



THE MINERAL VEIN

Official Newsletter of

THE MINERAL SOCIETY OF MANITOBA

APRIL 2016

MARCH PRESENTATION SUMMARY

By Marjorie Turton

March 5 we had the pleasure of Cornel Rock conduct an interactive workshop on gold. He was an entertaining speaker whose credentials and places of employment were so many that this author was lost in recording them.

He started the workshop by asking why was gold so desirable. Our answers were: monetary value, malleable, doesn't tarnish, jewelry, used in medicine, treating bad water, filter, ductile.

Then he expanded on our answers.

At one time gold was the standard of currency, today that may not be the case although some countries are buying and accumulating gold for their reserves. This metal has been a valuable and highly sought-after precious metal for coinage, jewelry, and other arts since long before the beginning of recorded history. In the past, a gold standard was often implemented as a monetary policy within and between nations, but gold coins ceased to be minted as a circulating currency in the 1930s, and the world gold standard was finally abandoned after 1976. The historical value of gold was rooted in its medium rarity, easy handling and minting, easy smelting, corrosion resistance, distinct color, and non-reactivity to other elements. One ounce of gold can be hammered into thin sheets or gold leaf resulting into 9 square meters. Alternatively the one ounce gold can be drawn into a thin wire 50 miles long. Gold leaf can be beaten thin enough to become transparent. The transmitted light appears greenish blue, because gold strongly reflects yellow and red. Such semi-transparent sheets also strongly reflect infrared light, making them useful as infrared (radiant heat) shields in visors of heat-resistant suits, and in sunvisors for spacesuits. Thus it is the most malleable and ductile metal on earth. Not only can thin sheets of gold be transparent it can block some radiation.



Crystalline gold from Mina Zapata, Venezuela

Gold resists attack from individual acids but it can be dissolved in aqua regia (nitro-hydrochloric acid, literally "royal water"). Gold metal also dissolves in alkaline solutions of cyanide, which are used in mining and electroplating. It is insoluble in nitric acid, which dissolves silver and base metals, a property that has long been used to refine gold and to confirm the presence of gold in items, giving rise to the term acid test; it forms an amalgam in mercury.

Gold, beaten into thin transparent sheets, are used as a filter on astronaut helmets, guarding against harmful radiation. Gold leaf is used as both a decorative and protective coating.

Well gold has many properties which themselves are desirable. It is an excellent conductor of electricity. Here it is employed mainly as coating facilitating passage of current and protecting the supporting base metal.

(Continued on page 3)

THE MINERAL SOCIETY OF MANITOBA

c/o The Manitoba Museum
190 Rupert Avenue
Winnipeg, MB, R3B 0N2

mineralsocietyofmanitoba.weebly.com

The 2015-2016 Executive:

President

Jacques Bourgeois, *ph. 204-885-5618*

Vice President

Joshua Myers, *ph. 204-330-0076*

Secretary:

Marjorie Turton, *ph. 204-775-0625*

Membership / Treasurer:

Lisa Grabowski, *ph. 204-774-5097*

Field Trip:

Marion Foster, *ph. 204-775-0625*

Newsletter Editor:

Jacques Bourgeois, *ph. 204-467-3282*

Website:

Josh Myers, *ph. 204-330-0076*

Members at Large:

Marion Foster, *ph. 204-775-0625*

Mavis Bedford, *ph. 204-417-6627*

Jack Bauer, *ph. 204-632-6934*

Yvonne Searle *ph. 204-663 6637*

School Programs

Yvonne Searle, *ph. 204-663 6637*

The Mineral Vein is published monthly from September to June.

Meetings are held on the first Wednesday of each month from September to May inclusive at the Manitoba Museum in room P47 on the Planetarium level. They begin at 7:30 PM and feature announcements, an invited speaker and a raffle. Members are encouraged to bring along any new, interesting specimens, or specimens appropriate to the speaker's topic.

Field Trips take place from May to September to interesting sites in Manitoba or neighbouring provinces and states.

Membership: A single membership is \$15 while a family membership is \$20. Memberships run from October to October.

Table of Contents

MARCH PRESENTATION SUMMARY.....	1
UPCOMING EVENTS.....	2
FIELD TRIPS.....	4

UPCOMING EVENTS

April 6, 2016: MSM regular monthly meeting begins at 7:30 p.m. at the Manitoba Museum. This meeting will feature guest speaker **Christian Bohm**, director of Manitoba Geological Survey who will talk about plate tectonics and other topics related to geology.

April 22, 2016: Earth Day—Manitoba Geological Survey Open House. **9:00 AM - 4:00 PM**

May 4, 2016: MSM regular monthly meeting begins at 7:30 p.m. at the Manitoba Museum. Speaker to be announced.

May 22 to 29 2016: Manitoba Mining Week
Archaeology, Rocks and Mineral Event at Oak Hammock Marsh on **May 28 & 29**

June 12, 2016: MSM Annual BBQ at Ron and Wendy Anthony's place. Hot dogs and hamburgers will be provided by the club. Feel free to bring a side dish, salad or dessert to share. RSVP by phone or via email: (204) 774-5613 or ranthony@mymts.net



Founded in 1971, the Mineral Society of Manitoba is dedicated to promoting the study of minerals, rocks and fossils for their scientific and recreational value.

The Mineral Society of Manitoba hosts monthly meetings covering a variety of mineral related topics. In addition, the Mineral Society organizes summer field trips to collecting localities, and hosts educational exhibits about minerals and fossils.

FEBRUARY PRESENTATION (CONT.)

It does not tarnish. It is one of the least reactive chemical elements, and is solid under ambient temperature and pressure. The metal therefore occurs often in free elemental (native) form, as nuggets or grains, in rocks, in veins and in alluvial deposits. It occurs in a solid solution series with the native element silver and also naturally alloyed with copper and palladium.

Gold, itself, is very dense: a cubic meter has a mass of 19,300 kg. By comparison, the density of lead is 11,340 kg/m³, and Silver is 10 kg/ m³.

It appears that gold is a most desired metal. In the "New World" the Spanish has destroyed a civilization in the quest of gold. In recent times North America had the gold rush in California and the Alaskan Pan Handle. Mountains and river ecosystems have been destroyed in the search for gold by individuals and mining companies.

The deposit of gold is 2 kinds, Placer and Load.

Extraction of gold from both types of deposit have been damaging to the environment. Dredge and vacuum systems of extraction have been destructive of river systems, killing fish and shore vegetation in the removal and screening of rock and sand. In the Pan Handle, mountain sides have been washed down.

Then he went to lengths to tell us about one of the wonders of Load deposits. In the Load method, the richest deposit is in South Africa, near Johannesburg in the Witwatersrand basin.

Here one finds the Mponeng mine. Its main shaft is over 4 kilometres (2.5 mi) below the surface, and is considered to be one of the most substantial gold mines in the world. It is also



currently the world's deepest mine. The trip from the surface to the bottom of the mine takes over an hour. With its galleries it is 240 miles long. Over 5400 metric tonnes of rock are excavated from Mponeng each day. Its profit from that is one billion dollars per year and this is without what people are stealing. The stealing is so rampant that even the pillars in the galleries are attacked.

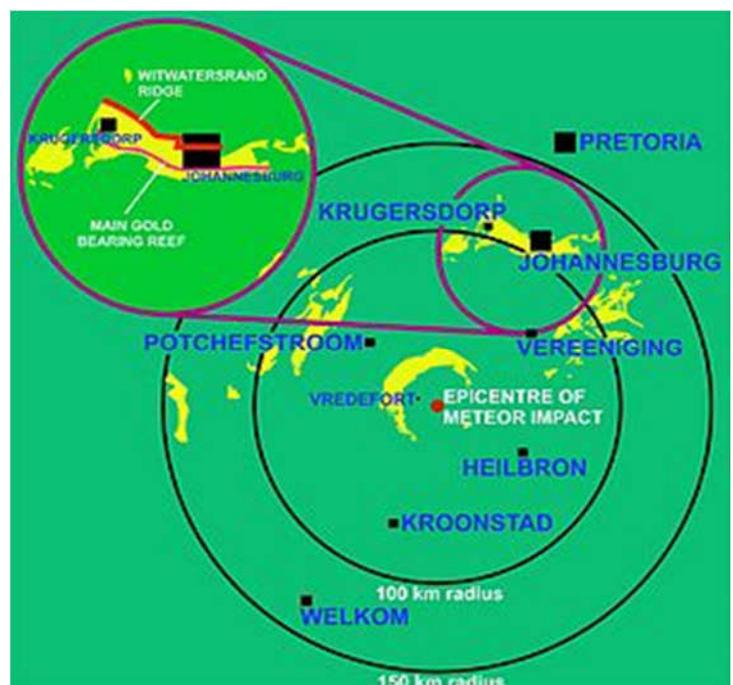
As a result tunnel walls are secured by flexible shotcrete reinforced with steel fibers, which is further held in place by diamond-mesh netting. Workers descend, 40 at a time, down the mine in an elevator cage. This cage drops 46 to 50 ft per sec. Descending is not for people who may have heart or circulatory problems. This cage weighs 20 tons, held by a thick rope which weighs 10 lbs. per foot and each second adds one tone to the total weight. At the bottom the rope is 140 °F.

The temperature of the rock reaches 66 °C (151 °F) at the bottom level, and the mine pumps slurry ice underground to cool the tunnel air below 30 °C (86 °F). Maximum work level is 82 °F but with humidity at 90 per cent. At the surface the ice plant is making 6-10 K tons of ice every 24 hours.

Potential workers are first tested to see if they can tolerate the temperature and high humidity for a week. If tolerable, they are sent down for several weeks. Survival and tolerance could mean they would be working underground for life.

Everyday 5K tons of explosives are passed down and 6K tons of material is removed. The largest vein is 30" wide but there is lots of gold in the ground.

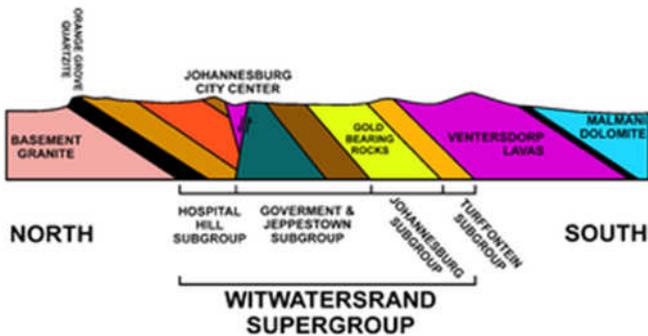
How come the gold is there? Blame the solar system. Dust coalesces in the formation of the earth and because of its weight, it sinks deep. Along comes an asteroid and the impact distorted the contemporary geological structures resulting in the Vredefort impact crater.



Vredefort Crater, South Africa

FEBRUARY PRESENTATION (CONT.)

In the immediate vicinity of the impact all the subterranean strata were uplifted and upturned, so that Witwatersrand rocks are exposed in an arc 25 km away from the impact center. There are unfortunately no gold deposits in these outcrops. The meteor impact, however, lowered the Witwatersrand rocks within the crater. This protected them from erosion later on; but, possibly more importantly, bringing them to the surface close to the crater rim, near Johannesburg.



Cross section of the terrain.

He finished with a video depicting the Casio Project. This is a potential mining effort near Whitehorse in the Yukon.

Quick facts about gold:

The largest nugget found was in Australia, 24 x 12 inches (Welcome Stranger) only 5" from the surface.

Gold reserves held by various countries:

U.S.A. 8,133 tons, Germany 3,387 tons, Italy 2452 tons, France 2435 tons, China 1054, Canada 0.6 tons (moving away from gold as a government asset)

Countries producing the most gold:

China, Australia, Russia, U.S.A.

Top Gold mining companies:

Goldcorp (Can), Barrick (Can), Newmont Mining (U.S.A.), Polyus Gold (Russia), Newcrest Mining (Australia).

FIELD TRIP ITINERARY 2016

By Jack Bauer & Marjorie Turton

1. Gillis Quarry, (May 14)

We will be looking for **Ordovician fossils** such as **sunflower corals, brachiopods, gastropods, cephalopods** and the elusive **trilobites**. Fossils of snails and nautiloids can sometimes reach giant proportions. Contact: Jack Bauer, 204-632-6934 or jebauer@mymts.net

2. Souris, (June 4)

Regarded as one of North America's largest deposits of semi-precious gems, this twelve acre glacial deposit is known for **agates**, but the site has also yielded **epidote, jasper, petrified wood** and other varieties of stones. Contact: Marjorie Turton, 204-775-0625

3. Bird Lake / Cat Lake area, (July 22 to 24)

Our objective is to collect **garnets** from outcrops, South and East of Bird Lake and West of Booster Lake. A pre trip to the area will confirm accessibility. Campsites are subject to availability. Confirmation deadline for this trip is July 15

Contact: Jack Bauer, 204-632-6934 or jebauer@mymts.net

4. East Braintree (August 6)

Join us as we explore this locality to find **peristerite**, an iridescent variety of **albite**. Its color sheen is similar to Labradorite but not as pronounced.

Contact: Marjorie Turton, 204-775-0625

5. Snow Lake, (August 26 to 28)

This 3 day trip will include a visit to the new concentrator, as well as metallic mineral collecting sites for **galena, sphalerite, pyrite, chalcopyrite**, etc.

Confirmation deadline for this trip is August 20.

Contact: Jacques Bourgeois, 204-467-3282 or j_bourgeois@yahoo.com

All field trips are subject to the weather cooperating. Some field trips may require participants to sign a liability waiver as a condition to gaining access.

Field trips are also subject to sufficient participation (and may be cancelled), so keep in touch prior to an upcoming trip. Advise trip leader of any unexpected changes.