

**JANUARY**  
**NEWSLETTER**  
**2009**

*What's On?*



**Sunday, 1st February 2009 at 12.30pm**  
**"Iron in the Earth" - a talk and hands-on workshop**

We will first investigate where iron comes from in the first place, then look at iron in meteorites, and relate them to the iron in the Earth's core and the formation of planets. What do we know about the layered structure of the Earth, and how do we know what is down there? Seismic and other methods will be outlined. Iron-bearing minerals in the Earth's crust will then be discussed, followed by hands-on testing of some common iron minerals. We finish with a fun exercise making paint from iron-bearing ochres to produce our own 'rock art'.

**where?** In the First Year Geology Laboratory. Park in (free), and enter from, UWA Car Park 19.

**when?** Talk starts at 12.30pm, but you can come early and eat a picnic lunch. I will be there from 11.30am.

**\* Don't forget that everyone has to contribute towards our insurance, \$2 per head for Friends (and their families), or \$10 for non-Friends.**

**Need information? check with me (6488 2681 or [jbevan@cyllene.uwa.edu.au](mailto:jbevan@cyllene.uwa.edu.au)) or Mignonne (9341 6746 or 041 895 5979 or [sacko@multiline.com.au](mailto:sacko@multiline.com.au))**

**[www.earthmuseum.segs.uwa.edu.au](http://www.earthmuseum.segs.uwa.edu.au)**

**IRON** is all around us (and is an essential part of our bodies). We find it:

- In soil
- In rocks
- In plants (iron is needed to make chlorophyll)
- In animals (our blood contains iron)

*Haemoglobin is the iron-containing protein attached to red blood cells that transports oxygen from the lungs to the rest of the body.*

*Haemoglobin bonds with oxygen in the lungs, exchanges it for carbon dioxide at cellular level, and then transports the carbon dioxide back to the lungs.*

- Dissolved in the sea
- In pigments and paints

**Come to the talk and find out more about this vital chemical element!**

## INTERESTED IN GEMS AND GEMMOLOGY?

The Diploma in Gemmology course run by the Western Australian Division of the Gemmological Association of Australia starts soon. This comprehensive, normally two-year, course gives you the knowledge and confidence to accurately identify gemstones, whether they are real, synthetic, imitation or artificial. It is recognised in Australia and internationally. If you want to know more about the course or gemmology in general, contact the Gemmos at: GAA - Western Australian Division

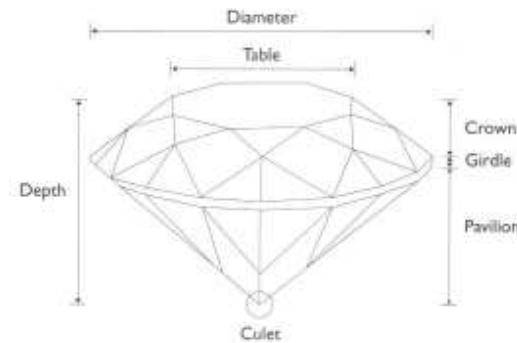
Address: PO Box 431  
Claremont WA 6910

Tel: 9385 5489

Fax: 9286 4986

Email: [wa@gem.org.au](mailto:wa@gem.org.au)

The WA Division have their own premises in Claremont and run many courses at all levels, including topics such as an introduction to gems and gemmology, pearl threading and diamond grading. They have lectures and workshops throughout the year. By the way, some of our 'Friends' are gemmos - if you would like a chat with one of them, let me know.



## The Friends' Christmas Function: a visit to the Naturaliste Marine Discovery Centre at Hillarys.

The Naturaliste Marine Discovery Centre is in the Hillarys Boat Harbour complex, sited on the northern arm of the harbour, at the opposite end to AQWA. Like AQWA, it is designed to be a place for learning, fun and exploration of the State's aquatic life, and a place that people of all ages will enjoy. The NMDC is open 10am to 4pm every Sunday to Friday and is closed Christmas day and ANZAC day: normal entrance fees range from \$7 for adults to \$4 for children, and there is a \$15 family ticket. Group



rates and tours are also available.



We were given a special introduction by our friendly guide to the Centre's rockpool which houses some interesting animals, and were told that "starfish" are now called "sea stars" and "jellyfish" are now called "sea jellies": in fact, only "fish" are allowed to be called "fish"!

Then we were treated to an excellent film on the Leewin Current. Afterwards we spent some time, at our own pace, enjoying the intriguing array of interpretive displays, multimedia presentations and interactive touchscreens in the rest of the Discovery Centre's main exhibition hall. The (hologram) great white shark leaping out of its screen with open jaws was great fun, and of course some of our group couldn't resist sticking their heads into its mouth. And it didn't take much to encourage others to try on the pearl diver's helmet: now I wonder if you can tell who is that in the picture (no prizes for guessing!).



Located in the WA Fisheries and Marine Research Laboratories, the Discovery Centre is also at the hub of some of the most important scientific research going on in Western Australia.

Normally, visitors can watch scientists at work through windows into their laboratories, and view a wide range of Western Australian aquatic life in special tanks ranged along the research corridor. Unfortunately for us, the scientists have their

weekends off, but it was interesting to look into the laboratories and see the equipment, and they had some specimens on show such as thin sections of otoliths (fish ear bones) which make it possible to find out precisely the age of a fish by looking at the growth rings, just as you might do with a tree.

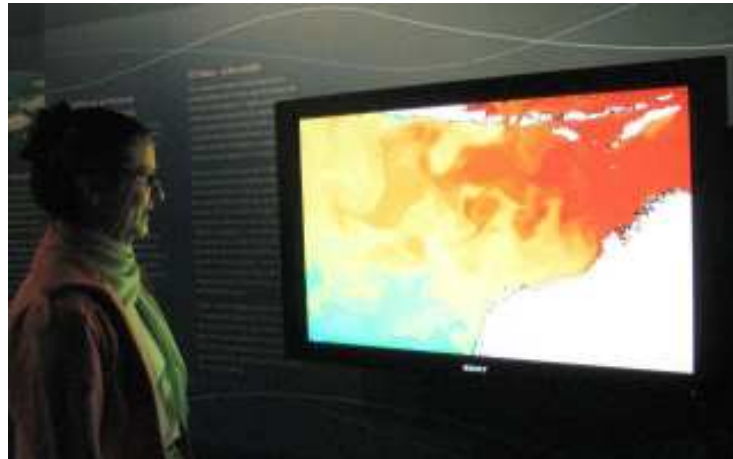
The Centre also has a shop and a marine science library which anyone can use. We were more interested in food by this time, so “took over” the courtyard cafe. Mignonne as usual had organised everything beautifully, so we sat down to tables decorated with Christmas trees and cloths, and Christmas bon-bons. All meals had been pre-ordered, and a convivial time was had by all.

Afterwards the Curator gave a short talk on the geological aspects of the Leewin Current, to complement the marine aspects discussed in the film presentation. I have to say it is the first time I have given a lecture wearing a party hat! but it did not put me off my stride.



## The Leewin Current and the formation of the Tamala Limestone

(based on an extract from an article in the *Geoscientist*, Volume 12 • No 7 • July 2002 entitled "Caves Downunder" by Ken McNamara and Stefan Eberhard)



The formation of the sediments that make up this coastal limestone was due to a fundamental change in the character of coastal sediments laid down during Pleistocene times (from 1.8 million years ago to almost the present). In the Early Pleistocene, before carbonate sediments (mostly the shelly

remains of sea creatures) began to be important, coastal deposits were largely quartz mineral grains ultimately derived (by weathering and erosion) from rocks on the land. The change to carbonates resulted from the development of higher sea surface temperatures, and increase in marine life, along the Western Australian coast during the Middle Pleistocene. This was instigated by the renewed activity of a southerly flowing current off the western margin of the continent.

Known today as the **Leeuwin Current**, this warm, low salinity water flows actively during the southern autumn and winter months, but essentially disappears during the summer. It derives from a body of warm surface water in the vicinity of Indonesia. As well as fluctuating seasonally, there is a cyclical variation linked to the El Niño Southern Oscillation. During El Niño periods it is weak or ceases to flow. During the contrasting La Niña periods, when the ocean temperatures north and west of Australia are high, it is very active.

The first signs of a current down the coast of Western Australia appear to date back to more than 50 million years ago, on the basis of the changing distribution of some marine invertebrate fossils, especially echinoids (sea urchins) and brachiopods (a creature with shells superficially similar to clam shells, but not even remotely related to them). These show first occurrences off the northwest of the continent, then subsequent, later appearances further south. Even later still they appear in the east, beyond the Great Australian Bight, their larvae having been carried there by the current.

Following a long period of quiescence, the Leeuwin Current was reborn as the Earth plunged into the Pleistocene Ice Age. Its impact today on the marine biota is dramatic. Its warm waters bring rich, subtropical marine fauna and flora to the southwest. Coral reefs, for instance, exist today as far south as 32°S around Rottneest Island, and corals themselves grow right round the south coast (you can see them near Esperance, for example). During the Last Interglacial corals grew even further south.

Rich molluscan (including clams and sea snails) and bryozoan (animals similar to tiny corals, which build lace-like colonial structures) faunas, along with extensive growths of calcareous algae that thrived in the shallow shelf seas during the Middle and Late Pleistocene (around 130,000 years ago), contributed vast quantities of carbonate debris (shelly sand) to the sediment. During glacial maxima, when the sea level dropped by as much as 130m below present levels and withdrew to the west by up to 40km, these vast expanses of sediment were exposed.

Onshore winds blowing during these cool, dry glacial periods, built up the carbonate debris into huge dunes that were blown steadily inland as the sea levels rose during the interglacial periods. The calcareous sand was readily cemented when rainwater filtering through the dunes dissolved and redeposited lime, glueing the sand grains together. So, some of the newer dunes of loose shelly sand that exist today may well end up as Tamala Limestone of the future!



## HOW DID WE GO IN 2008? - Curator's Report

**My full report stretches to TEN pages so I have picked out just a few of the highlights.** This year we welcomed Assistant Curator Ms Kris Brimmell, initially on a grant from the Faculty to enhance the student learning experience, and then on a grant from ESWA to produce curriculum-related Museum worksheets. She looked after the Museum while I was away on **3 months' Long Service Leave** and is also employed generally by the School to assist with laboratories and the Teaching Collections. In 2009 she will continue with this contract on a similar general basis.

**The surprise of the year was the bequest from Professor Prider of \$117,357 to the Museum. It is expected that some of this money will be spent in 2009 upgrading the lighting of displays and installing a large external exhibit. The UWA Community Budget contribution to the Museum was also increased, to \$60,000 for 2009: this is allocated to the School to largely cover the Curator's annual salary.**

**Visitors to the Museum** (members of the public, does not include UWA, includes on-site presentations).

Weekdays: 2500 (not all counted, true figure will be more)

Sundays: 1640 (includes Expo)

**VISITOR TOTAL: 4140**

**Public Enquiries** (in person, 'phone or email): **TOTAL: 84**

**Collections:** The UWA Collection stands at **142 793** registered specimens

Total added to the collection in 2008:

**1975 specimens**

**Museum website**

Hits **90 913** (average 7 576 per month)

Visits **22 912** (average 1 909 per month)

**The 'Friends' had a busy year too! We enjoyed:**

- Ø A 5 day **field excursion** to Mt Magnet and Kalgoorlie, via Leonora
- Ø A 1-day **field excursion** to John Forrest National Park (led by Mike Freeman)
- Ø A **talk** on "Volcanoes, gardens and islands – a Japanese Journey."
- Ø A **talk** on "ANZAC Cove and other sites: how geological setting affects human history." (by Mike Freeman)
- Ø A **talk** on "Plants Through the Ages" as a joint function with UWA Friends of the Grounds, with hands-on lab and walk through Eocene and Jurassic Gardens
- Ø A **talk** on "Flint" (by Susan Stockmayer) with hands-on lab
- Ø A social "Joint Friends of UWA" **Cocktail Party**
- Ø A **Christmas Function:** visit to the **Naturaliste Marine Discovery Centre** and lunch at the **Flinders Café**, plus a short **talk** on the influence of the Leeuwin Current on the rocks and sediments of WA's coastal region.
- Ø A total of **5 newsletters** with geological articles and information - see these in COLOUR as pdfs on the Museum website

**[www.earthmuseum.segs.uwa.edu.au](http://www.earthmuseum.segs.uwa.edu.au)**

**MUSEUM ROSTER:****Allan Hart organises the Roster:**

**Allan's Phone Number: 0401 612 505**  
**Allan's Email Address: allan.hart.perth@hotmail.com**

**\*\*\*\* Roster to April 2009\*\*\*\****Is YOUR name here?*

Jan 25	<b>Allan W</b>	Mar 15	<b>Nell M</b>
Feb 1	<b>Allan H</b>	Mar 22	<b>Jeff B</b>
Feb 8	<b>Aiden C</b>	Mar 29	<b>Robert C</b>
Feb 22	<b>Margaret McF</b>	Apr 5	<b>Kirsten D</b>
Mar 1	<b>Sue B</b>	Apr 12	<b>Stella H</b>
Mar 8	<b>Dawn S</b>	Apr 19	<b>Anita M</b>

**HAVE YOU BEEN AN ACTIVE 'FRIEND'??** If not, contact Allan straight away and offer to do a Sunday duty soon. Remember you can also contact me or Kris (6488 2681) or Mignonne (9341 6746 or 041 895 5979) if you have any queries beforehand.

*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. Any problems, e.g. if you can't come at the last minute, let Allan, Mignonne or myself know (not Security).*

**\*\*\*SECURITY** are in the building on the western side of Carpark 1, at the north end of the campus. Check with them when you come to do your duty by **calling in to the office** or **'phone 6488 3020**, and they will open up the Museum.

*Remember, if you are unable to be a "Friend" by doing a roster, the alternative is to give a donation towards newsletter expenses etc.: \$25 is suggested. Don't forget your contribution for 2009 !!* We also welcome extra donations from generous Friends!

**\*\*NB\*\*Please make cheques payable to: "UWA"** (must be **UWA**, otherwise we cannot pay it in). **Send to:**

**Postal address:** Mrs J C Bevan, E de C Clarke Earth Science Museum  
 School of Earth & Environment, UWA M004  
 35 Stirling Highway, CRAWLEY, WA 6009

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