



THE CMS TUMBLER

January
2020

Next Meeting:
January 9, 2020
7:00 p.m.

American Legion Hall
25406 97th Pl S
Kent, WA

The Program is John Cornell
giving a talk on beadwork.

The Show & Tell
Theme is your favorite rock,
mineral or lapidary item that
you received or bought in
2019.

This month remember
to wish a
Happy Birthday to

Roger Danneman on January 8

Jonathan Fraser on January 10

Elliot Epley on January 16

Jeremy Bort on January 17

Ann McMurtray on January 19

Becky Trepanier on January 19

Era Pogosova on January 20

Jaymin Shaffer on January 20

Juan Viejo on January 22

and also remember

to wish a

Happy Anniversary to

Michael & Katy Stevenson

on January 9

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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

Connect with us!

Website: cascademineralsociety.org

Club Facebook: facebook.com/CasMinSoc/

Show Facebook: facebook.com/cascadegemandmineralshow

Instagram: instagram.com/cascadegemandmineralshow/

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25838 W LK Wilderness Dr. SE.
Maple Valley, WA. 98038

Keith Alan Morgan, Editor
3802 W Tapps Dr. E
Lake Tapps, WA 98391

Postal, or Email, Exchange
Bulletins are welcome.
Email preferred.
greenrockdraggin@yahoo.com

2020 Elected Officers

<i>Title</i>	<i>Name</i>	<i>Phone</i>	<i>E-mail</i>
President	Kat Koch	425-765-5408	president@cascademineralogicalsociety.org
Vice President	Merriann Fu	253-236-5593	merriannf@gmail.com
Treasurer	Charles Benedict	425-306-0465	charlesbenedict@comcast.net
Secretary	Pete Williams	425-228-5063	petewill02@gmail.com
Director	Roger Pullen	206-387-3214	june.d.murff@boeing.com
Director	Roger Danneman	425-228-8781	roger.danneman@q.com
Director	Richard Russell	253-736-3693	richru1@yahoo.com
Past President	Bob Pattie	425-226-3154	bobpattie@comcast.net
Show Chairman			
Federation Representative	Michael Blanton	425-271-8757	mblanton41@hotmail.com
Federation Representative	Kat Koch	425-765-5408	president@cascademineralogicalsociety.org
Mineral Council	Bob Pattie	425-226-3154	bobpattie@comcast.net
Mineral Council	Jacquie Pattie	425-226-3154	dianahorsfall@comcast.net

2020 Show Committee Chairs

Cascade Show			
Cascade Show Co-Chair	Kat Koch	425-765-5408	president@cascademineralogicalsociety.org
Cascade Show Treasurer	Pete Williams	425-228-5063	petewill02@gmail.com
Cascade Show Silent Auction	Michael Blanton	425-271-8757	mblanton41@hotmail.com
Cascade Show Raffle Donations	Michael Blanton	425-271-8757	mblanton41@hotmail.com
Cascade Show Demonstrators	Richard Russell	253-736-3693	richru1@yahoo.com

2020 Committee Chairs

Club Historian			
Donations	Kat Koch	425-765-5408	president@cascademineralogicalsociety.org
Field Trip	Roger Danneman	425-228-8781	roger.danneman@q.com
Health & Welfare	Bev Williams	425-228-5063	britbev1957@outlook.com
Library	Bob Pattie	425-226-3154	bobpattie@comcast.net
Meeting Programs	Miriann Fu	253-236-5593	merriannf@gmail.com
Membership	Mark Hohn	253-332-3736	showchair@cascademineralogicalsociety.org
Newsletter - Tumbler Editor	Keith Alan Morgan	253-862-8201	greenrockdraggin@yahoo.com
Open Shop Instructors	Bob Pattie	425-226-3154	bobpattie@comcast.net
Public Relations	Kat Koch	425-765-5408	president@cascademineralogicalsociety.org
Refreshment	Angie Bayer	253-631-3840	angiemc61@msn.net
Raffle/Display	Roger Pullen	206-387-3214	june.d.murff@boeing.com
Shop Operations	Bob Pattie	425-226-3154	bobpattie@comcast.net
Show & Tell	Michael Blanton	425-271-8757	mblanton41@hotmail.com
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.

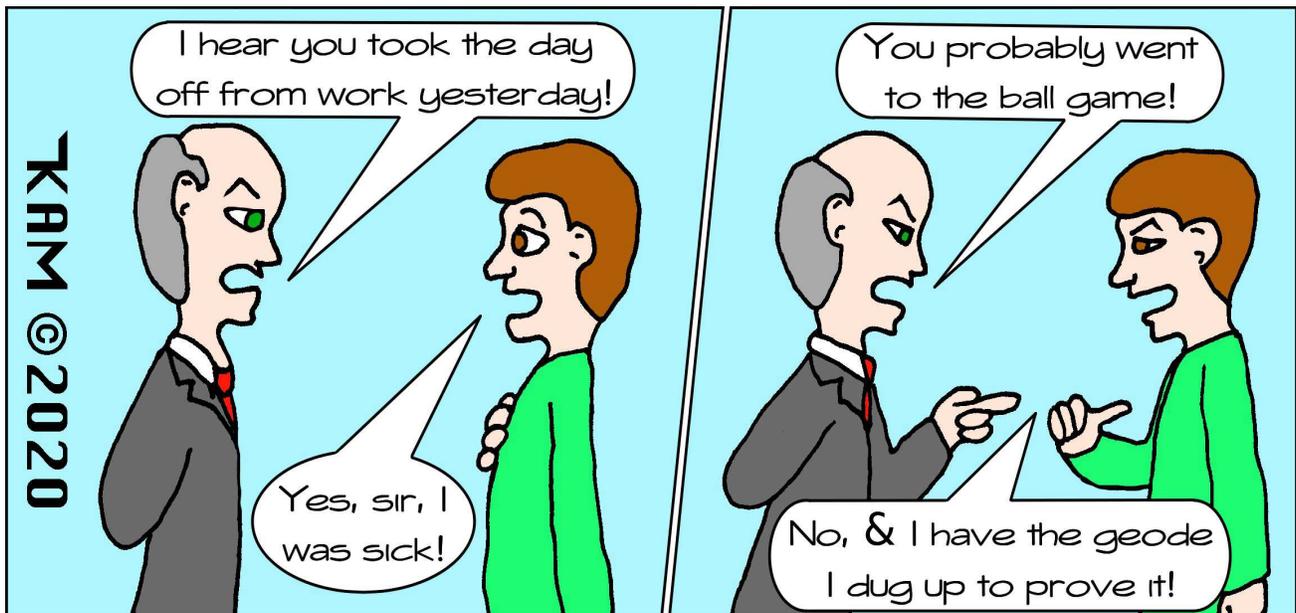
January

Sun	Mon	Tue	Wed	Thur	Fri	Sat
Happy New Year!			1	2	3	4
5	6 Show Meeting 6:30 pm Board 7:00 pm	7	8	9 General Meeting 7:00 pm	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	2020

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



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

CMS Board Meeting Minutes December 10, 2019

Meeting canceled.

Pictures From The Christmas Party by Keith Morgan



CMS Christmas Party December 15, 2019

by Pete Williams, 2019/2020 Secretary

Minutes from the December 15, 2019 CMS Meeting and Christmas dinner/auction

The December meeting drew 35 members who enjoyed the Christmas dinner and auction. There were 51 lots in the auction with 20 winning bidders. The main order of business was the election of officers. Below are the officers for the 2020-2021 term

President – Kat Koch

Vice President – Merriann Fu

Treasurer – Charles Benedict

Secretary – Pete Williams

Past President – Bob Pattie

Show Chair/Co-chair - Open

Director – Roger Pullen

Director – Roger Danneman

Director – Rich Russell (1 year remaining in term)

Mineral Council – Bob Pattie, Jackie Pattie

Federation – Mike Blanton, Kat Koch



From left to right, Pete Williams, Roger Pullen, Kat Koch, Mike Blanton, Merriann Fu, Charles Benedict, Bob Pattie, Roger Danneman, and Rich Russell. Photograph by John Cornell.

Editor's Note

All board and committee members please check page 2 to see if your information is up to date and accurate. If something is wrong send me the correct information, please.

2019 Green River Grant by Kat Koch

I just found out who received our grant from the proceeds of our 2018 Rock & Gem Show. Green River College Foundation awarded the Cascade Mineralogical Society's 2019 Scholarship to Tanya Lutman. Tanya who is a current student at Green River College, in the Natural Resources Program. It was used for her last quarter (fall 2019) in the Bachelor's Program. In addition to her studies of Salmon and wildlife, Tanya is interested in Geology, as she has taken classes and her dad was a Geologist. With the grant she is looking forward to completing her program.



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

I want to thank everyone that attended our Holiday Dinner. We had the best turnout since the club struck out on it's own. 40 members, family and friends attended. We had a great selection of food. Best ever. Thank you to each one of you for making the dinner such a great success.

I found out at our Holiday Dinner that some of our members are artistically talented beyond collecting rocks. If you have another talent besides collecting rocks please let me know. I found out John Cornell does beaded wall hanging and art pieces (he currently has a showing at an art gallery in Greenwood), Terri Gerard does watercolor and oil painting (she currently has a showing at an art gallery in Greenwood too), I do stipple art (pen & ink using small dots) and ceramics besides my wire wrapping. Your other talent can also include lapidary arts, faceting, wire work, cabochons, opals, metal working, knapping, intarsia, etc. What do you do? Let me know by mailing me at president@cascademineralogicalsociety.org

We are fast coming up on a decision for our 2020 Rock & Gem Show. I have not been able to confirm we have the venue or the dates with the college. So I won't be asking for volunteer sign up at our January club meeting. Just be aware that we will need sufficient volunteers to commit to covering the open slots before proceeding with the show.

If I am going to be Show Chair I can't carry a heavy physical load. I have to back off the long show hours as my legs and feet can no longer handle 10 to 13 hour days. I will need everyone's help to accomplish the 2020

show. Every little bit someone can do will be a help. So be prepared to sign up for something (hopefully) at the February meeting.

Side note: I am already getting requests to book our 2020 show. Mark has given our club a running start on doing a very successful show.

With 2019 now behind us, I want to thank each and every one of you that have volunteered all year long to help our club grow and run successfully. A special thanks to Jennifer Russell, Rich's wife, for baking goodies for our monthly meetings. She doesn't even attend our meetings!

Our club went into 2020 with 87 family memberships on our roster. Thank you to everyone for helping to make 2019 a very good year for our club!



Young Richard's Almanac by Dick Morgan

I don't always remember names, but I always remember smiles.



The History of Quartzsite, Arizona by Kat Koch

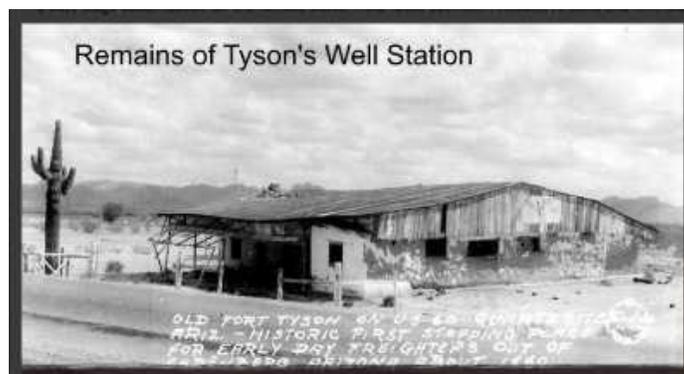
The December issue of the AFMS Newsletter had a short article (2 paragraphs) on the history of Quartzsite, AZ. I previously had no idea how Quartzsite became the Mecca every January for recreational rockhounds. It really piqued my interest and I wanted to know more.

In 1856 Charles Tyson and his wife Victoria arrived in the area. In the early years of the American gold rush, pan handlers began to arrive in Arizona searching for the precious metal. Gold deposits were discovered in the desert mountains of Plomosa and Dome Rock in the area and a boom in the mining industry followed. Charles Tyson was a miner who foresaw the mining potential of the area.

The Yavapai Indian Tribe (Mojave-Apache) resented the arrival of these white settlers. The water supply was their main target. In 1856 Charles Tyson built his own private fort, Fort Tyson, for protection against the Indian raids.

In 1864 Tyson hand dug a well. Between 1866-1867 the Tyson's Well Stage Station was built. It was a stop on the famous Butterfield Overland Mail route between Ehrenburg, AZ and Prescott, AZ to and from Riverside, CA. In 1875 a traveler described the place as being "the most melancholy and uninviting place that they had ever seen. It reeks of everything unclean, morally and physically." The route was used to transport not only travelers but supplies to support the miners and US Army.

Hadji Ali (1828 - December 16, 1902), he was also known as "Hi Jolly" and "Philip Tedro", was a Turkish citizen of Greater Syrian, who were among the men hired by the US Army to introduce camels as beasts of burden to transport cargo across the "Great American Desert." In 1857 the US Army brought in 77 camels for building projects as they could



carry 2 to 3 times the weight of mules and could survive on less water. Ali was the lead camel driver during the US Army's experiment with the US Camel Corps. The cost of the American Civil War resulted in Congress did no longer approving more funds for the Corps. The camels were auctioned in 1864. Ali was discharged from the U.S. Army at Camp McDowell in 1870.

He next ran a freight service between the Colorado River and the mining establishments further east, using the few camels he had purchased. His business was unsuccessful, however, and he released his camels into the desert near Gila Bend. With his camel adventures now in the past, he became a legend of sorts, talked about as a strange yet skillful and funny person running camels in the American desert.

In 1880 Ali became an American citizen using his birth name Philip Tedro.

Ali was hired in 1885 by the US Army in Arizona, under the command of General George Crook during the Geronimo Campaign where he was in charge of packing mules. Later Ali moved and to Quartzsite, AZ with his wife Gertrudis Serna and family. During his years as a resident of Quartzsite, he did some mining in the local mines and on occasion served as a scout for the US government. He ended his life as a failed prospector. Local merchants helped him with handouts. Congressman Mark Smith even tried to get him a pension, but since he was never an official soldier in the Calvary the paperwork wasn't processed. He died in 1902 and was buried in the Quartzsite Cemetery which was renamed the "Hi Jolly Cemetery" in 1903, in honor of Hadji Al.

Hi Jolly lived well into his seventies. The locals were so fond of him that when he died that they spent several weeks building Hi Jolly a special pyramid tomb, made of multicolored petrified wood and quartz. It was dedicated on Jan. 4, 1903. Thirty-three years later the Arizona Highway Department came along and cemented a bronze plaque to the tomb, telling Hi Jolly's story, and topped the pyramid with a metal camel silhouette.

In 1897 there was a small mining boom. The establishment of the railroad affected the commercial aspect of the area since most people preferred to travel by train. However, Tyson's Well stage station continued to provide rest and refreshment to travelers and freight drivers plus general supplies and mining supplies. It's reported that Tyson Wells had 3 general stores, 11 saloons, hotel, barber shop and Chinese restaurant and a short lived post office. With the boom and arrival of the railroad it became necessary to reopen the post office. A new name had to be found since the post office did not permit offices to re-open the post office under formerly used names. It was suggested the name Quartzite, since quartzite is actually found in the vicinity, but quartz is not. However, the post office in error apparently added an "s" to the name. Today Quartzsite is approximately nine miles east of the old Tyson's Wells which lay nineteen miles from Ehrenberg. Therefore, a different name was doubly suited.

By 1900, less than 20 people lived in town. The major problem was the lack of water at the mines, which affected production. Water brought from La Paz, AZ sold for \$1 a gallon to \$5 a barrel. Most gold was recovered by primitive dry washing. From 1900 to 1960, election records listed a population from as few as 14 to a few hundred during the Depression, to 50 in 1960 on a permanent basis.

In 1936 SR95 was extended north through Quartzsite to SR72 in Bouse, AZ. It became US95 in 1960.

In 1965 the Quartzsite Improvement Association was formed with 44 members. The population of city and surrounding area was a few hundred at this time. February 1967 the first POWWOW was held in an old school building on 1 acre of ground. Historical records are not clear but it suggests 20 vendors "tailgated" outdoors with estimated attendance of 1,000. In 1968 there were 42 tailgaters outside and 242 exhibitors inside, all on 4 acres. The shows began to bring in more people and snow-birds and the town began to grow. The population in 2019 is estimated At 3,766. Growing at approximately 100 people a year.

Today about 2,000 vendors go to Quartzsite every year to sell rocks, minerals, gems, fossils, and jewelry. Setting up outside is not easy for the dealers. Besides the unpredictable weather, dust covers everything and it is a daily, never-ending chore to keep the bins and displays clean. Vendors also have to secure their merchandise, tables, and tents every night, not only against theft but primarily against potential rain or wind damage. Altogether there are about 10 shows in Quartzsite from late December to late February. Today attendance tops well over 1 million people.

So I guess in conclusion, Quartzsite is known for three things: it's rich American history in the movement west, Hi Jolly and the Annual Quartzsite Pow-Wow.

Source: *Fort Tyson, Wikipedia, Quartzsite AZ, Wikipedia, List of historic properties in Quartzsite, AZ, Wikipedia, List of U.S. Forts, Wikipedia, QIArizona.org. Pictures are available under Wikipedia's "Wikimedia Commons": You are free to Share - copy and redistribute the material in any medium or format, Adapt - remix, transform, and build upon the material for any purpose, even commercially.*



Photo of Hadji Ali (left) and his bride, taken in Tucson, Arizona.



Young Tumblers News

Attention All Young Tumbler's

I encourage each of our Juniors to enter the following contest. Last year Alex Danneman won a Junior Achievement Certificate plus \$25. Isaiah Fu won a Junior Achievement Certificate. It's the first time our club has ever had a Young Tumbler win this contest. So all Young Tumblers, between the ages of 7 and 18, please seriously consider entering.

Some years they have no applications for this reward. You can win up to \$100 plus a Junior Achievement Certificate.

When reading the rules below I realized the NFMS had not included the application form mentioned below. I contacted the NFMS editor and it will be available in their January bulletin. I will include it in the February Tumbler.

The following is reprinted from the NFMS December 2019 News Bulletin:

NFMS JUNIOR ACHIEVEMENT AWARD by Gayle Butler; NFMS Juniors Chair

The next NFMS meeting is April 10-12, 2020 so time is short for **Junior Rock Hounds** to share their accomplishments from the past 2 years (2018 and 2019). The Northwest Federation wants to honor you. You must be paid up and listed as a member of your Club and the NFMS or provide proof of membership if not listed in the Federation membership book 2019.

Your age as of December 31, 2019 determines the age category.

Age Group 1: ages up to 7 years

Age Group 2: ages 8 through 11

Age Group 3: ages 12 through 15

Age Group 4: ages 16 through 18

If you won last year (2019) at Lewiston, Idaho you will need to wait until 2020 to enter again UNLESS you move up to the next age category.

Your Resume and Application together require a postmark by February 16, 2020. Winners will be notified a month later, after the NFMS Judges vote on each candidate's Summary. If any of this sounds too complicated or if you have any questions just contact me at gaylesmail@comcast.net or ask your Juniors Advisor, a parent or the Federation Director of your Rock Club. Everyone will be delighted to help you in the quest of achieving fame.

All awards will be presented at the NFMS Annual Meeting at Ogden, Utah on Friday, April 11, 2020.

Here are your three EZ steps:

Write or type a short summary (resume/outline) about what your achievements are for the past two years (2018 and 2019), following Sections I, II, III & IV from the GUIDELINE below.

Photocopy the APPLICATION from the Northwest Newsletter. Fill out the APPLICATION and have your Rock Club representatives sign their spaces.

Mail with a postmark by February 16, 2020, your summary (resume/outline), and completed **APPLICATION to the NFMS Junior Committee Chair – Gayle Butler, 8821 SW Equestrian Place, Crooked River Ranch, OR 97760**

Guidelines for Junior Achievement Award

Section I. HOBBY RELATED (Possible 45 points)

Club Involvement (field trips, committees, show participation)

Hobby Craft Involvement (faceting, lapidary, metals, collecting)

Competitive Involvement (display, articles, promotion, awards)

Section II. EDUCATIONAL ACHIEVEMENT (Possible 25 points)

Scholastic (honor roll, advanced classes, improvement of grades),

Extracurricular (sports, drama, debate, drill team, music)

Section III. COMMUNITY ACTION (Possible 20 points)

Events Involvement (charity, volunteer, donation programs) Scouts, Campfire, 4H-Club, Other community groups).

Section IV. WORK RELATED (Possible 10 points)

Volunteer, employment, home chores, neighborhood work, business

Young Tumblers News

Cabbing Shapes And Stuff by Keith Alan Morgan

Complete the word find. Bring to the general meeting and get \$2 Rock Bucks!

P	D	O	P	Q	J	K	O	S	D	C
M	O	X	H	R	Y	T	A	Q	F	A
S	U	L	G	C	I	P	R	U	R	B
S	B	Z	I	N	X	O	M	A	E	O
O	L	V	A	W	V	D	K	R	E	C
R	E	C	T	A	N	G	L	E	F	H
C	T	E	L	P	I	R	T	B	O	O
P	Q	Y	E	U	P	I	F	O	R	N
L	U	J	T	Y	Z	N	S	I	M	N
E	B	H	I	G	H	D	O	M	E	U
Z	C	B	Y	K	A	M	G	F	W	X

Cabochon
 Cross
 Dop
 Doublet

Freeform
 Grind
 Heart
 Highdome

Oval
 Rectangle
 Square
 Triplet

Fault by Duane Flackus

In geology, a fault is the actual crack in the earth, resulting from the sudden movement of rock during an earthquake. This crack can be hidden very deep below, or in the more damaging quakes, it can open up at the surface, A fault (often called a "fault-line") can extend for many miles.

from The Clackamette Gem, 9/19

“But I Don’t Have Anything New to Say” by Sue Webb, BEAC

One of the most challenging tasks an editor faces is getting folks to send in articles for you to publish in the newsletter—at least, it is for me. One comment I hear often is, “Well, I really don’t know anything to write about” or “I don’t have anything new to say.” My response to that is “Of course you do!” Members have lots to write about if they just think about it, and no two people have the same perspective on anything, not even on rocks.

So how to find something to write about? Journalists have long used the questions Who, What, When, Where, Why, and How to stimulate what they can say about a subject. Your members can, too. Here are some ways that you might help them go about exploring a topic and so encourage articles to flood in—well, maybe not “flood,” but at least “trickle.” Feel free to appropriate whatever you find useful here. It’s fairly common knowledge, and it’s very likely a technique you’ve used yourself a number of times.

WHO did something your members should know about—good things, interesting things, etc. WHO is a great member? WHO taught you something? WHO led—or went on—a field trip, not only for your group, but maybe some other organization or maybe a private trip???

WHAT do you like to do in your club? What did you do? WHAT do you want to know about our hobby? WHAT is a certain rock or mineral? You can build an article around any of these questions—or plenty more that focus on WHAT something is, WHAT you or somebody did or will do or should do, what happened in the world that your members might find interesting, and so on.

WHEN is something going to happen? Is there some event happening soon members should know about? WHEN did something happen that you participated in or thought was important?

WHERE is there a great exhibit of minerals? WHERE can you find certain rocks or minerals? WHERE is a class or a meeting being held? WHERE did that great field trip go? WHERE was there a great show?

WHY should you wear closed toe shoes in the shop? Tie back your hair? Tuck in your shirt? Bring certain kinds of tools on a field trip? Stay out of abandoned mines? And so on.

HOW do you get the best polish on a cab? HOW do you solder a bail on a rough rock? HOW do you slab a fairly small but oddly shaped rock? Make a bracelet out of tiny little beads? Make a cage for those cabs some new members just finished?

Answers to any of these questions can get a member started and, you know, getting started is the hardest part!
from AFMS Newsletter, 2-3/19

Carbon: The Hardest And Softest by Brandon Poy

Ever since humanity invented writing, there have been many different methods. One of the most common means of writing in past centuries has been pencil and paper. Many people know that pencil “lead” is actually graphite. One of the softest minerals known, graphite is a crystalline form of carbon. This is an ideal mineral for pencils because it has a low hardness and forms in sheets that break off onto the paper.

On the other side of the spectrum is diamond, the hardest natural material known. Graphite under high pressure and intense heat converts to diamond. Around 30% of the diamonds found are gem quality. When faceted, these diamond crystals become beautiful, precious gems sparkling with “fire.” These two minerals, despite having the same chemical compositions, are complete opposites of each other.

“Lead pencils” is a misnomer. Historically, the element lead or any of its ores has never been used in the making of pencils. The modern pencil, invented in 1795 by Nicholas-Jacques Conte, traditionally consists of a core of graphite mixed with a clay binder within a wood casing. Graphite was first discovered in Bavaria, in Europe, at the start of the 16th century. It was mistakenly believed to be a form of lead and was called “plumbago” or black lead centuries ago. The name graphite came into use in 1789; it is derived from the Greek word, “graphein,” which means to write.

Graphite in massive form is common while graphite crystals are quite rare. Black to silver in color, graphite has a hardness of 1–2 on the Mohs Hardness Scale for minerals.

The mineral diamond is much rarer than graphite because of the way this mineral is formed. Diamond is the product of immense pressure and temperatures of 1,652–2,372° Fahrenheit deep, between 90 and 120 miles within the Earth. Because of its structure, it has many unique characteristics. Diamond can conduct five times as much heat as copper, and it also conducts sound very well, but it doesn’t conduct electricity. A faceted precious-gem grade diamond can also act as a prism, creating a highly desirable “fire” effect with the colors in the gem.

So why, if both are made of carbon, is one the hardest mineral while the other is one of the softest? The answer lies in their crystal structures. Within diamond, the carbon atoms form in a tetrahedral pattern, where each carbon is bonded with four others to form a 3D structure.

Also, because of the intense pressure that diamonds undergo, the atoms are very compact. On the other hand, graphite atoms form layers made up of hexagonal molecules. Graphite, due to its planar structure, can conduct electricity, has a lower density than diamond, and absorbs light, making it appear black. Graphite is so soft that its layers cleave easily.

That two polar opposites are actually made of the same element is fascinating. There are many cases similar to this in the mineral world. Crystal structure has a lot to do with the properties of a mineral, especially with cleavage and hardness. How remarkable is it that the graphite in a pencil, which snaps if it is sharpened too much, is actually made of the same element as diamonds? This is a reminder of how amazing nature and geology are.

Sources: *How can graphite and diamond be so different if they are composed of pure carbon?* Mariam Rossi, *Scientific American*, www.scientificamerican.com/article/how-can-graphite-and-diam/. Accessed December 19, 2018.

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My Child Ate Pencil Lead, Resource Center, Illinois Poison Control, www.illinoispoisoncenter.org/my-child-ate-pencil-lead. Accessed December 19, 2018.

Graphite, Wikipedia: The Free Encyclopedia, <https://en.wikipedia.org/wiki/Graphite>. Accessed December 19, 2018. Photo of graphite from the U.S. Geological Survey and the Mineral Information Institute, via Wikimedia Commons. via The Quarry, 10/19; via MWF Newsletter, 10/19; from Pick & Dop Stick, 1/19

Ulexite: A Mineral with Unusual Optical Properties by Steve Mulqueen

Ulexite is a borate mineral composed of the boron-oxide molecule plus sodium and calcium ions and several moles of hydration. The mineral was named after the German chemist Georg Ludwig Ulex (1811–83), who first identified it. Ulexite occurs within bedded lake deposits when saturated, boron-rich fluids that originate from volcanic fumaroles accumulate and then evaporate. A form of the fibrous mineral that is informally known as “TV rock” demonstrates its natural fiber optic properties.

“Cotton ball ulexite” got its name from its appearance: puffy-looking, small, rounded aggregates of acicular crystals. It occurs with mud in dry playa lake deposits in the deserts of California and Nevada. This form of ulexite was the initial borate mineral mined in playa lake deposits in the deserts of California and Nevada, beginning in the 1870s.

It was first mined in 1872 at Teels Marsh, located in Mineral County, Nevada, by Pacific Coast Borax Co., under the management of Francis M. “Borax” Smith. It was mined at the Eagle Borax Works, on the floor of Death Valley, as early as 1882. Beginning around 1883, William T. Coleman managed mining operations that recovered cotton ball ulexite from Death Valley mud flats near the Harmony Borax Works. The irregular masses of ulexite at the Harmony deposit were mined by Chinese laborers using pitchforks.

The three ulexite extraction operations in California and Nevada converted the ulexite, a sodium-calcium borate, into refined borax, a sodium borate product. The basic process used by these operations involved dissolving the ulexite in vats of hot water, adding a sodium source such as halite, and cooling the saturated liquor to allow the refined borax to crystallize. In this process, the introduced sodium ions easily substitute for the undesirable calcium ions as the product crystallizes.

Despite what the history books have stated, the mineral borax was never mined in Death Valley. Cotton ball ulexite was used to manufacture refined borax during the early years. The borax was hauled from Death Valley by 20-mule teams and wagons as early as 1883, 10 years after John Searles had demonstrated the wagons’ usefulness and endurance.

The natural mineral borax is closely related to ulexite. In what is now called Searles Lake (near present-day Trona, California), raw borax was processed to remove soluble and insoluble impurities. Searles’ 20-mule teams hauled wagonloads of the refined borax 175 miles to the port at San Pedro. In 1876, the railroad reached the town of Mojave, a mere 65 miles away.

Colemanite, ulexite and probertite were also mined by Kern County Land Co. in the 1950s at the Thompson mine (present-day Boraxo pit), in Death Valley. The ore, a combination of these three minerals, was used in the manufacture of ceramic glazes, structural fiberglass, insulation fiberglass, and heat-resistant glassware.

Other mines were formally operated during the early 1970s by Tenneco Mining Inc. and American Borate Co. The Boraxo pit, Sigma pit, and underground Billie mine in Death Valley extracted colemanite with ulexite. The deeper deposits at the Boraxo and Billie mines also encountered probertite. Probertite formed naturally from ulexite due to deep burial and increased temperatures, which caused recrystallization and drove off moles of hydration. Mining in Death Valley ended when the Billie mine permanently closed in 2008.

At Rio Tinto Minerals’ operations (formerly owned by U.S. Borax) at the Kramer deposit in Kern County (Boron pit), ulexite is stockpiled with colemanite in massive dump piles for future use. At this time, borax and kernite are mined as feedstock for the manufacture of refined granulated borax and granulated boric acid, respectively. Borax and kernite are abundant, so the stockpiled colemanite and ulexite are not applied to the process. They are valuable, however, as a future borate resource, and will be accessed when all sodium borate ores at the Kramer deposit are depleted.

Recent analytical work by Rio Tinto has revealed a huge resource of lithium within the stockpiles, which will add to the economic benefits of reprocessing the colemanite and ulexite.

Conclusion: Ulexite is a mineral that has many unusual crystal habits. It is famous among mineral collectors for its unique fiber optic qualities. Cotton ball ulexite has been mined as early as 1872 from remote playa lake deposits in California and Nevada. It continues to be a valuable natural mineral resource that is mined from deposits in many foreign countries. The mineral ulexite is a very important part of the mining history of Death Valley.

References: Research the following keywords on the Internet: borate, ulexite, colemanite, probertite, borax, kernite, refined borax, boric acid, Georg Ludwig Ulex, William T. Coleman, “Borax” Smith, Eagle Borax Works, Harmony Borax Works, Teels Marsh, and Kramer Borate Deposit.

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AFMS Code of Ethics

I will respect both private and public property and will do no collecting on privately owned land without permission from the owner.

I will keep informed on all laws, regulations or rules governing collecting on public lands and will observe them.

I will, to the best of my ability, ascertain the boundary lines of property on which I plan to collect.

I will use no firearms or blasting material in collecting areas.

I will cause no willful damage to property of any kind such as fences, signs, buildings, etc.

I will leave all gates as found.

I will build fires only in designated or safe places and will be certain they are completely extinguished before leaving the area.

I will discard no burning material - matches, cigarettes, etc.

I will fill all excavation holes which may be dangerous to livestock.

I will not contaminate wells, creeks, or other water supplies.

I will cause no willful damage to collecting material and will take home only what I can reasonably use.

I will practice conservation and undertake to utilize fully and well the materials I have collected and will recycle my surplus for the pleasure and benefit of others.

I will support the rockhound project H.E.L.P. (Help Eliminate Litter Please) and will leave all collecting areas devoid of litter, regardless of how found.

I will cooperate with field-trip leaders and those in designated authority in all collecting areas.

I will report to my club or federation officers, Bureau of Land Management or other authorities, any deposit of petrified wood or other materials on public lands which should be protected for the enjoyment of future generations for public educational and scientific purposes.

I will appreciate and protect our heritage of natural resources.

I will observe the "Golden Rule", will use Good Outdoor Manners and will at all times conduct myself in a manner which will add to the stature and Public Image of Rockhounds everywhere.