



THE MINERALOGICAL SOCIETY OF NEW SOUTH WALES INC

C/o School of Natural Science
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NEWSLETTER

MAY 2013

The May Meeting will be held on Friday the 3rd of May 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.

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 7.30 p.m. sharp and after any announcements the auction will commence immediately and will probably last about two hours.

A list of **94** specimens to be auctioned will accompany this Newsletter. Specimens will be on display for examination from 7.00 p.m.

Members bringing in minerals to sell at the auction should arrive well before 7.00 p.m. to lay out the specimens for inspection by buyers. The specimens should be clearly labeled with the owner's name as well as the species and the locality and before the sale commences specimens will be allocated the auction number corresponding to the accompanying list.

Prospective buyers should also arrive well before the sale commences to allow time to examine the lots and members who wish to bid will be allocated a bidding number. Please make sure you are given one.

Transactions must be by **CASH ONLY** and paid directly to the vendor at the completion of the auction. There would be no cost to sellers, the Society will take no commission on sales, will not handle any money and will not take responsibility for ensuring transactions are completed or enter into any disputes should they arise. There will be no reserve on specimens but if a vendor is dissatisfied with the final bid, he or she can make a higher bid themselves in order to retain the specimen.

A SILENT AUCTION will also be held. Members may bring a mineral or trays of minerals to sell and place them on a table at the rear of the Meeting room. They should write their name on the tray or trays and on a bid form for each tray which will be provided. Bidders may examine the trays during the auction and then write their name and bids on the bid form, the highest bid by the end of the evening obtaining the tray. There is no need to notify details beforehand of the minerals in the trays, just bring them to the meeting, register, and place the Silent Auction bid form on your box.

FORTHCOMING MEETINGS

Meetings will be held on the first Friday of each month this year except in June when the Society General Meeting has been cancelled because of the **Seminar** being held that month and October when the Meeting will be deferred to the second Friday because the first Friday is before a long weekend.

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

June 7th: The Society General Meeting has been cancelled for this month.

June 8th to 10th: **National Mineralogical Societies Joint Seminar.**

‘The Wonderful World of Minerals’

To be held in the Ryde-Eastwood Leagues Club, Ryedale Road, West Ryde.

July 5th: **New Guinea Gold** by Michael Waterhouse

August 2nd: Society AGM and the Betty Mayne Memorial Lecture.

September 6th: The program is not yet finalized but may include a lecture on **Skarn Minerals** or **Pine Ridge Cassiterite**.

October 11th: (The first Friday in October is before a long weekend and the Society Meeting will therefore be deferred to the second Friday).
Member’s display of their favourite fluorites. Talk on **Fluorite** by Gary Sutherland.

November 1st: The program is not finalized but may include the lecture by George Stacey on –
‘Mt Isa - **The Mine in the Spinifex**’

December 6th: Annual Christmas Social and ‘Swap n’ Sell.

WELCOME

Welcome to new Society member Rob Barnes of Windella

2013 MEMBERSHIP SUBSCRIPTIONS

and PERSONAL ACCIDENT INSURANCE

Members are advised that registering all Society members for Personal Accident Insurance is dependent on their being financial members of the Society by March 31st. A number of reminders including to individuals were sent out in the first three months of this year and if any members failed to pay subscriptions by March 31st they cannot be insured until the subsequent September 1st when the next insurance year commences. The insurance year runs from Sept 1st each year with a full six months period of grace provided for members to pay their subscriptions and become financial but if this is not done by the end of the six-month period the member would be uninsured.

The SOCIETY COMMITTEE

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APRIL MEETING

At the commencement of the April Meeting there were a few announcements. Graham Ogle addressed the Meeting urging members to seriously consider attending the forthcoming **National Mineralogical Societies Joint Seminar** in June. Referring to previous Seminars, the last one in Sydney having been in 2006, Graham advised that in his experience he had found the entire program fascinating. The talks were very interesting and whilst some were a little more technical, others were more general and the whole event had been well worth attending.

The fourteen speakers scheduled for the forthcoming Seminar included several academics from interstate, Ian Plimer, Dermot Henry and Bill Birch of the Museum of Victoria, Ralph Bottrill from Tasmania and Rod Martin from New Zealand. As could be seen from the program on the registration forms, the speakers were covering a wide range of subjects. The Society had arranged to hold the Seminar in the **Ryde-Eastwood Leagues Club** which the Committee had examined and found to be very adequate, comfortable and easily accessible. The Seminar fees had been set at \$80 for attendance which as well as the fees to the Club for the convention room hire also included morning and afternoon refreshments and lunches on the two days, Saturday and Sunday. The Seminar dinner, traditionally held on the Saturday evening and always a pleasant social event would be an extra \$45.

Jim Sharpe addressed the Meeting to remind members about the forthcoming **Mini-Auction** at the May Meeting advising that it was important that everyone made an effort to make the evening interesting and urged members to look to sorting out any surplus specimens to bring them along. The annual Auction was obviously very popular with members but Jim was concerned that there should be a substantial variety of specimens. Ideally he would like to see a smaller number of specimens from a larger number of people, which would make the evening so much more enjoyable. Anyone with specimens to sell was asked to contact Jim Sharpe with the information preferably a week or two before the sale so that a list could be prepared.

Vicki Golin spoke to the Meeting about the **Field Trip** held in March to **Airly Mountain and Mount Knowles**. The party had a very enjoyable time being hospitably received on the first day by Col Ribeaux at his property under Airly Mountain and then taken up via an extremely rugged track on to the top. There were tremendous views in all directions with the party spending some of the time walking along one of the tracks across the top in a valley strewn with huge tree ferns before settling down on the processed diamondiferous gravel patch to look for 'precious stones', quite a few grains being found.

After a pleasant evening picnic-style dinner by the river in Mudgee and an overnight stay in comfortable cabins in one of the town camping grounds the party visited the Mt Knowles quarry the following day. A rewarding amount of calcite, dolomite and quartz specimens were found but only one specimen of the ranceite-related mineral for which the site has been notable. The visit to the quarry was not the first one made by the Society and a few years ago another trip had found a number of small specimens of the ? ranceite but in the interim the pile of rock containing the mineral had been processed. Accordingly David Colchester was lucky to have found one specimen on this trip.

Dieter Mylius next drew member's attention to a number of mercury minerals that had been brought to the Meeting room to display in order to complement the lecture on **Mercury Mining in Australia**. Meaghan McKinnon had brought a tray of historic specimens mostly of cinnabar, some of which had been exhibited in the 1893 World's Fair Columbian Exposition in Chicago.

Peter Williams was asked to introduce the speaker for the evening and commenced by suggesting that Professor McQueen effectively needed no introduction since he had lectured to the Society on a number of previous occasions. He had always delivered detailed and interesting lectures on various aspects of mineralogy and geochemistry and also on the history of mining in Australia reflecting his deep interest in that subject. He is a very fine geochemist and a leader in the C.R.C. L.E.M.E. (the Co-operative Research Centre for Landscape Environments and Mineral Exploration) programs for developing new methods of prospecting for and locating orebodies in deep strata.

Professor McQueen has published many articles on aspects of his work and notably in relation to his lecture this evening had published an article with the thoughtful title; '*Mercury Mining: A Quick History of Quicksilver in Australia*' in the **Journal of Australasian Mining History, Vol. 9, September 2011**. The speaker had brought a number of copies of the article to the Meeting and invited members to take them for a small fee to be given to the Kids with Cancer charity. Members wishing to learn more about the history of mercury mining in Australia would be well served to refer to the article.

‘Mercury Deposits and their Historic Mining in Australia and New Zealand’

Professor Ken McQueen

Professor McQueen initially advised that whilst his lecture this evening was to deal mostly with mercury mining in Australia it so happened that he had visited New Zealand last year to examine a few small deposits in that country and would also refer to these in the course of his lecture. The lecture was extensively illustrated by a series of historic images of maps and diagrams of the mining areas, mines, miners, processing plant and equipment and minerals referred to by the speaker as well as the minerals which had been brought in to display. A number of the images had been taken more recently by the speaker showing the remains of the mining areas, dumps, shafts, buildings and countryside.

In the past mercury has had much greater significance than today when it is being progressively phased out of use for most purposes because of its toxicity and environmental considerations. Historically mercury has had a wide number of uses, from thermometers and barometers, dental amalgam, preparing felt material particularly for hats, medical uses before the advent of antibiotics and the sulphide has been used as a pigment. It is used for electrical switches and in low-energy mercury vapour fluorescent lamps which contain from one to five micrograms of mercury per tube. Mercury has been used extensively as an explosives detonator, accordingly being more important in wartime and inevitably in times of war it became a strategic material. Up to the latter part of the last century mercury fulminate was the main material used in explosive primers and detonators for cartridges and shells. It has particularly been used in the past in large amounts for extracting gold and silver from ores. Apart from the gold industry one of the main uses of mercury up to very recently has been in the production of chlorine and caustic soda by the Castner-Kellner electrolytic process although this use is also now being phased out.

Whilst major gold-producing areas have phased out the use of mercury for gold production there are a number of places in the World still making substantial use of it, such as in the more backward areas of Indonesia, Brazil and Africa with probably serious effects on the health of the people and local environment. The speaker had visited a site in Sumatra where gold was being recovered by mercury amalgamation and observed the miners treating the collected amalgam by instead of distilling the mercury off in a retort and collecting it they just applied a blow-torch to the amalgam to drive off the mercury as vapour which would drift everywhere.

The main mercury mineral is cinnabar, mercury sulphide. China and Kyrgystan are the largest producers in the World with current production at a little under two thousand tonnes. Australian deposits are relatively rare and fairly small and Australia's contribution to World mercury production historically has been less than miniscule with recorded total production of only seventeen tonnes. However since gold production in Australia has been so important the need for mercury in the past has been substantial so much so that in the early 1900s the New South Wales colonial government offered a £500 reward for the first company that could produce fifty thousand pounds (lbs) of mercury. Large amounts of imported mercury were in use in Australia in the gold extraction industry up to the 1950s.

Geochemically mercury is classed as a precious metal but interestingly it has had a very fluctuating price history and the speaker showed charts indicating the marked price changes over the years. Because of the military significance of mercury substantial price rises have inevitably occurred during wartime. The charts showed price ‘spikes’ over 1914-1918 and 1939-1944 of up to US\$200 per flask, compared to about US\$50 in the early 1900s but particularly showed rises to over US\$500 per flask through the 1960s. (A flask of mercury is about 76lbs). Another factor influencing the price however has been at least partially due in the past to the market control exerted by just a few major producers.

Starting in the late 1700s the Rothschild family has had a big interest in mercury and largely controlled the market through to the late 1900s due to their involvement with the major producers, Almaden in Spain and the Idria company in Slovenia.

Moving to describe the occurrences of mercury in Australia Professor McQueen indicated on maps where these were. Small amounts of mercury have been found at Kalgoorlie due to the decomposition of mercury tellurides but most mercury deposits in Australia have been in the east. There were a number of small deposits but the speaker would be dealing with only the main three.

Mercury was first found in Australia in 1843 in the Cudgegong River area, west of Rylestone in New South Wales with the Rev W.B. Clarke being shown some samples of ore containing small globules of mercury. He was a little skeptical of the find since he suspected that the mercury may have spilt from some explorer's barometer and the find was not regarded as significant. By 1868 other finds were made in the area by gold prospectors who started finding small amounts of heavy red material in their gold pans. Samples were sent to an analyst, Samuel L. Bensusan in Sydney, who pronounced them to be cinnabar and noting that the prospectors were not very impressed sent a fellow to examine the site to take out a lease and mining on a small scale commenced that year. The Cudgegong cinnabar was in an alluvial deposit in an old river channel and the presence of any sulphide would be unusual but cinnabar is relatively chemically very stable and will collect as alluvium.

After some production of mercury from the Cudgegong deposits had commenced W.B. Clarke came back to say that well, yes, he had previously noted the presence of mercury in the area.

Kilkivan near Gympie in Queensland has been the largest producer of mercury in Australia and deposits were initially found in 1872 when a shepherd working on a property owned by J.D. Mactaggart picked up a red stone noting that it was quite heavy and later analysis showed it to be cinnabar. As a consequence Dan Mactaggart, a nephew of the property owner and two associates took out a 240 acre lease and gradually other groups also took out leases in the area opening up a number of shafts and cinnabar mining started up. The Kilkivan area is an interesting mineral field according to the speaker who showed a number of images of the area today with remains of the mining work seen as well as many historic images of the field and mines when it was in production and some images of the people involved. Maps indicated the number and names of mines and shafts and since the area also contains some gold and copper mineralization the location of these deposits was indicated. Professor McQueen was also able to point out to the Meeting a specimen from the Bloodworth mine which was among those which had been brought in to display. Images were also shown of specimens now in the Kilkivan Museum.

One of the companies set up to work several leases in the Kilkivan area was the Wide Bay and Gympie Cinnabar Company. Two brothers, Samuel L and William Hester who had worked in the Californian mercury mines and gained experience there and a Captain W.H. Eldred took over the company and commenced operations. Images were shown of the fairly small-scale processing initially conducted. This involved roasting the cinnabar ore with lime in sealed iron retorts with an exit pipe cooled by circulating water. The heating generated sulphur dioxide and mercury vapour, the sulphur dioxide being neutralised by the lime to form gypsum and the mercury vapour condensed in the exit pipe. There was no difficulty in finding a ready nearby market for the small amount of mercury being produced which was sold to gold mines in the Gympie area. Since development capital was difficult for companies in the area to attract the Hester brothers were gradually able to buy up other leases and acquire access to more deposits.

In 1881 an investor in the person of one William Drogo Montagu, Duke of Manchester, visited Australia with a view to investing in pastoral and mining properties. One of the areas he visited was Kilkivan and after looking around decided to form a company to work the leases, many of which were to

be bought from the Hester brothers. This was the Quicksilver Estates Company which was floated in 1886 with a nominal capital of £400,000. After the company had been operating for a while the Duke came out for another visit in 1888 and the event was sufficiently notable for the Town and Country Journal to arrange to send one of its journalists with the Duke, accompanying him from Maryborough to Kilkivan in the Duke's special private train with one personal carriage. A few images of the journalist's sketches of some of the shafts and mine workings were shown.

Mining did not go too well since by 1888 the company had spent about fifteen and a half thousand pounds basically on setting up and other expenses and had only produced nine flasks of mercury worth then £82. Some legal problems arose for the company geological consultant who was charged with obtaining money under false pretenses and although he was acquitted the episode would have left a degree of stigma. The consultant headed back to England but was killed in the wrecking of the Quetta ship off Thursday Island in early 1890. The Duke himself died in March that year so with the poor performance from the mining work the Quicksilver Estates Company declared itself bankrupt in September 1890 and its leases were all bought back by the Hester brothers who re-commenced their mining on a much smaller scale. They continued working the Kilkivan mines fairly profitably up to 1892 when due to falling prices operations ceased completely.

In the 1930s there was a brief revival of mining in the Kilkivan area with some new alluvial deposits being found around the Commotion lode and small-scale processing conducted for a few years.

In 1890 a prospector named William Kelly discovered cinnabar at Horseshoe Bend near the Clarence River to the north-west of Grafton. In 1895 there was a larger find made a little further north on Yugalbar Station, also on the Clarence River, with some exploratory work continued and by 1899 the Great Australian Quicksilver Mining Company was formed to acquire all the small leases and work the deposits. After some time it had produced over 7,000 lbs of mercury. Some years earlier in the 1870s a few small copper mines had been opened up in an area near Pulganbar Creek some twenty klm south of Yugalbar and in about 1908 a miner named Archie McLean there recognized that there was also cinnabar in some of the ore. This sparked up interest in recovering mercury from the deposits rather than copper which was quite low-grade. The Pulganbar mineralization occurs in granodiorite veins.

Accordingly in 1908 the Pulganbar Mineral Prospecting Company was floated to bring together the various copper leases, now known to contain mercury, and initially set up a small retort to process ore. The retort cracked after only a short time running it and due to mercury vapour leaking out some of the workers had to be taken to Grafton hospital to be 'de-quicksilvered'. In hoping to be able to claim the £500 reward then being offered by the New South Wales colonial government for the first company to produce 50,000 lbs of mercury the Pulganbar Mineral Prospecting Company amalgamated with the nearby Clarence River Copper Mining Company to form the Pulganbar Quicksilver and Copper Mining Company Ltd. The new company then set about building a much more elaborate continuous-operating furnace reducing plant to process ore. Professor McQueen spent a little time and by referring to images, described the construction and operation of the reducing plant which was opened in early 1914. As well as recovering mercury by condensing the vapour the process would produce sulphur dioxide which converted to sulphuric acid could have been used to dissolve the copper out of the roasted ore and recover it also but this may never have happened.

The whole operation turned out to be disappointing. The company mined about two thousand tons of ore and treated about 680 tons for a return of about 1,280 lbs of mercury. There was obviously something wrong with the processing since the ore had assayed at up to 5% mercury but was giving a recovery about 0.1%, at least ten times less. After some consideration it was apparent that the condensing was not adequate and that much of the mercury was escaping up the chimney or condensing there and in view of its considerable density was seeping its way down into and through the bricks in the bottom of

the structure. The company continued processing for a while longer but had discontinued production by 1916.

Reportedly when a mercury reduction works in California was closed down and dismantled workers in digging into the foundations of the plant discovered a large pool of mercury soaked into the ground immediately below. Professor McQueen did not know if the ground under the Pulganbar plant was ever dug up and examined.

Referring to New Zealand the amount of deposits and production has been worse than Australia. A map was shown of three sites, all in the North Island, the two main ones for mercury production being Puhipuhi and Ngahwa and the third site, Karangahaki Gorge where a smaller amount of mercury was produced from the Ascot mine. Puhipuhi produced about 27.8 tons of mercury around 1925 with another burst of production during the 1939-1945 war and Ngahwa around 1934 produced about 18 tons with again a small burst of production during the war.

In visiting the Ngahwa deposits the speaker found that they sit in an area with a number of active hot springs and a very cratered landscape and a number of views of the springs and bathing pools were shown. The resort is run by Maoris and in asking one of the older attendants what he knew of mercury mining in the area was promptly told that 'There's no mercury around here'. Only for the speaker to notice a short time later that one of the nearby bathing pools was named the Cinnabar Pool!, suggesting that there was, or had been, mercury to be found.

Professor McQueen finally described his visit to Puhipuhi much of the workings of which have been overgrown with vegetation although the scale of operation had been sufficiently large to leave a lot still to be seen. The working had started off as an underground mine in the 1920s but after a while was converted to an open pit. Mining did not continue for too many years but was revived again during the 1939 – 1945 war when a number of rough labourers regarded by locals as draft dodgers were brought in to resume mining. A New Zealand government decision taken during the war and not generally known about by many people was to implement a scorched earth policy in the event of a Japanese invasion. The mines at Puhipuhi were on a 'The Denial of Resources' list and were scheduled to be blown up. The speaker speculated that implementing the policy would have involved scattering puhipuhi everywhere!

On this note Professor McQueen who had provided a lecture interspersed with a number of other humorous observations and comments concluded and dealt with a number of questions.

FORTHCOMING EVENTS

The 23rd Annual LISMORE GEMFEST

Presented by the Lismore Gem & Lapidary Club Inc

Being held over Saturday and Sunday the 18th & 19th of May 2013 in the Lismore Showground.

Opens 9 am – 5 pm Saturday, 9 am – 3 pm Sunday.

'Handcrafted jewellery, Gemstones, Minerals, Healing Crystals, Fossils, Meteorites, Undercover displays and stalls, Great bargains for Rockhounds, Children's activities, Lapidary craft demonstrations'

'This event was hailed in the Gold Gem and Treasure Magazine October 2012 issue as the best and largest gem and crystal show in Australia by patrons who attend other interstate shows and Gemborees. We already have the dealer hall fully booked with 26 dealers and expect in excess of 130 tailgaters from various parts of Eastern Australia including ACT, NSW, QLD and VIC. We had a large number of visitors including collectors from NZ and the USA'.

'Anyone intending to visit NSW prior to the Seminar in June should take note that the LISMORE GEMFEST is held only a couple of weeks before the June long weekend and more than rivals the Gemboree. Accordingly interstate/overseas visitors might like to incorporate Lismore in their itinerary and perhaps also the New England/Hunter areas prior to the Seminar.'

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

THE 36th NATIONAL MINERALOGICAL SOCIETIES JOINT SEMINAR 2013

The 2013 Seminar is being hosted by the Mineralogical Society of N.S.W. Inc in Sydney over the Queen's Birthday long weekend, Saturday 8th to Monday 10th of June 2013 on the theme : -

'The Wonderful World of Minerals'

The Seminar will be held in the Ryde-Eastwood Leagues Club, Ryedale Road, West Ryde, Sydney. The Leagues Club is in the corner of Wattle Street with Ryedale Road about one hundred meters from the West Ryde suburban railway station and two hundred meters from the junction of Ryedale with Victoria Road.

Most Seminar activities will be held in the Club which has substantial convention and catering facilities. Activities will include the Seminar dinner on Saturday evening 8th of June and mineral and micro-mount displays on Monday the 10th of June.

Activities to be held away from the Club will include a field trip to Kulnura Quarry for zeolite collecting on Tuesday the 11th, Australian Museum mineral collection visits arranged for Monday the 10th and private collection visits, to be arranged but probably also on Monday.

Seminar Registration forms with preliminary program information including information for Interstate visitors and attendees from outside Sydney about suitable accommodation in the West Ryde area have been distributed by e-mail. Hard copies will be available at the General Meeting or from the Secretary, George Laking, and are also available through the Society Website.

WINDSOR JEWELLERY, BEADING, GEM & MINERAL SHOW

Saturday & Sunday, June 15th & 16th
At the Windsor Function Centre on the corner of Dight & Macquarie Streets, Windsor.
Next door to Windsor Public School.

Saturday open from 9.30 a.m. to 5.00 p.m. & Sunday from 9.30 a.m. to 4.00 p.m.
Admission \$5, children \$1. Light refreshments.
SALES of jewellery, gemstones, beads, opals, mineral specimens from all over the world,
tools and equipment for lapidary and beading work, metaphysical and healing crystals.
Inquiries to Peter Beckwith on 0412 333 150.

Other shows by the above exhibitor through 2013 are : -

24th & 25th of August at the Panthers Club, Penrith, (more information to follow).

23rd & 24th of November, Windsor Function Centre, Windsor.

GEM SHOW by the BLAXLAND GEM & MINERAL CLUB

Over Saturday and Sunday, the 1th and 18th of August
Being held in the Glenbrook Community Hall, Great Western Highway, Glenbrook, NSW
(Next to Glenbrook Theatre). Just west of Information Centre.
Displays of lapidary work and gem, mineral and crystal sales. Refreshments available.
<http://www.freewebs.com/blaxlandgemmineralclub/BGMCshow.htm>
8 am to 4 pm Daily. Entry: Adults: \$3 Children \$1

GEMKHANA 2013

In the Showground at Mudgee over the long weekend Saturday October 5th - 10.00am-5.00pm;
Sunday October 6th - 9.00am-5.00pm; & Monday, October 7th - 9.00am to midday.

'The competition brings entries from all across NSW and quite a few from interstate.
Dealers and tailgaters will attend. We will have children's activities. Refreshments will be available.
There is wheelchair access and plenty of parking. On-site camping is available
Contacts are Arthur 02 4572 5812, Marilyn 02 9635 8218,
www.gemlapidarycouncilnsw.org.au for info and link to secretary.'

Parramatta-Holroyd Lapidary Club Annual Exhibition

Friday 8th, Saturday 9th and Sunday 10th of November. From 9am to 4pm each day
At the Club Rooms at 73 Fullagar Road, Wentworthville, Sydney.

'Competition, sales, demonstrations, children's activities, sand sieve,
fossicking heap, refreshments. Wheelchair access and plenty of parking
Contact the Club on 02 9636 7843.'
