

Colorado Springs Mineralogical Society *Founded in 1936* Lazard Cahn Honorary President April 2017 PICK&PACK

Vol 57.... Number #3

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# **Mineral Collecting in Colorado Part 3**

The presentation for this month's General Assembly will feature our club president Ernie Hanlon with a discussion of the Book Cliffs collecting area near Grand Junction, Colorado. This presentation will provide an introduction for those who are interested in attending the field trip scheduled for May 6 and 7 as well as for anyone who is curious about these minerals and how and where to collect them. Ernie plans to bring a Wichita Case with samples of calcite and barite to this meeting. The following is a more detailed description of what to expect from this trip:

#### Field Trip to Book Cliffs, Grand Junction May 6-7, 2017

The Field Trip will be over 650 miles (Round trip from Colorado Springs to Grand Junction). If it rains or snows, the roads to the sites become impassable. Vehicles can sink into the wet muddy shales to the axle. In order to contact the field trip goers to cancel the trip if necessary I will need phone numbers and/or emails. There will be a sign up sheet at the April General Meeting. I will drive to Grand Junction on Friday, May 5, 2017 to check it out. The meeting place and time will be at Motel 8 parking lot at 728 Horizon Dr. At 10:00 A.M. I will wait 30 minutes for anyone on the sign up sheet who has not shown up by 10:00 A.M. To get to the motel take Exit 31 (Horizon Drive) off of I-70, turn left on Horizon Drive. Go under I-70; Motel 8 is on the left at 728 Horizon Drive. The drive to Grand Junction takes 5 to 6 hours depending on traffic and road repairs. I usually pass 3 or 4 state patrol cars each trip. You may get by with a 2 wheel drive vehicle but a four wheel is preferred.

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#### COLORADO SPRINGS MINERALOGICAL SOCIETY PO BOX 2 COLORADO SPRINGS, COLORADO 80901-0002

CSMS Pick & Pack

# **CSMS** Calendar

# April & May 2017

Thu., Apr 6 & May 4—Board Meeting, 7 p.m., Senior Center
Tue., Apr 4 & May 2—Fossil Group, 7 p.m., Senior Center. Jerry Suchan, 303 648-3410
Thu., Apr 13 & May 11—Faceting Group, 7 p.m., Senior Center. John Massie, 719 338-4276
Thu., Apr 20 & May 18—Pebble Pups & Juniors, 5:30 - 6:15 p.m., Sr. Ctr. Steve Veatch, 719 748-5010
Thu., Apr 20 & May 18—General Assembly, 7 p.m., Senior Center
Thu., Apr 27 & May 25—Crystal Group, 7 p.m., Senior Center. Kevin Witte, 719 638-7919
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

The Senior Center is located at 1514 North Hancock in Colorado Springs. 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

Fri.-Sat.-Sun., Mar. 31-Apr. 2, Fort Collins Gem & Mineral Show, sponsored by the Fort Collins Rockhounds Club, at the McKee 4-H Building, Larimer County Fairgrounds/The Ranch, I-25 exit 259. 4-8 p.m. Fri., 9-6 Sat., 10-5 Sun.

**Tues., Apr. 4**, 10:30 a.m., USGS Rocky Mountain Science Seminar series, "**Understanding the years to months preceding eruptions at Yellowstone caldera**", by Christy Till, Arizona State University. Visitors are welcome; in the Building 25 auditorium (enter the Federal Center at the main gate, Gate 1, on Kipling St.; park east of building 25 and use building entrance E-14).

Wed., Apr. 5, 4:00 p.m., CU Geological Sciences Seminar, Boulder, Fast and furious or slow and steady: rates of subduction and crustal melting (with potential lunch talk too), by Daniela Rubatto, Australian National University, Benson Earth Sciences Building Auditorium (room 180). All welcome; refreshments are served at 3:30 in the 2nd floor atrium.

Fri., Apr. 7, 3:00 p.m., Reef Communities from the Great Lakes of the Eocene, by Mark Loewen, Univeristy of Utah. Denver Museum of Nature & Science Earth Sciences Colloquium, VIP Room, DMNS, all are welcome, Museum admission not required to attend.

Thurs., Apr. 13, 4:00 p.m., Mineralogy of the Earth's Interior, by Dr. Joseph R. Smyth, Mineralogist and Mineral Physicist, Department of Geological Sciences, University of Colorado-Boulder. Friends of the Colorado School of Mines Geology Museum's "First Thursday" lecture series [but this month, on the 2<sup>nd</sup> Thursday] on the CSM campus in the Ben H. Parker Student Center, Ballroom E, Maple Street, Golden. Socializing at 6:30 p.m. and the lecture will start at 7:00. Admission is free and all are welcome. Thurs., Apr. 13, 7:00 p.m., Heritage Exhibit Lecture at the Western Museum of Mining and Industry, Colorado Springs: Mindy S. Vogel, Geologist, U.S. Forest Service, "Rock, Paper, Forest Service: A Summary of Mining and Permitting on Forest Service Lands."

A Heritage Lecture to accompany the new temporary exhibit (Feb. 9 – June 3), "Minerals We Use Everyday: Mined from Our National Forests". To attend this free lecture, please call 719-488-0880 or respond by e-mail at rsvp@wmmi.org (a 6 p.m. reception will probably precede the lecture). For more information see the WMMI website, http://www.wmmi.org/home.

Fri., Apr. 14, 6:45 p.m., North Jeffco Gem & Mineral Club Silent Auction. APEX Community Center, 6842 Wadsworth Blvd., Arvada. Setup at 5:30, auction begins at 6:45. All are invited.

**Fri.-Sat.-Sun., Apr. 14-16, Colorado Mineral and Fossil Spring Show,** Crowne Plaza Hotel - Airport, 15500 E. 40th Ave. Denver, CO; 9 a.m. to 6 p.m. Fri. & Sat., 9-5 Sunday. Free admission. See http://www.rockygems.com/colorado-mineral--fossil-spring-show-2017.html. Saturday evening at the show, 6-9 p.m., will be the 2<sup>nd</sup> Annual Colorado School of Mines Geology Museum Fundraiser & Social, including a silent & vocal auction.

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Wed., Apr. 19, 4:00 p.m., CU Geological Sciences Seminar, Boulder, Carving the Grand Canyon and Places Like it: Developments Toward the Integration History of the Colorado River, by Andy Darling, CSU; Benson Earth Sciences Building Auditorium (room 180). All welcome; refreshments are served at 3:30 in the 2nd floor atrium.

Thurs, Apr. 20, 7:00 p.m., monthly meeting of the Colorado Scientific Society, featuring a talk by Scott Denning, Atmospheric Sciences, Colorado State University, "Simple, Serious, and Solvable: The Three S's of Climate Change". At Shepherd of the Hills Church, 11500 W. 20th Ave., Lakewood. All are welcome. Social time 6:30, meeting begins at 7. See www.coloscisoc.org for more info.

**Sat., Apr. 22** (Earth Day), **March for Science, Denver.** 10 a.m. to 3 p.m., Civic Center Park (Colfax Ave. & Bannock St.), Denver. See https://www.facebook.com/events/1349869341753329/permalink/1422737527799843/ and https://www.facebook.com/groups/1243413865743907/. "The March for Science is a celebration of our passion for science and a call to support and safeguard the scientific community. The March for Science champions robustly funded and publicly communicated science as a pillar of human freedom and prosperity. We unite as a diverse, nonpartisan group to call for science that upholds the common good and for political leaders and policymakers to enact evidence-based policies in the public interest."

**Sun., Apr. 23,** 8 a.m., **Earth Day Geology Hike on North Table Mountain**, to include seeing the Table Mountain lava flows, sedimentary rocks of the Denver Formation, and the zeolite locality in the middle lava flow at a former paving stone quarry, now part of Jefferson County Open Space. A 1.3-mile hike each way; meet at 8 a.m. at the trailhead at Easley Way & Ulysses Way, on the southeast side of North Table Mountain. To be led by USGS geologist Pete Modreski. *Please note change in date & time from what was announced earlier, so as not to conflict with the March for Science - Denver (see above).* For more info or to confirm attending, please contact (weekdays) pmodreski@usgs.gov, 303-202-4766, or (weekend contact info) pmodreski@aol.com, cell 720-205-2553.

Sun., Apr. 23, noon (lunch), 1 p.m. (lecture), "Geology of South Park", presentation at the monthly meeting of the Florissant Scientific Society, by Peter Barkmann, Colorado Geological Survey. Probably to be held at the Dinosaur Ridge, Dinosaur Discovery Center, Morrison. See http://www.fss-co.org/ for details, or contact Beth Simmons at cloverknoll@comcast.net . All are welcome. Peter plans to follow up this talk by leading a 1-day geology field trip across South Park, tentatively scheduled for Sunday, June 25.

Sat.-Sun., April 29-30, 9 a.m. – 4 p.m., "Announcing another ridiculously exciting Book/Garage Sale" at the Colorado School of Mines Geology Museum 1310 Maple St., Golden. "Thousands of maps; hundreds of books, journals, minerals, fossils, etc. Prices vary by item or box. Most prices will drop throughout the event. Information: 303-273-3815."

Sat., May 6, 11 a.m. – 2:45 p.m., Colorado Mineral Society's Silent and Verbal Auction, Holy Shepherd Lutheran Church, 920 Kipling St. (3 blocks north of West 6th Ave.) Lakewood, CO 80215. "Minerals, fossils, faceted stones, lapidary pieces, books, jewelry, and fluo-rescent minerals. Door prizes every half hour, raffle at 2:45pm. Special verbal auction at 1:00 pm of museum quality specimens do-nated by special dealers. Abundant parking, refreshments, and easy handicap access. A few auction tables reserved for only children to bid on. Checkout will begin at 2:45pm (cash or check only). \*\*A special invitation is extended to non-CMS members to participate in this auction as sellers and buyers.\*\* Limit of sales to three flats of materials. Sellers can get copies of bidding slips on our club website (fillable and printable pdf file): see http://www.coloradomineralsociety.org/ . Checkout will be by bidder number, so contact Leslie Osgood at 303-986-4488 for a bidder number and/or seller letter. Any questions about the auction should be directed to Ben Geller by phone at 303-550-5993 or by email at geller520@gmail.com ."

Thurs., May 11, 7:30 p.m., monthly meeting of the Colorado Chapter, Friends of Mineralogy. 7:30 p.m., social time to meet & talk with members, and all are invited to bring specimens to show or pictures to share as Powerpoint or .jpg images. 8:00 p.m., formal meeting and program—speaker & topic still TBA at this time. VIP Room, Denver Museum of Nature & Science. All are welcome. See http://friendsofmineralogycolorado.org/events/ for more info.

**Sat., May 13, Friends of Mineralogy, Colorado Chapter, Silent Auction.** Clements Community Center, 1580 Yarrow St., Lakewood CO, 12:00-4:00 (setup begins at 10:30 a.m., auction begins at 12:00, verbal auction 1:00, all tables will close by 3:00 p.m., checkout follows). For more info see http://friendsofmineralogycolorado.org/.

Sat., May 13, Dinosaur Discovery Day – Boy Scout Day at Dinosaur Ridge, Morrison, CO. Scouts as well as the public are invited." Parking will be off-site at the Bandimere Speedway overflow lot located east of C-470 and south of Alameda along S. Rooney Road. Signs will be posted. Parking is \$5 per car, paid as you enter. More than 80 earth scientists and other volunteers, including certified Merit Badge Counselors, assist with the event." There is a registration fee for participating Scouts, and a \$4 per person charge for persons (over age 3) who wish to take a bus tour of the ridge" (no charge for just a walking tour). For full information see http:// www.dinoridge.org/scoutdays.html#bsa . The next Dinosaur Discovery Day will be Saturday, June 10.

**Thurs., May 18,** 7:00 p.m., **Too Warm, Two Poles: How Past Super Interglacials Should Inform Future Coastal Policy**, Julie Brigham-Grette, University of Massachusetts-Amherst. Annual Emmons Lecture of the Colorado Scientific Society; American Mountaineering Center Auditorium, 710 10<sup>th</sup> St., Golden. No admission charge and all are welcome.

Fri.-Sun., May 26-28, Fossil Fish Dig, Kemmerer, Wyoming. Friends of Dinosaur Ridge is sponsoring a field trip to collect fossil fish at a private quarry in Kemmerer, WY. The registration fee of \$550 per person (\$525 for Friends members and volunteers) includes trans-

#### S. F. EMMONS, EMMONSITE, MT. EMMONS & TELLURIUM

#### Mike Nelson csrockguy@yahoo.com

In wandering through my collection of minerals brought home from the 2016 Tucson Show, I came across a specimen of emmonsite. I reached to the back recesses of my mind trying to remember why I purchased such a specimen. Yes, it is a nice green-yellow color and looked interesting under the loupe but then I remembered—I was going to check and see if emmonsite was named for the famous geologist Samuel Franklin Emmons (Fig. 1). Well, I finally got around to checking and sure enough emmonsite [Fe<sub>2</sub>(TeO<sub>3</sub>)<sub>3</sub>-2H<sub>2</sub>O], a rare iron (ferric) tellurite, was named for a well-known geologist that Colorado has sort of claimed as a native son (although he was born in Boston in 1841 and descended from a long line of native Bostonians—lineages arrived in the 1630s), or at least a favorite son.

The following information is abstracted and interpreted from Hague (1912) who wrote a "Biographical Memoir" of Emmons published by the National Academy of Sciences. Emmons was one of those "old fashioned" geologists, attending private primary and secondary schools in Boston and finishing up at the Dixwell Latin School. Emmons was educated to become a gentleman of broad culture, refined manners, and to enter Harvard University, which he did at

age 17, and graduated in 1861. When I not enlist in the U.S Army since Harvard slavery movement. Hague (1912) noted pursue a professional career, rather than service. To further discourage enlistment father, after graduation, to Europe to acperation trip. He seemed to have spent and hiking, and presumably taking care of in November while Emmons toured Lon-City of Eternal Light, Emmons spent nine order to relearn French and prepare for Imperiale des Mines (School of School of Mines and then decided he experience (hands-on) so spent the next (Mountain Academy) at Freiberg, Saxony, city limits). After leaving Freiberg, nally returned to Boston in June 1866 the conflict was over).



S.F. Emmons, ca. 1860s. Photo courtesy of Library of Congress.

first read "1861" I wondered why he did furnished several students to the antithat Emmons' father persuaded him to to follow many classmates into military (I presume), Emmons was sent by his company his mother on a health recuthe summer of 1861 climbing mountains his mother. She sailed back to the States don and ended the year in Paris. In the months working under private tutors in entrance exams to the prestigious Ecole Mines). Emmons spent two years at the wanted to get a more practical mining year (1865) at the Bergakademie Germany (where there were mines at the Emmons spent the winter in Italy and fi-(probably to the delight of his family since

As a graduate student at the University of Utah, I fell "in love" with reading about the geological exploration of the American West via the Great Surveys: F.V. Hayden and the *United States Geological Survey of the Territories*; Clarence King and the *Geological Exploration of the Fortieth Parallel*; John Wesley Powell and *The Exploration of the Colorado River and its Canyons;* George M. Wheeler and the many volumes of *Explorations and Surveys West of the 100<sup>th</sup> Meridian*. These surveys of the western United States ultimately were reorganized (1879) into the United States Geological Survey.

This was an exciting time to be at the University since the senior instructors were only a couple or three generations removed from the early western geologists and had traversed the wide-open spaces of the west when it was still "wild." They had been trained as classical geologists (mostly in the eastern U.S.) and tried to impart their thoughts to the students, especially the need for precise field work. Our field trips often were taken to areas touched by Great Surveys. I sort of fell into a trance standing at the entrance to Ladore Canyon on the Green River trying to imagine what John Wesley Powell felt as he guided his small boats into the "great unknown." Students were greatly impressed with the detective work of Clarence King (including Emmons) and his geologists in debunking the great diamond find in northwestern Colorado and we wondered if a ruby or diamond still were to be found? Alas, no luck.

But back to Emmons (following Hague, 1912). Upon returning to the States Emmons secured a job, at first as an unpaid volunteer, with the King Survey and they sailed for California in May 1867. He later was hired as an assistant geologist and Hague (1912) noted that Emmons "was full of youthful spirits and manly exhilaration over the work

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before us." Emmons worked for 10 years with various aspects of the King Survey that perhaps culminated with the publication (890 pages) of descriptive geology. I did not realize (no surprise here) that after leaving the Survey Emmons "engaged actively in cattle ranching, and for some time made his home in Cheyenne, Wyoming."

In 1879, the U.S. Congress created the Bureau of the Geological Survey (the USGS) and Clarence King was appointed the first director on April 3. On August 4 of that year King appointed Emmons as "Geologist in Charge of the Rocky Mountain Division" and a mandate to devote his first years to "a study of the mineral wealth of the Rocky Mountains." In 1886, Emmons was the lead author of USGS Monograph XII, *Geology and Mining Industry of Leadville, Colorado with Atlas* (~779 pages). Hague (1912) noted that it "won for its author an international reputation…probably no single publication of the geological survey has exerted a more beneficial influence and stimulated more discussion." Professional geologists could ask for little more than an accolade like that.

After Leadville Emmons lead an active geological life with an amazing number of papers on a wide variety of subjects, including: *On glaciers in the Rocky Mountains; Notes on gold deposits in Montgomery, County, Mary-land; Geology of the Tintic Special District, Utah.* In Colorado Emmons is remembered for excellent papers on *Colorado ore deposits, Geology of Aspen Mining District, Geology of the Elk Mountains, Geology of Rosita and Silver Cliff* and *Mines of Custer County, Geology of the Denver Basin,* and *Geology of the Ten Mile District.* I would encourage interested readers to observe his bibliography (Hague, 1912) found at: https://books.google.com/books? id=vZ0aAAAYAAJ&as\_brr=4&pg=PA309#v=onepage&q&f=true. In addition to his publications, Emmons was one of the founding members of the Geological Society of America and served as the President in 1903.

Also of interest to Colorado scientists: (in the history of the Colorado Scientific Society, the oldest scientific society in the Rocky Mountain region at www.coloscisoc.org.) On the evening of December 8th, 1882, a number of gentlemen interested in the formation of a scientific association met in the rooms of the United States Geological Survey, in Denver, at the invitation of Mr. Samuel Franklin Emmons." "Mr. Emmons, in stating the object of the meeting, said that it seemed to him that the time had come for those persons in Colorado who were interested in true science to unite in forming an association or society, whose immediate object would be to facilitate the interchange of scientific observations and ideas, and promote intercourse among the observers themselves. There should be some means of recording and publishing the many interesting and valuable facts which are daily observed in different parts of the State. This could be done through the medium of a society, and the opportunity thus afforded would no doubt act as a stimulus to some to pursue investigations in directions specially open to them." "An informal discussion ensued in which the advisability of such a step was advocated, and it was agreed to proceed at once to form a permanent organization." "The following named persons were unanimously chosen as officers for the first year: President—Samuel Franklin Emmons Vice-President—Richard Pearce Secretary—Whitman Cross."

Although Emmons was not a "Native Coloradoan" his work certainly qualified him as perhaps the most respected geologist in the state's history. Emmons was active until his death in 1911. Hague (1912) noted that "he left a noble record of life's work well performed."

Among other honors bestowed on Emmons, Colorado designated a 12,401-foot peak near Crested Butte in the West Elk Mountains as Mt. Emmons (Fig. 2). Not to be outdone, Utah designated a 13,448-foot peak in the High

Uintas Wil-Emmons ingly, the nected by the highest Kings Peak even in and his and col-King, re-



Fig. 2 Mt. Emmons, Colorado, 12,401 feet. Photo courtesy Google Earth ©.



derness as Mt. (Fig. 3). Interest-Utah peak is cona rugged ridge to peak in Utah, at 13,534 feet. So, death Emmons long-time friend league, Clarence main connected.

Fig. 3. Mt. Emmons, Utah, 13,448 feet. Photo courtesy Google Earth ©.

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This offering started out about the mineral emmonsite and so it will finish with the same. Emmonsite is one of a few minerals that contain the element tellurium, a silver-white metalloid (possesses properties of both metals and non-metals). Tellurium is an extremely rare element as most rocks contain about 3 parts per billion and is 8 times less abundant than gold (Goldfarb, 2014), and is related to selenium but may be only mildly toxic! Tellurium is rarely found in a native form.

Tellurium can act as a cation with a +2 valance as in the uncommon mineral tellurite,  $TeO_{2}$ , or with a +6 valence as in jensenite,  $Cu_3TeO_6-2H_2O$  The telluride anion with a charge of -2 can combine with gold and silver cations in the minerals calaverite (AuTe<sub>2</sub>) and sylvanite (AuAgTe<sub>4</sub>). These telluride minerals form major gold ores at Cripple Creek, Colorado. So, it is confusing when one talks about tellurium, tellurite, and telluride.

Emmonsite [Fe<sub>2</sub><sup>+++</sup>(Te<sup>++++</sup>O<sub>3</sub>)<sub>3</sub>-2H<sub>2</sub>O, a hydrated iron tellurite, occurs in a wide variety of habits from microscopic druses, to hair-like masses, sprays, compact masses, globs, and small acicular crystals (Fig. 4). I could not locate information on larger than microscopic crystals but MinDat lists emmonsite as belonging to the Triclinic System. It has a green to yellow-green color, vitreous to subvitreous to even dull luster, opaque to translucent to transparent diaphaneity, and is reasonably hard at ~5.0 (Mohs). Its characteristic yellow-green color combined with the often branching (coral-like) or fungus-like shape are the best identifying marks. Emmonsite is a secondary mineral found in the oxide zones of hydrothermal tellurium-bearing base minerals. It is often found with native tellurium and the telluride minerals.

Hillebrand (1885) gave the type locality of emmonsite as Tombstone, Arizona. As described by Pearl (1941), the discovery of a new mineral which he named emmonsite in honor of Samuel B. Emmons, first president of the Colorado Scientific Society and one of America's outstanding geologists, was told by W. F. Hillebrand at the meeting of the society at the Arapahoe County (now Denver) Court House on June 1, 1885. The mineral had been sent by R. C. Hills from an uncertain locality near Tombstone, Arizona Territory. So, it would seem that Emmons was (may have been) at the Colorado Scientific Society meeting when Hillebrand gave his description of emmonsite.

Hillebrand (1904) also described emmonsite(?) from Colorado and in Bulletin 262 of the USGS (1905) stated a green mineral was collected at the W.P.H. Mine at Cripple Creek that showed a close resemblance to emmonsite he described 20 years ago, (the specimen from Tombstone). However, Williams (1980) believed that the mineral described from Tombstone actually was rodalquilarite, a hydrogen iron tellurite chloride. Eckel and others (1997) then believed it would then make sense to declare the mines at Cripple Creek, Colorado, as the type locality for emmonsite. However, I note that MinDat still lists Tombstone as the type locality.

My specimen of emmonsite was collected from the Bambolla Mine (Montezuma Mine) located in Municipio de Moctezuma, Sonora, Mexico. I have been unable to locate much information on the Mine other than in the 1970s, it

was a producing gold mine. I asmineralization was related to ated with Tertiary volcanic acinformation is that the Mine, and Bambollita Mine, are the type lo--bearing minerals! Also, I stuma discussion, of a micro-mineral mineralogica Italiana). Luckily, the any rate, Ciriotti (2010) minerals are relatively rare worldminerals, 68 of which are consideither tellurite (Te4+O3)2- or tellucies... over 60% of the species ered at only four deposits: Mocte-Arizona; Centennial Eureka Mine, California. In fact, nearly a third of



Green, fungal-like habit of emmonsite. Length main "mass" of mineral ~4 mm.

sume, that like nearby mines, hydrothermal activity assocition. However, the amazing the nearby (half mile away) calities of at least 23 tellurium bled upon an article, actually group (Associazione Microdiscussion was in English! At noted: Oxide-zone tellurium wide... 71 known Te-oxide ered valid species; most are rate (Te6+O6)6- spe-(43 out of 71) were discovzuma, Mexico; Tombstone, Utah; and Otto Mountain, all Te-O mineral species were

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discovered in just one deposit: Moctezuma. Many of these species are still found at only one locality today... The four leading occurrences listed above are all oxidized base metal deposits, and not surprisingly, 60% of all Te-O minerals contain Pb and/or Cu. If Zn and Fe are added in, this increases to 84%... And that sort of sums up my limited knowledge about tellurium minerals.

This is one of those articles that started out as a simple discussion of the Colorado Scientific Society and its first president S. F. Emmons. However, it morphed into the fascinating world of tellurium and the resulting minerals. I am still trying to digest some of the information but needed to draw a conclusion line--somewhere! Unfortunately, the length and breadth of the subject may turn off all but the most dedicated readers and for this I apologize. But, just as a dog worries a bone I worry a subject that I don't really understand. The good thing is that "new learning" is a joy for me and hopefully keeps my brain alive. My philosophy about learning may be summed up by two rather famous individuals:

Anyone who stops learning is old, whether at twenty or eighty. Anyone who keeps learning stays young. Henry Ford

*Every time I learn something new it pushes some old stuff out of my brain.* Homer Simpson REFERENCES CITED

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portation to and from Kemmerer, 2 nights lodging, 2 breakfasts and 2 lunches, 2 speaker sessions about the fossils, and 2 days (4 hours each) digging for fossils. Registration and full payment is due by May 5. For full info and a copy of the registration form, please write to volunteer@dinoridge.org.

Fri.-Sat.-Sun., June 2-4, Pikes Peak Gem & Mineral Show, sponsored by the Colorado Springs Mineralogical Society. At Mortgage Solutions Financial Expo Center, 3650 N. Nevada Ave., Colorado Springs. 10-5 Fri. & Sat., 10-4 Sun.

**Thurs.-Sun., June 8-11, Fairplay Contin-Tail** rock, gem, and mineral show, MiddleFork RV Resort, 255 Highway 285, Fairplay, CO **Fri.–Mon., July 21-24, Gold and Silver Deposits in Colorado**, a symposium cosponsored by the Friends of the Colorado School of Mines Geology Museum, the CSM Museum, DREGS (Denver Region Exploration Geologists Society), and Friends of Mineralogy, Colorado Chapter. "The event will feature two days of talks (July 22 - 23) and two days of field trips (July 21 and 24) to historic Colorado gold and silver mining areas, focusing on the Front Range and the northern half of the Colorado Mineral Belt." More information about the symposium is at: https://www.facebook.com/LikeCSMGeoMuseum/posts/1822491981371516 . Registration cost will be \$100; students, \$50; banquet, \$40; each field trip, \$40. A complete registration form will be available soon.

**Sat.-Sun., Apr. 22-23, Rock/mineral collection sale** (8-5 Sat., 10-3 Sun.). "After 60+ years of rock hounding and collecting, Dan Lovitt, Littleton Club, has decided it is time to disperse most of his accumulated material. This is an eclectic collection and includes many different rocks, minerals, fossils and even some landscape/yard art material. The largest volume of rocks will be of fossil wood (petrified wood); approximately 2500 – 3000 pounds. The second largest group of material will be of agates, jaspers and various other workable stones; approximately 1600 -1900 pounds. Next will be mineral specimens; approximately 30 – 35 flats/containers. Some slabs of Wyoming nephrite jade, obsidian...". Soft drinks/water and hot dogs for all; small gifts for children under 12. 7045 W. Pineview Dr., Littleton 80125. For more description of material to be sold, please write to or Daniellovitt@aol.com.

July 14-15-16, 9 a.m. – 6 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, enhydros, fossils, amber, minerals, crystals, gemstone

# 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: <u>http://pebblepups.blogspot.com</u> and through the CSMS website: csms1936.com New Course Offering Basic Field Methods in Paleontology By Steven Veatch Rocky Mountain Dinosaur Resource Center Woodland Park April 29, 2017 9:30AM –12PM Contacts/further info: www.rmdrc.com 719 686-1820 X104 ask for Deb Ages 12 to adult Fee: \$20.00

The Rudist Fossil Story

By Jack Shimon (Adapted from a presentation given at the Denver Gem Show, September 17, 2016) Continued from the March 2017 Pick & Pack

We spent a lot of time at the quarry observing the massive specimens onsite and then collected some smaller pieces to bring home and look at closer. A simple way of thinking about fossils is to consider them either a cast or a mold. A mold is formed when an object is placed into a soft surface and then decomposes or is washed away leaving an impression. This impression can be used to form a cast fossil which is when the mold fossil fills with sediment. I think cast fossils of these organisms were also forming when the hollow interior part of the animal was filled up. We were curious about the mold fossil in the left picture (below) and what caused the spinney ridges lining it. The casts in the right photo (below) have a tube shape suggesting they might have grown as stalks. Looking closely you can also see junctions in the stalk.





In these close up images of colesting observations. Inside the mold Above it in the photo separate from estingly, the crew at the quarry had claws. I thought they were anchors Photo credits: Mike Hursey



lected samples you can make some interis a thick cast broken into segments. the colony is a hooked shape fossil. Interbeen collecting these thinking they were for the intact animal.

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# 2017 CSMS Officers

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**TBD, Social Committee Chair** 

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Mike Nelson, Federation Representative

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#### Sub-Group Responsibilities for Refreshments for General Assembly Meetings

Feb.	Mar.	Apr.
Crystal	Faceting	Fossil
Мау	June	July
Jewelry	Lapidary	Micromount
Aug.	Sept.	Oct.
No Meeting	Board	Crystal
Nov.	Dec.	
Faceting	<b>Christmas Party</b>	

# **SECRETARY'S SPOT**

by Barbara Middlemist

General Meeting Minutes for the Colorado Springs Mineralogical Society — March 16, 2017

# General Meeting Minutes of the Colorado Springs Mineralogical Society

#### March 16, 2017.

The president, Ernie Hanlon, called the meeting to order at 7:02, followed by the pledge of allegiance.

The evening's program was **Collecting in Colorado Part 2**, presented by president Ernie Hanlon.

Calm, cool, and collected, these are essential traits for a good mineralogist. Great specimens are often found when you're taking a break, walking back to the car or eating. Also, keep your eyes on any speck on the ground, it could turn out to be the greatest find of the season.

Ernie showed photos of the treacherous Mt. Antero switchback roads that take you to the collecting areas. Narrow, steep gravel roads where the slightest miss-calculation can end with an unexpected trip down the wrong side of the mountain. Be careful, leave at the first sign of rain or lightening and you can find some spectacular specimens. Among his finds were clean smoky quartz, fluorite and aquamarine that can be displayed after only simple washing.

He showed a pocket filled with mica that didn't seem to contain anything special. However, he filled up a bag, and when he got home and looked through the bag, he found many pieces worth keeping.

In one pocket on Mt White, Ernie found 117 aquamarines.

At the Sedalia Copper Mine he found garnets with many faces. The best was a stack of garnets.

At Ruby Mt, rhyolite cavities have been found with great quality garnets. Unfortunately, Ruby Mt is no long available for collecting.

Almondine garnets and black tourmaline are also found in the Colorado mountains.

People have found pockets of amazonite in and around Woodland Park. They have been found in roadways, when digging house foundations, and other miscellaneous places. This only adds to the adage to always be looking around you. Finds are in unexpected places.

Ernie told us the tale of finding gold while out gold panning. He went back a time or two and always found gold. He marked it by spotting where certain snow patches were seen. Then warm weather struck. He went back and could never find the spot again. He says always mark your spot in some way that won't move and that you can easily find.

The photos of Ernie's finds were of fabulous, beautiful specimens. He encourages everyone to keep hunting.

Jack Thomson brought a display case of pyrite, and Ernie Hanlon brought a display case of rhodochrosite.

Both cases contained interesting specimens that were enjoyed by the club. Thanks to you both.

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#### (CONTINUED FROM PAGE 8)

Embedded in this cluster is another hooked shaped fossil I believe is associated with the stalk. On the ground, the partial round fossil could be a lid. Although we didn't see any stalks, what I think is the body of the animal, supporting such a large size lid.



Photo credit: Mike Hursey

**Using the Clues to Start Solving the Mystery**: We were able to identify some fossils from the site such as the ammonites in the photo. These gave us a fossil age and also confirmed they came from a shallow marine environment. The ammonites were found shortly before we left when I was climbing on huge piles of rock and I was able to put pieces together to make a complete ammonite.



#### Photo Credit: Mike Hursey

We knew what our fossils were NOT but still didn't have an answer about what they actually are. So it was time to turn to the professionals. Since we were nearby the University of Texas, Austin we started there. The University has a neat museum and we spent hours asking questions about our fossils but no one knew what they were. They also have fossil drawers where kids are encouraged to match their local fossil finds to those from the Austin area, but none matched ours.

We continued our research online and came across a reef building organism called rudist bivalves.

When I got back from my Texas trip so we took them to the Rock Fair at the a lot of exhibitors really interested in were rudists. Our last stop was to the was lucky to meet with Dr. Logan Ivy. facility and spent time with me talking as rudist bivalves. One thing he exfunction of the hook shaped valve. chor to the sea floor with a small valve shaped valve is actually the top lid in

After figuring out what our fossils were valves. Bivalves are aquatic mollusks and clams. I've seen some of these were called bivalves. I especially like it shows a lesser known stalked bivalve from the top left are cockles, mussels



Permission to use courtesy of the Cambridge Museum of Zoology

we still didn't know for sure what we had found Western Museum of Mining and Industry. I met my fossils but no one that could confirm they Denver Museum of Nature and Science where I He gave me a fascinating tour of the collections about my fossils. He positively identified them plained that I had been wrong about was the That part is not an anchor, although they do anon the lower portion of the body. The hookthis species.

by name we needed to know more about biwith a hinged shell such as mussels, scallops animals on beach trips I just didn't know they the image of modern "edible" bivalves because called a razor shell. Also pictured clockwise and a scallop.

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Rudist bivalves are extinct aquatic mollusks that came in many forms. They lived in shallow marine environments. They dominated the reefs through the Cretaceous until they became extinct in the upper Cretaceous. We found fossils of caprinula and titanosarcolites. Today their fossils can be found in limestone rocks.



Permission to use courtesy of Dr. Thomas Steuber

The conclusion of this article will appear in the May 2017 issue of Pick & Pack

#### **Possible Flourescent Mineral Sub Group**

Bill Mattison who joined CSMS in October of 2016 has proposed forming a new sub group to focus on mineral flourescence and related phenomena such as phosphorescence and tenebrescense. According to Bill, he has been collecting flourescent mineral specimens since the early 1970s and selling them for over 20 years. He's been a member of the Flourescent Mineral Society for at least 24 years, a lifetime member of the Sterling Hill Mining Museum, the Franklin-Ogdensburg Mineral Society, and a member of the Franklin Mineral Museum for over 20 years. A meeting time and place has yet to be determined. For further details, please contact Bill Mattison at:

mattisonwc.shi@yahoo.com before the April General assembly.

#### (CONTINUED FROM PAGE 1)

MINERALS: barites, calcites and selenites. The barites are found in nodules that must be broken into. They range in size from a basketball to a small house. The barites are usually water clear, but some may be brown or black due to carbonaceous inclusions. The barites range in size from micros to 10-1/2 inches tall. Barites are heavy. Barites occur in single crystals, twins, and in groups. Most barites that are considered large at the Book Cliffs are from 2 to 3 inches in length. The barite crystal belongs to the orthorhombic system. Sometimes the crystals are on an orangish matrix of siderite. Colorless to white to yellowish calcite crystals occur with the barites in the nodules. Selenite crystals colorless to lemon-yellow up to 2 inches have also been found.

EQUIPMENT NEEDED: Sledge hammer, heavy duty pry bar or spud bar, shovel, 2 lb hammer, gloves, wrapping paper, container for specimens, goggles or eye protection and water.

HAZARDS: The wet shale roads, scorpions, black widow spiders, and rattlesnakes are in the area. In my eight trips to the Book Cliffs, I have seen scorpions every trip, only two black widow spiders and have yet to see a rattlesnake. There are three areas to collect barites at the Book Cliffs near Grand Junction. One area is off of 27-1/4 Road, and two areas are off 25 Road. I usually go off 25 Road, because target shooters with high powered rifles are on 27-1/4 Road.

#### Message from Mike Webb

#### **CSMS Field Trip Coordinator:**

I would like to add a sneak peek into the April issue & some events to the club calendar, with our finalized field trip schedule to be announced in May. (Once all dates are confirmed with claim owners & field trip leaders)

1.) Book Cliffs, Grand Junction. Field trip leader Eerie Hanlon. May 6&7 Contact: eehanlon@netzero.net Colorado Classic! Barite & calcite.

2.) Red Feather Lakes. Margrette (Rainbow) Lode Claim. Leader Mike Webb July 15 Contact: mwebbstudent@yahoo.com Colorado Classic! Quartz var. Amethyst.

3.) Montezuma, Summit Co. Burke & Martin Mine. Leader Mike Webb August 26 Contact: mwebbstudent@yahoo.com Montezuma's last operational mine. Participation limited to 20. Silver, Quartz, pyrite, sphalerite & galena.

There will be several other field trips announced as plans & dates become finalized. I look forward to releasing our full schedule asap!

All the best. Mike Webb CSMS Field Trip Coordinator

#### (CONTINUED FROM PAGE 9)

Awards:

Mile Nelson received three awards.

- 1) AFMS( American Federation of Mineral Societies) Bulletin Editor's Contest, Best of the Best, Author-written Features 2016
- 2) Paleontological Resources Preservation, 7th Place Winner, Special Publications 2016 AFMS
- 3) Field Trip Report Trout Creek, Pegmatites Chaffe Co., Colorado

3rd Place Winner 2016 AFMS (including a plaque).

The minutes were approved.

There were three Door Prize drawings, winners could select from a group of ten. One was a mineral book with fabulous photos.

President Hanlon announced that at the Jan board meeting the board went above the \$500 spending limit for the club website to be installed and running. The board decided this was a necessary expediency.

#### The president recognized new members and guests who introduced themselves.

One of the visitors, Mr. Hart, was a descendent of Willian C. Hart whom ran the "Rocky Mountain Gem Store" around 1920. He shared some written information about his ancestors' experiences. Mr. Hart may be interested in selling some of this collection.

#### **Reports:**

#### Show Report:

Show chairman, Lisa Kinder, reported there will be show flyers available at the next meeting for members to take and distribute. All but one show coordinator positions have been filled. Still needed is a coordinator for Logistics to handle venders. Many volunteers still needed for the smaller jobs. Yam Yamiolkowski volunteered to do the silent auction. Sharon Holte reported she has club fossils and other minerals stored at her house and asked Yam to examine them to see what may be used for the silent auction.

Membership: Norma reported the membership directory is nearly complete.

#### Group Lead Reports:

**Faceting:** John Massie is leading the faceting group. They meet the 2<sup>nd</sup> Thursday at the Senior Center.

**Fossil:** The group will watch a video about new theories on dinosaur extinction and discuss the various possibilities. This is part 2, part 1 was a lively discussion. There often are free fossil specimens given out at the fossil group meetings. First Tuesday at the Senior Center.

#### Crystal: no report

Jewelry: Bill Arnson announced the group is planning both a chain mail class and a wire wrapping class. More information will be available soon.

Lapidary: Sharon Holte reported many non-club members were interested in using the club lapidary equipment. To solve this problem, club members will be asked to show their club card before using the equipment.

#### New Business:

A new source is needed to make club logo decals.

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#### COLORADO SPRINGS MINERALOGICAL SOCIETY'S EARTH SCIENCE SCHOLAR AND FORMER PEBBLE PUP WINS SCIENCE FAIR AND CATCHES THE EYE OF A MOVIE PRODUCER

By Steven Wade Veatch

Jenna Salvat, Colorado Springs Mineralogical Society's Earth Science scholar and former Pebble Pup, took home the top prize in Senior High Physical Science category at the 2017 Pikes Peak Regional Science Fair when she won first place on February 28, 2017. Jenna was presented her award by Dr. Rob Kolstad during the awards ceremony at Library 21C in Colorado Springs amid the cheers of her family, fellow students, and Steven Veatch, Pebble Pup Director. Jenna also received several other awards:

Armed Forces Communications and Electronics Association Arizona State University Walton Sustainability Association for Women Geoscientists Georgia and Charlie Matteson Award I-SWEEP Outstanding Scientist NASA Earth System Science Award Northrop Grumman Excellence Award US Air Force Award US Navy Science Award



Jenna Salvat is seen holding her science fair awards with Steven Veatch, Pebble Pup and Earth Science Scholar Director. Photo © by S.K. Veatch.

Jenna was one of 40 students invited to the Colorado Science and Engineering Fair, April 6-8, 2017 at Colorado State University, and she was one of only three students invited to the Intel International Science and Engineering Fair (Intel ISEF). The Intel ISEF will be May 14-19 in Los Angeles.

Jenna's work has caught the eye of Fishbowl Films of Los Angeles, California. The movie company is planning a film about selected teens growing up in the 21<sup>st</sup> century who create scientific solutions to the most pressing issues on the planet through their participation in the largest and most prestigious high school science competition in the world, the Intel International Science and Engineering Fair. The film, by Laura Nix, plans to document the start of Jenna's science fair to the end of her journey as a competitor at the Intel ISEF.

Jenna's award-winning project was on crystalline silicon dioxide and the potential of the generation of voltage through its **pyroelectric** (charge generated when heated or cooled) and **piezoelectric** (charge generated in response to applied mechanical stress) properties.

According to Jenna, "The highest point in the project was watching the electrical signal feedbacks on the oscilloscope as it recorded the electrical fields being induced by mechanical stress and temperature increase." Jenna conducted some of her investigations at one of the laboratories at the Colorado School of Mines. Dr. Katharina Pfaff, a research assistant professor at the Colorado School of Mines, was instrumental in making arrangements for Jenna to use the QEMSCAN lab.

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#### **Unfinished Business:**

Thanks to Bert and Pete Daily for the gift of minerals and slabs. Of these, 61 will be given as door prizes (1 each month). The remainder will be used for the club show silent auction. The collection is stored at Roger Pittman's house.

There has not yet been a decision on purchase of a club microphone set, the options are being evaluated.

#### Field Trips:

There are many field trips being planned. Ernie Hanlon is planning a trip to Grand Junction to collect Barites and Calcites, sign up will be next month.

Meeting was adjourned at 8:35.

#### (CONTINUED FROM PAGE 13)

The most difficult part of Jenna's science fair project was locating a facility to conduct her experiments. Jenna plans to continue her research and will need to find a research institution with an interferometer, a lock-in amplifier, and a He-Ne laser for next year. She is also in need of a large-scale autoclave or autoclave reactor with a buffer that allows for two distinct temperature gradients. Jenna said, "My plans for the future are to utilize more precise methods in relation to my experimentation and characterization for next year's portion of this project. I will begin to test a wide variety of materials that are classified as thermovoltaics. I will test these using the proper instrumentation and represent my data mathematically. I will be able to further characterize thermovoltaic materials by calculating their coefficients. I also will pursue the hydrothermal synthesis of alpha-phase silicon dioxide and will learn how to prepare silicon wafers. I plan to develop a small scale thermovoltaic transducer or electromechanical energy system that can be implemented in surface geothermal vents and features, as well as a variety of other applications.

Jenna is in 10<sup>th</sup> grade at Coronado High School. She is also a volunteer interpretive ranger at the Florissant Fossil Beds National Monument in the summer.



Jenna Salvat proudly displays her first place ribbon she won for first place in the senior high physical sciences category. Photo © by Steven Veatch.

# PIKES PEAK PEBBLE PUPS ARE EXHIBITORS AT THE WIPS FOUNDERS SYMPOSIUM AT THE COLORADO SCHOOL OF MINES

#### By Steven Wade Veatch

Colorado Springs Mineralogical Society Pebble Pup Jamie Weise and Earth Science Scholar Blake Reher, also a member of the Lake George Gem and Mineral Club, were exhibitors at the 10th Western Interior Paleontological Society's Founders Symposium, March 4-5, 2017 at the Green Center on the campus of the Colorado School of Mines. Jamie entered a case that featured a fossil fish he



Blake Reher, is a senior Earth Science Scholar. He is a member of the Lake George Gem and Mineral Club and the Colorado Springs Mineralogical Society. This is the second symposium he has been an exhibitor at. Photo by S. W. Veatch.

The symposium's theme was the Morrison Formation and its multi-colored sandstones, mudstones and conglomerates that entombed some of the classic dinosaurs of the Jurassic along with the plants and invertebrates that shared their North American home. The next Founders Symposium will be in 2019.

excavated in Wyoming.

Blake designed a case that had a variety of fossils he collected or are a part of his collection. Blake's case included a specimen of the carbonized wood found in an igneous rock from Cripple Creek, Colorado.



Jamie Wise stands in front of his case. This is the first exhibit he has done. Photo by S. W. Veatch



View of Blake Reher's case. Each specimen is carefully staged inside of the case along with several props that add interest. Blake included the logos of the two clubs he is a member of promote their Pebble Pup programs. Photo by S. W. Veatch



#### 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

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#### **CSMS**

# T-Shirts, Badges, and Pins

are available for sale. If you celebrated a CSMS anniversary in 2015 or 2016, you are eligible for your one year pin award Please see Storekeeper, Ann Proctor





Or email sidewindermin@comcast.net

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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 the Colorado Springs Senior Center, 1514 North Hancock Ave., Colorado Springs, CO. <u>Visitors are always welcome</u>. 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 organizatons:

American Federation of Mineralogical Societies (AFMS) www.amfed.org

Rocky Mountain Federation of Mineralogical Societies (RMFMS) www.rmfms.org