



THE MINERAL VEIN

Official Newsletter of

THE MINERAL SOCIETY OF MANITOBA

October 2018

SEPTEMBER PRESENTATION SUMMARY

By Jacques Bourgeois

Our guest speaker in September was Cornell Rock, a geologist originally from Romania. He worked his way up to eventually manage 39 mines in the best mineral deposit sites in Europe. He also worked in diamond mines in Congo then moved to Canada and worked with John Biczok.

His presentation was on garnets which is not a mineral, but rather a group of minerals.

In geology there are 2 groups of garnets, aluminum based and calcium based. They all share the same basic general formula $X_3Y_2(SiO_4)_3$.

The first group, when Y is aluminium, is made up of **pyrope**, **almandine** and **spessartine**.

The second group, when X is calcium, includes **grossular**, **andradite** and **uvarovite**.

Because the chemical composition of garnet varies, they can have a hardness between 6.5 and 7.5 on the Mohs scale. Almandine, for example, is stronger than quartz and is often used as abrasive. In fact, garnets were used as abrasive for many years. Mixed with other minerals, they can be used for water filtration as well as laser technology. The colours of garnets are some of the most diverse and beautiful in the world and it is no wonder they are heavily used in jewelry. Some of the most valuable gemstone in the world are garnets. The blue garnet, for example are worth over 1 million dollars per carat. There has been only 25 pieces found in the world over all civilization.

Garnet is the birthstone for January. It means love and friendship and focuses energies according to old customs. The almandine is the state mineral for Connecticut since that state is one of the finest sources in the world.

In geology, the garnet group is a key mineral in interpreting the genesis of many igneous and metamorphic rocks.



Cornell Rock and Jack Bauer holding a garnets

Garnets are relatively resistant to alteration. Hence, garnets commonly preserve the compositional zonation that are used to interpret the temperature-time histories of the rocks in which they grew. Garnet peridotite found in kimberlite are used as indicator for diamonds. At 300 kilometers below the surface, the plagioclase are transformed into garnets. Such silica-rich garnets have been identified as inclusions within diamonds.

Almandine is the most common type of garnet in the world. It is also the hardest one. The name Almandine is a corruption of Alabanda, a region in Asia Minor where these stones were cut in ancient times. Almandine occurs in metamorphic rocks like mica schists.

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UPCOMING EVENTS

October 3, 2018: MSM regular monthly meeting and AGM begins at 7:30 p.m. at the Manitoba Museum. This is our **Annual General Meeting and Election** night. We will be accepting nominations from the floor for the position of Vice President. Duties of the VP, include arranging speakers for our meetings, providing a brief introduction of our guest speaker and helping with the newsletter summary. Senior members will help provide contacts and potential guest speakers. If you have the confidence to speak in front of a group of people, we could use your help. **October is also Show and Tell.** Bring your interesting finds of the season and tell us your story. **Jack Bauer will do a short demonstration on "Cleaning Selenite"** with a cleaning station set up to help you clean your selenite crystals.

November 7, 2018: MSM regular monthly meeting begins at 7:30 p.m. at the Manitoba Museum. Guest speaker to be announced.

December 2, 2018: MSM annual Christmas Party. This year, our Christmas party will be held at the Aaltos restaurant at the Canad Inn Polo Park. Our annual **Mineral Auction** will take place during this event.



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.

THE MINERAL SOCIETY OF MANITOBA

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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.

SEPT. PRESENTATION SUMMARY (CONT.)

Spessartine's name is derived from the Spessart mountains in Bavaria, Germany, where it was first identified. It occurs most often in granite pegmatite and allied rock types and in certain low grade metamorphic phyllites. Spessartine of an orange-yellow colour is found in Madagascar. Violet-red spessartines are found in rhyolites in Colorado and Maine.



Pyrope's name come from the Greek pyrōpós meaning "fire-eyed". It is red in colour but varies from deep red to black. Pyrope and spessartine gemstones have been recovered from the Sloan diamondiferous kimberlites in Colorado. They are very common in the Czech Republic where they are often called Bohemian garnets. Another intriguing find is the blue color-changing garnets from Madagascar, a pyrope-spessartine mix. Pyrope is an indicator mineral for high-pressure rocks.



Andradite is of variable composition and may be red, yellow, brown, green or black. It is found both in deep-seated igneous rocks like syenite as well as serpentines, schists, and crystalline limestone. Some green variety of andradite has been called the "emerald of the Urals" from its occurrence there, and is one of the most prized of garnet varieties.

Grossular is the only garnet that can be colourless . The name grossular is derived from the botanical name for the gooseberry, *grossularia*, in reference to the green garnet of this composition that is found in Siberia. Other shades include cinnamon brown, red, and yellow. Because of its inferior hardness to zircon, which the yellow crystals resemble, they have also been called *hessonite* from the Greek meaning inferior. Grossular is found in contact metamorphosed limestones with vesuvianite, diopside, wollastonite and wernerite. Grossular garnet from Kenya and Tanzania has been called tsavorite. Tsavorite was first described in the 1960s in the Tsavo area of Kenya, from which the gem takes its name

Ovarovite is the rarest garnet in the world. It is bright green in color, usually found as small crystals associated with chromite in peridotite, serpentinite, and kimberlites. It is found in crystalline marbles and schists in the Ural mountains of Russia and Outokumpu, Finland.

Garnets are easy to fake with glass. First thing to look for is the price. If they are very cheap, go away, if they feels oily, run away, there's plastic inside. One of the best way to determine if the garnet is real is to use a reflectometer or a mineral magnet. There are no pure garnets. Pyrope is 83% pure and almandine is 95% pure. All natural garnets will have impurities in them. If it looks perfect, it's probably a fake one. Shape is also important in determining if the garnet is real. Garnet form in the dodecahedron or cubic shape. Of course, once it is polished it is often difficult to determine the shape but if you bring the gemstone close to your eye, you can often see how the light is refracted inside. Rocks associated with it are also good telltale as well when in matrix.

For gemstone, the clarity, the cut (how many faces) and the colour will give the value of the cut stone.