06/15/09 Westside Board meeting minutes

Meeting Open
Brian Waters called the meeting to order at 7:30 pm.

There were not enough board members present to constitute a quorum so no official business was conducted.

Ed Lehman gave the Wagonmaster's report:
First Creek—All of the arrangements for access to the collecting area have been made with the timber company. Be sure to meet at the 29 Pines campground and not at the gate. Ed will give a short safety talk prior to leaving the campground. Anyone meeting the group at the gate will be asked to wait until everyone else has entered the property as "punishment" for skipping the safety rules talk.

Mt Higgins— Everything looks good for the rhodonite dig to proceed. Mike Messenger will get the key for the gate. Everyone is to meet at the old gas station/store in Oso. There have been some reports that someone has re-opened the business so parking there may no longer be possible.

On June 20-21, the Marysville club is going to Riverside to the thulite dig outside of town.

Ed announced that he has updated the map booklet, mostly general clean up and a few map changes.

Meeting adjourned,
Submitted by Glenn Morita, Secretary Pro-Tem

Ancient supercontinent was a diamond factory

Catherine Brahic,
New Scientist 01/12/09

Talk about deep, dark secrets. Rare "ultra-deep" diamonds are valuable - not because they look good twinkling on a newlywed's finger - but because of what they can tell us about conditions far below the Earth's crust.

Now a find of these unusual gems in Australia has provided new clues to how they were formed.

The diamonds, which are white and a few millimeters across, were found by a mineral exploration company just outside the village of Eurelia, some 300 kilometers north of Adelaide, in southern Australia. From there, they were sent to Ralf Tappert, a diamond expert at the University of Adelaide.

Tappert and colleagues say minerals found trapped inside the Eurelia diamonds could only have formed more than 670 kilometers (416 miles) beneath the surface of the Earth - a distance greater than that between Boston and Washington, DC.
Clues from the deep

"The vast majority of diamonds worldwide form at depths between 150 km and 250 km, within the mantle roots of ancient continental plates," says Tappert. "These diamonds formed in the Earth's lower mantle at depths greater than 670 km, which is much deeper than 'normal' diamonds."

Fewer than a dozen ultra-deep diamonds have been found in various corners of the globe since the 1990s. Sites range from Canada and Brazil to Africa - and now Australia.

"Deep diamonds are important because they are the only natural samples that we have from the lower mantle," says Catherine McCammon, a geologist at the University of Bayreuth in Germany. "This makes them an invaluable set of samples - much like the lunar rocks are to our studies of the moon."

The Eurelia gems contain information about the carbon they were made from. Their heavy carbon isotope signatures suggest the carbon was once contained in marine carbonates lying on the ocean floor.

'Oddball' gems
Location, though, provides researchers with a common thread for the Brazilian, African and Australian deep diamonds, which could explain how they were born. All six groups of diamonds were found in areas that would once have lined the edge of the ancient supercontinent Gondwana.

"Deep diamonds have always been treated like oddball diamonds," says Tappert. "We don't really know what their origin is. With the discovery of the ones in Australia we start to get a pattern."

Their geographic spread suggests that all these ultra-deep diamonds were formed in the same way: as the oceanic crust dived down beneath Gondwana - a process known as subduction - it would have dragged carbon down to the lower mantle, transforming it into graphite and then

diamond along the way.

Eventually, kimberlites - volcanic rocks named after the town of Kimberley in South Africa - are propelled to the surface during rapid eruptions, bringing the gems up to the surface.
Surprisingly young

According to John Ludden of the British Geological Survey, if the theory were proven true, it would mean the Eurelia diamonds are much younger than most diamonds are thought to be.

"Many of the world's diamonds are thought to have been sampled from subducted crust in the very early Earth, 3 billion years ago," says Ludden.

Yet Tappert's theory suggests these diamonds would have been formed about 300 million years ago. "This may well result in a revision of exploration models for kimberlites and the diamonds they host, as to date exploration has focused on very old rock units of the early Earth," Ludden told New Scientist.

McCammon says Tappert's theory is "plausible" but just "one among possible models". She says not all deep diamonds fit the Gondwana model, but adds that the new gems "proved a concrete idea that can be tested by others in the community".

Polishing and Orienting Oregon Sunstone

by Merle Reinikka

Dichroism occurs in all colored Oregon sunstones to some extent.

Reds: To obtain the best color (and size, when possible), orienting to the most intense red shade is preferred.

Greens: Invariably dichroic, green on one axis and red or pinkish-orange on another. I recommend cutting the stone in a step cut, with steep ends—65 to 70 degrees—just as you would when cutting strongly dichroic tourmaline. The whole stone will be a pleasing green when viewed from the table; from the ends, the red is strongly evident. If cutting a standard round brilliant, put the red color zone in the culet. Otherwise the finished product will be as exciting as dead seaweed.

Cleavage: Oregon sunstones have two perfect cleavages. One is evident in the schiller that shows as aventurescence paralleling cleavage planes in some stones. This effect is caused by a concentration of copper platelets. Less evident—but of some importance when it comes to polishing—is the cleavage of the triclinic structure of the crystal itself.

Cleavage planes do present problems in the final phase of polishing. One can avoid these situations by orienting 7 to 10 degrees off these known cleavage planes. But when all else fails, try reversing the direction of the polishing lap, or if available, use a wax lap at slow speed.

Cerium oxide, in all combinations of solution or lap make-up, is especially effective in polishing Oregon sunstones. Linde A slurry is my alternative choice, on tin or Conan laps. Spectra (Linde A) or Ultra (cerium oxide) laps may also be useful, though always with the chance of rounded facet edges.

via BEMS eTumbler, 0609, via Pegmatite, 2/07; via The Rock Collector, 2/05; excerpted from Facets, 12/04

Peridot

By Vi Jones

Peridot is one of the lesser known gemstones and is the birthstone for the month of August. (Since Sapphire is the gemstone for September, and I covered corundum (ruby) in our last newsletter. I thought that we would discuss Peridot in this issue.)

Peridot is the gem form of the mineral Olivine. Olivine is a magnesium and iron silicate, (Mg,Fe)2SiO4. It crystallizes in the orthorhombic system and usually occurs in the form of granular masses. The color ranges from olive-green or grayish-green to brown. Olivine has a hardness of 6.5 and a specific gravity (relative density) of from 3 to 4. It exhibits conchoidal fracture, has a glassy luster, and is transparent or translucent. Found principally in ferromanganese igneous rocks, such as basalt and peridotite, it occurs in the lavas of Mt. Vesuvius, near Naples, Italy, and in Norway, Germany and Arizona. Gem quality olivine is called peridot and is the traditional birthstone associated with the month of August. During the Crusades, peridot was brought to Europe from Saint John's Island, Egypt, where it has been mined for more than 3500 years. A rock called dunite is composed almost entirely of olivine. Found principally in stony meteorites and in ferromangnesian igneous rocks, such as basalt, dunite is the chief constituent of peridotite, the rock that makes up the earth's mantle. Norwegian olivine is used both as foundry sand and as a flux for making steel.

Ref: Microsoft Encarta Reference Library 2004

Ed. Note: one of the largest dunite deposits in the world is near Mount Baker in the Cascade range of Washington. This material has been mined in Whatcom County for many years and is shipped out via train from Hamilton, WA. It is used in the steel industry. Rock Club members have made field trips to visit this mine in cooperation with the mine owners and the owners are generous in our sample taking--alas! No peridot here! Olivine does make lovely carvings.

Other sources for Peridot have been found on the Island of Hawaii but too small for gemstones. Most of the world's supply is mined in Arizona--hand hammered out of the basalt. The San Carlos Indian Reservation is the source for the Arizona stones. Peridot is also found in Upper Burma, near Mogok, in Minas Gerias, Brazil, in Norway, China and Kenya. There has been a recent find in Madagascar as well. The 310 carat, fine quality peridot, from Zebirget, Egypt, is the largest known. (Zabargad Island).

Another reference book lists Peridot with the correct mineral make-up but also discusses that Peridot has cleavage that is "imperfect in two directions" and that it has a hardness of 7 and a specific gravity of 3.22 to 3.45 and that the refractive index is 1.635--1.690 (moderate). Most peridots contain about 90 percent fosterite and the rest fayalite. The transparent gemstone has reasonably good properties: moderate durability and brilliance with a slightly greasy-looking luster.

Historically, the Egyptians mined and fashioned peridot beads as early as 1580 to 1350 B.C. In the 3rd and 4th centuries in Greece and Roman culture, the gemstone was used for intaglios, rings, inlays and pendants. During the Middle Ages, the Crusades brought Peridot back to Europe and the gems are found in Cathedrals. Peridot was prized during the Ottoman Empire (1300 to 1918). Turkish Sultans amassed the world's largest collection of them. In Istanbul's Topkapi Museum, there is a gold throne with 955 peridot cabochons decorating it, along with thousands of peridots in turbans, other jewelry and loose peridots.

When the term peridot was first used is uncertain. French jewelers used it long before French Minerologist R. J. Hauy (1743- 1822) applied it to the mineral. Sometimes the yellow-green mineral is called chrysolite, a term deriving from the Greek words meaning "gold" and "stone" From early times through the Middle Ages, peridot was considered a symbol of the sun.
An early Greek manuscript on precious stones tell us that peridot bestows royal dignity on its wearer. Another belief was that the stone would protect its owner from evil spirits; in order to do so, the gem must be pierced, strung on the hair of an ass, then tied round the wearer's left arm, a procedure outlined by Marbode. A thirteenth-century English manuscript states that if a torchbearer, sign of the sun, is engraved on the gem, it will bring wealth to its owners.

How to determine the value of Peridot? The greener the color the more value it has. Also clarity is a big factor as well as size. Peridot can be confused with tourmaline, green zircon, green garnets, chrysoberyl, diopside, moldavite and sinhalite.

Ref. "Gems, Crystals & Minerals", The American Museum of Natural History, 1990

As far as polishing Peridot--it polishes similar to glass/quartz and some folks add a drop of vinegar or oxalic acid to their water drip. If you folks enjoyed my research on Peridot let me know and I may research another stone.

From Gem and Crystal News 09/08