

THE CMS TUMBLER

March
2020

Next Meeting:
March 12, 2020
7:00 p.m.

American Legion Hall
25406 97th Pl S
Kent, WA

The Program is Bob
Pattie on Gemstones
of Washington.

The Show & Tell
Theme is to bring a
gemstone of your own.

This month remember to wish a Happy Birthday to

Maynard Byers on March 2
Daniel Fraser on March 7
Sharim Johnson on March 7
Linda Jorza on March 12
Scott Harris on March 14
Peter Williams on March 18
Yingchu Chuang on March 20
Alan Epley on March 20
Alexa Viejo on March 20
Scott Miles on March 23
John Biggs on March 27

and also remember to wish a Happy Anniversary to
Steve & Emihiant Sorkness on March 3 (30 years)
Angie & Brian Bayer on March 8 (8 years)
Garry & Kathy Hartzell on March 13 (49 years)
Cheryl & Dale Ehrenheim on March 14 (22 years)

Connect with us!

Website: cascademineralsociety.org
Club Facebook: facebook.com/CasMinSoc/
Show Facebook: facebook.com/cascadegemandmineralshow
Instagram: instagram.com/cascadegemandmineralshow/

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Tips, suggestions, recipes and experiments printed in this newsletter are the experiences and/or opinions of the individuals submitting them. We are not responsible for their authenticity, safety, or reliability. Caution and safety should always be practiced when trying out any new idea.

The monthly newsletter of the Cascade Mineralogical Society, Inc., Kent, Washington

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Email preferred.
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2020 Elected Officers

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2020 Committee Chairs

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Webmaster	Mark Hohn	253-332-3736	showchair@cascademineralogicalsociety.org

2020 CMS Dues are \$25 per year per family

Pay online, by mail, or at our meetings.

Mailing Address: Charles Benedict, 25838 W Lk Wilderness Dr SE, Maple Valley WA 98038

You can pay your dues via credit card!! We now accept all cards through our website or at the meeting.

You can renew your membership or enroll as a new member and pay your dues all in one shot online. You will find it under the "Membership" tab on our website. <http://www.cascademineralogicalsociety.org>

The object of the Society shall be to stimulate interest in the study of the earth sciences, lapidary arts and related subjects.

This Society is affiliated with the American Federation of Mineralogical Societies; the Northwest Federation of Mineralogical Societies; and the Washington State Mineral Council.

Every member of the club should be receiving a copy of the Northwest Newsletter. If you are not receiving a copy contact Mike Blanton in person or by telephone at (425) 271 -8757 or by computer at mblanton41@hotmail.com

To get information to the Tumbler via the Internet send it to greenrockdraggin@yahoo.com Please put Tumbler and subject in the Subject Line. The deadline is the 20th of each month.

Sun	Mon	Tue	Wed	Thur	Fri	Sat
1	2	3	4	5	6	7
8	9 Show Meeting 6:30 pm Board 7:00 pm	10	11	12 General Meeting 7:00 pm	13	14
15	16	17	18	19	20	21 Club Field Trip Baker Lake
22	23	24	25	26	27 Spokane Show	28 Spokane Show Mt. Baker Show
29 Spokane Show Mt. Baker Show	30	31				

CMS Show Committee Meeting:....Monday, March ?.....6:30 pm to 7:00 pm
 CMS Board Meeting:.....Monday, March ?.....7:00 pm to 8:00 pm
 CMS General Meeting:.....2nd Thursday, March ?.....7:00 pm to 9:00 pm

Lapidary Class Hours:.....By appointment, call to set a time & day for your lesson (425) 226-3154
 Lapidary Shop Hours:.....Most Tuesdays..... 2:00 pm to 5:00 p, call ahead (425) 226-3154
 Lapidary Shop Hours:.....3rd Saturday..... by appointment only (call a few days ahead to set time)

More Field Trip info can be found on Page 11
 More Show info can be found on Page 12

Gertrude & Brunhilda

by **KAM**



The Tumbler has received One-Time Rights to publish this cartoon

CMS Board Meeting Minutes February 10, 2020

Meeting canceled.

by Pete Williams, 2020 Secretary

Our Club is a Member of these Federations and Associations: by Kat Koch**AFMS:** The AFMS governs our Northwest Federation.

Read all about it!! The March 2020 issue of the AFMS Bulletin, on page 6, Mark Hohn has been nominated as "Rock Hound of the Year" from the NFMS.

You can find the most current association news at <http://amfed.org/news/default.htm>

NFMS: The Northwest Federation is our home federation. To keep up on the goings on in our own backyard you can find the most current news bulletins at <http://northwestfederation.org/Newsletters.asp>

This years Northwest Federation Show:

82nd Anniversary Northwest Federation of Mineralogical Societies Show & Convention 2020 and The 69th Annual Gemstone Junction Held in: Ogden, Utah!

Hosted by the Golden Spike Gem & Mineral Society

WHERE in Ogden, UT: Golden Spike Event Center

1000 North 1200 West • Ogden, UT 84404

WHEN: Friday, April 10th 2020 - 9am - 6pm

Saturday, April 11th 2020 - 10am - 6pm

Sunday, April 12th 2020- 10am - 4pm

This is one of the best shows I have been too. This is held in dinosaur country and they always have great FREE lectures. You also will find minerals and rocks not found in western Washington. They have a dinosaur walking around the show for the kids.

They currently don't have a NFMS show scheduled for 2021. Stay tuned as it will happen.

ALAA: The American Lands Access Association, Inc. represents the rockhounding interests of 325 gem & mineral clubs/societies in 47 States and the District of Columbia. The purpose of the association is to promote and ensure the rights of amateur fossil and mineral collecting, recreational prospecting and mining. The use of public and private lands for educational and recreational purposes. They also carry the voice of all amateur collectors and hobbyists to our elected officials, government regulators and public land managers.

Under "Active Access Issues" there is some very interesting info on several bills before Congress that impact rockhounding.

ALAA also publishes a monthly news letter. To keep up on the news and lobby efforts on our behalf check out <http://amlands.org/>

Washington State Mineral Council: The Washington State Mineral Council is dedicated to the location and conservation of rock and mineral sites of interest to the rockhounds of Washington state.

The Mt. Baker Snoqualmie National Forest has several projects happening this year. Check the Schedule of Proposed Actions at: <http://data.ecosystem-management.org/nepaweb/currentsopa.php?forest=110605>

They also have a monthly news bulletin that keeps you informed of everything the State and Federal governments wants or are doing to the rockhounding areas in the northwest.

You can find all this information and a whole lot more at <https://mineralcouncil.wordpress.com/>

**From the Top of the Rock Pile...** by Kat Koch, 2020 CMS President

Mike and I spent 4 days roaming a very small portion of the Tucson Rock and Gem Show. I think we could spend the full 3 weeks there and not see every show. I picked up four very good bargains on minerals specimens for raffle prizes at our Gem Show.

From there we went on to San Antonio to visit Mike's relatives. Shortly we head towards California as we received a phone call at the beginning our trip that my sister had had a stroke.

The sale of booth space goes live March 1st. I am excited about getting our show officially open and booked.

**Young Richards Almanac** by Dick Morgan

Once upon a time when man greeted man with rocks they were weapons of war. Now when man greets man with rocks they are usually polished, decorative, and conversation starters.

CMS General Meeting Minutes February 13, 2020

by Pete Williams, 2020 Secretary

Meeting called to order at 7:12

Treasurer's Report: The club is doing well. Copies of the financials were made available for viewing.**Tumbler Editor:** Keith is requesting articles for the Tumbler to be submitted to him. Pictures are also welcome.**Webmasters/Membership Report:** Dues for 2020 are being accepted and can be paid via the club website.**Shop Reports:** A new tarp has been put on the shed and there have been no leaks even with all the rain.**Mineral Council:** New bills have been re-introduced in congress to expand wilderness areas in several states. In Washington, it would expand the Olympic wilderness area by 126K acres and result in many road closures eliminating most recreational use. The bills do not have a high probability of becoming law.**Show Committee:** The show this year will be on Sept. 19-20 at Green River College. The contract with the college has been signed and vendors will soon be invited. Sign up sheets are available to request club members to volunteer.**Program:** Roger Daneman gave a presentation on 2020 field trips and required equipment.

Meeting adjourned at 8:11 followed by show and tell and the raffle.

Listing of US House of Representative Activities by Bob Pattie

The attached list is some of the bills that were submitted for consideration in February. They cover various areas in the Washington, California, Colorado, New Mexico, and St. Croix and are primarily concerned about increasing wilderness areas and wild and scenic rivers. For an example in the Olympia National Park and Olympia National Forest bill number US H.R.2642, 126,000 acres to the wilderness areas and 19 rivers to the wild and scenic rivers area are considered and would be closing current roads. The percentage numbers on each bill is an estimate of the chances it will be passed in this session, but we have seen in the past sometimes that they have combined a number of bills so they can get enough support to pass a bunch all grouped together.

I would suggest that everyone would google the bills that are effecting areas they are interesting in visiting and keep up to date on any actions take by our U.S. Representatives.

Feb 4, 2020 — Bill Text

H.R. 2546: Colorado Wilderness Act of 2019 11% This appears to change the status of 10 Proposed Wilderness to a wilderness area and added 19 areas as Proposed Wilderness sites

Feb 4, 2020 — Bill Text

H.R. 2642: Wild Olympics Wilderness and Wild and Scenic Rivers Act Has been submitted but has not been voted on at this time. Involves adding 126,000 acres to the 14 wilderness areas in the Olympic Forest and parts of 19 rivers to designate as "Wild and Scenic Rivers" in the Olympic Forest and Olympia National Park.

Feb 4, 2020 — Bill Text

H.R. 2250: Northwest California Wilderness, Recreation, and Working Forests Act 16% The bill establishes the South Fork Trinity-Mad River Restoration Area {about 730,000 acres}, the Northwest California Public Lands Remediation Partnership, the Trinity Lake and Del Norte County visitor centers, the Horse Mountain Special Management Area, the Elk Camp Ridge National Recreation Trail, and the Sanhedrin Conservation Management Area. The other sites have fewer acres included but they also have miles of decommission roads.

Feb 4, 2020 — Bill Text

H.R. 2199: Central Coast Heritage Protection Act 19% This bill designates specified land within the Bakersfield Field Office of the Bureau of Land Management and in the Los Padres National Forest in California as components of the National Wilderness Preservation System, and as the Black Mountain Scenic Area. The bill designates certain land in the Los Padres National Forest as the Machesna Mountain Potential Wilderness Area. This would include a little over 220,000 acres and many miles of "Wild and Scenic Rivers".

Feb 4, 2020 — Bill Text

H.R. 2215: San Gabriel Mountains Foothills and Rivers Protection Act This bill was presented in 2017 and 2019 but has not had a roll call vote. The bill would include about 50,000 acres of Federal Land and about 110,000 National Forest land which would basically be added to the Wilderness land in that area.

Feb 4, 2020 — Bill Text

H.R. 1708: Rim of the Valley Corridor Preservation Act 3% To adjust the boundary of the Santa Monica Mountains National Recreation Area to include the Rim of the Valley Corridor, and for other purposes.

Feb 3, 2020 — Introduced

H.R. 5747: St. Croix National Heritage Area Act 3%

Jan 28, 2020 — Introduced

S. 3241: A bill to amend the John D. Dingell, Jr. Conservation, Management, and Recreation Act to establish the Cerro de la Olla Wilderness in the Rio Grande del Norte National Monument, New Mexico. 3%

Cement and Concrete (Part 1 of 3) by Steve Mulqueen

Concrete is one of the most common construction materials used today. It is a complex mixture of cement, aggregate, and numerous chemical additives, and is an essential component of foundations, roads, bridges, dams, containment walls, fences, walkways, and many other structures. Almost everyone in the world has benefited from the use of cement and its finished product, concrete.

Cement: a finely powdered, manufactured substance that is composed of a complex group of manufactured compounds, natural minerals, and chemical additives

The earliest introduction of cement to various forms of mortar used in constructing stone walls and brick structures dates to approximately 6500 BCE. This is based upon evidence found at numerous archaeological sites in the Middle East. Ancient sites in Europe, China, Egypt, Greece, and the former Roman Empire also show signs of the development and use of cement.

Concrete: a blend of cement with the proper portions of aggregate, more chemical additives, and water

The Romans did not invent cement and concrete, but they greatly enhanced their chemistries and devised complex means of shaping concrete with wooden forms. The Romans also applied cement mortar to large rocks for use in constructing roads, walls and aqueducts. The best example of early cast concrete can be observed at the Roman Colosseum, which was completed in 82 in present-day Rome.

Portland cement: the basic component of concrete

The term "Portland cement" was coined in 1824 by Joseph Aspdin, an Englishman who was the first to patent a recipe and process for the manufacture of an "artificial stone" from limestone, clay and water, calcined in a furnace.

Aspdin claimed that his cement-mortar resembled the natural limestone that was quarried on the Isle of Portland on the south coast of England. The term Portland cement is still used in reference to varieties of the common high-quality cement used in most blends of concrete, although modern formulas bear little resemblance to the original.

Cement plants and concrete mixing plants derive commodities from many natural rock deposits, industrial mineral sources and chemical suppliers, using available materials that do not have uniform compositions.

Clinker: the baked product discharged from a rotary kiln

Clinker is made by baking carbonate sources such as a limestone, marble, dolomite, or other comparable materials with mineral commodities in raw form composed of silica sources, alumina sources, iron sources, and many other miscellaneous materials. It is manufactured in a rotary kiln (rotary calciner) at a cement plant.

The rotary kiln produces a baked product that may include compounds containing complex molecular chemistry. The clinker compounds may include tricalcium silicate, dicalcium silicate, tricalcium aluminate, and/or tetracalcium-aluminoferrite.

These compounds are the primary binding agents in cement, and give it strong adhesive qualities and superior shear strength. Clinker is allowed to cool, then is crushed into a fine powder and blended dry with other additives and compounds to form cement.

Concrete Curing Process

Concrete is a complex mixture of cement, aggregate (sand, crushed gravel and/or pebbles) and water with mineral compounds and chemical additives that is blended in a concrete mixing plant. After concrete is poured from a mixer into wooden or steel forms, it under goes an exothermic reaction called hydration that produces crystalline fibers of calcium silicate hydrate. These fibers are what bind the concrete into a strong solid substance with excellent adhesive qualities and superior shear strength.

Some concrete formulas are custom blended for special applications that have high-strength requirements, for high-temperature environments, or to resist the effects of chemical degradation caused by seawater or other chemicals in liquid or solid form.

Concrete is used to pave roads, erect walls, fabricate buildings, and set structural supports in many facets of the construction industry.

In a real sense, concrete is the glue that holds a city together.

References:

"Industrial Minerals and Rocks," Society of Mining Engineers (SME), Seeley Mudd Book Series, 7th edition, 2006.

<https://patentyogi.com/american-inventor/this-day-in-patent-history-on-october-21-1824-joseph-aspdin-patented-portland-cement/>

www.cement.org/cement-concrete-applications/how-cement-is-made

www.cement.org/learn/concrete-technology/concrete-construction/curing-in-construction

<https://interestingengineering.com/why-concrete-doesnt-actually-dry-out>

from Rockhound Rambling, 2/20

Pearl

Unlike most gemstones that are found within the Earth, pearls have an organic origin. They are created inside the shells of certain species of oysters and clams. Some pearls are found naturally in mollusks that inhabit the sea or freshwater settings such as rivers. However, many pearls today are cultured-raised in oyster farms that sustain a thriving pearl industry. Pearls are made mostly of aragonite, a relatively soft carbonate mineral (CaCO₃) that also makes up the shells of mollusks.

A pearl is created when a very small fragment of rock, a sand grain, or a parasite enters the mollusk's shell. It

irritates the oyster or clam, who responds by coating the foreign material with layer upon layer of shell material. Pearls formed on the inside of the shell are usually irregular in shape and have little commercial value. However, those formed within the tissue of the mollusk are either spherical or pear-shaped, and are highly sought out for jewelry.

Pearls possess a uniquely delicate translucence and luster that place them among the most highly valued of gemstones. The color of the pearl depends very much on the species of mollusk that produced it, and its environment. White is perhaps the best-known and most common color. However, pearls also come in delicate shades of black, cream, gray, blue, yellow, lavender, green, and mauve. Black pearls can be found in the Gulf of Mexico and waters off some islands in the Pacific Ocean. The Persian Gulf and Sri Lanka are well-known for exquisite cream-colored pearls called Orientals. Other localities for natural seawater pearls include the waters off the Celebes in Indonesia, the Gulf of California, and the Pacific coast of Mexico. The Mississippi River and forest streams of Bavaria, Germany, contain pearl-producing freshwater mussels.

Japan is famous for its cultured pearls. Everyone familiar with jewelry has heard of Mikimoto pearls, named after the creator of the industry, Kokichi Mikimoto. Cultured pearls are bred in large oyster beds in Japanese waters. An "irritant," such as a tiny fragment of mother-of-pearl, is introduced into the fleshy part of two- to three-year-old oysters. The oysters are then grown in mesh bags submerged beneath the water and regularly fed for as long as seven to nine years before being harvested to remove their pearls. Cultured pearl industries are also carried out in Australia and equatorial islands of the Pacific. The largest pearl in the world is believed to be about three inches long and two inches across, weighing one-third of a pound. Called the Pearl of Asia, it was a gift from Shah Jahan of India to his favorite wife, Mumtaz, for whom he also built the Taj Mahal.

La Peregrina (the Wanderer) is considered by many experts to be the most beautiful pearl. It was said to be originally found by a slave in Panama in the 1500s, who gave it up in return for his freedom. In 1570, the conquistador ruler of the area sent the pearl to King Philip II of Spain. This pear-shaped white pearl, one and a half inches in length, hangs from a platinum mount studded with diamonds. The pearl was passed to Mary I of England, then to Prince Louis Napoleon of France. He sold it to the British Marquis of Abercorn, whose family kept the pearl until 1969, when they offered it for sale at Sotheby's. Actor Richard Burton bought it for his wife, Elizabeth Taylor.

Pearls, according to South Asian mythology, were dewdrops from heaven that fell into the sea. They were caught by shellfish under the first rays of the rising sun, during a period of full moon. In India, warriors encrusted their swords with pearls to symbolize the tears and sorrow that a sword brings. Pearls were also widely used as medicine in Europe until the 17th century. Arabs and Persians believed it was a cure for various kinds of diseases, including insanity. Pearls have also been used as medicine as early as 2000 BC in China, where they were believed to represent wealth, power and longevity. Even to this day, lowest-grade pearls are ground for use as medicine in Asia.

from Golden Spike News, 6/18

Amethyst

Amethyst is the purple or violet member of the quartz family. Its chemical formula is SiO₂, but it has many impurities (Mn, Fe, Al) inside the usual quartz structure. Amethyst is composed of an irregular superposition of alternate lamellae of right-handed and left-handed quartz. It has been shown that this structure may be due to mechanical stresses. Amethyst occurs in primary hues from a light pinkish violet to a deep purple. The color is from the presence of manganese, but the range in shade of color is due to the presence of varying amounts of iron. The iron must be in excess of aluminum, and exposure to ionizing radiation converts some of the Fe⁺³ to Fe⁺² to produce the amethyst color. The color was formerly believed by some authorities to be from an organic source, but more recent work has shown that amethysts' coloration is due to ferric iron impurities and the complex interplay of iron and aluminum. On exposure to heat, amethyst generally becomes yellow, and much of the citrine, cairngorm, or yellow quartz of jewelry is said to be merely "burnt amethyst".

Amethyst may exhibit one or both secondary hues, red and/or blue. The ideal grade is called "Deep Siberian" and has a primary purple hue of around 75–80 %, 15–20 % blue and (depending on the light source) red secondary hues. Its color is as unique as it is seductive, though in fact this gemstone of all gemstones is said to protect its wearer against seduction. It is a birthstone for February and is used to make seals and rings. Because it has a hardness of seven on the Mohs scale, amethyst is most suitable for its use in jewelry.

Amethyst occurs at many localities in the United States, among these may be mentioned Amethyst Mountain, Texas; Yellowstone National Park; Delaware Co. in Pennsylvania; Haywood Co. in North Carolina; Der Hill and Stow in Maine; and also in the Lake Superior region. The Thunder Bay District is located along the northern shore of Lake Superior. The amethyst from Thunder Bay is extraordinary. It occurs in all shades of purple from pale to deep, from warm to cool hues, it is often further colored by inclusions (most often red, due to included hematite) and once in a while phantoms are also found. Amethyst is relatively common in Ontario, and in various locations throughout Nova Scotia, but uncommon elsewhere in Canada. Many deposits occur worldwide in veins once deeply buried in metamorphic or deep-seated igneous plutons. The finest specimens occur in Sri Lanka, and is also found and mined in South Korea.

Amethyst is common in Europe and in many parts of Scotland. Amethyst may also occur in vug linings (amethyst 'cathedrals') or as druses. The largest opencast amethyst vein in the world is in Maissau, Lower Austria.

Arguably the largest amethyst deposits on Earth are found in Rio Grande do Sul province in extreme southern Brazil. In this area, numerous mines produce large quantities of amethyst geodes that range in size from a few inches up to tens of feet in height. The amethyst encountered can be very pale purple or can be so dark and gemmy it is gem grade and used in jewelry. The geodes are cut open with large rock saws in Brazil and the edges polished and, in most cases,

the outside skin painted a dark green or black to cover up imperfections or cracks that have been sealed with glue. The amethyst cathedrals are produced in abundance from the state of Minas Gerais in Brazil, where the large geodes form in volcanic rocks. Many of the hollow agates of Brazil and Uruguay contain a crop of amethyst crystals in the interior.

Much fine amethyst comes from Russia, occurring as drusy cavities in granitic rocks. Many localities in India yield amethyst and one of the largest global amethyst producers is Zambia. Two outstanding amethyst localities are in Vera Cruz and Guerrero. These amethyst locations produce some of the most unique amethyst specimens. The Vera Cruz amethysts are often doubly terminated, prismatic, attached to matrix or free floating and clear with a pale lavender color. The Guerrero amethyst is much darker in color, prismatic, phantom, tapering and majestic. Some Mexican amethyst can identify their localities themselves. The crystals with white capping the amethyst are from the Guerrero Mine⁴, Guerrero, while the amethyst capping white quartz is from Las Vigas, Veracruz. It is rare that crystal characterization is so definitive. from Golden Spike News, 2/20

Citrine

Citrine is one of the most valuable and popular gemstones in the quartz group. While many citrines on the market today are actually heated amethyst or smoky quartz, citrine does occur naturally in beautiful golden and brownish-orange hues. It's also possible that quartz crystals that grew naturally as amethyst or smoky quartz were turned into citrine by natural heat from nearby magma activity. Citrine is one of the most valuable and popular gemstones in the quartz group. While many citrines on the market today are actually heated amethyst or smoky quartz, citrine does occur naturally in beautiful golden and brownish-orange hues. It's also possible that quartz crystals that grew naturally as amethyst or smoky quartz were turned into citrine by natural heat from nearby magma activity.

Replacing the simple name of yellow quartz, the name "citrine" was officially adopted for this stone in 1556 when German metallurgist Georg Bauer, known to some as "the father of modern mineralogy," used it in a publication about gemstones and jewelry. The word "citrine" has a few potential sources, all related to citrus fruits. The most likely root of this word is from the old French word citron, meaning "yellow," or the Latin word citrus, in reference to citrus fruit. Around the 17th century, both citrine and smoky quartz were called "cairngorm" after their source in the Cairngorm Mountains of Scotland. "Madeira citrine" is the term used for darker, orangey-brown citrines, so named because they share their color with Madeira wine.

Citrine has been used ornamentally on tools and in jewelry for thousands of years. In ancient Greece, the stone now known as citrine first gained popularity as a decorative gem during the Hellenistic Age, roughly between 300 and 150 B.C. In the 17th century, Scottish weapon makers used citrine to adorn dagger handles, sometimes even using a single large citrine crystal as the handle itself. Some Biblical scholars believe that citrine was the tenth of 12 stones in Aaron's breastplate described in the book of Exodus. The stone was referred to as chrysolitus (Greek for "golden stone") in both Roman Catholic and Latin versions of the Old Testament, leading to some confusion over whether it was citrine, topaz, or beryl. However, in the King James Version, the tenth stone is referred to as beryl, meaning it would be heliodor, and modern scholars believe the stone was actually topaz. In 1852, after Queen Victoria married Prince Albert, they built Balmoral Castle in the Scottish Highlands. Because she was so fond of her new home and Scotland in general, the queen often had parties for which she required her guests to dress in full Highlands attire. This gave Victoria a good opportunity to share another of her loves: gemstones found within her kingdom, citrine in particular. As a result, citrines set in traditional Highlands shoulder brooches and kilt pins became popular.

from Golden Spike News, 11/19

What Are The Types Of Coal?

There are four major types (or "ranks") of coal. Rank refers to steps in a slow, natural process called "coalification," during which buried plant matter changes into an ever denser, drier, more carbon rich, and harder material. The four ranks are:

Anthracite: The highest rank of coal. It is a hard, brittle, and black lustrous coal, often referred to as hard coal, containing a high percentage of fixed carbon and a low percentage of volatile matter.

Bituminous: Bituminous coal is a middle rank coal between subbituminous and anthracite. Bituminous usually has a high heating (Btu) value and is the most common type of coal used in electricity generation in the United States. Bituminous coal appears shiny and smooth when you first see it, but look closer and you may see it has layers.

Subbituminous: Subbituminous coal is black in color and dull (not shiny), and has a higher heating value than lignite.

Lignite: Lignite coal, aka brown coal, is the lowest grade coal with the least concentration of carbon.

Also, there is peat. Peat is not actually coal, but rather the precursor to coal. Peat is a soft organic material consisting of partly decayed plant and, in some cases, deposited mineral matter. When peat is placed under high pressure and heat, it becomes coal.

from <https://www.usgs.gov/faqs/what-are-types-coal>, 2/14/20

The pyramids of Egypt are older than most of Mount St. Helens.

Virgin Valley Opals by Evelyn Cataldo

Hidden in the high desert region of the northwest corner of Nevada, lies the famous Virgin Valley precious opal mines. The area is famous for black opal, known to occur in only two places on Earth: Virgin Valley, Nevada and New South Wales, Australia.

It is believed that this area was once a large lake surrounded by a forest filled with a variety of tree species. Over time the forest was devastated by a series of volcanic eruptions. Twigs, limbs and rotting wood collected in the coves of the lake. The forests, the lake and the driftwood were buried under layer after layer of ash. The buried wood decayed and left cavities. Over millions of years, heat and pressure filled the cavities with silica that percolated through the ash; gradually hardening into opal. Under the right conditions, precious opal was formed. Over time, the entire area has been uplifted and eroded, exposing the opal deposits. It is said that it took Mother Nature twenty million years to make a Virgin Valley black opal.

The Virgin Valley area has been inhabited by man for more than 10,000 years. In the southwestern portion of the valley lies the "Last Supper Cave". Its bones and artifacts have been carbon dated to 10,000 to 12,000 years.

There is evidence that the Chinese sent an expedition to mine the precious black opal approximately 4,500 years ago. During the late 1800s and early 1900s a few specimens were collected by cowboys and sheepherders.

These specimens were reported to the press and soon prospectors found their way to Virgin Valley. Opals were first mined commercially in the area in 1905 with the discovery of the Bonanza Mine. Other early mining operations included the Rainbow Mine. Both are still in production today.

Most of the opal found in Virgin Valley is in the form of replaced wood and limb casts. Opalized bones of vertebrate animals have also been found, as well as opalized bark, roots, pine cones and seeds. The opals are found in layers of clay. The precious opal bearing layers may be as much as 10-30 feet below the surface and range in thickness from 2-12 feet. Common opal is abundant throughout the layers of clay and ash, but only specific conditions produced the precious opal.

Anything that resembles petrified wood should be carefully examined and kept. Look for specimens that are glassy looking. The background color does not matter. Some of the most beautiful opal specimens do not show color immediately. Collect everything glassy looking, black, clear, milky, brown, etc. Sometimes, good pieces of opal are covered with a white, chalky coating. A small percentage of the opal found in Virgin Valley is valued at more per carat than diamonds. Keep your eyes open for other fossils and artifacts.

Virgin Valley is high desert. Expect warm days and cool nights. Be prepared with a variety of clothing, plenty of liquids, sun screen, hat, and chap stick. Food, fuel and lodging can be found at Denio, Nevada (35 miles away).

Dry camping is available at the CCC campground with is about five miles from the mines. The campground is free. There are no hookups but outhouses are available, a shower room and swimming in the hot spring. There are fire pits for the cool evenings, but you need to bring your own wood.

Other items you will find useful are a small pick, small garden rake, small shovel, spray bottle with water, a bucket for sitting on, gloves and some zip lock bags to store your specimens.

The opal mines at Virgin Valley are fee dig areas. Some mines allow digging through the tailings, some allow digging in the clay wall and Rainbow Ridge offers loads of virgin material. Prices range from \$50 per day for going through tailings to \$400 for a load of virgin material.

via Golden Spike News, 3/18; from The Geode, 4/07

What on Earth is a Tektite? by Kathy Reimers

"Tektite" from Greek τηκτός tēktós, "molten"

I guess the better question would be: "Where do tektites come from?" There is controversy about their origin. The most accepted theory is that a tektite is the product of a meteorite crash onto the earth. The tektite is formed from the heat and pressure of the crash of the meteorite onto the natural debris on the earth surface. In other words, the heat of the crash melted the rocks and minerals of the earth and formed these small pieces instantly, changing the properties of the molten material. They were blown into the atmosphere from the impact and then came showering down. Some of them are shaped like a teardrop or are of other shapes that indicate they hardened while falling or as they hit the earth surface. They do come in some very cool shapes!

Another theory is quite controversial. It is the theory that tektites were ejected from volcanoes on the moon (or other extraterrestrial source), then drifted through space to land on the surface of the earth. This theory came about because tektites have chemical composition and physical properties that are very rare on earth.

Tektites are a five out of ten on the Moh's Scale of Hardness. They are glassy but are not made of the same material as obsidian. They have an extremely low water content and are made of silicon dioxide. They are found in every continent except Antarctica and South America. They are found in huge groups called "strewn fields". Juniors, you could own one of these tektites if you come to the meeting! Mrs. Sack also has a craft in mind for our class!

Source of Info —Wikipedia, Britannica and Gem5.com

from The Hard Rock News, 3/20



Young Tumblers

Rocks And Minerals Are All Around Us! adapted by Kat Koch

They help us to develop new technologies and are used in our everyday lives.

Our use of rocks and minerals includes as building material, cosmetics, cars, roads, and appliances.

In order maintain a healthy lifestyle and strengthen the body, humans need to consume minerals daily through food, water and vitamins.

Rocks and minerals play a valuable role in natural systems such as providing habitat like the cliffs at Grand Canyon National Park where endangered condors nest, or provide soil nutrients in Redwood where the tallest trees in the world grow.

Rocks and minerals are important for learning about earth materials, structure, and systems. Studying these natural objects helps us the understanding of earth science, chemistry, physics, and math.

Natural objects, such as rocks and minerals, contribute to the beauty and wonderment of the National Parks and should be left, as they were found, so that others can experience a sense of discovery. adapted and condensed from National Park Service website



What is a Leaverite?

Earn \$1 Rock Buck

Write a definition of a Leaverite rock and bring it to the meeting.

When Paleontology And Archeology Become One by David Sanderson

When diving for fossils, it is common to find arrowheads scattered among the "litter" of teeth and bones on the riverbed. Recently, I made an exciting find when I came across two "possible" points found on the same dive in about ten feet of water in coastal South Carolina.

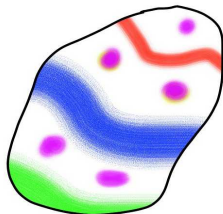
What makes these "points" different is that they are made from shark's teeth! I have often wondered if Indians were inspired by the natural shape of shark's teeth when making their arrowheads from stone.

After my discovery, I took both specimens to be inspected by Dr. Oliver at the Office of State Archaeology in Raleigh. He teaches forensic investigation for the state and upon my arrival immediately viewed the two specimens under a microscope.

I was quite impressed with his technical knowledge when viewing the cutting edges of the artifacts under high magnification. Dr. Oliver was quick to point out areas such as "impact fractures" and wear use called "striation grooves and polish". He was quick to determine that both artifacts were not spear points at all, but in fact cutting tools. By analyzing wear use on the Meg, he was able to determine that it was probably used as a chopping tool for butchering animals.

He could even determine how the shark's tooth was attached to its wooden handle (at right angles and parallel to the handle it was mounted to). I would like to thank Dr. Oliver for spending time analyzing the two specimens. He did note that another shark tooth tool/arrowhead had also been excavated at a site in Beaufort, NC.

from Janus, #4 2003



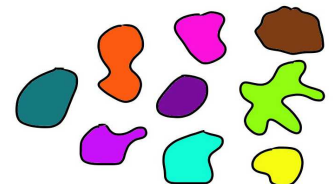
Rock-Hound by John Livingston

I picked up a rock from the ground
Then showed my mom what I had found

One, then another
Soon there was clutter

And that's how I became a "rock-hound"

from Newsletter of the Gem & Mineral Society of Lynchburg, 1/20



March Club Field Trip by Roger Danneman

On March 21st, 2020, we will be going to the Baker Lake area for agate, jasper, and jade.

Meet 9:45 AM at Sedro Woolley Forest Service Office.

Directions: From I-5, go past Mt. Vernon and take exit 232 Cook Rd to Sedro Woolley. Go through about 3 roundabouts. Forest Service Office is on left side before the Arco Station (810 WA-20, Sedro Woolley).

The group will leave promptly at 10 am.

From Renton it is approximately a 1.5 hour drive (80 miles) to the meeting place. Then another 35 miles to the collection site..

Swift Creek flows into the Baker Lake reservoir and you will need waders (or hip boots) to cross the stream and get to the gravel beds. Usually in March there are still snow banks along the roadway and on the river bank. So access requires climbing over snow berm and walking through some deep snow and down snow covered embankment. Tools – shovel (optional), bucket, and garden pick. Collecting is in the stream bed as well as the gravel beds further downstream, so a pair of PVC gloves would be handy (the water can be pretty cold). The water is 1-2 feet deep in places. Roads are good, with some hard pack snow and ice in places this time of year.

There could also be an alternative site east of Mt. Vernon for people who don't have waders or want to work in a river. E-mail, text, or call me if you're interested.

Roger Danneman (roger.danneman@gmail.com ; 425-228-8781 or 425-757-3506 cell).

Safety Matters—A Numbers Game by Ellery Borow

Perhaps you may have heard about the questions of vaccinations and having sufficient coverage to insure the safety of the “herd” effect. Being safe is sometimes a matter of numbers. What is the likelihood of a particular tree being struck by lightning? Or, the likelihood of a mailbox being taken out by a car careering out of control on slippery roads? Or, the likelihood of toast landing on the floor—butter side up? What are the odds? What are the numbers?

With much of the rockhound safety an important number is the number one. One person is usually the one working in the basement lapidary workshop. One person is usually the one working with the hazardous rock cleaning chemistries out in the garage. One person is sometimes the one going on the field trip to the new site.

How does the one protect him- or herself? Well, have you ever heard of the instance where the person puttering upstairs has a sudden thought, “Hmmm, sure is quiet down in our basement shop. It sounds a little too quiet. I think I'll wander down and see how things are going for her.” In this case the number is two. There is another person involved with the safety of the other. What if there wasn't the other? Well, there is always reliance on being familiar with all workshop safety parameters, have a cell phone for emergency communications, have a med kit nearby, know and respect one's limits and abilities, and so on. Still, having the number 2 is a great backup.

With chemistries one can, with remarkable ease, encounter a situation of breathing too many fumes. One way to be safe would be to understand that pilots, surgeons, astronauts, and rockhounds use checklists. Why would a thoroughly trained professional use a checklist? Because they are a thoroughly trained professional. Please give serious consideration to having and using checklists when working around hazardous chemistry.

One person can be safe on a field trip if one is prepared. But even with the best preparation it is wise to have a number two. The number two in this case will be a person who has information about the one's destination, route (especially when there are several ways to enter the collecting site), anticipated time of return, cell phone number, and any other information that might be useful in an emergency, such as meds.

A herd is not necessary in most rockhound activities, although, the one should make doubly sure to do everything possible to be safe. It is often not merely a matter of numbers to be safe. It's a matter of guidelines, understanding, patience, practice, common sense, thoughtfulness, care, attention, preparedness. Is that all? Well, almost. There is one more. There is also a need to respect your abilities and limits.

By all the numbers, your safety matters.

from AFMS Newsletter, 6/19

Helpful Hints

Before grinding and sanding cabochons, put cold cream on your hands and rub them until they are dry. This fills the pores and cracks in your fingers. When grinding, sawing, or sanding is completed, the dirt can be washed off easily. Good idea for painting also.

via Golden Spike News, 2/20; via The Sooner Rockologist, 11/09; via Beehive Buzzer, 1/98; via Napa Gems, 12/97; via Breccia, 10/97; from Gemstar

Glasses with quartz lenses were once sold claiming they were cooler to the eye.

An old superstition about diamonds claimed that swallowing diamonds would rupture your intestines.

GeoWords of the Day (from the American Geoscience Institute)

Deglaciation

The uncovering of a land area from beneath a glacier or ice sheet by the withdrawal of ice due to shrinkage by melting or calving of icebergs. As used in Great Britain, the term is restricted to a process that occurred in the past, in contrast to deglaciation. Also, the result of deglaciation.

via The Mineral Newsletter, 12/19; from the Glossary of Geology, 5th edition, revised

Tectono-eustasy

Worldwide change of sea level produced by a change in the capacity of the ocean basins owing to plate tectonic motions, such as seafloor spreading and subduction. Term introduced in 1961. See also: glacio-eustasy; sedimento-eustasy. Synonyms: diastrophic eustatism; tectono-eustatism.

via The Mineral Newsletter, 1/20; from the Glossary of Geology, 5th edition, revised

Chalybeate waters

Ferruginous waters—that is, mineral spring waters containing salts of iron. (The Latin word for steel is chalybs.)

via The Mineral Newsletter, 5/19; from Wikipedia

Dirt Cake Recipe by Tammy Hooper

Ingredients

- 1/2 cup butter, softened
- 1 (8-ounce) package cream cheese, softened
- 1/2 cup confectioners' sugar
- 2 (3.5-ounce) packages instant vanilla pudding mix
- 3-1/2 cups milk
- 1 (12-ounce) container frozen whipped topping, thawed
- 32 ounces chocolate sandwich cookies with cream filling

Directions

1. Chop cookies very fine in food processor. The white cream will disappear.
2. Mix butter, cream cheese, and sugar in bowl.
3. In a large bowl, mix milk, pudding, and whipped topping together.
4. Combine pudding mixture and cream mixture together.
5. Layer in flower pot, starting with cookies, then cream mixture. Repeat layers.
6. Chill until ready to serve.
7. Add artificial flower and trowel.

from The Mineral Newsletter, 5/19

Shows

March 6 – 8: 10 am – 5 pm

Tualatin Valley Gem Club, 62nd Annual Rock and Mineral Show
Forest Grove National Guard Amory
2950 Taylor Way
Forest Grove, Oregon

March 13 & 14: Saturday 8:30 am - 6 pm; Sunday 9 am - 5 pm

Panorama Gem and Mineral Club, Annual Show
Colville Fairground
Colville Ag and Trade Center
317 West Astor
Colville, WA

March 27 – 29: Friday & Saturday 10 am – 6 pm; Sunday 10am – 4pm

Rock Rollers Club of Spokane, 61st Annual Gem, Jewelry and Mineral Show
Spokane County Fair & Expo Center
N. 604 Havana
Spokane WA

March 28 & 29: Saturday 10 am – 6 pm; Sunday 10 am – 5 pm

Mt. Baker Rock & Gem Club, 59th Annual Rock and Gem Show
Bloedel-Donovan Park
2214 Electric Ave.
Bellingham WA