



# THE MINERALOGICAL SOCIETY OF NEW SOUTH WALES INC.

C/o School of Natural Science  
B.C.R.I. Parramatta Campus University of Western Sydney  
Locked Bag 1797 Penrith South DC N.S.W. 1797  
Website: [www.minsocnsw.org.au](http://www.minsocnsw.org.au)

## NEWSLETTER

**JULY 2009**

**The July Meeting will be held on Friday the 3<sup>rd</sup> of July 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.**

The program will commence with a talk to be given by Bruce Myles on : -

### **‘Zircons from Malawi’**

The talk will be followed by a lecture to be given by Graham Ogle on : -

### **‘Minerals of Mt Vesuvius’**

At the July meeting there will be a number of **Mineral Specimens on Sale** at \$5 or \$10 each. They are mostly from Australian locations including Broken Hill. The proceeds will go to the **Kids with Cancer** charity. Please bring your money and your generosity.

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## FORTHCOMING MEETINGS

Subject to circumstances some changes to the following schedule of program subjects and speakers may be made in due course.

August 7<sup>th</sup>: Society A.G.M. and the Betty Mayne Memorial Lecture to be given by Peter Williams on ‘The Sunny Corner Silver Mines’.

September 4<sup>th</sup>: Talk on ‘Scheelite in Australia’ by John Chapman and a lecture on ‘The History of Copper Mining in NSW’ by Dereck Dolstra.

October 9<sup>th</sup>, (Second Friday): Talk by Matt Sciberras on ‘Copper-Zinc Sulphate Minerals’ and a lecture by Geoff Parsons on ‘Gold, Copper, Oil and More’.

November 6<sup>th</sup>: Talk by Simon Hager on 'The Pharmacosiderite Group of Minerals'  
and a lecture by Paul Meszaros on 'Gold'

December 4<sup>th</sup>: Christmas Social and Swap n' Sell.

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## 2009 ANNUAL GENERAL MEETING

Members are hereby duly notified that the Meeting on Friday the 7th of August 2009 is the Society **Annual General Meeting** which will commence 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.

The A.G.M. will commence with the President's report for 2008/2009, the presentation of the annual financial statement and the election of the Society Committee and office-bearers for 2009/2010. In accordance with the Society Constitution the entire current Committee retires at the commencement of the A.G.M. and all positions are open for nomination and election. Any other business may also be raised and discussed. The Minutes of the previous 2008 A.G.M. were circulated in the September 2008 Newsletter. Copies of this will be available at the 2009 A.G.M. or may be obtained from the Secretary.

**Nomination forms for election to the 2009/2010 Committee are being circulated with this Newsletter.** Further copies may be obtained from the Secretary if required. According to the Society Constitution nominations should be received before the commencement of the A.G.M. and it would be at the discretion of the A.G.M. chairperson whether to accept any further ones being presented after the Meeting has started. Only financial and Honorary Life members of the Society are eligible for nomination or allowed to participate in any voting.

Any members who feel able to serve on the Committee are urged to discuss this with any of the current Committee members and to make known their availability for nomination at the A.G.M. A member can be nominated for but cannot hold more than one position.

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## THE SOCIETY COMMITTEE

PRESIDENT:	Arthur Roffey	Tel: (02) 4572 5812
VICE-PRESIDENT:	Gary Sutherland	Tel: (02) 9871 1379
SECRETARY:	George Laking	Tel: (02) 9636 7145
	E-mail: <a href="mailto:bglaking@tech2u.com.au">bglaking@tech2u.com.au</a>	
TREASURER:	Jim Sharpe	Tel: (02) 9871 2502
COMMITTEE MEMBERS:	John Chapman	Tel (02) 9808 3481
	E-mail: <a href="mailto:chapmanjr@optusnet.com.au">chapmanjr@optusnet.com.au</a>	
	David Colchester	Tel: (02) 9449 3862
	Dieter Mylius	Tel: (02) 9477 1060
	Graham Ogle	Tel: (02) 9876 5224
	Peter Williams	Tel: (02) 9685 9914

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## JUNE MEETING

At the commencement of the June Meeting the Society President, Arthur Roffey, gave a brief report on the **32<sup>nd</sup> Joint Mineralogical Societies Seminar** held the previous weekend in Brisbane. The Seminar was attended by eight members from New South Wales, most of whom were among the speakers at the event. The Seminar was very well organised and the lectures were also very good and educational with a substantial variety of subjects presented. The subjects included lectures on the minerals of the Lake Chillagoe area and of the Franklin and Sterling mines in New Jersey; on how to transport a collection; on historical mining lamps and lighting methods in early mines; on Queensland Gem Minerals; and on the complex uranium minerals of Lake Boga in Victoria. This last lecture by Bill Birch had been presented in précis on an ABC radio programme the previous evening.

The President reminded members that the **mineralogical microscope** donated to the Society by Arthur McLean was always available for borrowing by any member, subject to notifying or arranging with the Librarian, David Colchester, that the member wished to borrow it. The microscope would be brought to each Meeting by the person who borrowed it for the previous month and would be available to hand over to the next borrower.

John Chapman asked the members at the Meeting for an indication of interest in mounting **field trips** to tour sites of predominately **geological significance**. Due to the scarcity of accessible specimen collecting sites it had been suggested that possibly members might be interested in joining a tour of geological sites which would involve examining geological formations and land forms but not specimen collecting. One such tour could be a day trip to **Wollongong**, the **Kiama area** and the **South Coast** and which could effectively follow in the footsteps of the Reverend W.B. Clarke. Another tour could be to the **Mudgee** area with possibly access into the Kandos quarry and other sites. In view of the greater distance from Sydney this tour would have to be a two-day trip. Even further afield a trip to the **Garrawilla / Tambar Springs** area could be considered which hopefully should also present some collecting opportunities. This would probably have to be a four-day trip.

A Society visit to **Kulnura quarry** north of Sydney was always a possibility, John Chapman was keeping contact with the company and subject to the quarry operations exposing a mineralized alteration zone a trip could be organised at short notice. Yet another possible trip destination was **Mineral Hill** in the Condoblin area, also a three to four day trip although visitors would probably have to search and work hard to find specimens there. Since a substantial number of members at the Meeting indicated that they would be prepared to attend purely geological trips John Chapman advised that he would set about working out a trip program.

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With no more announcements to be made the President asked Jim Sharpe to deliver the first talk for the evening on : -

### ‘Malachite, Azurite, Chrysocolla and their Pseudomorphs’ by Jim Sharpe

see “Meeting Talks” section of website for summary

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The second speaker for the evening was David Colchester who was to speak on the Burra Copper Mine in South Australia which was the largest mine in this country for the peak period of its operations. The speaker has provided notes on his lecture as follows.

## BURRA. THE MINE AND THE TOWN

By David Colchester

In response to a suggestion that more talks on historical subjects should be presented at Society meetings it was suggested that I give a talk on the Burra copper mine and the township of Burra because I had lived in the town and had worked in the surrounding area. As you all know the Burra copper mine is well known to mineral collectors for its beautiful malachite and azurite specimens.

The history of the Burra copper mine and the township of Burra has been extensively documented in the print literature notably by Ian Auhl who was at one time the principal of the Burra Primary School. The history of the mine and the town is also well reviewed on the Internet.

The Burra copper deposits are located 160 km north of Adelaide and lie within a major structural unit called the Adelaide Fold Belt. This fold belt consists of folded and faulted rocks of Upper Proterozoic age and they form the Mount Lofty Ranges to the south and the Flinders Ranges to the north. An interesting feature of the Adelaide fold belt is the presence of numerous diapirs. These are regions of intensely folded and fractured rocks and they usually occur in the cores of the folds and are often associated with mineralization.

You may find it interesting to know that Burra creek which flows through Burra township was once part of the Murray River system which used to cross the Northern Mount Lofty Ranges through the Burra creek gorge and then out to Spencer Gulf. The Murray River was diverted south at Morgan during Eocene times, about 50 million years ago by fault movements and uplifting of the fold belt.

Copper ore was discovered in Burra creek on the 9th June 1845 by a shepherd, William Streair and shortly after another shepherd, Thomas Pickett, discovered a copper ore outcropping a few km to the north of Streair's find. Within days this caused a great flurry of activity and wheeling and dealing in Adelaide. At this time land outside the settled areas had to be purchased in 20,000-acre rectangular lots at a £1 per acre. Careful surveying showed that the two copper ore outcrops could be included in one lot. To come up with the cash two consortia labeled the "Snobs" and the "Nobs" combined to raise the necessary purchase price of £20,000. The deadline set by the governor of South Australia for the sale to go through was midday on the 18th August. They only just made it, with the last £800 in gold sovereigns being delivered to the South Australian Treasury in a wheelbarrow as 800 gold sovereigns would weigh 24.88 kg !.

Once the land had been bought it was necessary to divide it into northern and southern halves. Lots were drawn on the 20th September with the Nobs, a group of capitalists, getting the southern block and the Snobs a consortium of shopkeepers and small business men getting the northern half. Nine days later the Snobs started mining what was to become the Burra Burra or Monster mine. The Nobs mine was named the Princess Royal. The Snobs got the better deal.

To preempt a question you may ask: why the term 'Snobs' and 'Nobs'. Up to a couple of weeks ago I did not know, but one evening when I was driving back home from here I had the car radio tuned to the ABC news radio station and Kel Richards who frequently discusses the etymology of words and phrases on this station just happened to talk about nobs and snobs. Apparently years ago when you enrolled at a university the term nob or snob was placed after your name on the class lists. Nob was a contraction of the word nobility and snob a contraction of the Latin phrase sans nobility.

The Burra mine is situated on a low hill just to the west of the Burra township. The country rock is composed of dolomite and minor siltstone. It is part of the Skillogalee formation of Upper Proterozoic age and encloses a small diapir. Within this diapir and between two faults which cross it lies the orebody. These two faults are named the Kingston and Tinline faults. Besides contorted and fractured masses of country rock the diapir also contains a mineralized porphyry of possible early Paleozoic age. It was thought that this porphyry may have been the source of the mineralization but a recently determined age date on the mineralization of 797 million years shows that it pre-dates these intrusive rocks. A geological cross section through the mine and orebody shows that the orebody does not extend more than 150 m below the surface.

A list of minerals found at the Burra mine shows that the mineral assemblage consists of the usual gangue minerals and there are no unusual ore minerals. The mine, however, is notable for the size and quality of the malachite and azurite it produced rather than the variety of its minerals. About 15% of the copper is chrysocolla. (A number of specimens from the Burra mine were displayed on the front bench at the Meeting.) It is interesting to note that libethenite was not recorded from the mine until the second stage of mining proceeded in the 1970's. The malachite occurs as compact concentric banded material found filling fractures in the breccia and where there were cavities, mammilated surfaces having a high luster developed. Crystals of malachite 1-2 mm also occur. Azurite occurred throughout the mine but was most common at the bottom of the open cut. The usual habit was clusters of bladed crystals having a royal blue to blue black colour.

The Burra town council used to have its office in the Town Hall and one room there contained a display of mineral specimens from the mine worthy of permanent display in any museum. In 1970 the council moved their office to another location and the display disappeared.

There were two phases of mining operations and 2.7 million tons of copper ore have been extracted from the mine during two phases of operations. The first stage operated from 1845 to 1877 and for about 10 years it was the largest copper mine in the world. It attracted many Cornish and Welch miners and their distinctive architectural styles can still be distinguished in the mine buildings and houses in the town. For example the Cornish built round chimneys and the Welch square ones. The mine began as an open cut but it soon went underground.

When the workings reached the water table, pumps were installed. The engine to drive the pumps was installed in a large building called Morphetts engine house which was restored in 1986 and can be inspected today. The engine required a very large boiler to drive it and this was made in Adelaide and dragged to Burra on a specially made jinker drawn by a team of 40 bullocks. For many years this jinker was on display in a shelter by the main road near the swimming pool. The wood fuel needed to fire the boiler denuded the surrounding hills of their trees. The effect can still be seen today in the bare hills surrounding Burra.

The mine site remained dormant for nearly 100 years before the second phase of mining was begun. It was an open cut operation which began in 1969 and ended in 1981. To overcome the water problem SAMIN, the company mining the orebody, excavated the ore quickly and stockpiled it for processing. The method of extraction used a novel ammonia leaching process to extract the copper.

Copper oxides and carbonates react with ammonia solution forming an intensely blue copper amine complex which is soluble in water. It was an extractive metallurgical process that had not been used on an industrial scale previously and it worked perfectly for cuprite, malachite and azurite but unfortunately not for chrysocolla which made up more than 15% of the ore. To overcome this problem the ore was first roasted before leaching using gas from the Moomba-Adelaide gas pipeline which fortuitously passed within a few hundred metres from the mine.

The township of Burra now has a population of 2200 but in its heyday its population was greater than that of Brisbane and Perth combined. The town has quite a picturesque atmosphere about it and there are a number of historically interesting sites that can be visited. For instance there is the Redruth gaol which used to be a prison for 30 men and was later a prison for women. The gaol was the site of the trial in the film Breaker Morant. The rest of the film was filmed just to the east of Burra.

During the boom times many miners made dugouts to live in and they stretched for 5 km along the banks of the Burra creek and accommodated up to 1600 people. Remains of some of these dugouts still exist. They would have been quite comfortable to live in as they would be thermally insulated and as summer temperatures can stay above 40 C for several weeks and then in winter the frosts are severe. A very early example of Australian company built housing is Paxton Square which consists of a row of cottages fronting three sides of a block.

About 10km east of Burra is the Mongalata gold mine. In 1970 it was just an adit about 75 m long dug into the side of a hill and marked by an abandoned 10 head stamp battery. It has since been reworked and some beautiful gold specimens have been extracted from it.

Some notable people have come from the district around Burra, probably the most notable was Sir Hubert Wilkins, an Antarctic explorer who comes from Mt Bryan East just a few kilometers north of Burra.

David Colchester  
June 2009

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## FORTHCOMING EVENTS

### BLAXLAND GEM & MINERAL CLUB GEM SHOW

Over Saturday and Sunday 15th and 16<sup>th</sup> of August 2009. 8 am to 4 pm Daily

In the Glenbrook Community Hall, Great Western Highway, Glenbrook, NSW  
(Next to Glenbrook Theatre), Just west of Information Centre.

<http://www.freewebs.com/blaxlandgemmineralclub/BGMCshow.htm>

Displays of lapidary work and gem, mineral and crystal sales.

Refreshments available. Entry: Adults: \$3.00, Children \$1.00.

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### CARLINGFORD GEM & MINERAL SHOW

Being held over Saturday and Sunday the 22<sup>nd</sup> and 23<sup>rd</sup> of August 2009 in the **Roselea Community Centre**, Pennant Hills Road, Carlingford.

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### GEMKHANA 2009

Goulburn Showground & Recreation Area  
Braidwood Road, Goulburn

Over the October long weekend, Saturday to Monday October 3<sup>rd</sup> to 5<sup>th</sup>.

Saturday and Sunday open from 10.00 a.m. to 5.00 p.m., Monday open from 9.00 a.m. to 12 noon.

Featuring: Competitions, Exhibition, Displays, Dealers, Tailgating, Demonstrations and Field Trips.

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GEMFEST at the Sapphire Gemfields, Central Queensland.

Friday to Sunday, August 6<sup>th</sup> to 9<sup>th</sup> 2009.

[info@gemfest.com.au](mailto:info@gemfest.com.au) or [www.gemfest.com.au](http://www.gemfest.com.au)

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## THE MINERALOGICAL SOCIETY OF N.S.W. INC

NOMINATION FORM FOR ELECTION OF OFFICE-BEARERS

AND COMMITTEE MEMBERS FOR 2009/2010

POSITION	Name of Nominee (Please print)	Signature of Nominee
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OFFICE-BEARERS:

PRESIDENT	.....	.....
VICE-PRESIDENT	.....	.....
SECRETARY	.....	.....
TREASURER	.....	.....

COMMITTEE MEMBERS

MEMBER	.....	.....

PROPOSER:

Name (Please print):	.....
Signature:	.....
Date:	.....