

## Lake George Gem & Mineral Club

# Club News

October, 2019



**NOTE: LGGM Club meetings in April through October will start at 9:00 a.m.  
November through March meetings will start at 10:00 p.m.**

**Program for the Month: Saturday, October 12, 2019, 9:00 a.m.**

### Central Colorado Geology

by **Bob Carnein**

**Bob Carnein** will discuss the geology of central Colorado from the Colorado Springs area to Lake George. This talk will be an introduction to two field trips – the first on Saturday, October 12, immediately after the club meeting and program, and the second on Sunday, October 13. Bob sent the following:

Central Colorado is a Mecca for geologists. It's not only a wonderful place to learn geology but a great place to teach it, as well. In central Colorado, textbook examples of an amazing variety of geologic features are packed into a relatively small area. Extensive exposure by weathering and erosion, combined with relatively thin vegetative cover, make it easy to trace boundaries between rock units and work out detailed geologic histories to explain how these rock units formed.

This talk will begin with a short review of the geologic time scale and the concept of a formation as the basic unit geologists use to plot information on geologic maps. We will look at how formations are grouped, in order, from oldest at the bottom to youngest at the top in a stratigraphic column. Central Colorado has a relatively complete column, with most parts of the geologic time scale represented.

The talk will also look at major structural features (mainly faults and folds) in central Colorado's rocks and how geologists represent them on geologic maps. Finally, we will see how all kinds of geologic data are combined to develop stories (called geologic histories) that summarize how we think the features around us formed. We will look at a few examples specific to our area, including the Ute Pass and Rampart Range faults, the metamorphic rocks of the Idaho Springs Formation (the oldest rocks in the state), the Rampart Range antiform, the Garden of the Gods, and the Florissant valley.

**Biography** Bob Carnein received a Ph.D. in geology from Ohio State in 1976. After a 37-year teaching career at Waynesburg College and Lock Haven University (both in Pennsylvania), he and his wife Nell retired to the Florissant area in 2007. At that time, Bob joined the Lake George Club, becoming Newsletter Editor, a post he held until 2019. Bob's major interests include the minerals and geology of the Cripple Creek gold deposits; crystallography,

especially twinned crystals; and fluorescent minerals, especially those of the Franklin/Sterling Hill, NJ zinc deposits.

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**NOTE FROM THE PRESIDENT:** We have noticed on recent field trips that some people who are on the list to attend have been no-shows without moving themselves from the sign-up list. This does not allow people on the Wait List to attend. For this and other field trips, if you are signed up for the trip and cannot attend, please be courteous to those on the Wait List, and remove yourself from the signup list. The website has been designed to make this a simple process.

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**Scheduled Programs at Club Meetings:**

**October** – Bob Carnein, Central Colorado Geology

**November** - Doug White, Newmont CC&V, Geology of Cripple Creek-Victor Gold Mine

**December** - Towel show, no presentation

**Silent Auction:** We need donations for the silent auction at our club meetings! If you have “extras”, whether minerals, fossils, books, or other items, and if you have a label saying what the item is and where it came from, we can use it. If not, bring some cash and be prepared to help support Club activities, including scholarships, Pebble Pups, and other items.

**LGGM Club Field Trips:**

Please share your pictures of your finds and adventures on our trips on our Facebook page and with Jerrolynn at [jerrolynn@wildblue.net](mailto:jerrolynn@wildblue.net) so that they can be included in our newsletter.

**Change in Field Trip Leader for Book Cliffs field trip October 5-6, 2019:** Please note that LGGM Club field trip leaders Dave Alexander and Richard Kawamoto will not be available to lead this trip. Chris Rayburn, from the Mile High RAMS is leading the trip and welcomes our members. The group of RAMS and LGGM Club members will be meeting at 9:00a.m. at a site near Grand Junction. Detailed directions and a map along with Chris’s contact information are posted the field trip signup page online.

If you have questions related to field trips, please contact me at [dave@davealex.com](mailto:dave@davealex.com).

Thanks, and happy digging!  
--dave and Laura

<b>SCHEDULE OF LGGM CLUB PROGRAMS, FIELD TRIPS &amp; EVENTS</b>			
<b>Date(s)</b>	<b>What</b>	<b>Where</b>	<b>Leader/Notes</b>
Sa 10/5	Book Cliffs - Day 1	Grand Junction Area	Joint trip with RAMS – RAMS Field trip leader is Chris Rayburn
Su 10/6	Book Cliffs - Day 2	Grand Junction Area	Joint trip with RAMS – RAMS Field trip leader is Chris Rayburn
Sa 10/12	Central Colorado Geology	LGGM Club Presentation	9:00a.m. Bob Carnein
Sa 10/12	Central Colorado Geology #1	GOG, Manitou Spr, Cave of the Winds, Crystola	10:30a.m. Bob Carnein
Su 10/13	9:00 a.m. Colorado Springs Area Geology Day #2	Ute Pass (Woodland Park to Rainbow Falls)	Bob Carnein
Sa 11/9	Newmont CC&V Geology of Cripple Creek-Victor Gold Mine	LGGM Club Presentation	Doug White
<b>Additional Presentations and Field Trips to be added after they are confirmed.</b>			

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

- **Steve Gorman** alerted us to this special presentation in Victor:

**Oct 5**, 11:00-3:00 The Victor Thomas Lowell Museum at 298 Victor Ave, Victor, CO 80860 will offer a special presentation on mining, mine history and stories of mining in Victor from 11:00 am-3:00 p.m. **(Meet at the museum at 10:30 for a ride to the mine tour.)** See details below.



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- **Cañon City Geology Club**, meets on the 2<sup>nd</sup> Monday of the month at 6PM in the United Methodist Church, Cañon City
- **Columbine Gem & Mineral Society**, meets on the 2<sup>nd</sup> Thursday of each month, 6:30PM in the meeting room, Mt. Shavano Manor, 525 W. 16<sup>th</sup> (at J St.), Salida
- **Colorado Springs Mineralogical Society**, meets on the 3<sup>rd</sup> Thursday of each month at 7PM in the Mt. Carmel Veteran's Service Center, 530 Communication Circle, Colorado Springs;
- **Pueblo Rockhounds**, meets on the 3<sup>rd</sup> Thursday of each month at 6:30PM in the Westminster Presbyterian Church, 10 University Circle, Pueblo.

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**Pete Modreski also suggests the following upcoming events:**

**Oct. 15** "Golden Beer Talks" at the Buffalo Rose, 1119 Washington Ave., Golden. Held on 2<sup>nd</sup> Tuesdays. Doors open at 6; Talk begins at 6:35; Intermission – 7-7:15; Q&A/clean up 7:15-8.

**Oct 15**, Donald Sweetkind, Geologist, USGS, "**From Uravan to Rulison: Tales from Colorado's Nuclear Past**"

Here is the rest of the schedule for the Fall:

**Nov 12**, Bob Reynolds, Geologist, CSM Adjunct Prof and DMNS Research Associate, "**Australopithecines to the Anthropocene: A Geologist's View of Where We Came from and Where We Are Going**" **Dec 10**, Barb Warden, Goldentoday.com, "**Funiculars of Golden Colorado**".

**Sat.-Sun., Oct. 5-6**, the Colorado Scientific Society will host a weekend field trip, "**Geology and Geoheritage of the Florissant-Cañon City-Florence area**". It will include Florissant Fossil Beds National Monument; Skyline Drive by Cañon City; Royal Gorge; the Florence coal, oil, and gas basin; the Cope-Marsh quarries at Garden Park; and the Cripple Creek and Victor Gold Mine. You must be a CSS member to take part, but anyone may join the Society if they wish to go on the trip; see <http://coloscisoc.org/>.

**Tues., Oct. 8**, 7:00-9:00 p.m. Western Museum of Mining and Industry Speakers' Bureau Lecture: "**Cripple Creek's Cresson Mine: The Untold Stories**", by Ben Elick. WMMI, 225 North Gate Rd., Colorado Springs. \$5 per person, free to museum members. RSVP to 718-488-0880 or [rsvp@wmmi.org](mailto:rsvp@wmmi.org); to book in advance: <https://fareharbor.com/embeds/book/wmmi/items/108438/calendar/?flow=41147>

**Oct. 13-19** is the annual **Earth Science Week**. I (Pete Modreski) will be leading a geology hike/field trip for the public sometime during or around this week--details TBA.

**Sat., Oct. 19**, 9 a.m. – 3 p.m., "**Girl Scout Day**" at **Dinosaur Ridge**. An event similar to Scout Day on Sept. 28; more info about this day will be forthcoming.

**Mon., Oct. 28**, 3:00-4:00 p.m., Denver Museum of Nature & Science Earth Sciences Colloquium, **Physical processes in carbonate sediments: Ooids, mud, hurricanes, and more**, by Lizzy Trower, CU Boulder. All are welcome. VIP Room at DMNS.

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**For more lecture series during the year see:**

**Colorado Beer Talks** (2<sup>nd</sup> Tuesday, 6-8 p.m.), Windy Saddle Café, 1110 Washington Avenue, Golden, "Golden's grassroots version of TED talks, Expand your mind with a beer in your hand", <http://goldenbeertalks.org/>  
**Colorado Café Scientifique in Denver**, monthly lectures on science topics held either at Blake Street Station or Brooklyn's, Denver; open to the public, no charge other than refreshments you may choose to purchase; see <http://cafescicolorado.org/>.

**Colorado Scientific Society** (3<sup>rd</sup> Thursday, 7 p.m.), see <http://coloscisoc.org/>. Meets at Shepherd of the Hills Church, 11500 W. 20th Ave., Lakewood CO, except when noted.

**CU Geological Science Colloquium** (Wednesdays, 4 p.m.)

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

**CSU Dept. of Geoscience Seminars** (Fridays, 4 p.m.),

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

**Van Tuyl Lecture Series, Colorado School of Mines**, (Thursdays, 4 p.m.): <https://geology.mines.edu/events-calendar/lectures/>

**Denver Mining Club** (Mondays, 11:30), see <http://www.denverminingclub.org/>.

**Denver Museum of Nature and Science, Earth Science Colloquium series**, 3:00-4:00 p.m., VIP Room unless noted, day of the week varies. Museum admission is not required;

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

**Lake George Gem & Mineral Club**

**October, 2019**

**Denver Region Exploration Geologists Society** (DREGS; 1<sup>st</sup> Monday, 7 p.m.), <http://www.dregs.org/index.html>  
**Florissant Scientific Society** (FSS); 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.

**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/> .

**Rocky Mountain Map Society** (RMMS; Denver Public Library, Gates Room, 3<sup>rd</sup> Tuesday, 5:30 p.m.), <http://rmmaps.org/>

**Western Interior Paleontological Society** (WIPS); beginning January 2019, WIPS will meet on the 1<sup>st</sup> Monday of the month, 7 p.m., at Lowry Conference Center, 1061 Akron Way, Denver. See <http://westernpaleo.org/> .

## LGGM Club News:

At the September Club meeting, **Steve Gorman** presented his family's history with the Gold City Mine. Then Bob Carnein followed up with information on the mineral diversity and fluorescent minerals that can be found on the claim. Bob emphasized that this claim was originally prospected for tungsten and that the granite here is Silver Plume granite which is distinguished by muscovite mica, while the Pikes Peak granite, which occurs a little farther to the east, is characterized by biotite mica.

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From **Wayne Orlowski** we have the following links:

<https://www.nytimes.com/2019/08/15/science/diamonds-earth-geology-brazil.html>

\* \* \* \* \*

Sixty-six million years ago, Earth had a very bad day indeed. A giant asteroid up to 81 kilometres (50 miles) across smashed into the coast of what is now Mexico near Chicxulub - an event thought to have triggered a wave of extinction that killed 75 percent of all life on Earth. For more information see the following link:

[https://www.sciencealert.com/rocks-under-chicxulub-crater-reveal-a-detailed-snapshot-of-the-day-the-dinosaurs-died?utm\\_source=ScienceAlert+-+Daily+Email+Updates&utm\\_campaign=73a7ddaf3a-MAILCHIMP\\_EMAIL\\_CAMPAIGN&utm\\_medium=email&utm\\_term=0\\_fe5632fb09-73a7ddaf3a-365667545](https://www.sciencealert.com/rocks-under-chicxulub-crater-reveal-a-detailed-snapshot-of-the-day-the-dinosaurs-died?utm_source=ScienceAlert+-+Daily+Email+Updates&utm_campaign=73a7ddaf3a-MAILCHIMP_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_fe5632fb09-73a7ddaf3a-365667545)

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Entertaining explanation of the west-to-east geo-history of the USA, which is good to show for civilian scientists. A nice wrap up of the big events that shaped our country.

<https://www.youtube.com/watch?v=1iTUAUmF-N4>

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Here is the latest installment of “**Bench Tips**” by **Brad Smith**: ([www.BradSmithJewelry.com](http://www.BradSmithJewelry.com))

## **TAPERED REAMERS**

A tool you don't see often these days is a tapered reamer. They're particularly useful for making an irregular hole round or for enlarging a hole to an exact diameter. For example, the small set in the yellow pouch is for holes in the range of 0.3mm to 2.5mm. They are great for sizing a tube to fit a hinge pin. Other times when I'm drilling a hole for riveting sheet metal and can't find the exact size drill, I simply drill the holes with a slightly smaller bit and enlarge them with a reamer until the wire just fits.

For larger hole sizes in sheet metal up to 14 gauge, I really like the reamer with the black handle. It makes quick work of sizing holes from about 3mm to 12mm. You can find them in well-equipped hardware stores. You may never use the large diameter reamers, but when sawing out some rings from 4mm thick sheet, I found they worked well for rounding and sizing the hole.



## **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.

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Work Smarter With Brad's "How To" Jewelry Books  
[www.Amazon.com/author/bradfordsmith](http://www.Amazon.com/author/bradfordsmith)

Happy hammering  
- Brad

## Notes from the Editors

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This article, which was originally published long ago in the LGGM Club newsletter provides explanations and photos of the various forms of pyrite, including those found here in Colorado.

### ***Pyrite: It's More Than Just "Fools' Gold"***

by Bob Carnein

Of all the sulfide minerals you're likely to encounter, pyrite ( $\text{FeS}_2$ ) is by far the most common. It occurs in all three basic classes of rocks, as well as being a common constituent of hydrothermal ("hot water") mineral deposits, where it's often found with other sulfides. Examples include galena ( $\text{PbS}$ ), sphalerite ( $\text{ZnS}$ ), and chalcopyrite ( $\text{CuFeS}_2$ ), as well as more exotic minerals, such as molybdenite ( $\text{MoS}_2$ ), tetrahedrite ( $\text{Cu}_{12}\text{Sb}_4\text{S}_{13}$ ), and a large variety of other important ore minerals.

Pyrite bears a superficial resemblance to gold. Its brassy yellow color and metallic luster resemble those of some naturally occurring gold-silver alloys (e.g. electrum). Its specific gravity, at 5.02, is just high enough to make it noticeably heavier than most other common minerals. (For comparison, quartz is 2.65; gold is 15 to 19.) As a result, some inexperienced and overly optimistic prospectors have been known to collect bags full of it, thinking they had struck it rich. Hence the nickname "fools' gold".

Most collectors view pyrite as a common mineral that sometimes occurs as attractive specimens, but is otherwise of little consequence. Crystals, which are isometric ("cubic"), can be large and impressive and may show a number of simple or combined forms. The most familiar include cubes, octahedrons, and pyritohedrons (aka pentagonal dodecahedrons) (see Figs. 1, 2, and 3).

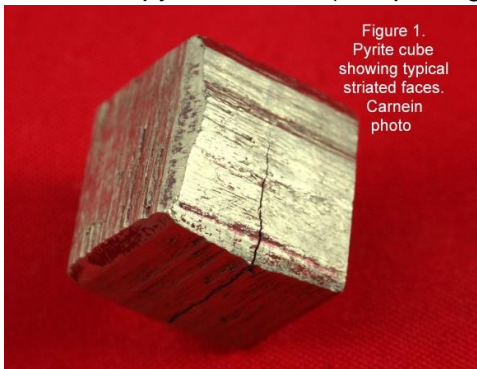


Figure 1.  
Pyrite cube  
showing typical  
striated faces.  
Carnein  
photo

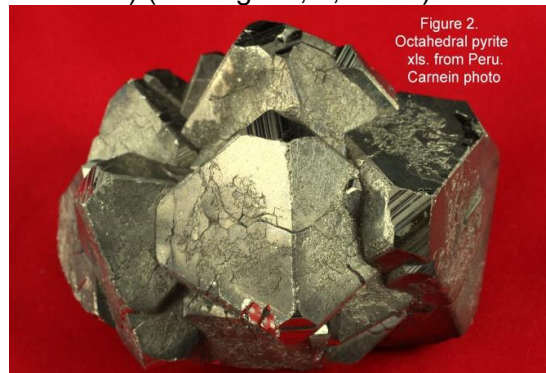


Figure 2.  
Octahedral pyrite  
xls. from Peru.  
Carnein photo



Figure 3.  
Pyritohedral pyrite  
xls. from Elba.  
Carnein photo

Nearly every mineral show includes dealers selling spectacular groups of cubic pyrite crystals (often reassembled!) from Navajun, near Logroño, Spain. Many Colorado localities (most notably Leadville, Climax, Central City, Rico, and Gilman) yielded handsome crystals or crystal groups of interest to collectors. Pyrite crystals from the Leadville district include cubes up to almost 12 inches on edge (see Roots, 1951; Muntyan and Muntyan, 1994; and Eckel, 1997 for more information on Colorado pyrite).

Some pyrite is chemically unstable in the presence of moist air. The writer has had specimens eat through labels and cardboard trays in storage cabinets in the humid air of Pennsylvania (Figure 4). Beautiful crystals may crack and crumble, yielding whitish iron sulfates that are extremely soluble in water. What's worse, the fumes emitted by rotting pyrite may attack other minerals stored in the same drawer. You can literally smell it as it decays. What, you might ask, is the problem?

The problem of decaying pyrite is far worse than just a matter of destruction of mineral specimens. When pyrite breaks down out of doors, it can produce an acidic brew that kills plants and animals in streams. The rust-colored streams of the Appalachian coal fields and some mining areas in Colorado are visual cues to the presence of pyrite in the rocks. When mining breaks up rocks, any contained pyrite is exposed to air, moisture, and helpful bacteria. Sulfur released as the pyrite breaks down contributes to the formation of sulfuric acid. Oxygen in the air combines with the iron to form various colorful iron oxides and hydroxides (e.g. "limonite", goethite, and hematite), all of which are chemically stable.

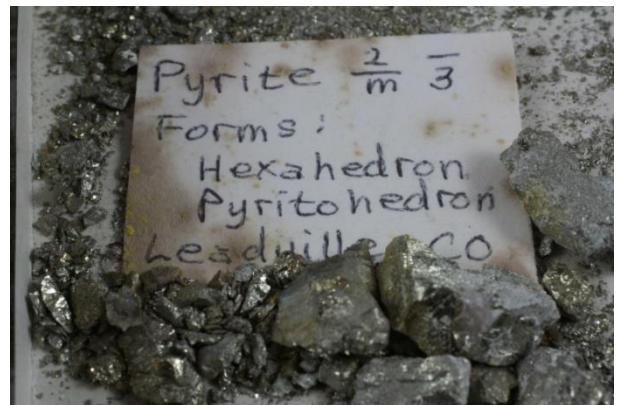


Figure 4. Deceased Leadville pyrite crystal in the writer's collection.





**Figure 5.** Yellow boy in acidified stream.

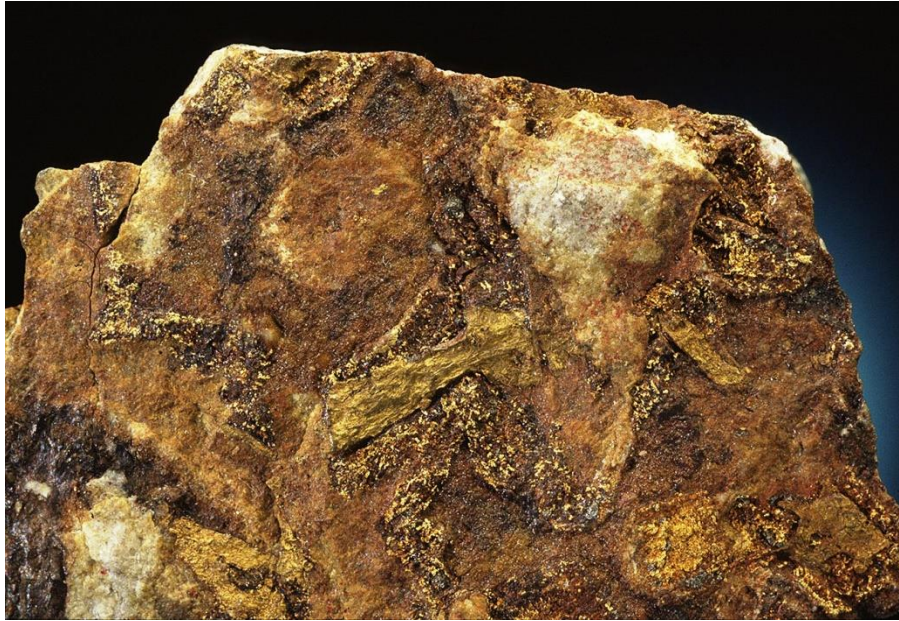
These iron compounds attach themselves to rocks in the stream bed, producing what some folks call "yellow boy"—a highly visible indication of acid-mine drainage (Figure 5). Acid-mine drainage has destroyed the wildlife in thousands of miles of streams in mining states, including Colorado. Nation-wide, the costs of cleaning it up are estimated in the billions of dollars, and all treatment methods require periodic renewal.

Of course, pyrite also breaks down as a result of slow, natural weathering processes, without the help of mining activity. In a moist climate, the dilute sulfuric acid normally forms in such small quantities that it is simply washed away, while iron oxides may coat fractures and mineral grains in the host rocks. In an arid climate, weathering processes are even slower. If rain water containing sulfuric acid soaks into the rock and soil over millions of years, rather than running off, the acid may gradually attack other minerals that are otherwise relatively stable. For example, in ore deposits that contain galena, sphalerite, and chalcopyrite, acid from the breakdown of pyrite attacks these minerals, releasing lead, zinc, and copper cations (positively charged atoms). These are carried by water through pores and cracks in the rocks. Above the water table, if oxygen ( $O^2$ ), carbonate ( $CO_3$ ), sulfate ( $SO_4$ ) or other (negative) anions are present, the metal cations combine with the anions to form an amazing array of interesting and beautiful oxygen-containing minerals. For example, lead from galena may recombine to form cerussite ( $PbCO_3$ ) or anglesite ( $PbSO_4$ ); zinc may form hemimorphite (zinc silicate) or smithsonite ( $ZnCO_3$ ); and copper commonly produces malachite and azurite (both copper carbonates). There are hundreds of examples (400 or so for copper alone). Were it not for the presence of pyrite in the original rock, most of these minerals would occur only as inconspicuous crusts.

In arid regions, a thick cap of these secondary oxidized minerals may accumulate above the water table, along with iron oxides—the residue of thousands of feet of weathered ore, most of which has been lost to erosion. Besides making nice specimens for collectors, the resulting oxidized minerals may themselves be locally important ores. They are generally close to the surface and cheap to mine and process. Examples include the minerals cited above. Any metal ions that make it below the water table without being precipitated are re-deposited as secondary sulfide minerals, sometimes in bonanza quantities.

Ironically, although pyrite is often called fools' gold, it sometimes contains enough gold to constitute an important gold ore. In Colorado, significant amounts of gold occurred in pyrite in the Georgetown, Summitville, Red Mountain, Alma, and Telluride areas. The current huge open-pit gold mine north of Victor exploits some pyritic gold ores, in which calaverite is intimately mixed with pyrite in very small grains. Because gold is nearly insoluble, weathering of some pyritic ores may concentrate gold with the

insoluble iron-oxide residue left behind when pyrite decays. As a result, in the old days, savvy prospectors commonly focused their attention on "rusty rocks" (Figure 6).



**Figure 6.** Gold in iron hydroxides, Cripple Creek district. Carnein collection; Jeff Scovil photo.

So, don't only think of pyrite as an environmental nightmare or as lowly "fools' gold". Although it seldom has much intrinsic value, pyrite is indirectly responsible for some of the most beautiful, coveted, and valuable mineral specimens seen in museums and at shows. It may even contain some real gold!

#### References Cited

Eckel, E.B., 1997, *Minerals of Colorado, Updated and Revised by R.R. Cobban, et al.*: Friends of Mineralogy-Colorado Chapter, Inc., Golden, CO, Fulcrum Publishing, 665 p.

Muntyan, B.L., and J.R. Muntyan, 1994, Colorado pyrite: *Rocks and Minerals*, v. 69, no. 4, p. 220-235.

Roots, R.D., 1951, Pyrite: *Rocks and Minerals*, v. 26, nos. 11-12, p. 598-600.

## Monthly Mineral Quiz



**Last Month's Mineral.** Muscovite,  $KAl_2(Si_3Al)O_{10}(OH,F)_2$ , is a micaceous mineral you will see in all three classes of rocks: igneous, metamorphic, and sedimentary. Although soft and with one perfect direction of cleavage, it is relatively chemically stable and is so elastic that it doesn't weather as readily as other soft minerals. As a result, it can survive transport by running water or wind surprisingly well—many sandstones contain muscovite that has weathered out of other rocks. It also occurs, generally as tiny grains called *sericite* in low to moderate temperature hydrothermal deposits, where it forms from alteration of feldspars and other silicate minerals. You are likely to find muscovite in the Silver Plume/Cripple Creek Granite and in gneisses and schists of the Idaho Springs Fm.



**This Month's Mineral.** Here is a relatively common mineral that occurs in metamorphic rocks (schist and gneiss) and, less commonly, in pegmatite. Although its color can vary, it is often some shade of blue or bluish green, as in the specimen to the left. It occurs as bladed crystals whose hardness is greater than that of a knife blade across their length and softer than steel along their length. It most commonly forms from sediments that were rich in aluminum silicates (clays, for example) and were metamorphosed under high pressure and moderately high temperature conditions, resulting in a relatively high specific gravity for a light colored silicate mineral. A common associate is last month's mineral. What is it?

**This month's mineral (Carnelian specimen and photo)**



**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 October, 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 2019 are:**

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