

HUI PŌHAKU 'Ō HAWAII

Rock & Mineral Society of Hawai'i, Inc.



Meeting Times

MEETING

Wednesday
May 24, 2017

6:15-8:00 pm

Makiki District Park
Admin Building

NEXT MONTH

Fossil's

LAPIDARY

Every Thursday

6:00-8:00pm

Makiki District Park
2nd floor Arts and
Crafts Bldg

MEMBERSHIP

DUE COSTS 2017

Single: \$10.00

Family: \$15.00

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Hawai'i, Inc.
P.O. Box 23020
Honolulu, HI
96823-3020

Beryl's By Dean Sakabe

May's topic is the wonderful gem mineral called Beryl. Beryl, from the ancient Greek, "beryllos", indicating a "precious blue-green color of sea water" stone. Beryl by it self is often unknown to the general public. Even though it is one of the most recognized and important gem mineral. The reason is that Beryl's are usually know by the varietal name. The list below is a guide for the Beryl family names.

Aquamarine is the blue variety of Beryl.

Emerald is the green variety of Beryl.

Goshenite is the colorless variety of Beryl.

Heliodor is the greenish-yellow variety of Beryl

Morganite is the pink variety of Beryl.

Pezzottaite is a marketing term for a raspberry red beryl

The name beryl is used for the red and golden varieties, which are simply called **Red Beryl** and **Golden Beryl**, respectively.



Emerald on calcite,
Coscuez, Boyaca, Columbia



Goshenite on Schrol,
Erongo Mountains, Namibia

Normally I would start off with the most prized variety of the mineral, which in most cases would be the red variant. Why, well it just is. However in Beryl's case, it is not the most prized Beryl. We will get to Red Beryl later, first in this case will be the green Beryl.

Emerald is the green variety of the mineral beryl. The green color of emerald is, caused by small amounts of chromium and

Beryl's



World's largest Aquamarine, found in Minas Gerais, Brazil. Weighs 110kg, measured 48cm x 42 cm in Diameter

enhanced by traces of iron. Unlike other beryls, emeralds often contain inclusions and other flaws. Which are considered part of the character of the stone and used to assure the purchaser that it is a natural stone.

The Roman historian Pliny the Elder summed up the green as "nothing is greens greener" summing the desire for the supreme green gem not only in Rome but throughout the ancient world.

The Emeralds from ancient times came from mines in Egypt and what is now Northern Afghanistan. The modern Emerald bounty began almost five centuries ago when Spanish explorers arrived in the new world. Montezuma presented Cortes with a staggering emerald crystal much larger and finer than anything ever seen before.

The Spaniards spent years searching for the source of the fantastic green gems, which they eventually found in what

is now Colombia. While Colombia is still the world's largest and most famous emerald-producing country, Brazil and Zambia are producing a large portion of the current Emeralds.

Aquamarine is the blue, or perhaps more correctly, blue-green or aqua variety of Beryl. Aquamarine gets its color from trace amounts of iron that find their way into the crystal structure. Most gem Aquamarines have been heat treated to produce the popular Blue to blue-green colors from less desirable yellow or light green stones. The leading producer of Aquamarines is Brazil, although they are also found in Pakistan, Nigeria, Madagascar, Zambia, Mozambique, as well as several US localities (Colorado, Texas, Maine, S. Dakota to name a few).

Aquamarine has mostly been a pastel blue, however the darker the color, the more valued it is. Additionally connoisseurs also prefer a more purer blue, with no green or gray in it. So, greenish Aquamarines are often heated to remove the yellow component leaving only blue.

Goshenite is the variety name applied to the colorless beryl. Goshenite, the transparent, colorless, alkali-bearing "pure" Beryl was discovered in Goshen, Massachusetts. The Lily Pond mine situated in a pegmatite near a small lake was the source of crystals accompanied by other pale greenish-blue, bluish-green, yellowish, pink, and white beryl crystals. Dr. John Sinkankas tells us that originally the designation included "pink beryls" and "pale-colored beryls." The name now applies only to transparent, colorless Beryls and often includes nearly colorless Aquamarine's, where the blue tones are undetected. Goshenite is found worldwide, but significant deposits lie in various locations in the former U.S.S.R., Mexico,



Morganite, Urucum mine, Minas Gerais, Brazil

Beryl's

Brazil, and Canada. California, Colorado, Utah, Idaho, South Dakota, North Carolina, Maine, Connecticut, and New Hampshire.

Heliodor is the yellow variety of Beryl. The name has been derived from a Greek word "helios", which mean "gift from the sun." It was discovered in Namibia around 1910 in a pegmatite. Today, the deposits of Heliodor are found in Minas Gerais and Goias in Brazil, Madagascar, Ukraine in Russia, as well as Connecticut and Maine. Russia's deposit has a deep gold color, whereas the stones from Brazil are usually lighter yellow color.

Heliodor does not include golden colors which are given the apt name of Golden Beryl. The color of heliodor is due to trace amounts of iron impurities in the beryl structure. The color ranges from pale yellow to yellow-orange to yellow-green depending on the relative concentrations of Fe^{2+} to Fe^{3+} . When Fe^{2+} is present in the interstitial channel site, a pure blue color is evident. When both are present the typical blue-green color of aquamarine is produced.

Heating Heliodor to approximately 250 - 300 degrees Celcius reduces the Fe^{3+} to Fe^{2+} , this eliminates the yellow and produces colorless Beryl or in some cases a pale blue to blue Aquamarine. Interestingly enough by irradiating the stone it can reverse this process restoring the yellow color.

Morganite is the pink variety of beryl. Morganite is colored by trace amounts of manganese that find their way into the crystal structure.

Morganite was first discovered in California in the early twentieth century. A rich find of Tourmalines, Kunzite, and other gem stones north of San Diego started a gem rush in the region. Morganite was an exciting new discovery, one that drew the attention of the most important gem buyer: George Kunz of Tiffany & Co. Kunz knew that this rich pink gem was something exceptional and he bought all he could. In 1911 He decided to name it in honor of his biggest customer: millionaire bank tycoon John Piermont Morgan, who was also an avid gem collector: Morganite.



Red Beryl, Violet claims, Wah Wah Mountains, Beaver County, Utah



Heliodor, Capelinha, Minas Gerais, Brazil

Although Morganite was also discovered in 1908 in Madagascar and there are also deposits in Brazil, Mozambique, Namibia, Afghanistan, and Russia, it remains relatively rare. In fact, its rarity keeps it relatively affordable, since it isn't available in enough quantity to cut in standard sizes and use in manufactured jewelry. Morganite continues to remain a connoisseur gem, for those who are willing to seek it out for its combination of soft color and dazzling brilliance.

Red Beryl is the rarest form of beryl. Red beryl is presently found at only three locations in the world: the Thomas Range, the Wah Wah Mountains in west-central Utah, and the Black Range in New Mexico. Of these the only the Wah Wah Mountains has gem quality Red Beryl,

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Officers

President

Matthew Martin

Vice President/Admin.

Jon Bly

BLYJ1966@Gmail.com

Vice President/Lapidary

Dean Sakabe

Dean.d.sakabe@verizon.com

(808) 282-6681

Treasurer

Debbie Iijima

Secretary

Blair Ishitani

Newsletter Editor

The Rock & Mineral Society meets on the 4th Wednesday of each month (except for adjusted dates in November and December) at the Makiki District Park, 6:15-8 pm. Enter from Keeaumoku Street. Parking is free but limited.

The Newsletter is published monthly, some days prior to the meetings and is distributed in electronic format by email (Adobe Acrobat PDF file attachment). Printed copies are "snail" mailed to those who do not have email. The electronic format usually contains full-color images; the print version may be limited to B&W due to reproduction costs.

DOOR PRIZES

Please note that we have instituted door prize drawings at our monthly meetings. Because of Hawaii's gambling laws, these drawings cannot be conducted in the common "raffle" format where tickets are sold. Rather, each *paid* member attending the meeting will receive a drawing ticket upon request. A voluntary donation of \$1.00 is requested and encouraged. Drawings will be conducted at the end of the meeting with available prizes awarded in random order. You must be present to win. Please remember: if you win a prize, please bring one to the next meeting. This helps to keep our drawings going. Thank you.

this is the Violet Claims, near Beaver, Utah. In 1904, Maynard Bixby discovered Red Beryl in the Thomas Range located in Juab County, Utah. Bixby thought it might be a new variety of beryl, but the raspberry-red color did not correlate with any beryl known to exist at that time (green, blue, pink, yellow, and white). W.F. Hillebrand, a geochemist from the National College in Washington, D.C., identified the mineral as a new type of Beryl in 1905.

In 1912, Dr. A. Eppler named it Bixbite in honor of its discoverer. Laboratory analysis showed that manganese and small amounts of iron, chromium, and calcium create the raspberry-red color of red beryl. It wasn't until the late 1950's that larger, better quality crystals were found in the Wah Wah Mountains in Beaver County.

Red Beryl is thought to have formed along fractures, in cavities or within the host rhyolite from a high-temperature gas or vapor phase released during the latter stages of cooling and crystallization of the rhyolite magma. Rhyolites ordinarily lack gem minerals and Beryl's of any sort are extremely uncommon. Therefore the presence of Red Beryl suggests some unusual conditions for gemstone formation. The crystals occur primarily as elongated hexagonal crystals that are up to 15 mm in length, and the largest crystal discovered to date is 14 mm wide and 34 mm long.



Pezzottaite,
Ambatovita, Mandrosonoro, Antsirabe,
Madagascar

Lastly here are some Beryl items:

Beryl crystals up to 93 Ft. long and weighing 61 tons were found in the Keystone area, South Dakota.

The largest known gem aquamarine of 110 kg, was found in the Papamel mine, Maraimba, Minas Gerais, Brazil, in 1910 .

Beryl Crystals up to 60 ft x 10 ft have been reported from various localities of Malakaina, Ankazobe and Tasantanana, in Madagascar.

Aquamarine crystals up to 1.5 m length have come from Tigerek, Rudnyy Altay Mountains, Russian Federation

At Muzo, Columbia, huge quantities of excellent gemmy emerald crystals are found, along with a bright green fossil shell have also been found. The fossil mollusk has been totally "emeraldized".

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