

# Lake George Gem & Mineral Club

## Club News

October, 2020



### CANCELLATIONS!

The coronavirus pandemic has resulted in statewide emergency regulations and public health advisories against group gatherings. Cancellations include all **LGGM Club meetings**, and **programs**, as well as **classes** such as Rockhounding 101, Mineral Identification, and Basic Wire Wrapping. We will let you know when these events can be rescheduled.

### FIELD TRIPS

Event Name	Details	Event Date	Event Leader(s)
Book Cliffs Barite (with Mile Hi RAMS)	Clear Barite	October 3rd, 2020 09:00 am	Dave Alexander
Douglas Pass Green River Formation Fossils (with MileHi RAMS)	Fossils	October 4th, 2020 09:00 am	Dave Alexander
Book Cliff Barite (with Mile Hi RAMS)	Clear Barite	October 4th, 2020 09:00 am	Chris Rayburn (Mile Hi RAMS)

### COMING EVENTS OUTSIDE THE LGGM CLUB:

**Many events that are held in college facilities or local community facilities are still cancelled until further notice. However, other organizations have resumed in-person meetings or have begun having meetings or special events online.**

Some of the programs listed below are through the Colorado Scientific Society. Whether these meetings will be virtual or in-person is dependent our nation's progress containing the COVID-19 epidemic. See <https://coloscisoc.org/> for details and updates.

**Oct. 8, Colorado Scientific Society, Annual S.F. Emmons Lecture. "21st Century Field Geology on the New Frontier".** Dr. Michael E. Zolensky, Planetary Scientist, Astromaterials Research & Exploration Science, NASA Johnson Space Center, Houston, TX  
"This talk will focus on the current missions to retrieve samples from two primitive asteroids and the largest moon of Mars." Location to be determined.

**Nov. 19, Colorado Scientific Society November Meeting. "The Rock that cried Silver Tears – The Early Jurassic Springdale Sandstone and its unusual precious metal mineralization at Silver Reef, UT, revisited".** Uwe Kackstaetter, Metro State University. Location to be determined.

**The Denver Mining Club** has resumed its regular Monday noontime meetings at the Golden Corral Buffet, Sheridan (S. Santa Fe Dr.). See their website for the upcoming monthly schedule once it is posted, <https://www.denverminingclub.org/>.

**OTHER EVENTS OUTSIDE THE LGGM CLUB:** (Nearby gem, mineral, fossil and geology events that you may enjoy.)

- **Cañon City Geology Club**, cancelled until further notice.  
<https://www.canoncitygeologyclub.com/>
- **Columbine Gem & Mineral Society**, meetings TBD. <https://rockaholics.org/about/>
- **Colorado Springs Mineralogical Society** meetings cancelled until further notice
- **Pueblo Rockhounds**, meetings cancelled until further notice.

\* \* \* \* \*

### In Person

**Oct 8., Van Tuyl Lecture (Virtual), Colorado School of Mines**, - Thursdays, 4-5 p.m. Berthoud Hall 241. Contact <https://geology.mines.edu/events-calendar/lectures/> for more information.  
**Denver Mining Club** (Mondays, 11:30), see <http://www.denverminingclub.org/> .

### Online Events

**Oct 8. Colorado Scientific Society virtual "Past Presidents" Emmons lecture.** 21st Century Field Geology on the New Frontier, by Dr. Michael Zolensky, NASA Houston Space Center;

**US National Committee for Geological Sciences Webinar Series.** Tuesdays 9:00 a.m. MT. For a complete list of webinar dates, topics, and speakers in the series, and to register, please visit <https://www.nationalacademies.org/our-work/americas-geoheritage-ii-a-workshop>.

**America's Geoheritage Workshop II Distinguished Speakers Webinar Program, Fall 2020**

Register via the hyperlinks below:

**Oct 6 Geoheritage and State Geological Surveys (AASG)**

**Oct 20 Geoheritage and Cultural Heritage**

**Nov 10 Geoheritage, Economic Development, Geotourism**

**Nov 17 Geoheritage and Geoscience Education (K-12, undergraduate, informal)**

**Dec 1 Geoheritage and Research Initiatives**

**CU Geological Science Colloquium** (Online via Zoom - Wednesdays, 4 p.m.)

see <http://www.colorado.edu/geologicalsciences/colloquium>

**CSU Dept. of Geoscience Seminars** (online via Zoom - Fridays, 4 p.m.),

see <https://warnercnr.colostate.edu/geosciences/geosciences-seminar-series/>

**Denver Museum of Nature and Science, Earth Science Colloquium series**, VIP Room unless noted, meeting dates and day of the week vary. Museum admission is not required;

see <http://www.dmns.org/science/research/earth-sciences/>

**Golden Beer Talks**, 2<sup>nd</sup> Tuesday, 6-8 p.m.), **At Home Editions** of Golden Beer Talks! These At Home Editions will include short videos providing an informational talk along with some details about local beers. "Golden's grassroots version of TED talks, Expand your mind with a beer in your hand".

See <http://goldenbeertalks.org/> for more information.

**Rocky Mountain Map Society** RMMS; Denver Public Library, Gates Room, 3<sup>rd</sup> Tuesday, 5:30 p.m.), Online via Zoom until further notice. For further information see: <http://rmmaps.org/>

**Western Interior Paleontological Society** (WIPS); WIPS has virtual meetings (rather than their usual meetings in person on the 1<sup>st</sup> Monday of the month, 7 p.m., in Petroleum Hall, Green Center, 924 16<sup>th</sup> St., Colorado School of Mines campus, Golden) See <http://westernpaleo.org/> for more info.

**The following are cancelled until further notice: check the following links for information on lecture series when they resume:**

**Colorado Café Scientifique in Denver**, monthly lectures on science topics see <https://coloradocafesci.org/>  
**Denver Region Exploration Geologists Society (DREGS)**; (Cancelled until further notice - usually 1<sup>st</sup> Monday, 7 p.m., Room 241 Bethoud Hall, CSM campus, Golden) <http://www.dregs.org/index.html>  
**Florissant Scientific Society (FSS)**; (Cancelled until further notice - meets monthly in various Front Range locations for a lecture or field trip; meeting locations vary, normally on Sundays at noon; all interested persons are welcome to attend the meetings and trips); see <http://www.fss-co.org/> for details and schedules.  
**Friends of Mineralogy, Colorado Chapter**, (Cancelled until further notice -usually meets on the 2<sup>nd</sup> Thursday of odd-numbered months, 7:30 p.m., Berthoud Hall Room 108, CSM campus, Golden; see <https://friendsofmineralogycolorado.org/>).

**Nerd Night Denver** is a theater-style evening featuring usually 3 short (20-minute) TED-style talks on science or related topics; held more-or-less monthly at the Oriental Theater, 4335 W. 44<sup>th</sup> Ave., Denver; drinks are available; for ages 18+. Admission is \$6 online in advance, \$10 at the door. See <https://www.nerdnitedenver.com/> .

## **LGGM Club News:**

**Member Reports on Private Rockhounding Activities.** Even though the club has resumed rockhounding field trips, any information you may have about other rockhounding you may have done on public lands that allow rock collecting, or on private lands or mines which allow fee digs or rockhounding with permission. Please tell us where you went, what you found, and provide contact information for obtaining permission (if required). Your information and photos may be included in future newsletters.

**Wayne Orlowski** sent the following report on his recent geology trip.

“Just did a two day ATV trip to the La Garita Wilderness near Creede, Colorado to see the erosional masterpiece created in the Rat Creek Tuff. Quite some story about the Mid-Tertiary ignimbrite flareup and the resultant natural wonder one can view in the Wheeler Geologic Area. It is not that easy to access and a Jeep or ATV is necessary to avoid the 14-mile hike to the area. It is worth the effort to view the cliffs up close. “



For more information, see: <https://rootsrated.com/stories/the-fascinating-story-behind-wheeler-geologic-area>

## **Pebble Pup News:**

**National Fossil Day.** Each year the Pebble Pups participate in the National Fossil Day by creating original artwork.

The National Park Service and National Fossil Day partners are sponsoring an art contest to celebrate the 11th annual National Fossil Day. The 2020 National Fossil Day celebration is scheduled for Wednesday, October 14, 2020, during Earth Science Week. The theme for this year's art contest is: "Life of the Paleozoic Oceans!" For this theme we would like contest participants to depict aquatic organisms from the Paleozoic oceans, particularly those found in the United States of America. The Paleozoic era (541 to 250 million years ago) was the earliest of the three geologic eras with diverse life, and is subdivided into six geologic periods: the Cambrian, Ordovician, Silurian, Devonian, Carboniferous, and Permian. The 2020 National Fossil Day logo features a wide variety of sea creatures that formed and lived within a 270 million year old Permian reef from Glass Mountains and Guadalupe Mountains of Texas and New Mexico.

For more information about the <https://www.nps.gov/subjects/fossilday/art-contest-2020.htm>

## **Links to Interesting Gem & Mineral Articles Online:**

**Bob Carnein** Sent us this link to two promotional issues of Rock&Gem magazine called "Illustrious Opals". These issues can be read online at [https://www.rockngem.com/illustrious-opals-library/?utm\\_source=promotion&utm\\_medium=email&utm\\_campaign=RocknGem\\_DigitalOpal\\_Library\\_Promo](https://www.rockngem.com/illustrious-opals-library/?utm_source=promotion&utm_medium=email&utm_campaign=RocknGem_DigitalOpal_Library_Promo)

**Bob** also submitted a free article about internet security for rockhounds from UDEMY.com (an online course website.)



## **Web Corner – Web and Computer Resources for Rockhounds** **Internet Security – by Bob Johnson**

Let me say it right up front. ***There is no such thing as "internet security"***. Those two words do not belong in the same sentence. Every major corporation or government agency has people with advanced degrees in computer security, whose full-time job is to protect their computer operations. Yet, *nearly every one of them has been hacked - or soon will be.*

**NASA** has had control of their satellites taken over by hackers:

<https://www.fastcompany.com/90464666/what-happens-when-all-the-tiny-satellites-were-shooting-into-space-get-hacked> and in 2019 they saw a 366% **increase** in cybersecurity incidents.

<https://www.forbes.com/sites/simonchandler/2020/06/08/nasa-hit-by-366-rise-in-cybersecurity-incidents-after-budget-cuts/#521749ca5b31>

**OPM**, the U.S. Office of Personnel Management was hacked and leaked the most personal information on millions of past and present government employees (like me) including those with top secret security clearances. The leaked data included the most intimate information about those employees, even their finger print data.

<https://www.wired.com/2016/10/inside-cyberattack-shocked-us-government/>

**YAHOO** was hacked, leaking information on 3 billion users.

<https://money.cnn.com/2017/10/03/technology/business/yahoo-breach-3-billion-accounts/index.html>

**HACKED**



**EQUIFAX**, the credit monitoring company, was hacked, releasing names, social security numbers, birth dates, credit card numbers and even driver's license numbers for 147 million consumers.

<https://www.wired.com/story/equifax-hack-china/#:~:text=In%20September%202017%2C%20credit%20reporting,gone%20in%20an%20unprecedented%20heist.>

### For more See:

The top 10 biggest U.S. Government Data Breaches of all time: <https://digitalguardian.com/blog/top-10-biggest-us-government-data-breaches-all-time>

The 10 biggest data hacks of the decade: <https://www.cnbc.com/2019/12/23/the-10-biggest-data-hacks-of-the-decade.html>

Check out The Wikipedia list for data breaches of 30,000 records or more:

[https://en.wikipedia.org/wiki/List\\_of\\_data\\_breaches](https://en.wikipedia.org/wiki/List_of_data_breaches) Count how many of the agencies that **you** do business with have been hacked. (I count over 26!)

Given all of the stories above what chance do the rest of us, who did not major in computer security, have? **NONE!** There is **ABSOUTLY NOTHING** you can do to *guarantee* that you will not be hacked. Even if you cancel your phone and internet today you will remain at risk (because your information is still being held in countless databases around the world).



Image by Rudy and Peter Skitterians from Picabay

### Who are the most likely people to be hacked?

First are **High Value Targets** - those people or agencies with lots of money or lots of high value information on their systems. (Most of us do not fall in that category.) The second is **Low Hanging Fruit** – those people or agencies that fail to follow best practices for security.

We've all heard the joke, "to be safe, I don't have to outrun the bear - I just have to out run *you*." The same can apply to both home security and internet security. Crooks are looking for the jobs with the least risk and the least work. Your job is to make it as hard as possible for them, so they pass you by.




While there is nothing you can do to *guarantee* your internet safety, there are *lots* of things you can do to *improve your odds*. Here is my list of top tips and tools for that:

1. **BACKUP** your system regularly. This will help to recover from both malicious activities and common hardware or software failures. The price of large external backup drives keeps coming down, making this more affordable than ever. My favorite free software for system backups is AOMEI: <https://www.ubackup.com/free-backup-software.html> I've used it several times to restore my computers. It's never failed me.
2. **STRONG PASSWORDS** – Statistics show that roughly **80% of data breaches are due to weak passwords**. Use strong passwords and don't use the same password for multiple accounts. Check out the *Ultimate Guide to Strong Passwords*: <https://blog.fleetsmith.com/password-security-guide/> Yes, it's nearly impossible to remember all

of those long, unique passwords, for dozens or hundreds of accounts! The google chrome browser can help you out by remembering your passwords and then automatically filling them in for you. **Chrome will also help you with tracking the security of your saved passwords.** Go to the Password Manager: <https://passwords.google.com/> Then click on **Go to Password Checkup** to see a report of how many of your passwords have been hacked, used twice, or are weak. You can then go in to change all of those problem passwords. **Do it!** For more details, check out this article from WIRED: <https://www.wired.com/story/chrome-password-popups/>



We've checked 27 passwords

	<b>6 compromised passwords</b> Change these passwords now	▼
	<b>14 reused passwords</b> Create unique passwords	▼
	<b>24 accounts using a weak password</b> Create strong passwords	▼

- 2FA** – Two-Factor Authentication involves a second method (in addition to passwords) to identify you. Most often this involves sending a code to your smart phone, which you must then enter in order to gain access to your online account. For more on setting this up for your various accounts check out this article from PC Mag: <https://www.pcmag.com/how-to/two-factor-authentication-who-has-it-and-how-to-set-it-up>
- VPN** – When using public Wi-Fi hotspots it is possible that your internet traffic, including any passwords that you enter, could be intercepted and stolen. Using a Virtual Private Network will encrypt your internet traffic to prevent that. To learn more check out this article from How-To Geek: <https://www.howtogeek.com/133680/htg-explains-what-is-a-vpn/>
- ANTIVIRUS** – Many Internet Service Providers now offer free access to virus protection software. In the Denver area Century Link provides McAfee, while Comcast provides Norton. And Windows has its own built in virus scanner which is getting better all the time. Whatever you use, make sure it is properly configured, is running regular scans, and is regularly updated. Periodically (and whenever I suspect there may be a problem) I run a second scanner to check for anything my regular scanner may have missed.



(Image by Vicky Gharat from Pixabay)

Here are 3 different lists for the best FREE antivirus programs for 2020:

<https://www.cnet.com/how-to/the-best-antivirus-protection-of-2020-for-windows-10/>

<https://www.pcmag.com/picks/the-best-free-antivirus-protection>

<https://www.antivirussoftwareguide.com/best-free-virus-protection>

6. **UPDATES-** Make sure that your operating system has the latest security updates. For details on how to manage your Windows 10 updates see: <https://www.techrepublic.com/article/how-to-control-updates-in-windows-10/> If you are running an older, no longer supported, version of windows you can still upgrade to Windows 10 for free. See: <https://www.forbes.com/sites/gordonkelly/2020/02/04/how-to-upgrade-to-windows-10-for-free-in-2020/#7305ab7075ff> But what about the drivers on your computer that control the sound card, the video card, and other hardware components? They may need updates. For that I use a utility called *Driver Booster*, but there are others. See: <https://www.lifewire.com/free-driver-updater-tools-2619206> Finally, there may be dozens of other programs you have installed. They too could have security holes that need updates. To monitor those, I recommend that you subscribe to the **CISA Weekly Vulnerability Summary Bulletin**. This is an eye-opening report on the latest software with security holes, and how to fix them. Subscribe here: <https://us-cert.cisa.gov/ncas/bulletins>



**Scammers never sleep!** Check out this list of 70+ Scams to watch out for online:

<https://www.comparitech.com/vpn/avoiding-common-scams-schemes/> And they are coming up with new ones all the time. See the Federal Trade Commission Scam Alerts:

<https://www.consumer.ftc.gov/features/scam-alerts> and the AARP listing of Scams & Fraud

<https://www.aarp.org/money/scams-fraud/>

**To learn more**, check out one or more of these FREE internet security classes offered by UDEMY:

<https://www.udemy.com/courses/search/?price=price-free&q=internet+security&sort=relevance>

\* \* \* \* \*

**Wayne Orlowski** sent the following paleontology links:

I get asked this all the time - how old is this? The answer for my civilian scientist and teacher friends is shown in the review videos below.

Radiometric dating explained - rocks and old fossils [https://www.youtube.com/watch?v=5\\_vKvJO7Kqw](https://www.youtube.com/watch?v=5_vKvJO7Kqw)

Specifically - Carbon 14 dating for past living things explained [https://youtu.be/phZeE7Att\\_s](https://youtu.be/phZeE7Att_s)

**Wayne** also sent us references from **geologypage.com** – Their free access to articles and newsletters is an outstanding source of information about a wide range of geology and paleontological topics.

Additional information from **geologypage.com** on Earth's carbon cycle can be found at:

[http://www.geologypage.com/2020/09/uncovering-new-understanding-of-earths-carbon-cycle.html?utm\\_source=feedburner&utm\\_medium=email&utm\\_campaign=Feed%3A+geology-page+%28Geology+Page%29](http://www.geologypage.com/2020/09/uncovering-new-understanding-of-earths-carbon-cycle.html?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+geology-page+%28Geology+Page%29) and from

[http://www.geologypage.com/2020/09/understanding-earths-deep-carbon-cycle.html?utm\\_source=feedburner&utm\\_medium=email&utm\\_campaign=Feed%3A+geology-page+%28Geology+Page%29](http://www.geologypage.com/2020/09/understanding-earths-deep-carbon-cycle.html?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+geology-page+%28Geology+Page%29)

## The latest installment of “**Bench Tips**” by **Brad Smith:**

([www.BradSmithJewelry.com](http://www.BradSmithJewelry.com))

### REMOVING SOLDER FROM A BEZEL

Sometimes when you solder a bezel to a base plate you end up with excess solder that needs to be removed before setting the stone. My choice of a tool bit for this is an "Inverse Cone" bur used in a motor tool or flexshaft. It cuts on both the bottom and the side and is shaped so that there's less chance of cutting into the bezel wall than if you used the more common cylinder bur shape. I find the 2 mm size useful for almost any bezel.

---

### TESTING FOR SILVER

Often you need to identify some of those unknown "silvery" pieces in the bottom of the toolbox or some piece of old jewelry. Is it silver or something else? Of course, if you need to know exactly what you have, it's best to send your metals off for refining. But inexpensive silver testing solutions can be used to help distinguish higher silver content alloys from alloys that have the same appearance but with little to no silver content, like German Silver or Nickel.

I purchased a half-ounce bottle of JSP Silver Testing Solution #GT41. It's not a rigorous analytic test, but it lets you know if you're on the right track. And it's inexpensive. Mine was only \$3.

With a fresh solution you have an instant reaction after applying it to the metal being tested. The procedure is simple - as you apply a small drop, look for a color change. Note that the acid will leave a slight mark, so choose a spot that is out of the way or will be easy to polish.

If you suspect the object is silver plated, you should file a little notch somewhere inconspicuous to expose what metal is below the surface. Otherwise, all you test will be the surface plating.

Here's the reaction I got when testing various materials:

- . Fine silver . . . . . Red/Orange
- . Sterling silver . . . . . Brick Red
- . 80% silver 20% copper . Dark red changing to gray
- . Brass . . . . . Yellow changing to blue
- . Nickel . . . . . Gray-green
- . Copper . . . . . Yellow changing to blue
- . Steel . . . . . Black
- . Stainless Steel . . . . . No color change

Learn New Jewelry Tricks and Techniques in Brad's Jewelry-Making Books  
[Amazon.com/author/bradfordsmith](https://www.amazon.com/author/bradfordsmith)

Best to all  
- Brad



## Notes from the Editors

Bob Carnein  
Co-Editor  
[ccarnein@gmail.com](mailto:ccarnein@gmail.com)  
719-687-2739

Jerrolynn Kawamoto  
Co-Editor  
[jerrolynn@wildblue.net](mailto:jerrolynn@wildblue.net)  
719-748-8152



### Colorado Type Localities Elpasolite By **Bob Carnein**

Colorado accounts for 87 mineral type localities, including carnotite, creedite, rickardite, and zunyite, which were covered in previous articles. This month's installment is about the extremely rare aluminofluoride mineral, elpasolite.

Central Colorado is world famous among mineral lovers as a source of a rare suite of aluminofluoride minerals, including cryolite ( $\text{Na}_3\text{AlF}_6$ ) and several rarer compounds derived from its alteration. Until recently, these occurrences were known mainly from the St. Peters Dome area, on or near the Gold Camp Road, in El Paso County. If you follow this newsletter, you know that, about two years ago, LGGMC member Larry Bertram discovered a small cryolite occurrence (Figure 1) about 3 km northwest of Florissant—the first such occurrence in this part of the Pikes Peak batholith.

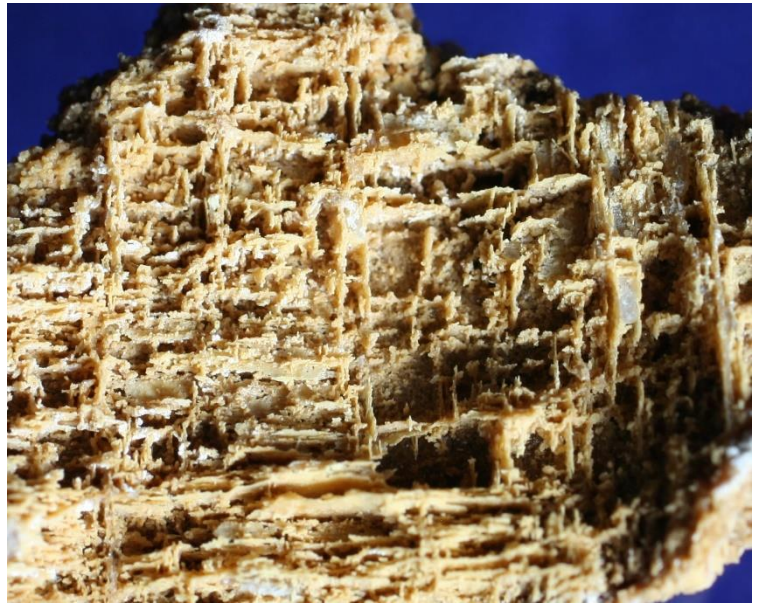
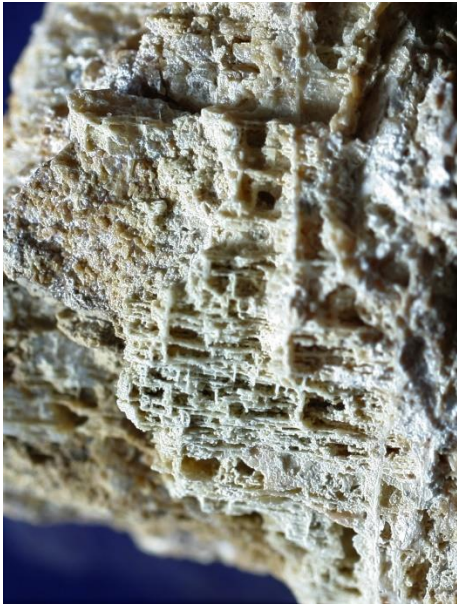


**Figure 1.** Larry Bertram at his cryolite discovery. (Carnein photo)



**Figure 2.** Sample of cryolite from Bertram locality. (Carnein collection and photo)

Since the identification of cryolite, Markus Raschke and I have recognized an additional suite of 6 rare aluminofluoride alteration products in about 5 kg of samples collected by Larry Bertram and me in 2018-2019. Identifications were carried out with a variety of methods, including immersion oils, X-ray diffraction, and scanning electron microscopy-energy dispersive X-ray spectroscopy (SEM-EDS). Markus and I were stumped by the analysis of one sample that appeared to be a mixture of several minerals. In August, 2020, using money from the Club's mineral-analysis fund, I sent this sample to the X-ray diffraction lab at New Mexico Tech to see whether we could sort it out. The sample came from the "crust" surrounding a massive piece of altered cryolite (Figures 2, 3, and 4).



**Figures 3, 4. Typical "boxworks" produced by alteration of cryolite along cleavage planes, followed by removal of cryolite. Remaining alteration products include pachnolite and elpasolite. (Carnein collection and photos)**

Typically, when cryolite alters, it dissolves, leaving a "boxwork" of intersecting perpendicular veinlets that originally occupied pseudocubic cleavage fractures in the cryolite (Figures 3, 4). The minerals in these veinlets are a bit more resistant than the missing cryolite and stand out in relief. The New Mexico Tech sample, which was taken from one of these boxworks, proved to contain three minerals: cryolite and pachnolite ( $\text{NaCa}[\text{AlF}_6]\cdot\text{H}_2\text{O}$ ), which were expected, and elpasolite ( $\text{K}_2\text{NaAlF}_6$ ), which is the subject of this article.

Elpasolite was first described by C. Whitman Cross and W.F. Hillebrand, two prolific U.S. Geological Survey scientists best known for their extensive work in Colorado. Cross was a field geologist and igneous petrologist who helped invent the still-used CIPW normative analysis of rocks that has bedeviled university petrology students ever since it was devised in 1931. (If you would like to know how it works and why it is used, I recommend that you visit [https://en.wikipedia.org/wiki/Normative\\_mineralogy](https://en.wikipedia.org/wiki/Normative_mineralogy).) Hillebrand was a chemist who worked as an assayer in Leadville before setting up a chemistry lab for the U.S. Geological Survey in Denver.

Cross and Hillebrand's publications on cryolite and its alteration products were based on field work conducted in the area around St. Peters Dome in the early 1880s (Cross and Hillebrand, 1883; 1885). Cryolite and other fluorides were first identified "in a prospect shaft and in a neighboring tunnel" at the northeastern base of St. Peters Dome (Cross and Hillebrand, 1885). The tunnel is the Eureka Tunnel, which many LGGMC members have visited over the last 10 or 12 years. The authors identified several other small cryolite occurrences in "veins" to the north and west of St. Peters Dome.



Cross and Hillebrand (1885) note that, on a few specimens of massive pachnolite associated with the cryolite at one of the St. Peters Dome localities, small cavities contained compact, irregular masses and “small rounded crystal-like projections” of an apparently isometric mineral that is chemically distinct from the other cryolite alteration minerals. They proposed the name *elpasolite* for it, from “the county of El Paso”. As of 1885, they were unable to access the locality and could not collect enough of the material for a definitive analysis. More recent work filled in the gaps, producing the following data (from Mindat.org, accessed September, 2020):

- Chemical formula:  $K_2NaAlF_6$
- Crystal system: Isometric (diploidal)
- Luster: sub-vitreous, greasy
- Mohs hardness: 2.5
- Specific gravity” 2.995
- Cleavage: none; uneven, irregular fracture

Interestingly, Cross and Hillebrand’s description of the first find closely matches the description of the material that Larry Bertram and I collected 135 years later and 40 km to the northwest.

Since Cross and Hillebrand’s original discovery, elpasolite has been found at only 19 (now 20) localities world-wide (Mindat.org, accessed September, 2020). Those include, in Colorado, the Eureka Tunnel and a locality 1 km to the southwest, as well as the Goldie carbonatite, in Fremont County, about 6.2 km southeast of Texas Creek. In the United States, elpasolite is also found at two other famous localities: the Zapot pegmatite in Nevada and the Morefield mine, in Virginia. The most famous of all cryolite occurrences, the Ivittuut (Ivigut) cryolite deposit, Arsuk Fjord, Greenland, also contains minor elpasolite. Cryolite at Ivittuut was mined for aluminum until the deposit was exhausted in the 1980s.

The type specimen of elpasolite can be found in the National Museum of Natural History (Smithsonian Institution), catalog number 83302 (Roe and White, 1976). It is described as coming from the “Cincinnati mine, St. Peters Dome, Pikes Peak, Colorado”. I’m guessing that this is the locality southwest of the Eureka Tunnel mine.

Markus Raschke and I are in the process of writing up Larry Bertram’s find for publication elsewhere. We acknowledge and appreciate the support of the Lake George Gem & Mineral Club for XRD analyses and the generosity of Larry Bertram, who collected the original samples and gave us access to his find.

### References Cited

Cross, E.B., and W.F. Hillebrand, 1883, On minerals of the cryolite group recently found in Colorado: *American Journal of Science*, 3<sup>rd</sup> Series, vol. 26, no. 154, p. 271-294.

\_\_\_\_\_, 1885, *Mineralogy of the Rocky Mountains II, minerals from the neighborhood of Pike’s Peak*: U.S. Geological Survey Bull. 20, p. 40-68.

Roe, A., and J.S. White, Jr., 1976, *A Catalog of the Type Specimens in the Mineral Collection, National Museum of Natural History*: Smithsonian Contributions to Earth Sciences, No. 18.

## Monthly Mineral Quiz

Last Month's Mineral: Corundum,  $\text{Al}_2\text{O}_3$ .



Corundum is a widespread mineral that occurs in some metamorphic rocks, including marble, mica schist, and gneiss, as well as in low-silica igneous rocks, such as syenite and nepheline syenite. Hexagonal crystals are common and may be quite large. It also occurs in placer deposits. Although it's often nearly opaque and some murky shade of gray or brown, corundum may be transparent and occurs in every color of the rainbow. Its extremely high hardness (9 on the Mohs scale) and toughness make transparent varieties very desirable gemstones. Red gem corundum is ruby, and all other colors are lumped together as sapphire. Color typically results from the presence of minor cations, and it may be modified by



treatments of various kinds. Synthetic corundum is common and cheap (e.g. Linde star sapphire, ruby for lasers and other electronic applications), but natural ruby of the "best" ("pigeon-blood" red) color may be very expensive. In Colorado, corundum occurs at scattered locations in Chaffee, Clear Creek, Custer, Fremont, Jefferson, Moffat, and Routt counties (Eckel, 1997). You might find blue crystals at the Calumet mine and surrounding areas, near Turret.

This Month's Mineral. (Carnein collection and photos)



The mineral for October is also very common and hexagonal, but it's quite a bit softer than corundum. As a result, although the color varies widely and it can occur as transparent crystals (see above), it doesn't make a durable gemstone. You may encounter it in pegmatites, like the massive specimen to the left. In this setting, it often fluoresces bright orangey yellow. This is actually a group of minerals with 3 main species, depending on the presence of F, Cl, and/or (OH). Fine crystals like the one on the right (above) have been produced in Colorado for years. What is it?

Eckel, E.B., 1997, *Minerals of Colorado, Updated and Revised by R.R. Cobban, et al.*: Golden, Colorado, Fulcrum Publishing.



**The Lake George Gem and Mineral Club** is a group of people interested in rocks and minerals, fossils, geography and history of the Pikes Peak/South Park area, Indian artifacts, and the great outdoors. The Club's informational programs and field trips provide opportunities to learn about Earth science, rocks and minerals, lapidary work and jewelry making, and to share information and experiences with other members. Guests are welcome to attend, to see what we are about!

The Club is geared primarily to amateur collectors and artisans, with programs of interest both to beginners and serious amateurs. The Club meets on the second Saturday of each month at the Lake George Community Center, located on the north side of US Highway 24 on the east edge of town, sharing a building with the county highway shops. **In the winter, we meet at 10:00AM. From April through September, we meet at 9:00AM, to allow more time for our field trips.**

Our organization is incorporated under Colorado law as a nonprofit educational organization, and is a member of the Colorado, Rocky Mountain, and American Federations of Mineralogical Societies. We also sponsor an annual Gem and Mineral Show at Lake George, where collectors and others may purchase or sell rocks, minerals, fossils, gems, or jewelry. Annual membership dues (Jan. 1 through Dec. 31) are \$15.00 for an individual (18 and over), and \$25.00 for a family (parents plus dependents under age 18). New memberships and renewals are only accepted Jan 1 through March 31 each year.

### **Our Officers for 2020 are:**

**Richard Kawamoto**, President  
7584 Cedar Mountain Rd.  
Divide, CO 80814  
719-748-8152  
[kawahome@wildblue.net](mailto:kawahome@wildblue.net)

**John Rakowski**, Vice President  
PO Box 608  
Florissant, CO 80816  
719-748-3861  
[rakgeologist@yahoo.com](mailto:rakgeologist@yahoo.com)

**Lorrie Hutchinson**, Secretary  
10915 Grassland Rd.  
Colorado Springs, CO 80925  
719-330-2795  
[4lohutch@gmail.com](mailto:4lohutch@gmail.com)

**Cathy McLaughlin**, Treasurer  
11595 Owls Nest Rd.  
Guffey, CO 80820  
702-232-3352  
[cathy\\_mclaughlin@hotmail.com](mailto:cathy_mclaughlin@hotmail.com)

**C.R. (Bob) Carnein**  
Newsletter Co-Editor  
507 Donzi Trail  
Florissant, CO 80816  
719-687-2739  
[ccarnein@gmail.com](mailto:ccarnein@gmail.com)

**Jerrolynn Kawamoto**  
Newsletter Co-Editor  
7584 Cedar Mountain Rd.  
Divide, CO 80814  
719-748-8152  
[jerrolynn@wildblue.net](mailto:jerrolynn@wildblue.net)