responsible to the Council's executive, chairs meetings, and should draw up a budget in consultation with the Treasurer for presentation to the Council.*

*Assistant Co-ordinator acts on behalf of the Co-ordinator in his/her absence. Traditionally, this position is also that of Exhibition Chairman and is responsible for the over-all running and co-ordination of all sections and, in conjunction with the Competition Chairman, the set-up of the hall.*

*Secretary records and circulates Committee meeting minutes and attends to day to day correspondence of the Committee.*

*Treasurer is, of course, responsible for financial matters, and is usually the Council's Treasurer.*

*Dealer Chairman: In conjunction with the Exhibition Chairman draws up a list of dealers. Invitations, contracts and other necessary papers are sent to the dealers.*

*Competition Chairman/Committee compiles the competition schedule in conjunction with the State J&R Committee, and issues it to other State J&R Committees for their perusal two years prior to the GEMBOREE. Northern Districts and Central Coast already has this in hand.*

*Registrar: This is a job best done by a group, rather than one person. As you can imagine marking out and directing visitors would be beyond the capacity of one person. In consultation with other members of the GEMBOREE Committee, draws up the registration form for inclusion in the booklet. Accepts registrations, issues receipts and allocates campsites. Marks out campsites. Issues registration bags when people arrive and directs them to their campsite.*

## GEMKHANA Report:

***Note entry closing dates for some sections are early this year: Entry forms & postal entries – Friday July 25. Entries in person Saturday July 26 (10am-1pm) at Parramatta-Holroyd clubrooms.***

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### Red Spinel

Red spinel ranges from orangy red to purplish red, with pure red to slightly purplish red hues of medium to medium-dark tone considered the finest of all. A top-quality 5-ct. red spinel might sell for around a tenth the price of an equivalent-quality ruby, and pink spinel often sells for less than pink sapphire.

Spinel has been making a name for itself over the last couple of decades, and demand for fine stones well exceeds supply. In fact, spinel is in great demand among gemmologists and gem connoisseurs. This has, to some degree, closed the spinel vs. ruby-and-sapphire price gap.

Blue spinel hues range from violet blue through very slightly greenish blue.

Most stones have low saturation, and the blue hues take on a distinctly greyish look. The best and most highly valued blue spinel colours parallel blue sapphire, with intense violet-blue to pure blue colours that are neither too dark nor too light.

### Clarity

Spinel that has no inclusions visible to the eye is more valuable than spinel with inclusions that can be seen. The more visible any inclusions are, the more the value drops

.Because of the scarcity of spinel on the market, most fine-quality rough is cut in non-standard sizes to save weight, instead of in standard industry sizes. The standard-cut, or calibrated, stones that are available tend to be mixed-cut ovals, usually in 6×4-mm and 7×5-mm sizes, suitable for centre stones in rings. Commercial qualities are more commonly cut to standard sizes for jewellery.



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Angel in Jasper

Picture jaspers are well known for their impressions of landscape scenes. But on rare occasions, figures too can be discovered within their patterns. Gem cutter Bart Curren discovered what he calls “The Angel of the Sahara” in the first slice of a small potato-shaped nodule of Egyptian Royal Sahara jasper. The image of an angel is natural and unenhanced but can only be seen from a particular distance. Within a few millimeters, the image fades away into the background. The jasper slice measures approximately

50mm x 40mm. *(If you have any similar rocks with pictures, please send me a photo and a few words about it.)Ed.*

# Gemcuts

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## ***Gem found on Australian sheep ranch is the oldest known piece of Earth. (thanks Pointer)***

Measuring just 200 by 400 microns (about 10 times the width of a human hair on its widest dimension), one would think finding an ancient zircon to be harder than finding a needle in the proverbial haystack...Or, in this case, like finding a nearly microscopic gemstone on a sheep farm in Western Australia. But geologists treasure such finds, even more than the rarest of gemstones. This is because such minerals contain clues to our planet's beginnings. According to



the geologists that found it, the tiny zircon crystal is 4.4 billion year old. As the age of our planet is estimated to be around 4.5 billion years that means, that the tiny crystal was formed barely 100 million years after our planet (and its outer crust layer) was formed — and just 160 million years after the entire solar system was formed.

Such crystals are typically formed in the Earth's crustal layers, and, under cooler geologic conditions. Thus, this early date would seem to indicate that our planet's crust formed much earlier than previously theorized. Also, it lends strong support to the 'cool early Earth' theory in which much milder temperatures predominated and so could sustain large surface oceans — even possibly primordial life forms — relatively shortly after forming.

Geosciences professor John Valley (University of Wisconsin) and leader of the geologic survey that found the zircon, believes that the find indicates our early Earth was not quite as harsh and/or inhospitable a place (for liquid water, and thus even primitive unicellular life forms) as other theories have suggested suggest.

This early period in our planet's geologic history is known as the Hadean Aeon (after the Greek god of the underworld, Hades). It is so named because it is widely accepted that the Earth formed from a relatively spheroid mass of molten rock (hot iron, mostly) — the very conditions one might expect in Hades. But according to this newer theory, the Earth cooled down quite rapidly (within that 100 million year time span) and so could support liquid water at a much early time (any water that may have formed would have quickly evaporated; the Earth being the equivalent of a geological steam bath).

To determine and verify the age of the crystal, the geological team used two dating methods; the first was a standard dating technique based upon the radioactive decay of uranium to lead in a mineral/crystal matrix. However, because lead atoms can move through the crystal over time, they can give a false date. So, the team also conducted a more advanced test using a technique called *atom-probe tomography*. This technique permits measurement of the mass of individual atoms of lead within the crystal, and the two measurements together confirmed the age of the crystal at 4.4 billion years. ( Photograph: John W. Valley, University of Wisconsin via *Science Insider*)

# CAMPBELLTOWN & DISTRICTS LAPIDARY CLUB

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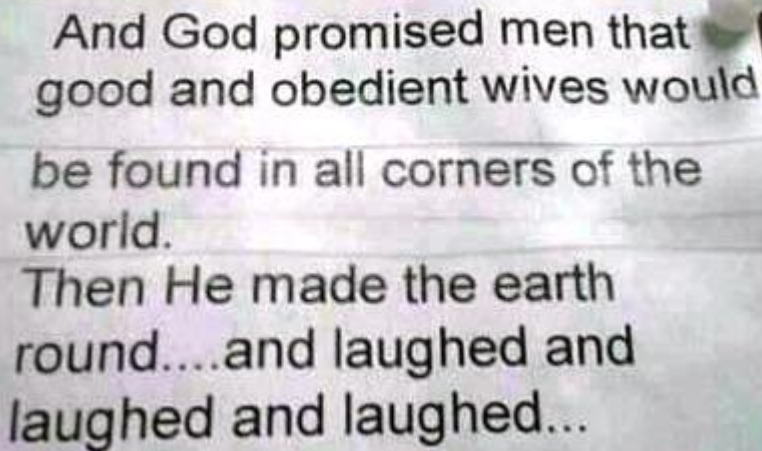
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And God promised men that  
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world.  
Then He made the earth  
round....and laughed and  
laughed and laughed...

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*Several days ago as I left a meeting I desperately gave myself a personal search. I was looking for my keys. They were not in my pockets. A quick search in the meeting room revealed nothing.*

*Suddenly I realized I must have left them in the car. Frantically, I headed for the car park. My husband has scolded me many times for leaving the keys in the ignition. My theory is the ignition is the best place not to lose them. His theory is that the car will be stolen.*

*As I scanned the car park I came to a terrifying conclusion! His theory was right. The car park was empty. I immediately called the police. I gave them my location, confessed that I had left my keys in the car, and that it had been stolen. Then I made the most difficult call of all.*

*"Hello My Love",*

*I stammered; I always call him "My Love" in times like these.*

*"I left my keys in the car and it has been stolen."*

*There was a period of silence. I thought the call had disconnected, but then I heard his voice. He barked, "I dropped you off!"*

*Now it was my time to be silent. Embarrassed, I said, "Well, come and get me."*

*He retorted, "I will, as soon as I convince this policeman I have not stolen your bloody car." This is what they call, "the Golden Years!"*

## Tsavorite Garnet

The shining green tsavorite is a young gemstone with a very long geological history. Its home is the East-African bushland along the border between Kenya and Tanzania. The few mines lie in a uniquely beautiful landscape of arid grassland with bare, dry hills. It's dangerous country, the habitat of snakes, and now and then a lion patrols, on the lookout for prey. There, near the world-famous Tsavo National Park, that history began.

In 1967 a British geologist by the name of Campbell R. Bridges was looking for gemstones in the mountains in the north-east of Tanzania. Suddenly he came across some strange, potato-like nodules of rock. It was like a fairy-tale: inside these strange objects he found some beautiful green grains and crystal fragments. A gemological examination revealed that what he had discovered was green grossularite, a mineral belonging to the colourful gemstone group of the garnets, and one which had only been found on rare occasions until then. It was of an extraordinarily beautiful colour and good transparency.

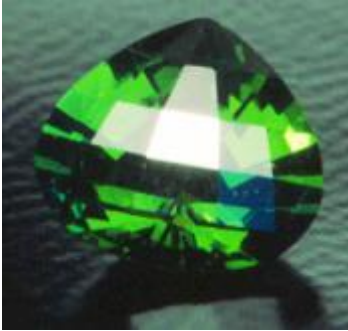


The find made the specialists sit up and take notice; Tiffany & Co. in New York also soon showed an interest in the newly discovered green jewel. However, in spite of all efforts, it was not, at the time, possible to export the stones from Tanzania. But Campbell Bridges was not one to give up easily. As a geologist, he knew that earth strata bearing gemstones were not necessarily limited to one particular area, indeed that they could extend over much greater areas - and in his opinion the stratum he had found was just such a one. For the rock belt in which most of East Africa's gemstone mines lie is very ancient. It began to form many millions of years ago, while the continents were still very much on the move. At that time, the area concerned had actually been under the sea. The sedimental deposits between the continents were greatly compressed and folded as a result of the movement of the massifs. Through tremendous pressure and at high temperatures, the rocks which had been present originally were transformed. New, exciting, beautiful gemstones came into being - among them the tsavorite. Having said that, the tremendous forces of Nature damaged most of the crystals so badly at the time of their formation that today it is usually only grains or fragments which are found.

Campbell B. Bridges persevered. His surmise that the seam bearing the gemstones might possibly continue into Kenya finally put him on the right track. In 1971, he discovered the brilliant green gemstone for the second time, in Kenya. There, he was able to have the find registered officially and begin with the exploitation of the deposit. It was an adventurous business. To protect himself from wild animals, Bridges began by living in a tree-house. In order not to have any of the gemstones stolen, he set a python to watch over them, making use of the fact that his workers were afraid of snakes. It was a wonderful find.

Unfortunately, the gemstone had been known only to specialists up to that point in time, but that changed quickly in 1974, when the Tiffany company began a broad promotion campaign which soon made the tsavorite well known in the USA. Further promotion campaigns followed in other countries, and soon the tsavorite was also known at international level.

### Green like a garnet ...



What is it that makes the tsavorite so desirable? Well, for one thing there is its vivid, radiant green. The colour range of the tsavorite includes a springlike light green, an intense blue-green and a deep forest green - colours which have a refreshing and invigorating effect on the senses. However, this gemstone is also valuable on account of its great brilliance. It has, like all the other garnets, a particularly high refractive index (1.734/44). Not without reason did they use to say in the old legends that a garnet was a difficult thing to hide. Its sparkling light was said to remain visible even

through clothing.

Unlike many other gemstones, the tsavorite is neither burnt nor oiled. This gemstone is not in need of any such treatment. Like all the other garnets it is simply a piece of pure, unadulterated Nature. Another positive characteristic is its robustness. It has almost the same hardness as the (considerably more expensive) emerald, - approximately 7.5 on the Mohs scale - but it is markedly less sensitive. That is an important feature not only when it comes to the stone's being set but also in its being worn. A tsavorite is not so likely to crack or splinter as a result of an incautious movement. It is well suited to the popular 'invisible setting', in which the stones are set close by one another, a technique which ought not to be used with the more sensitive emerald. Thanks to its great brilliance, the tsavorite is, in this respect, a partner to match the classics: diamond, ruby and sapphire.

Only in rare individual cases is a raw crystal of over 5 carats found, so a cut tsavorite of more than two carats is a rare and precious thing. But then that is one of the special features of this gemstone: that it can display its great luminosity even in small sizes.

There's something very special about this young gemstone with the very long history. With its fresh, vivid green, it's good wearing qualities, great brilliance and relatively reasonable prices, it is surely one of the most convincing and honest gemstones that exist. (<http://gemstone.org/>)

## Fire Opal

Fire opals are unique in the lush world of the opals. It is in Mexico that the most significant fire opal deposits in the world lie. Rock strata containing opals run through the Mexican highlands, with their many extinct volcanoes. With a few exceptions, the gemstone, which lies hidden in cavities and crevices, is extracted in open-cast mines, the work giving rise to impressive canyons with walls up to 60 metres high and labyrinthine passages which wind their way through the mining areas.

Sometimes, these orange-red gemstones are also found in other countries, in Honduras or Guatemala, in the USA, Canada, Australia, Ethiopia and Turkey, but these are mostly sites of little or no economic significance. With Brazil it is a different matter. Several years ago, in an agate mine near Campos Borges in the South Brazilian State of Rio Grande do Sul, fire opals coloured yellow to orange were discovered. They distinguish themselves by their beautiful colour, often with slight clouding, but without play of colour. Their warm, expressive orange comes in all varieties from yellow to light red, sometimes with a brownish undertone. What is particularly remarkable is the sheer size of the raw stones. Some of them are as big as a man's fist, which opens up completely new possibilities in the way they can be worked. Today, these Brazilian fire opals are setting new trends in the fascinating world of gemstones.



### **A powerful gemstone with a vivacious colour**

The fiery, warm glow of the fire opal beguiles jewel enthusiasts the world over. This radiant orange simply cannot be overlooked! The fire opal, which, like the other opals, consists of silicic acid with relatively high water content, was named for its colour. The colour itself comes from fine traces of iron oxide. With a hardness of between 6 and 6.5 on the Mohs scale, however, the fire opal is among the somewhat sensitive gemstones which require a protective setting, especially when worn as a ring stone.

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## Fire Opal (Cont)

Not all fire opals are the same. We differentiate between the common fire opals, which, depending on their quality, are either faceted or cut into cabochons, and the especially valuable ones, which, in addition to their vivacious colour, also have the gaudy play of colour typical of opals. But with or without play of colour, the fire opal plays its part as a top quality gemstone to perfection.

### **The drier the place where it is found, the more durable the fire opal**

Fire opals are either faceted - that is, as far as their transparency allows - or cut as a cabochon, since this is the shape which best brings out the rich glow of this orange jewel. It is the oval which is regarded as the classical shape for valuable fire opals. Brazilian raw stones, however, are also cut into many other imaginative shapes, their sheer size giving cutters and gemstone designers almost unlimited freedom for both work and play.

In spite of their relatively low hardness, opals are not actually that easy for the cutter to work with. When setting up the cut, he must pay attention to the direction in which the stone shows its play of colour to the best advantage. When working on the raw stone, the cutter - and later the setter - must take care to ensure that the gem does not come into close contact with great heat, since the water content of the fire opal is unevenly distributed and the stone can crack if dried artificially. Indeed, when the raw stones are found, many fire opals are covered in a chalky white weathering crust, a sign that the stone has aged through loss of water and become cloudy and cracked. Whether and to what extent a fire opal is susceptible to this ageing process is not only dependent on how it is handled, but also has to do with its origin. But an experienced gemstone specialist can judge by where it was found whether a fire opal is going to be durable or not. Having a very precise knowledge of the places where their stones are discovered, opal specialists are able to answer for their durability. One rule of thumb goes: the drier the place where it was found, the more durable the opal.

The tolerance of the fire opal to extreme heat is just as poor as its resistance to acids, alkaline solutions and sharp objects. Very unfavourable conditions compel the opal to surrender its moisture, which can make it cloudy and cracked. Like all opals, it should not be exposed to intense light over long periods. However, it loves to be worn a lot, since this enables it to maintain its water balance, using the moisture of the wearer's skin and that of the air. Having said that, it should be protected against contact with cosmetics. Fire opals which have become matt through being worn a great deal can be repolished. (<http://gemstone.org/>)



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## **Celestial cues point desert ants home**

The ants appear capable of "averaging" information from multiple celestial cues to improve accuracy (Source: Patrick Schultheiss /Macquarie University)

The sky is the limit for central Australian desert ants trying to find their way home, according to a new international study. In a study aimed at finding what sources of "celestial cues" the desert ant uses to navigate, the researchers found the ant

will take whatever information is available.

And interestingly, senior author Professor Ken Cheng, from Sydney's Macquarie University, says it appears the ant is also capable of "averaging" information from multiple celestial cues to improve accuracy.

For the study the researchers devised a series of tests that would examine the reliance of the central Australian desert ant *Melophorus bagoti* on a range of celestial compass cues.



### (Cont Celestial Cues)

"The way the light is being scattered as it enters the atmosphere creates a pattern that is all over the sky," he says.

The position of the Sun by comparison, he adds, is "just a blob in the sky".

Cheng says the experiment in which the Sun's position was manipulated gave "the cleanest" result. This showed that it had no effect on the ants' orientation, "clearly indicating that a view of the Sun was not necessary for orientation".

These included the pattern of polarised light, the position of the Sun and the intensity and differing wavelengths of light. The study, which took place about 10 kilometres from Alice Springs, involved a feeder containing biscuits crumbs located about eight metres west from the ant nest.

Ants were taken from the nest and placed in the feeder and their ability to navigate home tested with various cues impeded. Some were tested in a high UV-blocking box, a low UV-blocking box and tested on open ground with the Sun reflected in a mirror so it appeared to be in the opposite position. Cheng admits the methodology of the experiment is a "bit clumsy" because it is difficult to isolate sources of celestial cues completely.

For example, he says it is impossible to "completely block out UV light" during the daytime.

This means these cues may still play a role when testing the ants' navigational ability without that information source. Cheng says the team suspected UV wavelengths were the most important celestial cue because of its availability.

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### **Combining multiple sources**

Cheng says the study also shows the ants combine sources of information and "average them out" to improve their navigational accuracy.

The results show an amazing hard-wired navigational ability, Cheng says.

"We did everything we can to knock them off, except putting them in the dark ... but they were still significantly oriented," he says.

"It is really phenomenal when you consider how small their brain is."

The skill is due to what Cheng likens to a "private channel or processing station" in the ant brain. He says there are neurons in the brain between neurons — known as inter-neurons — that are sensitive to a particular direction of the pattern of polarised light.

"One direction will excite the neurons, the opposite direction slows them down."

The findings appear in the latest edition of the [Journal of Comparative Physiology A](#).

[Dani Cooper](#) ABC Science Online

# GEMKHANA

The Gem & Lapidary Council of NSW  
(A Non-profit Educational Organisation)  
Presents Its Annual

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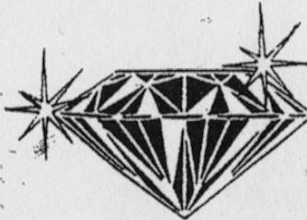
October 4, 5, 6, 2014

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<b>WHEN</b>	<b>WHAT</b>	<b>WHERE</b>
<b>May</b>		
3 -4 <sup>th</sup>	Redcliffe, Gem, Mineral and Craft Show	Southern Cross Catholic College Kippa- Ring Qld
9 <sup>th</sup> -11 <sup>th</sup>	Hawesbury Ag Society Show	Hawkesbury
17 <sup>th</sup> -18 <sup>th</sup>	Lismore Gemfest	Lismore Showground
24 <sup>th</sup>	Mt Gravatt Gem Show	Club House 1873 Logan Rd Mt. Gravatt Qld
31 <sup>st</sup> -1 <sup>st</sup> June	Gunyah Club Lapidary Display	Mt Cootha Botanical Gardens Qld
<b>June</b>		
7 <sup>th</sup> & 8 <sup>th</sup>	Canberra Lapidary Winter Show	73 Fullagar Road Wentworthville
14 <sup>th</sup>	Parramatta-Holroyd Open Day	W.A. Lapidary & Rock Hunting Clubrooms
14 <sup>th</sup> & 15 <sup>th</sup> & 21 & 22 <sup>nd</sup>	Annual Gemstone Exhibition	Cnr Gladstone Road & Newey Street RIVERVALE WA 6103
21 <sup>st</sup>	Deception Bay Gem Show	Community Hall Cnr Ewart St and Raymond Terrace Qld
28 <sup>th</sup>	Gold Coast Gem and Craft	80 Pacific Ave Miami Pizzey Park Qld
<b>July</b>		
12 <sup>th</sup> & 13 <sup>th</sup>	<b>Campbelltown &amp; Districts Annual Gem, Mineral &amp; Jewellery</b>	<b>Greg Percival Community Centre Cnr oxford rd. And Cumberland rd. Ingleburn</b>

**GEMBOREE DATES****2015 -VIC MAY 3****2016 -TAS MAR 25****2017 -NSW MAY 14**

**GEMKHANA 2014**  
**GOULBURN**  
**OCTOBER LONG WEEKEND**  
**4<sup>TH</sup>, 5<sup>TH</sup>, 6<sup>TH</sup>**



**GEM, JEWELLERY, BEADING MINERAL**

**SHOW AND SALE**

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**GEMBOREE LITHGOW 2017**  
**YOUR HELP IS NEEDED NOW.**