

Mineralogical Society of Western Australia Inc March 2013 Newsletter

Editorial

Many thanks to those members supplying articles for this newsletter. Thanks to Ken for his donation of CDs that were given to various members. The policy that members may submit short adverts free of charge will remain.

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Recent Activities

11th January, 2013.

Thanks to Crystal Universe, Subiaco for hosting a welcome to 2013 party.

General Meeting on Wednesday 16th January, 2013

Following the General Meeting, Ken Ireland spoke on "Talc, its mineralogy and wonderful diverse applications". This talk includes a short video of the Three Springs Talc (in WA) and an entertaining video on Tulikivi Talc (in Finland) (Photograph 1).

Talc is a hydrated magnesium silicate with the formula $Mg_3Si_4O_{10}(OH)_2$ that generally shows little variation in composition. It has a characteristic soapy or greasy feel (unctuous) and a pearly lustre. Massive forms of talc are referred to as steatite and soapstone. The former is commonly found as a very pure form of white to grey-green talc that can be sawn or machined into precise shapes. Soapstone is soft and commonly grey to bluish in colour.

Sedimentary rocks such as dolomite that have been altered by regional or contact metamorphism can give rise to large and high grade talc deposits, such as at the Three Springs and Mount Seabrook deposits in Western Australia.

The Three Springs talc mine is located some 330 km north-northeast of Perth. Talc was first discovered in the 1940s; mining commenced in 1948 and Western Mining Corporation had partial or total ownership between 1959 and 2001. The mine currently belongs to Imerys Talc, currently the world's largest talc producer.

Western Mining Corporation operated the mine between 1960 and 2001, exporting talc through the port at Geraldton to customers in Japan, Europe and the Americas. Talc is one of the most widely used minerals in the world, found in products as varied as chewing gum, plastics, paint, ceramics, cosmetics and dog food.

Apart from the numerous commercial applications, talc is a popular medium for sculpting and carving; a set of carved talc vases together with a lump of massive talc are shown in Photograph 2.

Ken concluded his presentation with a short video on the Tulikivi Talc operation in Finland. Around the beginning of the 20th century, the Finnish Soapstone Company (Suomen Vuolukivi Oy) was formed in the village of Nunnanlahti. In 1980, the company was reorganized and began producing stoves using the name <u>Tulikivi</u> ("fire stone"). Since then, it has grown to become the world's largest producer of soapstone fireplaces and baking ovens.

The primary minerals that make up Tulikivi soapstone are talc and magnesite in almost equal quantities. It also contains chlorite and opaque minerals, the most common of which is magnetite. The talc makes Tulikivi soapstone easy to work. Thanks to its exceptionally high magnesite content, it also has excellent strength properties. Although soapstone is easy to work, it has a dense structure and is not porous.



Photograph 1 Ken Ireland with a piece of unctuous talc from the Three Springs Mine.

Photograph by Sue Koepke.

Photograph 2. Vases turned from Three Springs talc with a lump of massive material.



Courtesy of Imerys Talc Australia

Book Releases

Three books that might be of interest to Members have been released recently. These are summarized below by Ken Ireland:

"Earth Materials – Introduction to Mineralogy and Petrology"

by Cornelius Klein and Anthony Philpotts ISBN 978-0-521-14521-3 Softcover, full colour. 537 pages for AUD 130.00 including post. (equals 24 cents per page). Available from Cambridge University Press (in Melbourne).

Superbly illustrated, and designed as a university textbook for Mineralogy, this book shows how the cooling of the planet gives rise to plate tectonics, and how minerals are formed in specific plate tectonic settings. This is a refreshing update on traditional boring geology.



A very readable tome, and a valuable reference for any mineralogist, lapidarist, gemologist, or weekend rockhound.

"Collectors Guide to the Garnet Group"

By Robert Lauf ISBN 978-0-7643-4003-1 Softcover, full colour. 93 pages for AUD 22.00 (equals 24 cents per page). From USA, but just give the ISBN to your local bookshop.

This is the sixth book in the series from the same author. It begins with an explanation of the chemistry and taxonomy of the group, then explains the kinds of environments where garnets are formed. There is then a detailed entry for each mineral. Superbly illustrated.



"Gemstones of Western Australia"

by Michael Fetherston, Susan Stocklmayer, and Vernon Stocklmayer ISBN 978-17416-84490 Hardcover, full colour. 306 pages for AUD 50.00 (equals 16 cents per page). Available from the Geological Survey of WA, see below.

This new comprehensive publication about Western Australian gemstones and decorative stones was launched on the 22nd January by Mines and Petroleum Minister Norman Moore.

This colourful publication was written for experienced fossicker and amateur rockhounds, as much as it was for the professional geologist and gemologist.

"This is a comprehensive resource on gemstones and decorative stones used in jewellery and ornamental sculpture in WA. It outlines geographic locations of known deposits which will assist fossickers searching for gemstones throughout the State," Minister Moore said.

"The book combines geology and gemology to provide factual information and each chapter has detailed mineralogical information as well as their geological setting and location".

The publication is available as a free download from <u>http://www.dmp.wa.gov.au/GSWApublications</u> or order a hard copy from <u>http://www.dmp.wa.gov.au/ebookshop</u> for \$50 (inc GST).

The launch was held at Mineral House and was attended by about 80 invited guests including representatives of the Mineral Society, the Gemmological Association and the Geological Survey as well as those members of the public who provided information.

A review of this book by Allan Hart is reproduced below.

This impressive hard-covered publication contains 306 A4 pages, with 247 illustrations and 5 tables.

This book starts with an introductory section of four chapters where various aspects of gemmology, including terminology, faceting, history, and prospecting are discussed. The rest of the book is divided into seven sections for varying gemstones and ornamental stones.

Each section has a different colour. Some sections have only one chapter while others will have up to 12 chapters. The sections are as follows:-

- A whole section is devoted to diamonds. This is the gemstone to which the most attention is given.
- The second section is on pegmatite gemstones (beryl with special reference to emerald and aquamarine, tourmaline, feldspar, lepidolite, petalite, spodumene, and phenakite).
- The third section is on siliceous gemstones (quartz, opal, chalcedony, and fossil wood).
- The fourth section on organic gemstones is entirely dedicated to the pearl industry.
- The fifth section is a small section on precious metals (gold and silver) but gives little detail on these.
- The sixth section is on other gemstones includes, but not limited to andalusite (with special reference to chiastolite), chrysoberyl (with special reference to alexandrite and cats eye), copper gemstones (malachite, azurite, etc.), fluorite, iron rich gemstones such as hematite and tiger eye.
- The last section is on decorative stones including magnesite, marble, limestone, stromatolites, Chinese writing stone, epidote, jade, mookaite, tektites, zebra stone and others.

Finally at the end is an appendix giving accurate (where available) locations of gemstones (excluding pearls, gold, and silver) discussed in this book.

Most chapters have the physical properties of the more important gemstones in an area offset and in the colour of the section to make it easy to find. These properties include crystal system, colour, hardness, specific gravity, refractive index, birefringence and many others. The cause of the colour is also included in this list.

Each chapter gives a wealth of information including the geological setting, how they formed and what causes their colour. In some cases the history of the gemstone and well known overseas locations may also be mentioned. Artificial enhancements of the gemstones are also briefly discussed. Details of the amount and quality of material mined at some locations are also given. Locations of the material usually give the mining lease that it is on and sometimes the lease owner. The appendix gives the GPS locations of the material and in some cases a WA Museum number for a reference specimen. At the end of each chapter is an impressive list of references.

There are numerous illustrations throughout this book including maps which range from a quarter of an A4 page to a full A4 page and photographs which range from an eighth of an A4 page to half an A4 page. The photographs are of the location where the material (either gemstone or ornamental stone) is found, the rough material, faceted gemstones, cabochons and items made from the material.

In conclusion this book is well worth the \$50 which I paid for it. It is a very useful reference book for anyone interested in gemstones, lapidary material in Western Australia, or even to mineral collectors who may be interested in minerals which are sometimes used as gemstones. Congratulations to the authors for producing an excellent reference book.





Minister Moore with the three authors of the Gemstones of Western Australia

20th February, 2013. An activity night entitled "An Introduction to Map Reading and Navigation Skills" was organized by Tom Bateman. This one hour "taster" was designed to both give an idea as to what the proposed workshop entailed and to gauge interest (see photograph below).

About ten members attended the session, but there were insufficient interested people to warrant running the proposed four hour workshop (see below).



Tom Bateman talking about map reading and navigation skills.

Photograph by Sue Koepke

24th February, 2013. A four hour workshop session on "Map Reading and Navigational Skills" organized by Tom Bateman. This will commence at 12 noon with a BBQ and finish at 5pm (see below). This has now been postponed and Tom Bateman has proposed re-scheduling to the last fortnight in May. Tom's contact details are

Mobile: 0417 908 188

March Meeting

There will be a General Meeting on **20th March**, **2013** at the WA Lapidary Club rooms located at 31, Gladstone Road, Rivervale (corner of Newey St)

The General Meeting will be followed by a talk entitled "High-resolution X-ray computed tomography: a 3D view of mineral morphologies, sizes and distribution at the sample scale" delivered by Belinda Godel (CSIRO).

Belinda Godel is a Research Scientist (geochemist) at CSIRO Earth Science and Resource Engineering based at Kensington. She is specialized in the geology, geochemistry and mineralogy of magmatic ore deposits and sources of Ni-Cu-Platinum group elements (PGE), V, Cr, Ti. Over the past few years, she was involved in the development and application of high resolution X-ray computed tomography (industrial CTscan at micron scale resolution) to igneous petrology and ore deposits (including Ni-Cu-PGE, gold, iron ore, and Cr-V-Ti deposits).

Visitors Welcome

A light supper will be served after the meeting.

2013 Future Meetings and other Activity Dates

15th May, 2013. General Meeting followed by a talk on "Alexandrite and other rare beryllium minerals" delivered by Susan Stocklmayer, Gemmologist.

29th March to 2nd April, 2013. Gemboree. Murray Bridge, SA.

Society Notices

Volunteer required

We need a member as 'second in charge' of electronic equipment (laptop and projection equipment) at meetings, in case person in charge/custodian of equipment is unable to attend meeting. Please contact Stewart Cole if interested.

A philosophical piece to emphasise the benefits of fossicking.

Tom Bateman, our Social Officer/Field Trips Leader compiled the report below responding to a question about what *REWARDS* can a fieldtrip participant can reasonably expect? (What's in it for me?)

I say <u>we seek rewards</u> related to our enthusiasm about minerals by following a time honoured <u>process:</u>

The Researching and Fossicking Process Steps:

1. Start researching the (scientific and curiosity rewards) possibilities with:

- book and scientific publication search on-line maps, reports etc. (this satisfies a curiosity a learning reward)
- contact letters to, then talking to geologists and local visitors that are usually knowledgeable people (the social connection rewards)

2. Conduct a visit once access permissions are obtained means that a relationship starts; with the gatekeepers and with the site. (a social and access reward)

3. Fossicking and collecting with all specimens which must be very carefully examined – actually looking for the *surprise is* the primary reward. ('Eureka' reward).

<u>We</u> always need to do **careful research** before we can answer those natural self-interested questions definitively. Expectations which <u>rely on someone simply leading a group</u> to sites based on past reports of good sites are convenient, but ultimately self-limiting.

About Expectations: now *no-one can readily predict with <u>certainty</u> what minerals may be found on any dump (especially as the waste** dump is the only likely area that could be expected to be available for access; due to regulatory and safety responsibilities.) ** waste is generally non valuable mineralised mining product; however the mining process like vegetable production is not fully efficient separation - wise and there will be 'gems left amongst the dross'.*

An analogy: In Big Game Fishing – a person seeks the opportunity to catch a barracuda; they hire a fishing Charter which provides boat, bait and gear; the Skipper (FTL) takes passengers to 'the sea environment' (such as a reef) or GPS locations where fish are believed to exist based on past catch or sighting reports. Sometimes the fishers will be lucky; but the fishing skill and timing of the visit plays its part. The Fishing Charter cannot and will not guarantee a fish to any participants.

The fishing analogy is that "the spot" above the reef that is constantly re-visited results in the total depletion of fish stocks; the greater reward is in finding new spots!

HOWEVER, we are fortunate that we understand that mineral deposit occurrences depend on the characteristic possibilities of their geological "environment" of formation. Examples of these are:

- At Golden Grove mine site is an Achaean-aged felsic volcanic VMS base metal deposit so we are looking to expect Pb, Zn, Cu and Ag minerals. Any mine dump usually has surprises and should be carefully searched if opportunity and permission can be obtained. That is part of the fieldtrip attraction the searching of unknown but suspected provenance of minerals.
- Another example of provenance is in a high grade metamorphic terrain (geological environment) like Mount Phillips in Upper Gascoyne suspect possible presence of attractive specimens of magnetite, garnets, staurolite and kyanite.
- If felsic pegmatites are reported (by prospectors and in geological reports) then the suite of pegmatite minerals need to be carefully searched for.

Field Trip Leaders duty: the REWARD guarantee:

Strange as it may seem; the Fieldtrip Leader (FTL) cannot and <u>should not</u> try to **guarantee** finding of minerals of interest to participants. That is a lesser side benefit; that may only serve to attract initial participation.

Collecting at new finds, sites and areas should be sought out using the many sharp eyes (body and brains) of audience who benefit most – the fieldtrip participants.

This involves the FTL demonstrating and assisting other enthusiasts to learn for themselves the processes of successful fossicking and prospecting for minerals.

What we FTL guarantee is participation for and with mineral enthusiasts. Shallow participation is merely showing way to "the spot" without learning how to find others. The fishing analogy is that "the spot" above the reef that is constantly re-visited results in the total depletion of fish stocks; the greater reward is in finding new spots!

My Personal Philosophy about fossicking and collecting:

My primary expectations come from the satisfaction of 'curiosity and eureka' rewards.

The 'social reward dividend' of '*sharing the experience*' and learning from similar- minded others is satisfying to me also. We are social animals.

I don't collect for money; and although I understand, and don't particularly mind others seeking that reward, I abhor selfishness and 'greedy collecting'.

I also enjoy the experience of helping others to learn as I learnt from others (a reward of "repaying my mentors") (now at my age; altruism plays a personal part).

'Pay it on' and set a good example by leaving something for others is what I recommend and practice. (conservation rewards).

Joint Mineralogical Societies of Australasia 36th Annual Seminar

The next Joint Mineralogical Societies of Australasia 36th Annual Seminar will be held in Sydney on Saturday 8th June to Monday 10th June 2013. Details, as supplied by the Secretary, George Laking, are shown below.

The MINERALOGICAL SOCIETY OF N.S.W. Inc

As you are aware the 2013 36th Australasian Mineralogical Societies Joint Seminar is being hosted by this Society over the Queen's Birthday long weekend, Saturday 8th to Monday 10th of June 2013, next.

The theme is to be: - 'The Wonderful World of Minerals'

The Seminar will be held in the Eastwood – Ryde Leagues Club in Ryedale Road, Eastwood, which we have decided upon since it is a fairly central location in Sydney but well away from the CBD area with adequate parking nearby and well served by public transport. All Seminar activities other than field trips or Australian Museum and private collection visits 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 micromount displays and sales probably on the Sunday afternoon and Monday the 10th of June. Interstate visitors and attendees from outside Sydney will be advised about suitable

accommodation in the Eastwood area which has a number of hotels. It is hoped that there will be field trips to one or more locations held in conjunction with the Seminar but details have not yet been finalized.

Our Committee has been deliberating for some months already about Seminar arrangements and we have already spoken to or lined up a number of speakers including several from interstate. However this e-mail is to invite all the other Australasian societies to suggest or nominate any other speakers who would be able to deliver a lecture. (If we get too many we may have to start saying 'thank-you, - maybe the following year').

Field Trips

Western Australia Lapidary and Rockhunting Club Inc.

By arrangement, members of the Mineralogical Society are able to go on field trips organized by the Western Australia Lapidary and Rockhunting Club Inc. If you are interested in attending these field trips please put your name on the notice board at the Lapidary and Rockhunting Club for the relevant field trip.

Please register with MinSocWA Field Trip organizers prior to attending any of the following events, but only if you are a current (financial) MinSocWA member to confirm event details.

Committee Members

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