

MARCH
NEWSLETTER
2005

What's On?



Sunday, April 3rd, 2005

To coincide with the Perth Sun Fair 2005 at UWA:

"A Star is Born: the Formation and Future of our Sun" by Jenny Bevan

when? The talk will start at 12.30pm.

The *Perth Sun Fair 2005* (see page 3 for details) is on all day from 9.00am until 5.00pm, based around the Oak Lawn (next to UWA Guild Village), so you will have a chance to look at that before or afterwards if you wish. Or BYO lunch and eat in the University's lovely grounds before the talk.

where? The **Woolnough Lecture Theatre** (off the Geology foyer). Park in Car Park 19 or 20, parking is free in red staff bays on Sundays.

extras? The Museum will of course be open after the lecture, and I am happy to show people the foyer gallery and displays which are not normally available on Sundays.

Ring 6488 2681 or email jbevan@cyllene.uwa.edu.au (Curator) for further information.



The illustrated talk will take us through the formation of stars and specifically our own star, the Sun. Find out how we compare with other stars in the Solar System and where the chemicals that make up everything on Earth, including your body, came from in the first place.

What is going to happen to our own special star? Will it burn forever, and if not, how long have we got?



What star can you see in the daytime?

Perth Sun Fair 2005 (information as given on website)

- Fair date and time:** Sunday April 3rd 2005, from 9am to 5pm
- Entry:** Adults gold coin donation, people up to 16 years free
- Location:** The Oak Lawn at University of Western Australia
- Seminars:** every 30 min - organisations are encouraged to present on relevant topics- contact the Fair Project Manager
- Childrens activities:** Making model windmills, solar heaters, straw bale structures etc.

The Sun Fair is aimed at introducing the people of Perth to sustainable living concepts, technology and lifestyles. Major themes of the fair include renewable energy, energy efficiency, environment conservation and natural living.

We hope to bring people together on this weekend so they may share information and experience and may return to their homes with a knowledge that they can make a difference to the future of the welfare of this planet and all its living systems. The fair demonstrates that sustainable lifestyles are environmentally sound and cost effective and are very much an attainable reality.

The environmental challenge that faces us will require technology, government, industry and individual effort. The major change must come from changes in individual behaviour. The challenge is to make micro-reform happen in each household and to accommodate the small changes in lifestyle habits that will lead to a higher level of energy efficiency, a lower level of resource use and an overall awareness of the issues that can translate into useful change.

Technology, corporations, financial institutions and government provide some of the tools and the means to meet the challenge: they are positive forces if used properly, and it is for their positive aspects that they have been developed and maintained by people. On their own they lack the cultural tools to address issues related to the common good of environmental conservation and sustainability.

The individual must drive technology, corporations, financial institutions and government culture into a sustainable future. It is up to us as individuals to do this - no one else will, no one else can and it is our democratic responsibility to do so. Most importantly enjoy the fair.

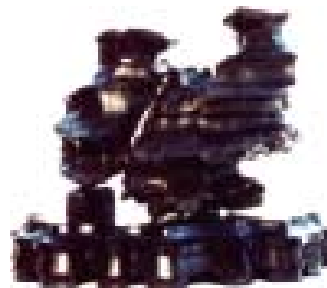
Leonie Wight, Fair Project Manager (08)9443 6983
email perthsunfair@globaldial.com

<http://www.sustainability.ofm.uwa.edu.au/welcome/perthsunfair>

Suiseki: The Japanese Art of Stone Appreciation

The January meeting was an unusual one: we had a joint affair with the Bonsai Society of W.A., a mutually beneficial event which everyone enjoyed! The Bonsai members had brought along some interesting stones, most mounted (in the usual way) on stands of carved and polished wood. To refresh your memory, the term "suiseki" means literally "water

stone"
(Sui = water,
Seki = stone)
and is the study and enjoyment of naturally formed stones as objects of beauty. Suiseki are small, **naturally formed stones** admired for their beauty and for their power to suggest a scene from nature or an object closely associated with nature. It is derived from the ancient custom of displaying miniature landscapes stones in trays filled with water and from the association between suiseki and classical Oriental landscape paintings of mountains and lakes.



Among the most popular types of suiseki (pronounced suu-ee-seck-ee) are those that suggest a distant mountain, a waterfall, an island, a thatched hut, or an animal, or they may just be uniquely patterned. Japanese chrysanthemum stones are probably the best known example of these patterned stones. Geologically, these usually consist of radiating crystal groups of minerals such as calcite, celestite, gypsum, feldspar, or andalusite, in a fine-grained matrix. Some dealers overpaint the matrix to make the crystals stand out better, but this is disapproved of! The image (right) came from the site

www.spirit-stones.com/type_other.html

As with Bonsai, Suiseki was first practiced by the Chinese during the Song Dynasty (960 - 1279), and are generally referred to as Chinese Scholars Stones. Small stones of great natural beauty were set on



stands to represent legendary islands and mountains associated with Buddhist or Taoist beliefs. As trade and contact between China and Japan flourished in the middle ages, the Japanese adopted and adapted the art form to their own culture, and like bonsai have set guidelines and refined the art. Because

of this, Japan is regarded as the mother nation of Suiseki.

The **Suiseki Classification System** arranges stones:

By Shape

Mountain stones;
Waterfall stones;
Island stones;
Shore stones;

which represent large-scale landscape. The beautiful example above is from D J Sampson's site (c 2001-2005 djsampson.com) and represents a mountain range in miniature.

Object stones
including *Boat-shaped stones;* *Human-shaped stones* and so on.



By Colour

Black stones;
Five-colour stones

By Surface Pattern

Plant-pattern stones;
Pattern stones

like the *chrysanthemum stone* opposite.



By Place of Origin

Sado red stones

Most of the images on these pages are from www.suiseki.net.

Suiseki are traditionally exhibited on a carved wooden base or in a shallow tray. When formally exhibited, suiseki are often accompanied by bonsai; dwarfed trees trained to grow into shapes that imitate the trees in their natural habitat.

Displaying the Stone

A suiseki that is poorly displayed loses much of its beauty and suggestive power.

Collectors take great care in choosing an appropriate container and in creating a beautiful display area. There are two traditional ways of exhibiting a suiseki; on a *dai* (sometimes referred to as a *seki-dai*), a wooden base carved to fit the stone; or in a *suiban*, a shallow watertight container filled with sand, water, or both.



The container should not detract from the stones; the suiseki always takes precedence over the container. A *dai* is traditionally dark in colour. The wood either has a natural finish or it is covered with black, brown, reddish-brown, or clear lacquer. Carved to follow the exact lines of the stones, a typical *dai* has a narrow lip and short legs.

Mignonne followed her talk by showing us her own special suiseki. It is a piece of "Pilbara jade" which has the shape of Western Australia, and is mounted on a jarrah base.

"Pilbara jade" is actually a kind of serpentine: Marble Bar jade and Pilbara jade, which are two names given to the same rock from the vicinity of Marble Bar, Western Australia, are a mixture of serpentine and chlorite. In WA, serpentines have been produced in areas where rocks rich in olivine and magnesian pyroxene minerals have been altered by hydrous fluids, giving rise to new rocks largely composed of greenish fibrous serpentine minerals, which have water in their crystal structures. Black iron oxides are usually present. Chlorite is a green platy mineral often produced when rocks are metamorphosed (changed by heat and (usually) pressure during Earth movements). Because Mignonne was originally from Onslow, the Pilbara connection is important to her. The jarrah base was made for her by her husband: the jarrah tree is one of WA's finest eucalypts so provides a profound emotional connection to Mignonne in relation to her home state, as does the overall shape of the piece.

The point about suiseki is that it is not purely the physical and artistic appearance of the stone but also the intrinsic value due to the emotional aspects, like a feel for the age of the piece and the knowledge of it being shaped by nature over many years, which add to the pleasure of viewing and ownership.

Covello, Vincent T and Yoshimura Yuji (1990)

The Japanese art of stone appreciation Suiseki and Its Use with Bonsai
Charles E Tuttle Company ISBN 0-8048 1485-6

Koreshoff, Dorothy & Vita (1999)

Bonsai with Australian Native Plants Boolarong Publications ISBN 0-9081-7566-3

Also on the menu for our last meeting was a short talk by Jenny Bevan on:

"The Geology of the Paynes Find Area"



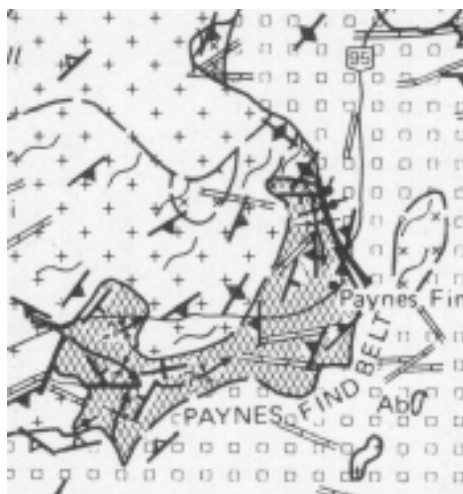
Just to prove that your Curator has first-hand experience of the area, note this flattering shot of your Curator (with Geology Department legend John Williamson) outside the roadhouse!



A large-scale map of WA like the one on the wall in the Museum shows our Yilgarn Craton, a piece of the Earth's crust which has been around for about as long as any other continent: much of it is well over two and a half billion years old. It consists largely of elongate green belts (greenstone belts) which are associated with black lines which represent deep fractures, set in pink areas (granitoid rocks). On the western side a very long fracture zone running roughly north-south marks the edge of the Perth and Carnarvon sedimentary basins. These continue out under the sea to the edge of the continental shelf, where our continent abruptly finishes.

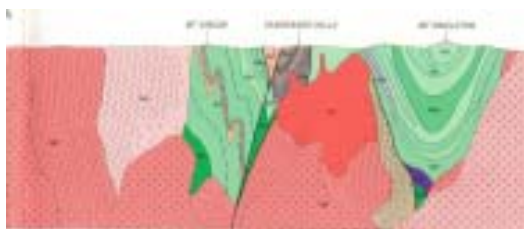
Beneath these younger rocks is a "basement" of the same ancient rocks that we see on the surface of the Yilgarn Craton: under Perth, if you drilled down far enough, you would encounter granites and gneisses. To the north and south of the Yilgarn are patches of older and younger rocks which have been attached or transformed during plate movements. Over the top of all this lie superficial deposits such as sand and gravel from rivers and flooding, soils and sand dunes which obscure the bedrock. We use geophysical methods to "see through" the surface deposits, backed up by drill-hole information.

Homing in on the Paynes Find area, we can see this association of greenstone belts and granitoids. The cross-hatched area represents greenstone, and the other symbols, granitoids.



GREENSTONE BELTS

The “greenstone belts” represent piles of volcanic, sedimentary, and intruded mafic rocks forced into elongate downfolds by intrusion of granitic rocks from below, and affected by elongate fractures which penetrate deep into the Earth’s crust. These fractures are pathways for gold-bearing fluids. See the cross-section below for a schematic summary of the area.



What came first?

- Lava flows
- Ash falls (“tuffs”)
- Volcanic breccias
- Sediment layers such as banded iron-formation.

The volcanic rocks may have been erupted close to or in a shallow sea. The ages of these are 3000-2900 my: they are Archaean in age.

What happened next?

- Rocks were forced to deeper levels in the crust by Earth movements
- Granitic rocks were intruded and deformed the layers into folds
- During this time many of the original minerals in the rocks were changed into others (“metamorphism”) and textures in them became distorted, because of the higher heat and pressure at depth. Tuffs were turned into gneisses, olivine-rich rocks became amphibole-rich schists, and many rocks became foliated (layered) in directions at right-angles to the pressure.

GRANITOID ROCKS

The rocks mapped as granites often have layers, reflecting further Earth movements and intrusions which deformed them and caused recrystallisation.

They may also show a linear texture which follows the outline of the intrusion. This may have been due to the lining-up by flow of crystals in the molten rock as it was intruded.

Several generations of intrusion have occurred, with newer granites forcing into existing ones. Radiometric dates obtained are in the range 2800-2700 my which makes them late Archaean in age.

GOLD

In the “Goodingnow centre” (1911) the ore is mined from quartz veins which intrude hornblende-biotite schist and gneiss (orange, Afq), and occur in the sheared metabasalt and other volcanics (Abl and Abv) of the greenstone belt. The quartz veins also contain pyrite, with some galena and sphalerite, as well as siderite and chalcopyrite (see map).



PEGMATITE MINOR INTRUSIONS

Pegmatites are bodies of coarse crystalline material, usually granitic in composition. Here they intrude mafic rocks, and contain beryl and also columbite-tantalite minerals. They post-date the gold veins.

The map (left) shows some of the pegmatites in black. It was taken from a report by B Nisbet (1983) and is after a map produced by Jays Exploration in 1982. See also Mark Jacobson’s “Guidebook to the Pegmatites of Western Australia” for more details.

OTHER INTRUSIONS

- Dykes of mafic (basaltic) rocks occur throughout. They have intruded along cracks opened up because of stresses in the rocks, and have a predominantly east-northeast trend.
- Quartz veins occupy fissures in the same way, others may follow shear zones.
- Lenses and dykes of porphyry (granitic) rocks may occur, often parallel to the layering.

RECENT DEPOSITS

- Residual deposits (silcrete, sandplain, laterite, lithified grit)
- Alluvial and colluvial deposits (soil creep, sheet flooding or channel flow)
- Lacustrine deposits (old drainage features such as Lake Moore)

These are generally no more than a few tens of millions of years old: some are modern.

If you plan to visit the Paynes Find area, there is accommodation in the roadhouse but also at Ninghan Station, the home of Mt Singleton with its easily-accessible and impressive pile of volcanic and sedimentary rocks. Did you know that one of the Friends, Stephen Lipple, did the Geological Survey mapping for this area? The Ninghan map sheet notes which accompany the map describe the rocks you will see. (The geology maps in this article are taken from the GSWA map).

Also on Ninghan Station is Wardagga rock, a large granite outcrop which is reminiscent of Walga Rock (which you may know), and has very interesting flora, fauna and aboriginal remains. It is on the station road between the Ninghan homestead and Paynes Find. Come and see me for more information.

Don't forget to visit the working battery (right) at Paynes Find: a unique experience!



As reported in the previous issue, the Mineralogical Society of WA are hosting a meeting and Field Trip to the Kalgoorlie area

The "Friends" are invited to participate in the meeting and/or the Field Trip.

Mineralogical Society of Western Australia (Inc.)

proudly hosting the

28TH ANNUAL JOINT MINERALOGICAL SOCIETIES SEMINAR 2005

Saturday 11th & Sunday 12th June

Theme:

Minerals of the Goldfields, Western Australia

"All that glitters is not gold..."

Likely seminar costs:

Seminar Registration	for the two days \$60
Seminar Dinner	held at a local Restaurant (Cost expected to be comparable with previous Seminar Dinners)
3-day Field Trip (Kalgoorlie area)	Monday 13 th to Wednesday 15 th June Cost will be dependant on number of participants and localities visited

Expression of interest

– do you want to know more about the 28th Annual Joint Mineralogical Societies Seminar in Perth, and Field Trip?

Please send the following information to:

The Secretary, John Reeve, 13 Buchan Place, Hillarys, WA 6025

- Your name:
- Your mailing address:
- Your email address (if available)
- Your telephone (day): and/or mobile number:

or contact the Secretary by **telephone: 08 9401 1963, fax: 08 9245 8885, or email: sacko@multiline.com.au**

NB don't forget to contact Mignonne if you are interested in the Friends' big field trip to the Carnarvon Basin in September 9341 6746 sacko@multiline.com.au

MUSEUM ROSTER:

Contact Allan Hart 9360 5157 (business hours) or you can email him on: allan.hart@abs.gov.au to let him know which date(s) you would like.

Sunday roster for Autumn 2005

Mar 20	Pat O'Shea
Mar 27	Joyce de Jong
Apr 3	Danuta Stansall
Apr 10	Rachel Blythe & Sue Birney
Apr 17	Aiden Couzens
Apr 24	Bill Fitzgerald
May 1	Nell Matthews
May 8	
May 15	
May 22	Ted & Joyce de Jong

Notice we are short for May: PLEASE contact Allan if you can volunteer.
It is important to do your roster as promised so that visitors are not disappointed,
so makesure you **DON'T FORGET!!!!**

New members who haven't done a roster yet: it is EASY and PLEASANT! I will guide you through what needs to be done, either beforehand or on the day if I am free. The book will be open at the **instructions page** so just READ THAT if you have forgotten anything, and the Security guys are there to help too. If all else fails, **ring me on my home number (button marked "HOME" on the phone)** or on my mobile: 0432 940 469.



Thanks so much, all of you, who have helped by being on the roster! Even if you don't get many visitors, it is important to be open when we promise we will be open, and who knows, your visitor may spread the word to others (and even be the reason why a student does Earth Science at U.W.A.!). Thanks also to those who organised their own "swaps".

NB.If you are unable to be a "Friend" by doing a roster, please don't forget that the alternative is to give a donation towards newsletter expenses etc.: \$15 is suggested. Thanks very much to those who have donated!! Please make cheques payable to: "University of Western Australia" and I can then direct it into the Museum's donation fund. *If it doesn't have UWA on it then they will not accept it.*