

# THE MINERALOGICAL SOCIETY OF NEW SOUTH WALES INC

C/o School of Natural Science
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### NEWSLETTER

### **APRIL 2015**

The April Meeting will be held on Friday the 10<sup>th</sup> of April at 7.30 p.m. in the LZG14 lecture theatre on the ground floor of Building LZ in the Science campus of the University of Western Sydney on the corner of Victoria Road and James Ruse Drive in North Parramatta.

#### **MEMBERS PLEASE NOTE:**

The April Meeting will be held on the second Friday of this month AFTER Easter

The program will commence with a talk to be given by Jim Sharpe on : -

### 'Sampleite, An Undervalued Mineral'.

Members are invited to bring specimens of sampleite to the Meeting to help illustrate the talk and particularly to bring specimens from any sites in addition to those from the Northparkes mine in NSW such as from Lake Boga and from the type locality, Chuquicamata in Chile. This will enable comparison to be made between specimens of the mineral from the various sites. Since the Northparkes mine has also produced fine examples of other copper minerals such as atacamite and libethinite it is suggested that members bring in specimens of other Northparkes minerals to display.

The talk will be followed by a lecture given by Jeff Davis on

'Applications of Mineralogy in Forensic Science'.

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### FORTHCOMING MEETINGS

May 1st: **Member's Mini-Auction**. The annual May Member's Mini-Auction will be held at the May Meeting. There may be a few announcements made at the commencement of the Meeting but otherwise the entire evening will be devoted to the Auction. The Meeting will start at the normal time and after any announcements the auction will commence immediately and will probably last about two hours.

So that an auction list can be prepared and distributed in advance please provide Jim Sharpe with a list of your specimens to be auctioned by the **22nd of April next**. Contact by phone – 9871 2502 or by email: sharpejames@tpg.com.au

In addition to the regular auction minerals can also be sold by silent auction. Members can bring in a tray of specimens to leave on a table accompanied by a bid form which will be provided. There will be no need to advise Jim in advance regarding the silent auction as the boxes will not be listed.

### Please clearly label all specimens and boxes.

June 12th: Lecture by David Vince on: - Mineral Collecting in China in 2000 and Now.

(Second Friday)

Lecture by David Colchester and John Chapman on : -July 3rd:

'Mudgeeite. Establishing a New Mineral.'

In order to illustrate and display at the lecture members are asked to bring in any specimens they may have from the Mt Knowles site.

Society A.G.M. and the Betty Mayne and Edna Walker Memorial Lecture August 7th:

to be given by Noel Kennon on : - 'The History of Broken Hill'.

Lecture on 'The Creative Power of Groundwater', by Peter Williams. September 4th:

October 9th: 'The Wonderful World of Micro-Minerals'. Presented by the Micro-Group.

(Second Friday)

November 6th: 'Aspects of the Block 14 Mine' by John Rankin.

December 4th: **Christmas Social** 

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### The SOCIETY COMMITTEE

PRESIDENT: Dieter Mylius Tel: (02) 9477 1060 Jim Sharpe VICE-PRESIDENT: Tel: (02) 9871 2502 E-mail· sharpejames@tpg.com.au

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### THE MARCH MEETING

Jim Sharpe addressed the meeting to thank members who had donated specimens for the previous month's **Kids with Cancer** sale. A total of \$1790 had been generated by the sale with almost all the specimens sold. The sale and funds generated had been a commendable gesture by the donors.

Jim Sharpe then referred to the forthcoming April meeting when he would be giving a short talk on **Sampleite**. He considered that the Northparkes mine in NSW has been the source of the best sampleite from anywhere in the World, given that there is very little of the mineral elsewhere and recommended that members bring in specimens to display to the April meeting. He further suggested that specimens of other Northparkes minerals such as atacamite and libethinite could in addition be brought in for display since the site has also produced fine examples of those species.

Penny Williamson next addressed the Meeting to explain the current situation appertaining to the **Howard Worner Mineral Collection** in the main foyer of the GeoSciences building of Wollongong University. After twelve months of rumours about changes to the positioning of the central case housing the largest part of the Collection Penny Williamson was pleased to announce that the Collection would remain on display in the foyer. Whilst the central case had been demolished a new one had been constructed and erected some six meters down the corridor from the original location and the Collection would be back on display by the 8<sup>th</sup> of April.

[ N:B: The Howard Worner Collection with other displays in the foyer of the GeoSciences building commenced being set up from about the year 2000 after the donation to the University of his collection by Howard Worner. There were later smaller donations from other benefactors. The very considerable work involved in acquiring sufficient large display cases and setting the specimens up with labels, photographs, maps, and explanatory plaques was described by Penny Williamson and Paul Carr in a lecture given to the Mineralogical Society in June 2012. 'Recent Additions to the University of Wollongong Mineral Collection'.

During his lecture in 2012 Paul Carr pointed out that before 2000 the GeoScience building foyer was a large open bare space but after the mineral donations and a great deal of work now boasts a world-class mineral display comprising nine large display cases, mostly of minerals and one with a display of fossils and artefacts of the 'hobbit' people whose remains were found in 2003 on the island of Flores in Indonesia. An article by Penny Williamson and Paul Carr describing 'The Howard Worner Collection' was published in the Australian Journal of Mineralogy, Volume 7, Number 1, June 2001. ]

Ed Zbik described arrangements and the schedule for the forthcoming **Field Trip** to the **Cordillera Mine** at Tuena commencing on Saturday 21<sup>st</sup> March which would also take in a visit to the Canberra Rock Swap during the morning. The party would then make its way to Tuena to camp overnight and fossick during Sunday. Since camping facilities at Tuena were fairly primitive he suggested that some attendees might wish to stay overnight elsewhere in the area. John Smedley advised that many years ago he had visited Tuena on a Society field trip with about thirty other members and they had had a very successful weekend making a number of nice finds.

Graham Ogle reported that the next meeting of the **MicroMineral Group** would be held on the following Saturday and the Group would be studying quartz and calcite. He noted that the Group had established the practice of writing up articles on the mineralogy of certain sites, an article on Woodlawn minerals having already been published in the *Crocoite.com* website. The Group had since been working on the minerals of the Bunnan road cutting, would submit an article in due course on that site and then would be working on Tolwong mineralogy.

### The 2015 Tucson Show

#### **Peter Beckwith**

Peter Beckwith first addressed the Meeting about the 2015 Tucson Show. There were only a few new groups of specimens which had stood out for him such as some new goethite with smithsonite, very reminiscent of the smithsonite with coronadite from Broken Hill. Not exactly cheap but still quite nice. Then there was quite an amount of material that the Chinese are producing from Inner Mongolia and mines elsewhere in China. As he has advised before, the brand-new material which appears at the Show is exceptionally expensive and the visitor has to wait a year or two for prices to, (hopefully!) come down a little. Also as before Peter Beckwith advised that as usual he had a really good and interesting visit to the Show and enjoyed it thoroughly.

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### **Penny Williamson**

Penny Williamson advised that her presentation would be entirely a slide show and proceeded to display a series of pictures of superlative mineral specimens. She had taken over 1,000 photographs at the Show and would be able to display only a selection. She also noted that correctly the event should be known as the Tucson Shows since apart from the main show in the Convention Centre there are at least seventy different other shows of minerals, gems, fossils, beads, 'high-end stuff', 'low-end stuff', the visitor name it, it is all there. Millions of dollars' worth of material goes on sale at Tucson each year over the three-week period.

Unlike the dealers who would probably attend for the full three weeks Penny Williamson as an exhibitor only attends the Show for the final few days, with a few extra for obvious sight-seeing. Otherwise she would be primarily involved in presenting a display in the main Show in the Convention Centre which is held at the end of the three-week period. In getting to Tucson the speaker reported that it is about a fifteen-hour flight from Sydney to Los Angeles and then another few hours on an internal flight to Tucson. Arriving at Tucson the speaker noted that the airport is also used by the U.S. Air Force and there were military planes parked about and also taking off and landing.

Another point made by the speaker was that Tucson, given its location not too far from the Mexican border and presumably also due to the military presence, has the second largest police force in the United States, after Detroit. The police are apparently divided into a number of different forces, or departments, all with varied and distinctive uniforms which the speaker, who admitted to being impressed with men in uniform, had taken photographs of all the different types.

Penny Williamson had given herself nine days in Tucson and during the first few days before setting up in the Centre was able to tour, examine and take photographs of some of the larger peripheral shows. Notably a number of views were shown of the show in the Westward Look resort which on Saturday always features a major display in two large cases in the foyer. This year the display for the foyer was provided by the Harvard Museum and a number of images of the magnificent minerals displayed were shown and then many others from displays in six large rooms inside the resort.

Moving on to the cases and displays in the Convention Centre Penny Williamson pointed out with the aid of images a large number of the magnificent specimens on display and of some of the exhibitors regularly attending the Show. The University of Wollongong display case set up by the speaker on 'Fluorites from the Weardale Valley' was illustrated, the speaker paying compliments to the collectors who had lent specimens for the display since the University does not have good Weardale material.

Penny Williamson then described a number of the security aspects of the Show which are substantial. The Gem & Mineral Show is a very significant if not the biggest event on the Tucson calendar bringing in very substantial income to the city and in recognition of this the Show is opened by the mayor of Tucson and usually also by the Arizona State governor. At least sixteen police are on duty in the Show at all times. They also use police dogs which are locked in the building at night. Given that the value of material on display in the Show in the speaker's estimation must run into many tens of millions if not billions of dollars it has been commendable that the Tucson Show has not had any issues with theft. This is surprising and a compliment to the existing security arrangements since a thief would need to 'net' just two or three \$100,000-plus specimens of which there were very many to have made a good profit.

Towards the end of her report and photographic display Penny Williamson dealt with a number of questions. Display cases are provided by the Show organisers subject to the exhibitor indicating how much room they will need and how well known they may be. The speaker has been lucky given that she has established credentials from previous attendances and for the latest visit was given a three-foot cube case situated next to the Smithsonian display. Other exhibitors were given four-foot cubes which if the speaker decided she would have needed a larger case she could have asked the organisers and expected that they would have provided one readily.

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### The Burning Question of Mt Wingen – When did the Fire Start? Paul Carr

Before he commenced his lecture about Mt Wingen Paul Carr related an anecdote about the Tucson Show where there had been at least one attempted robbery that he knew of. It so happened that a thief seized a specimen from a dealer's table in one of the motels and made off with it, pursued by the dealer who had seen him. The thief ran outside and into the tent of another dealer, right through the tent and out of the back. Only to discover that the back of the tent led straight out into the main road! He was hit by a car and sustained a broken leg. The speaker did not mention what happened to the specimen.

Proceeding to speak about Mount Wingen Paul Carr initially expressed acknowledgment to two of his colleagues, Brian Jones and David Price, who had been involved with him in researching the site. Mt Wingen, also known as 'The Burning Mountain' is in the northern Hunter Valley about a kilometer east of the New England Highway between Scone and Murrurundi, about 25 kilometers north of Scone and near the village of Wingen which is on the highway. The mountain, more correctly a hill, has a long history, local aborigines knew about it and the name actually comes from an aboriginal word meaning 'fire'. It is at an elevation of 520m and is about 120m above the surrounding countryside.

The first European record comes from 1828 when a local farmhand, surnamed Smart, was out shooting and saw smoke and steam rising. In later asking aborigines about it and being told that the mountain itself was burning he reported this to a government agent. Not long after a report appeared in the *Australian* newspaper of March 1828 which interestingly stated specifically that the mountain was a volcano. This was only fifty years after the first European settlement in Australia and was supposedly the first active volcano to be found on the mainland. The report caused quite a stir at the time with people impressed about the existence of a volcano. Twenty years later in 1848 a Frenchman published a book with a sketch of the mountain which quite clearly shows a volcano. The problem is that it bears no relation to Mt Wingen.

At the time of the first report the Reverend Charles Wilton was working in his parish in Newcastle. He was interested in natural history, particularly geology, and in seeing the 1828 report went to examine Mt Wingen several times between 1828 and 1832. His observations were published in the

*Sydney Gazette*. On his first visit he immediately realised that it was not a volcano and attributed the surface manifestations of smoke production and ash to coal burning some distance underground.

Also at about the same time a very famous explorer, Sir Thomas Mitchell, went through the area and being a surveyor by trade produced a sketch map of the mountain. He also correctly attributed the site as an underground coal seam burning. As far as the speaker can find the first professional geologist to examine Mt Wingen was Sir Edgeworth David in 1907 who published reports in his journals. Another interesting visitor was a local man, William Abbott, who after seeing the mountain first in the 1850s spent literally the rest of his life there and in 1918 published a book, 'Mt Wingen and the Wingen Coal Measures'. The book is available in the National Library in Canberra and is quite descriptive of what has happened and of the author's observations over time. Since 1918 there have been a few other reports but the first ones were the more interesting.

With the aid of projected photographs Paul Carr described what can be seen today at Mt Wingen today indicating on a map the access to a large parking and picnic area with camping facilities a short distance off the Highway. From the parking area there is a well-marked walking track of about two kilometers to the currently active area. At intervals along the track there are information boards describing the vegetation and nature of the ground immediately around which may be seen to be fissured, clefted and cracked in places and is very uneven. Visitors are forbidden to venture on to the active area and have to observe from a viewing platform. The active area is ground clearly strewn with ash and baked soil with faint smoke rising from a number of fumaroles and a substantial smell of sulphur pervades. It is devoid of vegetation, is bright red in places from the presence of highly oxidized ferric oxide or is white and grey with very fine-grained and powdery material, some of it sublimated from the gases emerging from below.

Kangaroos are plentiful in the area and from droppings all around the active zone would seem to favour resting for periods on conveniently warmed ground, presumably more so during the winter. Not too far away from the underground burning area where the ground has cooled completely a few small plants and shrubs have taken root and further away the forest has been gradually re-claiming the ground.

Referring to his map of the Mt Wingen area Paul Carr indicated a nearby nature reserve, another area which is privately owned and then a large area which is owned by the Bickham Coal Company. A few years ago the company took out about 200,000 tonnes of coal and based on this put in a proposal to establish a large open-cut mine. The speaker's understanding is that the open cut proposal was refused but the company has now put in proposals for underground mining. Since the upper Hunter Valley is quite significant agriculturally with many horse-breeding properties the coal company's proposals are not at all popular with local property owners. Perhaps because of these concerns Bickham Coal will not allow any visitors including the speaker on to their property.

On the map Paul Carr indicated the line of the underground coal seam tracing it from the current active area through the Bickham Coal property to a point outside the company area. By means of observing the remains of ground fissures and metamorphic effects on the surface soil and rocks he had identified the origin of the fire, about seven kilometers north of the current active area. Whilst there is apparently a great deal of coal under the land in the area of interest to the coal company it is only an uppermost seam that has been burning through to its current active area under Mt Wingen.

Asking the question, 'Why does the coal continue to burn?' the speaker suggested that this would be due to a combination of high-carbon, low-ash coal which was highly combustible, a fairly thick seam of about two meters, fairly low depth of about 20 to 30 meters from the surface and critically there is an ongoing supply of oxygen.

Moving on to speak about the mineralogy of the area the speaker advised that unfortunately the site has not produced pictures of spectacular specimens but there were some exotic minerals present and a list of these associated with the fumaroles was projected. Sulphur was present as would be expected but a little more unusual was native selenium which comes out of the fumarole gas as a precipitate.

There is ammonium chloride due to the coal producing ammonia, hydrogen and chlorine and a whole host of sulphates which are basically the products of reaction between the sulphuric acid fumes and the original rocks and clays on the surface. Due to the very high temperature in the burning seam of well over 1,000°C kaolin-rich clay-stones and fine silt-stones in contact with the fire have been metamorphosed. One of the common products is mullite which is a high-temperature aluminium silicate. The high-temperature forms of quartz, cristobalite and trydimite are found and also halloysite, an alteration product of kaolin. In the 1980s these materials were mined as refractories, particularly the mullite and used extensively by the Port Kembla steelworks and possibly also in Newcastle.

Interestingly starting in the late 1890s and up to about the 1960s but particularly in the 1940s and 1950s there was some commercial extraction of fumarole sublimates. Pipes were laid across the active area surface to the vents to collect and condense the gases. This was to produce various supposedly medicinal materials – sulphur-rich creams and liquids with names such as 'Winjennia' and 'Sulfazone'.

Coming to the 'burning' question, 'When did the Fire Start?'. The first estimate of this was made by William Abbott who had seen the Burning Mountain as a child in 1852 and had then kept it under observation right through to 1917, for some sixty-five years. During that time he determined that the fire front had travelled about eighty yards or 74 meters which would indicate a rate of movement of about 1.1 meters per year. In applying mathematics from the identifiable starting point seven kilometers from the current fire and assuming a constant rate of progression of the fire Paul Carr has estimated that it could have been burning for about 6,400 years. The figure of about 6,000 years had already become well established locally and in the literature but is at odds with research performed by the speaker involving chemical analyses of the surface rocks along the track of the fire.

Briefly referring to an image of two Chinese pottery vases Paul Carr suggested that if they were of the Han dynasty and about 2,000 years old they would be very valuable, worth about \$14,000. But if they were Han dynasty-style jars, modern reproductions, they would be worth much less, only about \$100. The obvious question is how could such objects be dated accurately and the answer is that a laboratory can apply thermoluminescence (TL) dating.

The speaker then described the TL methodology which depends on measuring the accumulated radiation dose of minerals, particularly quartz, indicating when the mineral was last heated to a temperature in excess of 500°C. Heated minerals will lose all stray electrons but then will very gradually re-acquire them at a constant rate from natural radiation. By re-heating a sample slowly in an appropriate analyser it will emit a faint luminescence as the free electrons are expelled. The amount of energy emitted by the sample would be proportional to the length of time that the specimen had been lying on or in the ground since last being heated to 500°C. In the case of the Chinese vases the clay would contain small grains of quartz which could be analysed by TL and provide a reliable date of firing.

In researching the Mt Wingen site Paul Carr had taken samples from along the track of the fire and obtained a number of readings. Samples taken from the rear of the current area where there is still no vegetation gave an age of 420 years and a little further away of 1,310 years. However samples taken from the origin site seven kilometers away gave an age of 54,200 years. The speaker suggested that the discrepancy between his findings and what might have been expected may be due to the fact that the figure of about 6,000 years had been derived by ground observations over only 150 years since the 1850s.

There was no reason to suppose that the rate of progression of the Mt Wingen fire currently or over the last 150 years at about one meter per year has always been even. At times further in the past and due to local factors, depth of overburden, variation in the thickness of the seam, amount of prolonged rainfall over the ground above the coal excluding oxygen supply, the rate of fire progression may have been much slower at times and certainly not uniform over the entire period.

Finally Paul Carr pointed out that burning coal seams are not unknown around the World. There are several in America and one in Colorado has been burning for about four million years. How long fires might continue to burn would depend on local factors which would probably be quite variable over a long period.

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### FORTHCOMING EVENTS

### The 26th Annual LISMORE GEMFEST

Presented by the Lismore Gem & Lapidary Club Inc over the weekend of the 16th & 17th May 2015 in the Lismore Showgrounds

The 26<sup>th</sup> Gemfest is now in its 'Silver Jubilee' year and will be held as by now long-established in the Lismore Showground. The last Show in May 2014 saw a large number of dealers and over 130 stall-holders and tailgaters who displayed and provided minerals, fossils, cutting material, cut stones, jewellery findings, tools, machinery and finished jewellery.

'More than half of the trading is under cover, providing a safeguard against poor weather. There are also club displays and children's activities such as gem sieving. A variety of refreshments are available from several caterers. On site camping registrations are obtainable at very economical rates.'

Information: Postal enquiries to P.O.Box 743, Lismore, NSW 2480, General enquiries to Bruce Copper on 02 6688 8280 or e-mail: - <u>bcopper@bluemaxx.com</u>, Tailgate enquiries to Jan Thompson on telephone 02 6621 4703. or visit the Website www.gemclublismore.org.au.

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### THE WINTER GEMCRAFT & MINERAL SHOW

by the Canberra Lapidary Club

Held over Saturday and Sunday the 30<sup>th</sup> and 31<sup>st</sup> of May 2015 from 10.00 am to 5.00pm each day in the Mallee Pavilion in the EPIC park alongside Northbourne Avenue in Canberra.

Entry \$5 adults, \$10 family, \$2 children/concession.

Dealers in Minerals, fossils, jewellery, rough & cut gemstones, opals, beads, lapidary equipment & supplies, displays of member's collections.

For information: - www.canberralapidary.org.au

Email: canberralapidary@gmail.com Phone: 02 6260 5322

### **BATHEX 2015:**

### Over the 26th and 27th of September 2015

### In the Bathurst Showground

### THE BICENTENARY COLLECTABLES, GEM AND MINERAL EXHIBITION

'BATHURST REMEMBERS 200 YEARS OF HISTORY'.

'The event will be the largest exhibition of its type to be held in New South Wales during 2015. It is being organised by the Bathurst Stamp, Coin, Collectables & Lapidary Club to celebrate Bathurst's Bicentenary. A large number of displays are being organised by collectors and organisations from all over Australia'.

For further information: - www.bathursthistory.org.au or from the Bathurst Stamp, Coin, Collectables and Lapidary Club.

Secretary Alan McRae; P.O. Box 9156, Bathurst 2795. Phone (02) 63315404 or email *amcrae@lisp.com.au* Co-Ordinator BATHEX 2015:

Ernst Holland; Phone (02) 6337 3661 or e-mail ernst.holland@bigpond.com

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### WHITE CLIFFS GEMFEST AND CAR BOOT SALE

26th & 27<sup>th</sup> September 2015 In the White Cliffs Community Hall from 9.00am to 5.00pm Saturday and Sunday For further information contact Jane Stevenson on 0438 790 510, e-mail <u>wcma2015@hotmail.com</u>

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### **GEMKHANA 2015**

Saturday to Monday, the 3rd, 4th & 5<sup>th</sup> Of October 2015

The Annual Gem & Mineral Show and Competition of Lapidaries from all over NSW. Presented by the Gem & Lapidary Council of NSW Inc.

The Gemkhana is being held this year in the Hawkesbury Showgrounds off Racecourse Road (opposite the RAAF base), at Clarendon outside Richmond, over the October, (Labour Day), long weekend, the 3rd, 4th & 5<sup>th</sup> of October from 10.00 am to 5.00 pm on Saturday & Sunday, and from 9.00 am to 12 noon on Monday.

'Sales, Displays and Demonstrations of Jewellery, Gem Faceting, Gemstones, Gem Identification, Minerals, Gemstone Carving, Crystals, Fossils, Beads & Equipment.

Local and interstate Gem, Jewellery and Mineral Dealers, Raffle, Children's Activities.

Attractions for everyone of all ages, Refreshments, Plenty of parking.'

Contacts for inquiries: - Marilyn or John Behrens on (02) 9635 8218 or Arthur Roffey on (02) 4572 5812.

## The AUSTRALASIA JOINT MINERALOGICAL SEMINAR: TASMANIA 2015

The Joint Mineralogical Societies of Australasia will be holding their annual Seminar at Grindelwald, Tasmania this year between the 1<sup>st</sup> and 14<sup>th</sup> of November 2015 hosted by the Mineralogical Society of Tasmania Inc.

The provisional theme for the Seminar is: - What's new in Australian Mineralogy

The Seminar lecture program will be held over Wednesday and Thursday the  $4^{th}$  and  $5^{th}$  of November at Grindelwald, a resort near to Launceston, and there is an extensive program of field trips to collecting sites, visits to museums, mines and events including the Zeehan and Launceston Gem & Mineral Shows being planned over the period from the  $1^{st}$  to the  $14^{th}$  of November.