# THE
# MINERALOGICAL SOCIETY
# OF
# NEW SOUTH WALES INC.

C/o School of Natural Science
B.C.R.I. Parramatta Campus University of Western Sydney
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Website: **www.minsocnsw.org.au**

## NEWSLETTER

## MARCH 2010

**The March Meeting will be held on Friday the 5th of March 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 report to be given by Penny Williamson on the 2010 Tucson Gem & Mineral Show: -

**'Tuscon Show Update'**

The report will be followed by a lecture to be given by Ross Pogson on : -

**'Cave Minerals'.**

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## FORTHCOMING MEETINGS

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

April 9th: (Second Friday, - after Easter): Minitalk by Bruce Myles on 'Zircons from Malawi'. Lecture by Les Bursil on 'Aboriginal pigments and tools'.

May 7th: Member's Mini-Auction.

June 4th: Talk by Meagan McKinnon on 'Scanning Diamond Drill Core' and a lecture by Lin Sutherland on 'Forensic Gemmology in N.S.W.'

July 2nd: Lecture by Jim Sharpe and Peter Williams on 'Ernest Henry. The Man and the Mines'.

August 6th: Society A.G.M. Betty Mayne Memorial Lecture to be given by Brian England on 'Minerals of the Garrawilla Volcanics'.

# 2010 Society Membership Fees:

**Society membership fees were due from January 1st 2010.** Subscription renewal forms were sent out last year and more are available from the Secretary or Treasurer at any Meeting. Members are recommended to provide their e-mail addresses if available in the interest of placing as many people as possible within electronic communication, not to mention cutting down the cost of posting out hard copies of the Society Newsletters.

2009 financial members are advised that failure to pay Society membership subscriptions for 2010 will **invalidate their Personal Accident Insurance from March 31st 2010** even if at the time of paying membership for 2009 insurance payment was made for the period September 2009 to September 2010. Insurance would only be valid if the members ensure that they remain financial for the whole of 2010. Officially and according to the Society Constitution membership lapses from March 31st in any new year if subscriptions have not been paid by that time. In practice previously-financial members would be kept on the Society mailing list for a while, - subject to subscription reminders being sent to them, and would be entirely welcome at Meetings but their insurance would be invalid.

If the member is unsure whether they have paid subscriptions for 2010 they can check with the Treasurer or Secretary at any Meeting or can telephone Jim Sharpe on (02) 9871 2502 or George Laking on (02) 9636 7145. Any member wishing to pay subscriptions but who cannot attend the next Meeting could post their subs directly to the Treasurer's address at 190 Ray Rd Epping 2121.

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# MAY MEETING

## MEMBERS MINI AUCTION

Members are advised that the May meeting will be in the form of a Mini Auction of members' mineral specimens. The auction will be in two parts: 1. A regular auction of individual specimens. 2. A silent auction of boxes of specimens.

A member can submit up to 3 boxes of specimens for the silent auction. There will be no need to pre-register your intention to sell in the silent auction. Just bring the box to the meeting, register and place the *Silent Auction* form on your box.

Individual specimens should be clearly labeled with owners name and the allocated auction number. Members who wish to sell or bid must register. The owner as well as the auctioneer's clerk must note the purchaser's number or name on completion of the bidding for their specimen. Please bring a note pad and pen.

For this to be a success in the limited time available on the evening, we need to work strictly to the planned program. Members selling minerals should be at the University by 6.30 PM., to allow time for setting up and inspection.

Transactions must be CASH ONLY and paid directly to the vendor at the completion of the auction. The Society will not handle any money. The Society cannot take responsibility for ensuring transactions are completed or enter into any disputes should they arise.

The Society will receive no commission. There will be no reserve on specimens but if a vendor is dissatisfied with the final bid, the vendor can make a higher bid in order to retain the specimen.

Time available is such that the number of specimens to be auctioned will be limited to 60. So that a catalogue can be prepared and distributed, please send details, name, mineral name and locality to Jim Sharpe. phone 9871 2502 or post to 190 Ray Rd Epping 2121, not later than 18th April.

MEMBERS SHOULD ARRIVE AT THE MAY MEETING NOT LATER THAN 7.10

SO THAT TIME IS AVAILABLE FOR REGISTRATION AND VIEWING.

The General Meeting will commence at 7.30

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## THE SOCIETY COMMITTEE

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|---|---|---|
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## WELCOME

Welcome to new member : - Leslie Wiles of Tingira Heights, Newcastle.

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## The FEBRUARY 2010 MEETING

The **mineral sale** on behalf of the **Kids with Cancer Foundation** was a great success. Members are to be thanked for their generosity in purchasing almost all of the specimens, raising $750. Specimens were donated by Ron Jacobson, Paul Melville, Arthur Roffey, John Rankin and Jim Sharpe.

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Three talks and lectures were given to the February General Meeting by Society members.

### ‘Martin Zwer’s Scheelite Mine, Nundle, N.S.W.’

John Rankin

John Rankin has established himself as a determined and enthusiastic collector of Broken Hill and New England mineral specimens but also as a historian or historical researcher of mines, miners, mining and mining sites. He had heard about a scheelite mine near to Nundle about 40 klm southeast of Tamworth and determined to investigate it. In doing so he had been impressed to find that a few Society members knew more about the mine than he did initially and were able to help with information and some members also had a few specimens from the site.

The speaker quoted the late Laurie Lawrence who said that 'crystallised scheelite specimens from Martin Zwer's mine were surely among the world's best'. It would certainly be the premier scheelite locality for Australia. Nundle is a gold-mining area with very minor stibnite and scheelite occurrences and the Martin Zwer's mine has been the only scheelite deposit found with any quantity of the mineral although this was not found to be associated with any gold. A number of images of scheelite specimens now in the Australian Museum from the Martin Zwer's mine were displayed. Crystal colours were mostly brown, some of the specimens also including quartz crystals.

In commencing his research on the mine John Rankin accessed the Google-Earth facility through the Internet and was able to show a few satellite images of the Nundle area pointing out the location of the mine between Nundle and Bowling Alley Point. He had also obtained maps of the mine area from the Mines Department showing the lease area, ML13 and diagrams of the mine showing that the workings descended about forty vertical feet and about eighty feet in length with a few side passages. It was not a very big mine. Another image of the mine records that was shown was of the mining lease indicating that it was taken out some three weeks before the attack on Pearl Harbour on December 7th 1941. This concurrence explained why little notice was taken at the time by others of the opening of a scheelite mine and the finding of notable crystal specimens. The scheelite output started in 1943 and peaked in 1947 continuing to 1956 although virtually ceasing after 1951 with a total output of 5,020 kilos, just over five tons over the thirteen years. In answer to a later question the speaker advised that in 1947 a hundredweight of scheelite was worth £21.

The scheelite was all exported to England but since it was a relatively rare mineral it could only be sold at that time through one company in Australia, O.T.Lempriere. A keen mineral collector, Jim Johnstone, who had a long association with the Australian Museum was a chemist at Lempriere and in seeing scheelite being handled by the company told the then Museum curator Hodge-Smith about it. Due to the pressure of the war period Hodge-Smith was not able to visit the mine until May 1945 and this is the only visit to the mine whilst it was still being worked that the speaker has been able to find a record of. In examining the deposit Hodge-Smith wrote notes for a report that he would have intended to publish but unfortunately died of a heart attack only two months after his visit. John Rankin however managed to find the penciled report notes in the Australian Museum archives. The report indicates that the mine deposit was not large comprising a small quartz lens or lenses containing some scheelite. In 1945 the operation was about fifteen feet deep and it appeared that most of the scheelite was in the top twenty-eight feet or so.

At the mine Hodge-Smith only saw one lens being opened up, with dynamite which would have substantially damaged any crystals, unfortunately Martin Zwer was then mainly interested in selling the scheelite. The first nine feet of the deposit had a number of cavities which contained quartz and scheelite crystals but were also filled with clay. In collecting a sample of the contents of one of the cavities and later analysing this Hodge-Smith found that the sample when dried weighed 274 grams and contained 62 grams of fragments of scheelite. The miner had however taken some trouble to collect a few crystals and at the time of Hodge-Smith's visit gave 32 specimens to the curator. It would appear that most crystals from the deposit now in collections were recovered in later years possibly due to the fact that the miner either struck larger pockets in the clay or was operating more carefully and had become aware that scheelite in crystal form was of interest to collectors.

Martin Zwer tended to mine mainly during the summer months and then spent the winter months working on the ore to separate the scheelite from the accompanying quartz. The mineral produced was collected by dray once a year and taken to O.T. Lempriere who said that it was the finest scheelite that London ever got. Whilst the scheelite orebody was effectively exhausted by 1951 the operator continued working on the dumps periodically over the next few years to extract any remaining mineral until 1957 when he was not able to obtain sufficient water to wash the dump material and after then there was no further recorded production.

Martin Lwys Zwer was born in Urschendorf in Yugoslavia in 1900, immigrating to Australia in about 1927 and moved to the Nundle area as a gold miner about a year later. He was unmarried, difficult to understand due to poor english and a heavy accent, was apparently a loner, living frugally although was said to be a beer drinker. He had a hobby or side-line in repairing clocks. His usual schedule involved him living in Nundle on weekends in a primitive two-room shop traveling on a bicycle out to his mine on Mondays to work through the

week until the next weekend when he would return to the town to relax. This would include visiting the local pub and then the local picture house on the Saturday night and he would also stock up on supplies.

A certain amount was recorded about the life of Martin Zwer whilst he was living in the Nundle area because he died under circumstances which were regarded at the time as suspicious. Accordingly an inquest was held and this caused a lot more information to be recorded about a loner with no family in the area and few friends than might otherwise have been the case. This has been of considerable benefit to later researchers such as John Rankin. Martin Zwer died in 1962 having apparently suffered an aneurysm or stroke whilst working at the mine and was unfortunately not discovered by others in his hut until five days later since they did not know that he was ill. He died about a week later in hospital. Evidence presented at the inquest included some photographs of the interior of the mine hut with clock and bicycle repair work visible. Copies of the photographs had been obtained by the speaker and were shown to the Meeting. According to Martin Zwer's death certificate his only family was a brother, also living in Australia, who had pre-deceased him. After his death it was discovered that he had some £80 or about three ounces of gold among his possessions and almost a thousand pounds in his bank account.

During the 1950s a few collectors such as Albert Chapman, a Robert Bruderer and later Arthur Roffey became interested in or learned about the Martin Zwer scheelite specimens and made efforts to acquire specimens. Albert was possibly the most successful in this endeavour and the Chapman Collection in the Australian Museum has several very fine examples. Due to Martin Zwer's determination that quartz was an impurity associated with the scheelite any specimens that he collected himself have had the quartz, or most of it, removed. Fortunately a few specimens were collected by others and who did not remove any attached quartz crystals. One of these may have been Robert Bruderer who probably paid at least one collecting visit to the mine in the 1950s and who later sold several specimens to Albert Chapman. At least one of these was sold by Albert to an American collector to be subsequently bought and brought back to Australia by George Stacey a number of years later. John Rankin has not been able to find out very much at all about Robert Bruderer. He was obviously a collector active through the 1950s but the only reference that has been found was in a 1959 copy of the Lapidary Club News where the collector was advertising to swap specimens.

Through the course of his lecture John Rankin was able to show a number of images of the more notable specimens which were recovered from the Martin Zwer scheelite mine as well as an array of images of mining, mine records and inquest documents demonstrating the speaker's thoroughness in researching his subject.

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## 'Fluorescence of Scheelite and Other Weird Stories'

Jim Sharpe

The next lecture was given by Jim Sharpe who had offered to speak on fluorescence partly due to questions raised at a Meeting late last year. The question had been "Does all scheelite fluoresce" and the speaker stated "No, probably not", and with the aid of a number of specimens of various fluorescent minerals and an ultra-violet lamp moved to explain why. Initially Jim Sharpe described briefly what fluorescence was being caused by a substance increasing the wavelength of light falling upon it and advised that lamps generating ultra-violet light should provide both long and short-wave U.V. light. The short-wave light being generally more important because it will generate fluorescence from a larger number of minerals than long-wave, particularly with scheelite.

In reading references about fluorescence Jim had found that there are over 500 minerals out of more than 5,000 or one in ten which will display the phenomenon. The speaker had also read that fluorescence will readily occur in daylight with ordinary white light wavelengths being increased by some substances. The observer cannot see this however since the normal visible light wavelengths are being extended into the infra-red zone which is invisible to the human eye.

Most pure minerals will not fluoresce except many uranium minerals and scheelite and powellite, other minerals all need an activator, a small amount of a contaminant, to generate fluorescence. Even fluorite will not fluoresce unless it contains an activator. The more common fluorescence activators in minerals are small amounts of manganese or lead. Disappointingly for the speaker with a notable collection of about 150 different copper minerals, nearly all do not fluoresce except for a specimen of marshite from Broken Hill. This compared notably with a specimen of marshite from Chile which he had tested and found not to fluoresce, the Broken Hill marshite which is chemically copper iodide, CuI, presumably containing an activator.

Conversely some minerals that would ordinarily be fluorescent such as most uranium minerals may contain a contaminant such as copper that would quench the effect, at least to some degree. The most common fluorescence quenching agent however would be the ferrous $Fe^{+2}$ ion which led Jim Sharpe to demonstrate with a U.V. lamp that the Martin Zwer mine scheelite a few specimens of which had been brought in to demonstrate the previous speakers lecture were not markedly fluorescent. He suggested that since the specimens were a slightly brownish colour this was likely to be due to the presence of ferrous iron which was reducing the degree of fluorescence that the specimens might otherwise have exhibited.

The fluorescence of a number of other mineral specimens were also demonstrated by the speaker such as calcites from Broken Hill, showing fluorescence due to the presence of manganese and a specimen of calcite from Cumberland in England. Fluorescence in English calcite was noted by a worker named Stokes who formulated Stokes Law which states that the emitted light from a substance has to be of lower energy and longer wavelength than the incident light.

Jim Sharpe finally referred to a greenish substance ‘cupro-scheelite’ which collectors in the past have acquired specimens of from the Cordilleira Mine near Tuena, about 60 klm south-west of Bathurst. The Cordilleira specimens have been noted by collectors to be quite fluorescent but the speaker advised that ‘cupro-scheelite’ is not a mineral. It has been X-rayed and whilst it contains some copper it is has been shown to be mainly a mixture of two minerals, scheelite and tungstite, the fluorescence being produced only by the scheelite.

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## ‘The History and Mineralogy of Lodestone’

David Colchester

Lodestone is nature’s permanent magnet and whilst the mineral is well-known not many people are familiar with its properties. As far back as 600 BC a Greek philosopher named Thales of Miletus described it as ‘an attractive piece of iron’ and later two Roman writers, Lucretius who among other works wrote *De Rerum Natura* (On the Nature of Things), in which he referred to lodestone and Pliny the Elder, (A.D. 23 to 79), also mentions the mineral in his *Historia Naturalis*. The ancient Chinese also knew about lodestone and its attractive properties by about the fourth century B.C. having fashioned spoons from carving magnetite which could be spun on a flat surface to stop with the spoon handle pointing south and the speaker was able to show an image of such a spoon to the Meeting. By the eighth century A.D. the Chinese were also making use of magnetized needles for geomancy or *Feng Shui* astrological rituals. Another device made use of by the Chinese for astrological purposes was a Luo Pan, a sort of early compass with a pointer and some symbols carved around a plate. None of the Chinese devices were used for land or marine navigation by travelers but for identifying or deciding upon the direction of energy forces and the most opportune effects of these.

Around 100 B.C. in ancient Greece there was a monument called the Tower of the Winds which can still be seen in the market place in Athens and the speaker showed an image of this structure. It was a very early example of a Town Clock. It had a clepsydra inside which was a type of clock utilizing water flowing at a constant rate through a small hole into a bowl with graduations. The sides of the Tower also held sundials and around the top was a frieze presenting an allegorical depiction of the winds coming from the various directions.

A north wind would be colder than one from another direction and if the traveler was out of sight of land but noted that the wind was cold he might suppose that this indicated a north direction.

By mediaeval times an English scholar named Alexander Neckham who lived from 1157 to 1217 A.D. mentions in his book named similarly to that of Lucretius, *'De Naturis Rerum'* and published in 1190 that sailors were using floating magnetized needles as an aid in navigation. Whoever invented the magnetic compass in Europe is open to question but the city fathers of the town of Amalfi just south of Naples decided to commemorate a fellow called Flavio Gioia who had claimed to be the inventor of the compass and images of the Gioia statue at Amalfi were shown to the Meeting. The claim is complete fiction but as the speaker advised one should never let facts get in the way of a good story !

There was not much development in ships compasses until the time of an Englishman William Gilbert, (1544-1603) after which ship's compasses improved gradually. Gilbert was a doctor and early physicist and in 1600 wrote a book which was very significant for its time *De Magnete.* This was the first book ever written on experimental physics and Gilbert described, established or laid down the principles of geomagnetism and magnetism. The mechanism for rotation of the needle was improved and an important development was that it was established that lodestone was needed as part of the ship's instruments in order to re-magnetise the compass needle since this would often lose its magnetism. From the 1200s up to the time of Queen Elizabeth I and beyond a lodestone was an essential component of a ship's instruments and without it much of the world exploration conducted by western European nations over this period, the English, Spanish, Portuguese and Dutch etc would have been much more difficult.

In 1927 there was an article 'A New Type of Magnetite' in the magazine Economic Geology identifying magnemite in lodestone. Two years later in 1929 several more articles were published on what lodestone was. It was decided that magnemite was oxidized magnetite or $Fe^{+2}{}_3O_4$ ferrous oxide which had been oxidized to $Fe^{+3}{}_3O_4$, ferric oxide. More articles reported that lodestone occurred only at the outcrops of magnetite deposits and usually at the highest levels. Not all oxidized magnetite is lodestone because not all the original magnetite would be magnetic. The real question has been how any of the magnetite becomes magnetic because the Earth's magnetic field is not strong enough to magnetise lodestone. The only other source of a strong magnetic field would be lightning strikes and it seemed likely that lodestone has been formed by lightning striking outcrops of oxidized magnetite. This has been proved by American workers who set up an experiment in New Mexico some twenty years ago by waiting for a thunderstorm to form overhead and then firing a small rocket trailing a copper wire into the clouds. The bottom end of the wire was fixed to a piece of proto-lodestone, non-magnetic iron oxide, and when lightning struck down the copper wire it made the proto-lodestone magnetic.

Accordingly it could be said that lodestones are naturally-occurring permanent magnets composed of partially weathered oxidized pieces of magnetite with a key ingredient of magnemite and which have been made magnetic by being hit by lightning strikes. Not all permanent magnets retain their magnetism indefinitely which will gradually fade away in time although at different rates. Magnetite is a soft magnetic material which will become strongly magnetic when it is placed in a magnetic field but loses nearly all its magnetism as soon as it is taken away from the field. Pure magnetite cannot be a lodestone and has to contain a small amount of magnemite to be capable of remaining strongly magnetic.

If a piece of magnetic lodestone is placed in a strong electrically-generated magnetic field this will increase its magnetism to a saturation point. Taken away from the field the sample will lose the extra magnetism, possibly very slowly but measurably and will eventually return to its original remnant level of magnetism. It has been found that measuring the difference between the saturation level of magnetism in a sample and its remnant magnetism will indicate how long ago that the sample was originally magnetized by lightning. There is a famous lodestone locality in Magnet Cove, Arkansas, where workers have examined the saturation and remnant magnetism in samples from the location obtaining periods of about ten thousand years from when lightning strikes induced the original magnetism.

Finally in moving on to the electronic age the speaker referred to the synthesis of γ (gamma) ferric oxide - $Fe_2O_3$ in 1860 which led to the recognition of a class of materials called ferri-magnets. These materials have become very important today by being incorporated into a number of electronic data recording devices, tape cassettes, floppy discs, CDs and DVDs, credit cards and even fridge magnets etc. In conclusion David Colchester stated that magnemite has been a key substance in helping to advance civilization having substantially aided navigation and world exploration by European countries in earlier centuries and over the last few decades has been important for its use in electronic data recording.

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# FORTHCOMING EVENTS

Members please note:
**Second Correction** to the dates given in previous Newsletters for the **Back from Tucson Sale 2010** which will be held over the 13th & 14th of March weekend.
**Not** the 6th & 7th of March or in February as stated previously.

## BACK FROM TUCSON MINERAL SALE

Being held from 10.00 a.m. to 5.00 p.m. on Saturday and Sunday the 13th & 14th of March 2010
at 52 Macpherson Road, Londonderry.
Featuring:
Sales by Crystal Habit, Quality Gem Rough Supplies and Quality Alpaca Supplies of a fine selection of mineral specimens, decorator pieces, faceting and cabbing rough, gemstones, beads, metaphysical needs and fine Alpaca products.

Hosted by Arthur and Christine Roffey, Peter & Debbie Beckwith and John and Val Tunzi.

Inquiries to Arthur Roffey on (02) 4572 5812 or Peter Beckwith on 0412 333 150

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## MINERAMA 2010

In the Glen Innes Showgrounds over the March 12th to 14th weekend

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## GEMBOREE 2010

Easter 2010. Friday to Monday, April 2nd to 5th, at Devonport, Tasmania.
Inquiries to the GEMBOREE 2010 Secretary, P.O.Box 996, Launceston, Tasmania 7250.
For travel and accommodation bookings contact the Devonport Visitor Information Centre,
Telephone : - 1800 649 514 and mention the GEMBOREE .

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## BATHEX 2010

At the Bathurst Showground over the April 17th and 18th weekend.
Sales of Stamps. Coins, Collectables, Antiques, Lapidary items.