



THE BULLETIN OF THE COLORADO SPRINGS MINERALOGICAL SOCIETY Published Since 1960

Colorado Springs
Mineralogical Society
Founded in 1936

Lazard Cahn
Honorary President

June 2018

PICK&PACK

Vol 58.... Number #5

CSMS General Assembly

Thursday, June 21, 7:00 PM

Speaker: Bob Carnein

Topic: Twinning and Twinned crystals

**Please note: Members whose last names begin with A-L
are responsible for refreshments in June**

****In case of inclement weather, please call**
Mt. Carmel Veteran's Service Center 719 309-4714**

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More About Our June Presentation Twinning and Twinned Crystals by Bob Carnein

Introduction. I will present a talk on twinning and twinned crystals at the June CSMS meeting. Many mineral collectors (including me) specialize in searching for twinned crystals. Let me assure you that I am not interested in any supposed magical or occult powers of such specimens. Rather, I collect twins because they are rarer and, to me, more interesting and beautiful than the sometimes mundane minerals that exhibit twinning. There are hundreds of kinds, and distinguishing them from ordinary intergrowths requires a keen eye and some knowledge of crystallography, which I find challenging.



Figure 1. Twinning in calcite, cinnabar, and quartz. Carnein collection and photos.

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CSMS Calendar

June & July 2018

Thu., **July 5** — **Board Meeting**, 7p.m., Pikes Peak United Methodist Church

Tue., **June 5 & July 3** — **Fossil Group**, 7p.m., Methodist Church, Jerry Suchan, 303 648-3410

Thu., **No Mtgs. 'til Sept.** **Pebble Pups & Jrs**, 5:30p.m., Mt. Carmel Ctr., Steve Veatch, 719 748-5010

Thu., **June 21 & July 19** — **General Assembly**, 7p.m., Mt. Carmel Center

Thu., **No Mtgs. 'til Sept.** **Crystal Group**, 7p.m., Mt. Carmel Center, Kevin Witte, 719 638-7919

Thu., **June 28 & July 26** — **Faceting Group** 7p.m., Medina's home, John Massie, 719 338-4276

Note: The Micromount Group is not meeting at this time. If you are interested in meeting, please call Dave Olsen, 719 495-8720

Appointment Only—**Jewelry Group**, Bill Arnson, 719 337-8070

Appointment Only—**Lapidary Group**, Sharon Holte, 719 217-5683

For more information on any of the sub-groups, meetings, and other CSMS valuable information, go to our website, csms1936.com

Upcoming Events of Interest to CSMS Members

Submitted by Pete Modreski

June 7-10, Fairplay Contin-Tail rock, gem, and mineral show, MiddleFork RV Resort, [255 Highway 285, Fairplay, CO](#); see www.facebook.com/ContinTail.

Three Florissant Scientific Society Field Trips, June 10, 24, & July 22

Sunday, June 10, 1:00 p.m., Trip to examine transported boulders (alluvial or... glacial?) in the "Wind Gap" on Dinosaur Ridge. "We will gather together at the Stegosaurus Parking Lot on the southeast corner of the I-70/Rt. 93/US 40 intersection. If that lot is full (it's not very big), folks can park over at the Woolly Mammoth lot on the northwest corner and carpool back to the Stegosaurus Lot. Meet at 1:00 p.m., no picnic.

"Bring equipment like notepad, pencils, measuring tape, and camera on your cell phone. We will hike up the west side of the Hogback on the Dakota Ridge trail and along the top to the wind gap. There we will map, identify, and measure the glacial[?] boulders and any orientation that we can see, that occur in the so-called U-shaped water gap. We will look for any other evidence of glaciation we can find. Dress for wind (it's called the wind gap for a reason). The hike is easy once you are on top of the Ridge - we will pause and rest on our way up to the top from the parking lot. After we think we've seen every glacial erratic there that can be found, we'll return to the parking lot. [P.S., the ?'s are added, mine; Beth believes that these boulders are a glacial deposit.]

Sunday, June 24, Central City Glacial[?] Gravels This FSS trip will be on the last Sunday instead of the 3rd Sunday (to avoid Father's Day the week before) and we will meet at the Central City Parkway roadcut at the top of the hill to map MORE glacial boulders. There we will take systematic samples and measure them. [Beth claims that...] "Pete [if he's here] will identify ALL of the rocks!" Please check with Beth to confirm the exact meeting time (probably 1 p.m.) and exact directions to this roadcut site: cloverknoll@comcast.net, 303-986-9693. The Colorado Scientific Society visited this location on their April 15 field trip.

Sunday, July 22, Bear Creek Lake Park, Fossil-bearing Cretaceous Marine Strata. This FSS trip will be in Bear Creek Lake Park, located at the Morrison Road (Rt. 8) exit off C-470. We will have lunch (12 noon) at the Skunk Hollow Pavilion, then hike along the creek to a nice outcrop of oyster and clam shells under the C-470

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bridge, which Arthur Lakes mapped in 1877. Then we will return to the picnic area and drive down to his other site where he found a *Pachyrhizodus* jawbone and teeth. Lew Kleinhans, who is something of an expert on the local strata at this site deposited in the Western Interior Seaway, hopes to be along to add his comments and insights. No collecting if you find stuff (this is a Lakewood City Park). For entry, a day pass (\$10, or \$5 for seniors) or annual City of Lakewood-Bear Creek Lake Park Pass is required.

The **Florissant Scientific Society** is an informal group that meets once a month for a field trip or lecture, most anywhere in or beyond east-central Colorado. Usually, the group meets at noon for a potluck lunch (indoors or outdoors depending on the location, season, and weather) and, then has the talk or field trip. There are no dues or formal membership list; anyone interested is always welcome, and to be on the FSS mailing list, write to Beth Simmons, cloverknoll@comcast.net, 303-986-9693.

Tues., June 12, WMMI (Western Museum of Mining & Industry) Speakers' Bureau Lecture, "**An Introduction to Ore Microscopy**" by Dan Kile (USGS, retired). The lecture will begin at 7:00 pm (doors open at 6:30 pm). \$5 per person, free for museum members. Please RSVP to 719-488-0880 or email rsvp@wmmi.org. At 225 North Gate Blvd., Colorado Springs.

Thurs., June 14, 4:00 p.m., "**History of the Creede Mining Site**", the first in a series of "**EDTalks**", in the Boettcher Room at the CSM Arthur Lakes Library (1400 Illinois Street, Golden, Colorado). "Ed Raines, Collections Manager at the CSM Geology Museum and recognized expert on Colorado minerals and mining history, will present a series of talks with an in-depth look at important mining districts of Colorado focusing on their history and geology. All are welcome. The full schedule of talks will be:

June 14, 4 p.m., History of the Creede Mining Site

June 21, 4 p.m., Geology of Creede, Colorado

August 2, 4 p.m., History of the Gilman mines

August 9, 4 p.m., Geology of Gilman, Colorado

June 15-17, Victor, CO Gem and Mineral Show, Victor, CO; see <http://victorcolorado.com>.

Sat., June 16, "**Dinosaur Ridge Brontos and Brews Festival**". "Colorado Brewers, Music & Dinosaurs; Guinness World Record Attempt & Family-Friendly Carnival", 10 a.m. – 4 p.m. [Striving for "The Most People Dressed in Dinosaur Costumes"]. See <http://www.dinoridge.org/brontosbrew.html> for more info.

Fri.-Sat.-Sun., June 29-July 1, **San Juan County Gem & Mineral Show**, hosted by the San Juan County [N.M.] Gem and Mineral Society. McGee Park, Farmington, NM. Free admission; 10-6 Fri. & Sat., 10-5 Sun.

July 6-8, **Four Corners Gem & Mineral Show**, La Plata County Fair Grounds, Durango, CO, sponsored by the Four Corners Gem & Mineral Club. 10 a.m. – 6 p.m. daily.

Tues., July 10, WMMI (Western Museum of Mining & Industry) Speakers' Bureau Lecture, "**Colorado Fuel & Iron**", by Victoria Miller. The lecture will begin at 7:00 pm (doors open at 6:30 pm). \$5 per person, free for museum members. Please RSVP to 719-488-0880 or email rsvp@wmmi.org. At 225 North Gate Blvd., Colorado Springs.

July 12-15, 9 a.m. – 5 p.m. daily, there will be a "**Home Rock Show (Sale)**" by John Haney, 4242 Thompson Court, Denver CO. 80216 (south of I-70, east of York St. & west of Steele St.). "Rough rock, slabs, cabs, fossils, amber, turquoise, minerals, crystals, gemstone bowls & boxes, lapidary equipment & supplies; discounts for lapidary students." Contact, rocksisme@comcast.net, 303-296-8268.

Prepared by Pete Modreski, U.S. Geological Survey, pmodreski@usgs.gov, 303-202-4766

**38th Annual Gem and Mineral Show
Rushmore Plaza Civic Center
Barnett Arena in Rapid City, SD**

Field Trips for the 2018 Show - Here are four planned trips. There should be more forthcoming as we move closer to the show date.

Wednesday July 18, 2018 – Antelope Ridge

This is an easy walking area and is very accessible from the road. You will find sponge coral on this field trip. Departure time to be determined.

Thursday July 19, 2018 – Black Hills National Forest / Hill City area

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KEEP YOUR EYES DOWN WHEN YOU WANDER

Mike Nelson csrockguy@yahoo.com

To be more childlike, you don't have to give up being an adult. The fully integrated person is capable of being both an adult and a child simultaneously. Recapture the childlike feelings of wide-eyed excitement, spontaneous appreciation, cutting loose, and being full of awe and wonder at this magnificent tile floor in the mall.

— Apologies to Wayne Dyer

At times I have a little trouble with the correct (so they say) pronunciation of certain similar sounding words. I blame this fault on growing up in a small Kansas town where all the kids had a twang. For example, creek (a small stream) was pronounced “crick” that was also a noun referring to a stiff neck—“I left the window open and woke up with a crick in my neck.” One of my bad problems was wonder and wander--there is only one letter difference so perhaps I could be forgiven?

Wander is a verb meaning “to move about without a fixed course, aim, or goal” (Merriam Webster Dictionary). Wonder can also be a verb “to feel curiosity.” For much of my life I have been wondering while wandering, or is it wandering while wondering?

This verb duo hit me one day while visiting the Superstition Springs Mall in Mesa, Arizona, whilst returning home from the Tucson Show. Now, I am not a “mall person” but did mosey in to purchase a cup of coffee and check out the “good German fossils” that an unknown rockhound in Germany had suggested as a little field trip! He had emailed me since after reading my Blog and knew I was in Tucson and might enjoy some nice rocks and fossils.

At first, I just sort of blanked out as is my custom upon entering one of these shopping behemoths. Straight to the coffee shop and then find a bench, and so I did without any thoughts in my brain. But then my mind began to wander, and also wonder---where were the German fossils? So, I raised off my fanny and my legs began to wander while my brain kept wondering---perhaps there was some sort of a display of vertebrates in the courtyard? But wait, what was right in front of me? Could it really be? Yep, I was looking at the bottom of a shallow Jurassic sea with all sorts of wonderful marine creatures looking back. Well, they were not really moving around and looking but were encased in the beautiful polished limestone that was used as floor tile in this humongous building. I immediately thought what a wonderful place it would be to bring a group of young children and let them look at, and hear about, the wonders of nature.

So, I began to wander around in my one little corner and hallway taking a great interest, and several phone photos, of these beautifully preserved fossils. I was sort of wandering around in a typical rockhound style bent over and searching while perhaps 300 people ignored me, and many gave me a wide berth. Now, I was dressed in decent clothes, and had shaved that morning so as not to embarrass my accompanying companion, but several persons actually seemed scared of my actions. I was really hoping that at least one family with children would have asked, “Hey Mister, what are you looking at?” But, no such luck. Think what would have happened if my knees were good and I had assumed the stance rockhounds use when hunting for tiny peridot crystals? I would have been hauled off by Paul Blart, Mall Cop.

It turns out that I had seen this limestone before—in a museum, and in Germany. It is called the Jura Limestone or Jura Marble (from the Jurassic Period and Jura Mountains) and is quarried in great quantities from southern Bavaria in Germany. It is also packed with spectacular fossils of ammonite cephalopods, corals, sponges, echinoderms, worm burrows, amazing belemnite cephalopods, and many other creatures I could not identify in a short time span. It is my understanding that some vertebrates (fish and reptiles) have been found in the unit. The building stones/tiles also come in several different “color shades” but the most common are tans and grays (in the trade each color variety has a specific name).

(Continued on page 5)



The floor tiles are “full of” fossils representing marine critters, or their traces. The ‘white specks’ seen in many of the photos are probably some sort of single- celled foraminifera.

Why was this limestone being walked on in southern Arizona? It seems as if the rock is quite hard, takes a nice polish and is shipped around the world for use in heavy traffic areas as floor tiles, counter coverings, entrance ways in hotels, etc. Evidently my unknown friend in Germany had visited the Mall and wanted me to take a peek at good German Fossils.

In reality, the Jura Limestone is a trade name for this spectacular rock while the geologic moniker is the Treuchlinger Formation and is Late Jurassic in age (Kimmeridgian ~157 Ma--152 Ma). The Jura Limestone is quarried in the same general area as the slightly younger, and more famous, Solenhoffen Limestone (Tithonian, ~ 152 Ma--145 Ma) with its famous fossils, including “*Archaeopteryx*”. Both quarried building stones are products of the widespread Tethys Sea that covered Europe for much of the Mesozoic Era.

In looking at the accompanying photos note the wide variety of what appears to be remains of soft bodied animals. But, perhaps some of the “things” I thought to be body fossils may simply be “worm” burrows. The only two definitive identifications are the hard-bodied belemnites and the ammonites, both cephalopods. I can offer speculations on a couple of others. This limestone is so amazing with such a wide variety of fossils and other structures.

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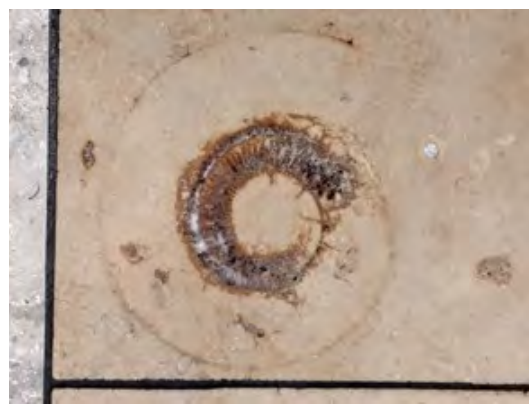
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These three specimens may be sponges. I am fairly certain the photo on the right is a sponge of some sort. Note penny for scale.



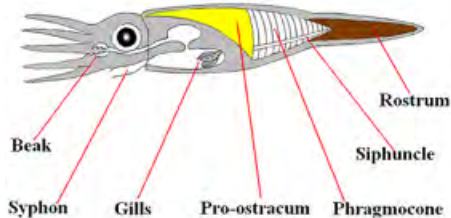
The above three photos—burrows? worms? crawling critters?



The above three fossils are ammonoid cephalopods perhaps of the genus *Progeronia*. Note penny on the left photo.

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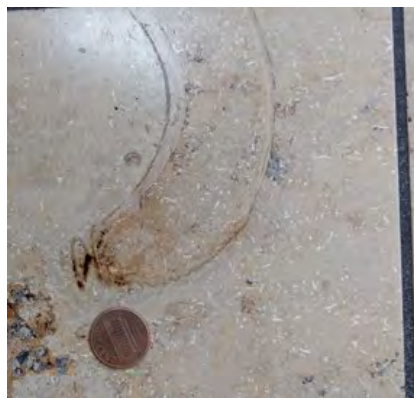


Belemnite Anatomy

A cartoon of belemnite anatomy courtesy of Phil Eyden at: www.tonmo.com/pages/



The most amazing specimens in the floor tiles are the rostra of numerous belemnites (Cephalopoda) belonging to the genus *Hibolithes*. Belemnites range from the early Jurassic until extinction at the end of the Cretaceous.



This specimen is interesting but what is it? The upper part is cut off by the end of the floor tile. Is that an attachment structure at the "bottom" of the animal?

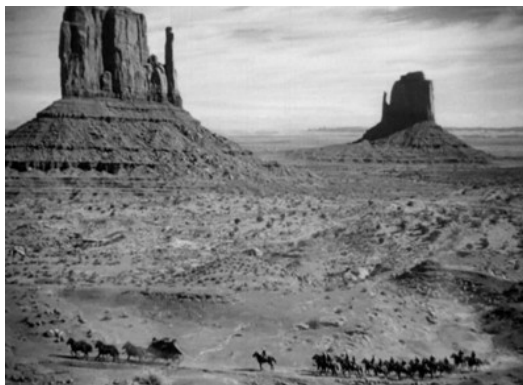


The above two specimens seem related as it appears hard parts are present. But what is it?

Unfortunately, I cannot, at this time (early April), locate a copy of Hans Bantz's 1970 book describing the fossils of the Jura Limestone from the Franconian Alps (*Der Fossilinhalt des Treuchtlinger Marmors (Mittleres Unter-Kimmeridge der Südlichen Frankenalb)*). Fortunately, I am writing this offering while camped at one of the most beautiful places in the U.S., Monument Valley in Navajo Tribal Park (southeastern Utah). Not only is Baltz's book unavailable, so are newspapers, television stations, internet service, telephone service and noisy railroads. What is available are fantastic sunsets and sunrises, amazing red rock scenery, crystal clear night skies with a full moon, and a real quietness. Life is good.



You name it!



Monument Valley is always associated with John Wayne and Director John Ford---at least to a generation of a certain age who grew up watching western movies such as *Stagecoach*.

PEBBLE PUPS CORNER



CSMS Pebble Pups & Junior Group

The Junior Group & Pebble Pups meet at the Senior Center every third Thursday at 5:30 PM until 6:15 PM or so. We only meet during the academic year, and we include January. So, it is Sept through May.

Special announcements and field trips are noted on our blog:

<http://pebblepups.blogspot.com>

and through the CSMS website:

<http://www.csms1936.com>

The following email from Steve Veatch demonstrates the Pebble Pup's involvement in our annual Rock, Gem, and Jewelry Show.

Greetings everyone:

Here is a final pebble pup update. First, I have attached the new pebble pup brochure that will be handed out at the show to the general public. This is a chance to increase the number of pebble pups. We presently have 21 enrolled pebble pups.

I will be helping **Thursday morning at 8:30** with a teen pebble pup to set up the Pebble Pup area. We will need about an hour. After that we can then help with everyone else in getting ready for the show.

Leo, a new teen pebble pup, will be available at 9 am on Friday to help with any last minute needs. Ben Elick will be helping with the show all day Friday. I have pebble pups of varying ages to help all three days. They will be working in shifts. These pebble pups are veterans of many shows and outreach events.

I am providing a certificate of merit to the pebble pups who are exhibiting during the show. They have put a lot of effort into exhibiting. I will need Sharon Holte to sign them Thursday.

The pebble pup area will provide interaction with the public, be manned by kids, which intrigues the kids who walk by, and we will provide specimens and lively discussions.

If there is anything I should add please let me know. Here is to the best show ever!

Steve

CSMS 2018 Upcoming Field Trips

Victor Gold Mine Tour, Cripple Creek District, June 9

Leader: Steven Veatch

Contact: steve.veatch@gmail.com

Limited to 12 participants

Topaz Mountain Gem Mine. Park Co. June 10

Leader: Norma Alexander-Rhodes

Contact: normajalexander@gmail.com

CF&I Wagon Wheel Gap Fluorspar Mine. June 16

Leader: Mike Webb

Contact: mwebbstudent@yahoo.com

Last Chance Mine, Creede CO. June 17

Leader: Mike Webb

Contact: mwebbstudent@yahoo.com

Smoky Hawk Mine. Florissant, CO. June 29

Leader: Joe Dorris

Contact: mwebbstudent@yahoo.com

Robert Michael #1 Peridot Mine. July 7

Leader: Robert Berry

Contact: debitcard@msn.com

Devils Head Area. Douglas, Co. July 28

Leader: Ernie Hanlon

Contact: eehanlon@netzero.net

Hartsel Blue Barite Mine. August 11

Leader: Billy Bell

Contact: magik4@yahoo.com

Warfield Fossil Quarries. Kremmerer, Wyoming. August 25

Leader: Mike Webb

Contact: mwebbstudent@yahoo.com

2018 CSMS Officers

Sharon Holte, President

Randy Hurley, Vice-President

Open, Secretary

Ann Proctor, Treasurer

Adelaide Bahr, Membership Secretary

Larry Jones, Editor

John Massie, Member-at-Large

Laurann Briding, Member-at-Large

Ernie Hanlon, Past President

2018 CSMS Chairpersons

Randy Hurley, Program Coordinator,

Mike Webb, Field Trip Co Coordinator

Ernie Hanlon, Field Trip Co Coordinator

TBD, Science Fair Chair

Frank & Ellie Rosenberg, Librarians

Mark Schultz Social Committee Chair

Ann Proctor, Store Keeper

Michael Kosc, Webmaster

Lisa Kinder, Facebook Keeper

Mike Nelson, Federation Representative

TBD, Federation Representative

SECRETARY'S SPOT

by Sharon Holte

General Meeting Minutes for the
Colorado Springs Mineralogical
Society — 05/17/2018

Pikes Peak Gem, Mineral and Jewelry Show Meeting, May 17, 2018 6:15 p.m.

Both meetings were held at the Mt. Carmel Center of Excellence, 530 Communications Circle, Colorado Springs, CO 80905.

The meeting was called to order by our Show Chairman, Lisa Kinder, at 6:18 p.m.

Lisa stated she is working on the floor layout. It should be good. We will start the show set up at 8:00 a.m. on May 31, 2018. All those who can help, it would be greatly appreciated. We will need to do the floor layout markings this time, distribute the tables and chairs, check out the electricity, and set up the parking area. We will not be having a potluck for the vendors. There will be a paid guard 24 hours a day starting at 12:00 noon on Thursday and ending at 8:00 p.m. on Sunday.

CSMS General Assembly Meeting, May 17, 2018 7:00 p.m.

The meeting was called to order by our President Sharon Holte at 7:07 p.m. Followed by the Pledge of Allegiance.

Lisa Kinder gave an update for the show. See notes above from the Show Meeting.

Randy Hurley, our vice-president, introduced Dr. John Warn. He gave a great presentation on "Tourmalines, In the Pink"!

After the presentation Sharon called for a break to eat and socialize. The treats were great, as always. Mark Schultz stated that someone brought sodas and ice. He thought this was great as the weather is getting warmer and most members do not want a hot drink.

There were no new guests or new members.

We had about 63 members and gave out seven great mineral specimens. Chairs were at a premium. Sharon spoke with Kisha about the shortage of chairs. She stated that we are welcome to take the red chairs out of the front conference room whenever we need them.

Reports by the Officers:

President - Sharon Holte: asked for approval of the minutes for April. It was moved and passed.

Sharon again requested a volunteer for the Secretary's position. She stated that Seferenia (her cat) is meeting her coming and going at all hours in the computer room. Seferenia has finally given up following Sharon downstairs after about five trips. Now she just sits and waits at

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2018 Satellite Group Chairpersons

Crystal, Kevin Witte/Bob Germano

Faceting, John Massie/Doreen

Fossil, Jerry Suchan/Joyce Price

Jewelry, Bill Arnson

Lapidary, Sharon, Holte

Pebble Pups, Steven Veatch/
Betty Marchant

2018 CSMS Liaisons

Florissant Fossil Beds
National Monument, Steven Veatch

Western Museum of
Mining & Industry, Steve Veatch

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the top of the stairs. Everyone got a chuckle out of this. No takers again for this position.

Sharon stated that Mike Nelson and Judy Gogins are our representatives for the RMFMS meeting in South Dakota. Mike and Sharon filled out the papers. Judy was not available. Sharon will give her a call.

Vice President — Randy Hurley: reported that Bob Carnein will give the June 21 General Assembly meeting on “Twinned Crystals and Twinning: What Are They and Why Collect Them”; the July 19 meeting speaker is to be Steve Veatch.

Secretary — Sharon Holte: forwarded the receipt for the trailer and the letter from Justice Sutton’s attorney to the PPLD to be added to our history. She is keeping the originals at this time. Where should they be kept?

There was some discussion about Society property. It was suggested that we put a notice in the Pick & Pack to have anyone with our property get in touch with Sharon and email a list of what they have to her.

Jenna Salvat sent a thank you card for supporting her passion for Earth Science!

Editor — Larry Jones: absent.

Membership Secretary — Adelaide Bahr: is working on the membership directory.

Member-at-Large – John Massie: needs many volunteers for the show.

Member at Large – Laurann Briding: absent.

Past President – Ernie Hanlon: Ernie left the microscope and the parts. This microscope is basically a biological microscope. It could handle very little rocks, slides, or small gems. The membership decided that it should be presented at the Silent Auction for bids.

Satellite Groups:

Crystal Group – Kevin Witte absent

Faceting Group – John Massie asked for volunteers for the Pike Peak Gem, Mineral and Fossil Show, please!!!

Field Trips – Sharon updated the Field Trip table and forwarded it to Larry Jones for inclusion in the Pick & Pack and to be updated on the calendar.

Fossil Group – Jerry Suchan – the 1st Tuesday of June, the 5th. “Presentation on the Green River Formation Sololiers” in Utah. Fossils, birds, clams, snails and plants.

Jewelry Group: Bill Arnson is absent. Jewelry is by appointment only.

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Lapidary Group: Sharon Holte by appointment only. Sharon has recently rebuilt a small six inch trim saw. It cuts through about two inches of rock in 2 minutes. Nice saw! Sharon will be doing shows for several weeks in June and will be home only intermittently. If she is home she will schedule lapidary time.

Rock sale: Sharon Holte is holding a garage sale. Rocks from a friend's father's estate. Wood, from another friend's estate. And, lots of garage sale items.

Library Group: several additional books were donated. Some may go into the silent auction. It was asked if Frank or Ellie could preview two or three books at each meeting. They said that it is possible and will do so.

Store Keeper: will have the store set up at the show.

Calendar of Deadlines:

We have Jack and Kay Thompson as the SME's for the Old Colorado Springs Historical Society. We have a display case for minerals there. It takes three men and a boy to move it. Currently they have it pushed back and it is hard to get to. It needs to be changed out. Also, suggested that we sell this case and put in a newer case more in line with what they have now. Frank Rosenberg has the key.

The meeting was adjourned by our President at 8:59 p.m.

Respectfully submitted by Sharon Holte, Acting Secretary

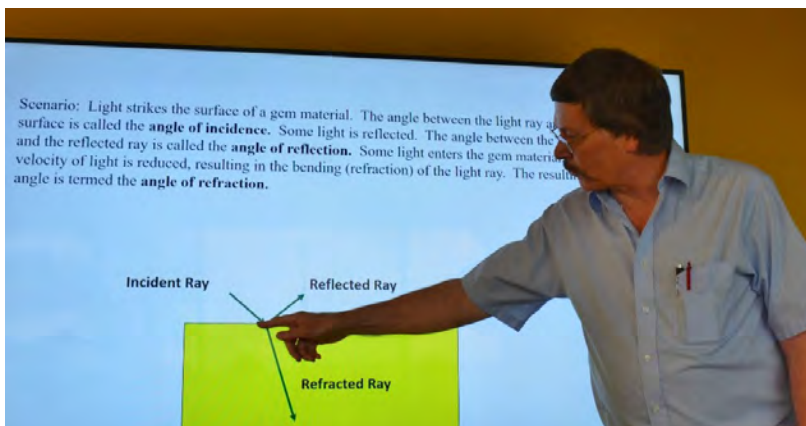
Crystal Group Takes a Break to go Prospecting

By Frank Rosenberg

On Thursday May 24, 2018, the Crystal Group had its last meeting until September. This gives all of us an opportunity to go out and collect lots of crystals during the summer months. We were fortunate to have CSMS's own Graduate Gemologist and Educator, William Myers of Gem Consultants enlighten us on the identification of gem stones. Thank you Bill for a great presentation.

John Wager showed off his recently collected Amazonite crystals (from the Pikes Peak Batholith).

We finished off the evening with a lively game of Crystal Bingo. Thank you Bob Germano for donating eye- popping prizes for the Crystal Bingo. We also thank Kevin Witte for his outstanding leadership of the Crystal Group.



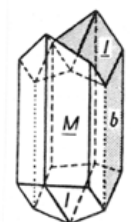
All photos courtesy Frank Rosenberg

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Mineral collectors and dealers commonly mistake any specimen where 2 or more crystals are intergrown, especially if they are intergrown symmetrically, as a twin. Many “twins” offered on websites are not really twins at all. The reason for the confusion is that a thorough understanding of twinning requires some basic knowledge of crystallography—not an easy subject for most collectors. This becomes very complex very fast. For this presentation, we will take a more *descriptive* approach and avoid arcane details.

Definition. So, what, then, is a twinned crystal? The definition of twinning is a bit technical, but that can’t be avoided, so let’s see if we can get a handle on it. Twinned crystals consist of the symmetrical intergrowth of 2 or more individual crystals (notice that there are no triplets or quadruplets in crystallography). The resulting intergrown crystals are **related to each other by a symmetry element** (usually a plane of symmetry or a symmetry axis) **that is not present in individual crystals of the same mineral.**

The last sentence is crucial to the definition and distinguishes twinned crystals from “ordinary” intergrowths. For example, in the “normal” and twinned gypsum crystals shown in Figure 2, note that the two parts of the twin are symmetrical, as though a mirror (a symmetry plane) was placed along the surface that joins them. One is the mirror image of the other. The untwinned crystal has no such symmetry plane. In other words, the twinned crystal has all of the symmetry elements present in the untwinned crystal, plus an *additional mirror plane*, the twin plane.



Gypsum.
Twin plane {100}.

Swallow-tail
twin

Fig. 2. Untwinned gypsum and gypsum exhibiting simple contact twinning. (Carnein collection and photo; Klein and Hurlbut, 1999)

Twin Types. Now, although this may not be intuitively obvious yet, let’s try the descriptive approach to defining *types of twins*. Depending on how many individual crystals are involved and how they relate to each other, we can recognize several basic kinds of twinning:

- If **2 crystals** are twinned, the result is a *simple twin*.
- Simple twins are separated by a surface called a *composition surface*.
- If the composition surface is a flat plane, the result is a *simple contact twin* (like the gypsum twin shown in Figure 2, above).
- If the 2 crystals penetrate each other so that the composition surface is not a flat plane, this results in a *simple penetration twin*. An example is the Carlsbad twin of potassium feldspar shown in in Figure 3. In this kind of twinning, the second crystal is essentially rotated 180° around an imaginary axis, relative to the first.



Fig. 3. Carlsbad twin. Carnein coll. and photo

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- If **3 or more crystals** are twinned, the result is a *multiple twin*.
- If the individual crystals in a multiple twin are separated by parallel, flat composition surfaces, the result is *poly-synthetic twinning*. Albite and calcite, shown in Figure 4, are examples.
- If 3 or more crystals are joined by planar, non-parallel composition surfaces, they are *cyclic contact twins*. Rutile, shown in Figure 5, is an example.
- If 3 or more crystals are joined by non-planar, non-parallel composition surfaces, they form *cyclic penetration twins*. Chrysoberyl, shown in in Figure 6, is an example.

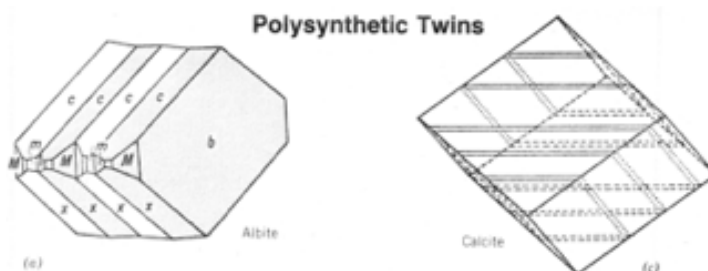


Fig. 4. Polysynthetic twinning in albite and calcite.
(Klein and Hurlbut, 1999)

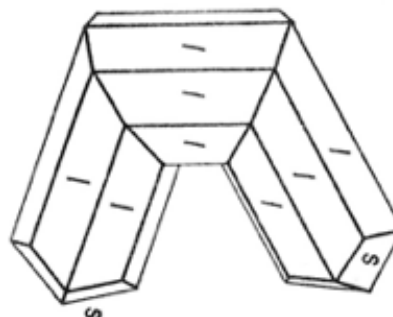
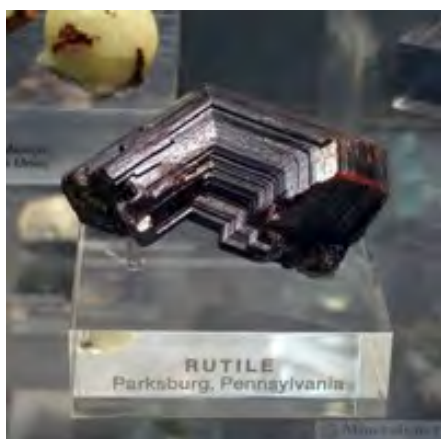


Fig. 5. Cyclic contact twin in rutile (Minerals.net) (Klein and Hurlbut, 1999)

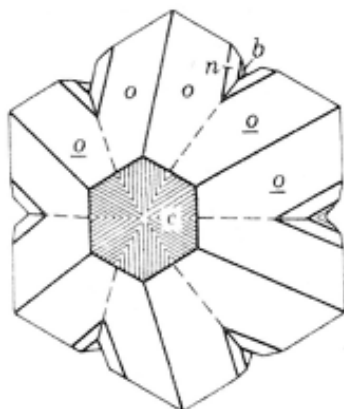


Fig. 6. Cyclic penetration twin in chrysoberyl (Klein and Hurlbut, 1999)
(Carnein collection and photo)

(Continued on page 15)

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Twin Laws. A *twin law* is a concise statement of the twin type and how twin planes or twin axes relate to the reference axes that crystallographers use in describing the 6 crystal systems (in the general case, called *a*, *b*, and *c*). Twin planes are identified by Miller indices [e.g. (001)], and twin axes are identified by a zone symbol (e.g. [001]). Note that, in order to distinguish these symbols from each other, the first symbol is in parentheses (); the second is in brackets []. This is part of the arcana of crystallography, and it's as far as I want to go; if you don't understand Miller indices, don't worry about it.

Illustrations. My talk will conclude with illustrations of common twin types that you are likely to see in collections, at shows, or in the field. The goal of the talk is to help you to recognize some common types of twins. In order to do this, we will briefly look at examples of the following minerals:

- Albite
- Aragonite
- Calcite
- Chrysoberyl
- Fluorite
- Potassium feldspar
- Pyrite
- Quartz
- Staurolite

I'll also throw in a few more exotic examples and see whether you can puzzle out the twin types for each. I hope that, by the end of the talk, you will understand why twinned crystals are a focus of my collection, and that you go home with a better understanding and greater appreciation for these crystal oddities.

Reference Cited

Klein, C., and C.S. Hurlbut, Jr., 1999, *Manual of Mineralogy* (after James D. Dana), Twenty-First Edition, Revised: New York, John Wiley & Sons, Inc.

(CONTINUED FROM PAGE 3)

This field trip is centered around the Hill City region. It consists of two parts where each part explores distinct geological activity all within several mile radius. The region is in close proximity to Mount Rushmore National Park; the trip locations, however, are located within the Black Hills National Forest.

The first stop will be Blackberry Trail. This is a contact metamorphic region where most of the Cambrian rock has been upthrust and metamorphosed through heat and pressure. One should expect to find pyrite, feldspar, mica schist, mica and biotite as well as some other metamorphic materials along a stream bed. The trails are somewhat rugged. Hiking boots and jeans suggested.

The second stop will be sand caves. Aptly, no formal name for the spot, but a favorite where trilobites of Cambrian origin can be found. This was a site intended to mine fracking sand, however, the sand particles did not meet the specifications and tunneling was discontinued. Several short, interconnected caves are present and some rough terrain hiking can be had. Hiking boots and jeans suggested; bring a high intensity flashlight for photography.

The rally point will be the Civic Center parking lot 0800. Expect to depart by 0830. Maps will be handed out prior to departing.

Monday July 23, 2018– Railroad Butte/Farmingdale

Farmingdale is about 25 minutes east of Rapid City and is part of the National Grasslands recreation areas. You will be able to find agates (prairie agates and possibly one of those illusive Fairburn agates), coral, petrified wood, chalcedony and other treasures. The area is accessible by car, but if the weather has been on the wet side, you will want to make sure that you keep your vehicle on the trails or in the gravel parking areas. Since this area is prairie and our summers can be quite warm, remember to bring water for drinking and a spray bottle with sufficient water to bring out the 'color' in your finds. Sturdy shoes and jeans are also recommended because there can be knee high

(Continued on page 16)

CSMS Field Trip Finds from 2017



Some of the Topaz discovered on last years CSMS outing to Topaz Mountain Gem Mine.



The Last Chance Mine was blessed with a wealth of Amethyst Vein ore. When it comes to collecting Amethyst Vein and lapidary material, the Last Chance may be your last chance.



Amazonite & Smoky Quartz collected during last seasons CSMS trip to the Smoky Hawk Mine.



Blocky crystals of colorless Barite, Wagon Wheel Gap Fluorspar Mine.

(CONTINUED FROM PAGE 15)

grass and the slithery creatures that reside in the grasslands. We will meet at the Civic Center at 8am and depart at 8:30am. Maps will be provided at the Civic Center on the day of the field trip.

If you have a smart phone and would like to download a map of the National Grasslands area, download the "Avenza" app and download the Buffalo Gap NG – Fall River Ranger District MVUM map.

Tuesday July 24, 2018 – Conata

Some of the things you will be able to find on the field trip to Conata Basin are prairie agates, petrified wood, Fairburn agates, coral and a lot of other beautiful rocks. Meeting time has not been determined. More information forthcoming.

Be safe and Be kind to the land

Bring water to drink, food to eat, chairs to rest, sunscreen to not burn, tools, buckets and anything else you might need.

Our Staff...

Larry Jones—Editor

We encourage everyone to submit articles, photos, illustrations or observations.

Share your experiences, your new finds, or simply your experience at our last field trip.

Handwrite it, type it, or email it. Format does not matter. All submissions are welcomed. The DEADLINE for items to be included in the next Pick & Pack, is the **20th of the month**

To submit an item:

For hardcopy photos or articles, mail to the address below or bring them to the General Meeting. All hardcopy photos remain the property of the submitter and will be returned. Electronic photos should be submitted at resolutions above 200 dpi in TIF, BMP, JPG, or PIC format. Articles are preferred in Word. Editor will correct font.

E-Mail to:

csmseditor@hotmail.com

Mail to:

Pick & Pack Editor
PO Box 2
Colorado Springs, CO 80901

The PICK&PACK is published ten (10) times per year (no issues in January or August). Unless otherwise marked, materials from this publication may be reprinted. Please give credit to the author and CSMS PICK&PACK.

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are available for sale.

If you celebrated a CSMS anniversary in 2016 or 2017, you are eligible for your one year pin award

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CSMS MEMBER TO SPEAK AT PIKES PEAK HISTORICAL SOCIETY

By Chase Alexander

Steven Veatch, CSMS life member and National Rockhound Hall of Famer, will present the acclaimed program, *From Mineral Strike to Meteor Strike: Guffey and the Freshwater Mining District* at the June 19 Pikes Peak Historical Society Chautauqua. Veatch will present his program **June 24 at 2:00 pm** at the Florissant Public Library, 334 Circle Drive, Florissant, CO 80816. There is no cost to attend this hour-long program.



Discover the geological, historical, and cultural wonders of Guffey, the quiet Park County hamlet that sits at the foot of a nest of ancient volcanoes. Learn about prehistoric eruptions of molten lava, hissing springs, and spewing vents. Enjoy a breathtaking virtual tour of old mines, secret hollows, and sweeping landscapes. Hear the story about the town's namesake and his oil company. See photos of the picturesque buildings that remain today. Top off the afternoon by learning about Guffey's forgotten meteor strike. Come and discover Guffey while you enjoy this image-rich lecture that will stay with you long after the day is over.

Bio: Steven Veatch was born in Denver and grew up in the Pikes Peak region. His family came to Cripple Creek in the 1890s from England and worked in the district's mines for over 40 years. The other side of the family established a ranch in the wilderness near Boulder in 1865. Veatch serves the Cripple Creek City Council as a member of its Historic Preservation Commission. He is also a member of the Board of Trustees for the Western Museum of Mining and Industry in Colorado Springs.

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CSMS is an incorporated nonprofit organization with these goals:

To promote and disseminate knowledge of the earth sciences, especially as they relate to mineralogy, lapidary, and fossils.

To encourage study, collection, and fashioning of minerals.

To accomplish the same through social meetings, lectures, programs, displays, shows, and field trips.

The Pick & Pack is published 10 times each year to assist and promote the above.

Joining the Colorado Springs Mineralogical Society (CSMS): Meetings are held the **third (3rd) Thursday of each month**, except January & August, **7:00 p.m.**, at Mt. Carmel Center of Excellence, 530 Communication Circle, Colorado Springs, CO 80905. (Starting (9/21/2017) **Visitors are always welcome.**

CSMS also offers Satellite Group meetings that allow more focused attention in specific areas of our members' interests. Our current Satellite Groups consist of the following: Crystal Study Group, Faceting Group, Fossil Group, Jewelry Group, Lapidary Group, Micromounts Group, and Pebble Pups/Juniors. For details on Satellite Group meetings, check out the calendars on page 2 and the web site.

Yearly dues include 10 issues of the *PICK&PACK*, all field trips (additional fees may be required on some field trips, and members are responsible for all transportation to and from), participation in all Satellite Groups (some groups may request additional fees to help cover resource costs), free admission to the *Western Museum of Mining & Industry*, a year of learning and enjoyment, plus a lifetime of memories.

Individuals—\$30, Family—\$40, Juniors—\$15, Corporate—\$100, *****Application is on the web site.

If you are interested in joining CSMS or would like more information, we encourage you to attend our next General Meeting or visit our web site: www.csms1936.com

CSMS is a Member of the following organizations:

American Federation of Mineralogical Societies (AFMS)

www.amfed.org

Rocky Mountain Federation of Mineralogical Societies (RMFMS)

www.rmfmts.org