

CALCITE SAND CRYSTALS: GET ONE FOR YOUR COLLECTION

BY DR. MIKE NELSON, CSMS

In writing about pseudomorphs for this month's ASK column, I was reminded of some very interesting crystals collected many decades ago. As a student at the University of South Dakota I had the opportunity to observe some great geology in the western part of the State; we were always traveling "West River" to examine rocks of virtually every geological age. During a summer tenure with the State Geological Survey, I was involved in chasing some high elevation stream gravels coming from the Black Hills and trending eastward. This ancient river is represented today by sporadic gravel deposits found on top of ridges and mesas. Since these gravels are most likely earliest Pleistocene in age (~2 Ma), their current location on ridge tops indicates much erosion has taken place since deposition. At any rate, I had the opportunity to explore and collect (with permission) at some very isolated localities in the southwestern part of the state, including Rattlesnake Butte (aka Snake Butte or Devil's Hill) in Jackson County.

The western part of South Dakota is unglaciated, is part of the Great Plains Physiographic Province, and has three very distinct regions—the gently undulating plains with a cover of short grasses, the Black Hills, and the eroded badlands. The Hills are a Laramide anticline and the easternmost range of the Rocky Mountains. Geologists often refer to the Hills as a "vest pocket" range since their footprint is small (as compared to something like the Sawatch Range in Colorado), the rocks are well- exposed, and large scale thrust faulting is absent. Precambrian rocks are exposed in the center of the anticline and successively younger Paleozoic, Mesozoic, and Tertiary rocks dip away from the dome. The best known features of the Hills include Mt. Rushmore National Park and the Homestake Gold Mine (no longer functioning as an active mine). They are also home to Wind Cave National Park and Jewel Cave National Monument while Devil's Tower National Monument lies just outside their perimeter. Harney Peak at 7244 feet is the highest point in the Hills.



Fig. 1. Rocks of the White River Group exposed at Badlands National Park in South Dakota. Photo courtesy of The Virtual Fossil Museum.

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Surrounding the Hills on the plains of South Dakota, Colorado, Nebraska and Wyoming are a series of badly eroded Cretaceous and Tertiary badlands. The exposed Cretaceous rocks are primarily represented by the Pierre Shale (deep water marine), the Fox Hills Formation (near shore to beach representing the final regression of the vast Western Interior Seaway), and then a series of formations representing fluvial to deltaic to swamp to brackish water deposits such as the Hell Creek, Fort Union, and Lance. Some of

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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 miner-alogy, 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.

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Colorado Federation of Gem & Mineral Societies (CFGMS)

Colorado Springs Mineralogical Society Founded in 1936 Lazard Cahn Honorary President

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these units span the Cretaceous-Tertiary (K-T)

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boundary and several have significant reserves of coal. The overlying Tertiary rocks include the well-known White River Group of Eocene and Oligocene age overlain by several units of Miocene and Pliocene age.

Fig. 2. Red Shirt Table, Shannon County, South Dakota. The White River Group forms the "badlands" in the background while Miocene age rocks cap the table. Photo courtesy of "freyawin" at <u>http://www.panoramio.com/</u>

The best known Tertiary rocks in South Dakota are those of the White River Group exposed along the White River at Badlands National Park south of Kadoka (#152 on I-90) and Wall (#109 on I-90), South Dakota (Fig. 1). However, to me the most interesting areas of Tertiary rocks are found around the perimeter, and external, of the park at a series of tables and buttes such as Porcupine Butte, Sheep Mountain Table and Cuny Table (Fig. 2). Most of these tablelands have rocks of the White River Group at or near the base overlain by prominent escarpments of Miocene rocks. These cliffs are ledge forming and contain a high percentage of volcanic ash blown in from the west.

One of these buttes in southwestern South Dakota, Rattlesnake Butte, has been known since the 1800's as a source for calcite sand crystals, a really interesting "member" of the calcite family. Essentially, the crystals are composed of sand, perhaps ~60%, and calcite, approximately ~40%. They occur



Fig. 3. Calcite sand crystals, South Dakota. The largest cluster (upper) is approximately 8.3 cm. in length. Photo courtesy of WorthPoint.com.

as double terminated, hexagonal scalenohedradon crystals sometimes modified by rhombohedrons (Fig. 3).



Crystals range in length from less than one inch to perhaps 15-20 inches (these are rare). The crystals are found in a bed of coarse sandstone, about three to four feet in thick-

Fig. 4. Sandstone layer containing calcite sand crystals on the summit of Rattlesnake (Snake) Butte. Photo courtesy of U. S. National Park Service.

ness, at the top of the butte, probably in the Miocene Arikaree Group (Fig. 4). Wanless (1922) believed the crystals were formed post-deposition by the action of ground water in eolian (wind blown) sands, perhaps in a spring environment with pressure from overlying rock. Newer studies using petrographic and scanning electron microscopes (Cirone and Law, 2005) indicated that the compaction of the sand grains was minimal and that presumed fluid pressure was higher than normal groundwater flow. In other words, they seemed to rule out the spring water theory of Wanless but failed to provide an adequate explanation for the crystal formation! I have searched the recent literature but have been unable to locate additional new information concerning these amazing crystals (Fig. 5).



Fig. 5. Cluster of calcite sand crystals from Rattlesnake Butte (size is approximately 16 x 14.4 cm.). Photo courtesy of Rob Lavinsky, <u>iRocks.com</u> – CC-BY-SA-3.0

Other calcite sand concretions are known from only a few localities around the world, including the Imperial Valley-Salton Sea area of California. Here, the secondary growth of large calcite crystals has cemented together grains of the surrounding sand and "spikes" (non crystal shape) are formed. In Monterey County, California, a locality in Tertiary rocks at Cholame Hills produces very poor calcite sand crystals, many of which are twinned. Better formed calcite sand crystals are known from Fon-



Fig. 6. Calcite with sand inclusions from Fontainebleau, France. The largest specimen is about 8x15cm.

tainebleau, France; however, these crystals are rhombohedral in nature (Fig. 6). And finally, the folks at Minertown Minerals (<u>www.minertown.com</u>) have for sale a nice specimen of calcite sand crystals

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from Saudi Arabia that appear to be clones of the South Dakota specimens. However, I could not find additional information concerning the geology of these crystals.



Fig. 7. Hexagonal sand calcite crystals from Saudi Arabia. Cluster is ~14.6 cm. in length. Photo courtesy of Minertown Minerals.

Now, this added disclosure statement: *The Rattlesnake* (Snake) Butte calcite sand crystal locality in South Dakota was designated as a National Natural Landmark (NNL in 1967). The National Park Service acts as a steward for the National Natural Landmarks Program. Rattlesnake (Snake) Butte is managed by the Oglala Sioux Parks and Recreation Authority and is located on the Pine Ridge Indian Reservation. It is illegal to collect or sell fossils, artifacts and minerals on reservation land without a permit from the tribe.

So here is my suggestion---since collecting the South Dakota calcite sand crystals has been illegal since 1967 it might be wise to purchase a specimen on the open market or at your favorite rock shop. They make quite interesting display specimens and are very unique. Get them while they last!

As I think about these long ago field trips to South Dakota I am reminded of that great American philosopher, Yogi Berra, who wisely stated, *It's like déjà-vu, all over again*.

REFERENCES CITED

Cirone, A. and E. Law, 2005, Microstructure of Calcite Sand Crystals and Implication on its Crystallization Process (abst.): Geological Society of America Abstracts with programs, v. 37, no. 1, p.59.

Wanless, H. R., 1922, Notes on Sand Calcite from South Dakota; American Mineralogist, v. 7, pp. 83-86.

Christmas Party Donations

On Sunday, 11/7/10, Yam went over to the home of Richard Mitchell and picked up about 7 boxes of rocks, minerals and fossils that Richard is donating to the Club. Some of the items are a bit unique and we can probably get most of the material for our Holiday Silent Auction and Door Prizes out of what he gave to us. There is also a box of grits for rock tumbling grit. Richard has not been a member of our club, but spends part of the year in Colorado Springs and part in Arizona. He is retired military and some of his collection was collected on military bases including some petrified wood from the Yuma Proving Grounds. He inferred that he has a geology background and has worked with kids in the past talking to them about geology and collecting.

Many thanks to Yam for taking the time to gather this donation, and many more to Mr. Mitchell—these items are sure to be a hit at the Christmas party.

Ch-Ch-Changes to Schedules, Meetings, etc.:

There will be no meeting of the **Micro-Mounts Group** in either November or December. Meetings will resume in January based on the current schedule. See the October minutes for more info.

Lapidary Club: The lapidary equipment is in Sharon Holte's garage. The three electrical lines are in. All of the equipment could be plugged in.

This needs to be a working session for a bit. One of the casters needs to be put back on the big saw. It croaked when Bob and Sharon unloaded it. However, it has been repaired and is ready to install!

We will also need to move a two-drawer filling cabinet. Where, I do not know yet! But it needs to be moved.

We need to work on one of the machines, as well. The motor is there and a new hinge to mount it. However, we still need to figure out what we need to order in the way of sanding belts, grit and such.

Meetings will be from 10:00 a.m. to 4:00 p.m., the second Saturday of the month, at 6811 Mission Road, Colorado Springs, CO 80915.

Many thanks to Sharon for stepping in for Jennifer Bailey, who, unfortunately for us, moved to Denver.

Club Wire Wrappers: If you are looking for some tips on how to wire wrap - see the videos at <u>http://www.eksuccessbrands.com/joleesjewels/</u> <u>creative/videos.html</u> If I can help in any way to answer your wire wrap questions please contact me at Bill Arnson 719-337-8070..

Ancient Artifacts: Ornamental Beads from Egyptian Tombs

By Chris Retzlaff, Victor Gordillo, Kyle Helmick, Krystal Arnold, Cameron Jesse, Kurt Lahmers, Victoria Arnold, Luke Sattler (**Colorado Springs Mineralogical Society Junior Group**)

Ancient Egypt flourished along the Nile River for over 3,000 years. During that time Egyptians built pyramids and temples, mummified pharaohs, put up obelisks, and created wonderful works of art. Egyptian art also included brightly colored beads in a variety of shapes and sizes. These beads were made of gold, copper, and semi-precious gemstones and were put together in elaborate ways.

The use of beads goes far back into antiquity and is an expression of behavior unique to man. Beads were among the very first manufactured products. The bead was perfect to help satisfy the basic need for personal adornment. The artistry of design, rich colors, durability, play of light, and natural materials has given the bead a unique status in personal adornment.

In ancient Egypt, beads were worn for both decorative and symbolic purposes. There is evidence that beads had symbolic meaning, had a spiritual and magic dimension, and were believed to have a link with supernatural powers.

Beads in ancient Egypt were fashioned by craftsmen and were used chiefly for necklaces. Egyptians strung beads together into a wide, fan-shaped necklace called bead collars.

Egyptian beads were often a ceramic or glazed clay (faience) bead. Beads were also made from semiprecious gemstones. Craftsmen used agates, amethyst, calcite, carnelian, feldspar, jade, jasper, lapis lazuli, and turquoise when making beads. Most of the gemstones were native to Egypt. Craftsmen would take long trips into the deserts in search of rocks, gems, and minerals. Once located, they would spend considerable time in the excavation of natural materials used to make beads.

Bead making was documented on the wall paintings in the tomb of Rekhmire which depicts craftsmen stringing beads and drilling holes with a bow drill (Coles, 1995). Craftsmen skillfully formed beads into a variety of shapes and then polished them. Some beads were inscribed with symbolic markings.

Since the strings that held beads together were made of organic material, they would rot away over the centuries, leaving the beads scattered with no clues to their original order. Recently, the Colorado Springs Mineralogical Society's (CSMS) Junior group and the Lake George Gem and Mineral Club's (LGGMC) Pebble Pups worked with ancient Egyptian beads that were found in a tomb as a study project. This collection of artifacts, over 3,000 years old, was purchased from an antiquities dealer located in the Midwest.

The study group worked with beads made of garnets, lapis lazuli, chalcedony, and copper. The group studied 10 beads. For each bead, they recorded the size, weight, color, raw material, and shape (Table 1). Raw material identification was based on tests and observation under a binocular microscope with a magnification of 40X.

| Table 1. Morphometry | | | | |
|----------------------|--------------|------------------|--------|------------------|
| Bead number | Material | Shape | Length | Weight, grams |
| 1 | Chalcedony | disk | 12 mm | .20 |
| 2 | Copper | Long cylinder | 9 mm | .16 |
| 3 | Garnet | Sphere | 3 mm | nd |
| 4 | Garnet | Sphere | 3 mm | nd |
| 5 | Garnet | Sphere | 3 mm | nd |
| 5 | Garnet | Spherical/facets | 4 mm | nd |
| 6 | Garnet | Spherical/facets | 4 mm | nd |
| 7 | Garnet | Spherical/facets | 4 mm | nd |
| 8 | Lapis lazuli | Short cylinder | 6 mm | .09 |
| 9 | Lapis lazuli | Long cylinder | 7 mm | .10 |
| 10 | Lapis lazuli | Long cylinder | 9.5 mm | .15 |

The location and archaeological context was lost as the beads were excavated in the 18th and 19th centuries and sold on the antiquities market. These beads, because they were made of semi-precious gemstones and of ancient Egyptian origin, will serve the purpose of this study and give the CSMS and LGGMC junior groups practice in research, laboratory procedures, and report writing.



Figure 1. This red garnet bead with complex faceting has made its way through the centuries to the present. Faceted garnets are little works of art. Photomicrograph by Patrick Glover.

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Garnet

Egyptian craftsmen worked with a group of minerals called garnet. The garnet that was commonly used by the Egyptians was a dark red, translucent semi-precious



Figure 2. The making of garnet beads is labor intensive. Garnets are a very hard material. Photomicrograph by Auston Mammenga.

gem found in Egypt, mainly at Aswan, in the eastern desert. The garnets were worked into small spheres or had multiple facets.

Garnets are commonly found in schist or gneiss (Bishop, et al., 2005). There are many kinds of garnets such as spessartine, uvarovite, hessonite, grossular, almandine, melanite, and pyrope, which is what the beads in figures 1 and 2 are made of.

Because the chemical composition of garnet varies, this mineral shows a range of hardness on the Mohs scale of



Figure 3. Disk bead of carnelian. The yellow-orange color is from iron oxide impurities. Photomicrograph by Kyle Helmick.

about 6.5 to 7.5.

Carnelian

Carnelian, a variety of cryptocrystalline quartz, occurs in a number of places in Egypt. This reddish-brown mineral was used in ancient Egypt for beads, pendants, jewels, and scarabs. The Egyptians believed that the stone could fight anger, hate, and envy.

People of high social status were often buried with this gemstone. The orange to brownish-red color comes from iron impurities. The hardness is 6.5-7 and specific gravity is 2.58-2.64. Carnelian has no cleavage and un-

even fracture. Carnelian was used in lapidary arts for its pretty color and hardness. The world carnelian is from the Latin word *carnis*, meaning flesh for its fleshy muscle color. (Bishop, et al., 2005).

Lapis lazuli

The most precious of all material used by Egyptian jewelers was lapis lazuli, a dark blue gemstone with flecks of pyrite. Lapis lazuli is not a mineral but a rock comprised of the minerals lazurite, calcite, pyrite, and sodalite. Lapis Lazuli with no calcite and only small amounts of pyrite has a greater value. Lapis Lazuli has no cleavage and the fracture is uneven. On the Mohs scale of hardness, it is 5 to 5.5. The luster is dull and



Figure 4. Cylindrical bead of lapis lazuli. Lapis lazuli, prized since antiquity for its blue color, is a contact metamorphic rock with variable composition and varying physical properties. Photomicrograph by Victoria Arnold.

the streak is light blue.

Lapis lazuli was used by ancient Egyptians for jewelry, carvings, medicine, and perhaps ground to a powder and used as eye shadow. Lapis lazuli is rare, and was traded to Egypt from the area that is now Afghanistan (Coles, 1995). Other places it is mined are Chile, Russia, Angola, Myanmar, Canada and even a few places



Figure 5. Close-up view of a lapis lazuli Egyptian bead. The mineral pyrite is clearly seen. Lapis lazuli has been prized since antiquity for its blue color. Photomicrograph by Cameron Jesse.

in the United States like California and Colorado.

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WMMI HAPPENINGS

225 Northgate Blvd. Colorado Springs, CO 80921

Main: 719.488.0880 Toll Free: 800.752.6558

Hours: 9 a.m.-5 p.m., Monday-Saturday (June-August) 9 a.m.-4 p.m., Monday-Saturday (September-May) Daily Guided tours at 10 a.m. and 1 p.m. (included in admission).

The Western Museum of Mining and Industry is a private, nonprofit museum founded in 1970. We educate over 8,000 school children a year on the importance of mining in the American West.

Help us Fill an Ore Cart, December 1-18,

9:00a.m. - 4:00p.m. Avoid the hectic pace of the holidays and celebrate like the miners of the 1800's. Miners would gather with their community and give back to families in need. Donate a new unwrapped toy for Toys for Tots and enjoy one complimentary admission when a second admission of equal or greater value is purchased. Museum tours begin at 10:00 a.m. & 1:00 p.m. More information can be found on our website at <u>www.wmmi.org</u> or call 719-488-0880.

Last Days: Margaret Whiting Exhibit – "Laws of the Land"

Ends December 30th, 9:00a.m. - 4:00p.m., Laws of the Land will exhibit work by artist Margaret Whiting! Margaret Whiting explores contemporary issues related to land use and encourages thoughtful consideration of the laws that regulate our relationship to the land by highlighting phrases and words in the text of law books to build new statements. Related programming will explore the history and future of the Mining Law of 1872. The exhibit runs until December 30. For more information please visit <u>www.wmmi.org</u> or call 719-488-0880.



The Gold Assay Process: Magic or Chemistry?

Saturday, November 27, 10:00 a.m. & 1:00 p.m. Gold does not come out of the ground ready to wear. Join us at the Western Museum of Mining & Industry to discover how ore is proceeded to extract gold. Hands-on learners of all ages will crush and classify ore as they learn the basics of gold ore assaying-determining the value of gold in the rock. This fast moving, interactive "cold" assay demonstration will overview the math, mechanics, and chemistry of this exciting process. Customary admission applies, and reservations are requested. Please call 719-488-0880 or email us at <u>RSVP@wmmi.org</u> to secure your spot.

Happy Holidays—Join in on the Annual Fun:

COLORADO SPRINGS MINERALOGICAL SOCIETY ANNUAL HOLIDAY GATHERING

THURSDAY, DECEMBER 16, 2010 7 P.M. UNTIL 9 P.M. at the Colorado Springs Senior Center, 1514 N Hancock Ave., Colorado Springs CO 80903.

All CSMS members are encouraged to gather at the Colorado Springs Senior Center for an evening of fun, food, and friendship. This year we will try something a little different. We will have a Silent Auction that will run the entire evening. We will also be awarding door prizes to those present at 15 minute intervals.

For food, we are encouraging all those who attend to bring a "hearty" appetizer or a nice dessert to share with your friends. Beverages will be provided by the Club.

We will set up the room with some tables and chairs to make it more pleasant for conversation and enjoying the wonderful food brought by all of you.

Since it is the end of a wonderful collecting season, we are encouraging any of you who wish to bring some special item(s) for the Silent Auction or for "Show and Tell."

Please try to attend and be part of the festivities.



THINGS TO DO FROM CSMS MEMBER PETE MODRESKI

Thurs.-Fri., Nov. 18-19, for science educators, the **Colorado Science Conference** is a professional development conference for science teachers. It's held at the Denver Merchandise Mart ; for registration and more information see <u>http://coloradocast.org/</u> <u>professionaldevelopment.php?page=overview</u>. A worthwhile event for anyone involved in teaching science! The 2010 theme is "Science: What Works for You?".

Sat., Nov. 20, 12 noon - 4:00 p.m., Littleton Gem and Mineral Club Silent Auction. "All are welcome to come, no admission charge; minerals, jewelry, gemstones, lapidary, books, fossils, etc.; light refreshments served; special verbal auction." Columbine Hills Church, 9700 Old Coal Mine Road, Littleton (SE of intersection of S. Kipling and Old Coal Mine Ave.).

Sun., Nov. 21, 1:00 p.m. plus optional lunch beforehand, "Palynology and the Florissant Mammoth", a meeting in Woodland Park, CO of an informal group, the Florissant Scientific Society (FSS), which meets monthly and to which all interested persons are always welcome to come: "We will meet at the Casa Grande Restaurant in Woodland Park at 11:30 for lunch, then report to the Woodland Park Library conference room at 1:00 (upstairs) for a lesson in palynology presented by Steve Veatch. Steve has been working on the pollen sample story of the mammoth skull part that was excavated from the Fossil Beds in 1996. After much sampling, testing, and analysis, he and other palynologists have ascertained that the Ice Age climate of Florissant about 50,000 years ago was much different than today's and came as a surprise. His work ties in well with the wonderful excavation at the Snowmammoth (SnowMass Village) site being excavated by the DMNS this past two weeks. SO remember: Woodland Park Library 1:00. Lunch precedes at 11:30 at Casa Grande Restaurant (just down the hill from McDonald's)."

Tues., Nov. 23, 10:30 a.m., USGS Rocky Mountain Area Seminar Series, **Scientific Ocean Drilling: Past, Present, and Future**, by Ian Ridley, USGS, Denver. Building 25, Lecture Hall (near the Bldg. 25 cafeteria; enter from the east side, center of the building; *please note, this is a <u>new</u> building location for this lecture series*); Denver Federal Center, Kipling St. south of 6th Avenue, Lakewood CO. All interested persons are welcome to attend these talks; please enter the Federal Center via the Main Gate (Gate 1) on Kipling St. just north of Alameda; turn right on First Street, continue north on First Street for 3 blocks, and park in the large lot east of Building 25. **Tues., Nov. 30, 7:00 p.m.,** Friends of Dinosaur Ridge "Fireside Chat", **The Dinosaurs' Last Seashore ,** by Gary Raham, Author/Scientific Illustrator. At Lutheran Church of the Master, NE corner of W. Jewell Ave., W. Alameda Ave., & Bear Creek Parkway. "Gary Raham has authored, designed, and illustrated many books, including two recent FODR publications—The Legacy of Arthur Lakes, and Colorado's Dinosaur Artist, A Tribute to the work and world of Paul Koroshetz. Join Gary with his mysterious time traveler, J., as they explore the world of the Cretaceous Interior Seaway." Free and, of course, open to the public.

Tues., Dec. 7, 10:30 a.m., USGS Rocky Mountain Area Seminar Series, Insights into the Origin and Evolution of Continental Magmatism at the Mid-Tertiary Never Summer Igneous Complex, Colorado, by Lang Farmer, University of Colorado, Boulder. Building 25, Lecture Hall (*please note, this is a* <u>new building location for this lecture series</u>), Denver Federal Center, Lakewood CO. All interested persons are welcome to attend these talks.

Fri-Sun, Dec. 10-12, Flatirons Mineral Club Show, Boulder County Fairgrounds Exhibits Building, 9595 Nelson Rd. (Nelson & Hover), Longmont, CO; Fri. 10-6, Sat. 9-5, Sun. 10-5; Age 13 and up \$3 on Friday, \$5 on Sat. and Sunday, 12 and under free with paid adult. Held in conjunction with the Boulder Model Railroad Club Annual Show, Dec. 11-12. For more info see http://bcn.boulder.co.us/community/fmc/fmcshow.htm

Lake George Gem & Mineral Club Happenings:

Below find our three recurring dates for the new year and of course this year too.

1 -- Second Sat of every month at the Community Center, Lake George 10 am till May when it changes to 9 a.m. (to accommodate a field trip in conjunction with our regular meeting). There is always a program or field trip.

2 -- Second Tuesday of every month is our Pebblepups meeting at the Community Center, Lake George. This is a great way for kids 7-14 to get exposure to the wonderful world of rock hounding. Education, rock identification, field trips, and even writing scientific papers are some of the numerous activities along with building their own rock specimen sets.

3 -- The Annual Rock and Gem Show is on Hwy 24 next to the Post Office, in Lake George. Many dealers attend and there will be many things to look at and enjoy. There is always a free rock for kids, and this show is a great source for handmade jewelry and rock specimens. AUGUST 19, 20 21.

PICKETWIRE CANYON FIELD TRIP

PHOTOS AND NARRATIVE BY RICHARD LACKMOND

I took a change from digging to looking. Yesterday I went to Picketwire Canyon in southwest Colo., about 25 miles from Oklahoma.

This is the site of the largest dinosaur footprint tracks in the world. They were discovered in the 1800s but not recognized until 1952 by a grammar school class project. Picketwire Canyon is now a national monument, and the tracks aren't completely uncovered but expected to have (by ground radar imagining) to have over 1500 footprints, ranging in size from 24 inches down to 2 inches.

The nearest town is 42 miles away on roads like this. There are 13 cars in-front of me. No rain since Feb. of this year. Also, this is a part of the area of the famous Dust Bowl of 1938.



When we finally got down into the Canyon, the temperature went up 10 degrees to 76.



The first thing we found was this wall with 1500 year old pictographs on it - Indian - done by picking the patina and not by pigment.



The scientists think it is a reference pictograph--the circle means here and the vertical marks mean multiple times conformation of animal sightings



The assumption here is this was a different kind of antelope with straight antlers or a poorly chiseled deer.



Next, we found this hole:



It was just a big sandstone rock that fell from the top sometime in the past, and the hole was created by the wind and dust.



Here's an arch cut by the wind:



Then we arrived at the Purgatory River, named because the Spanish explorers visiting had killed their leader and the priest traveling with them would not go on, so he left and went back to Santa Fe, sentencing them to go to Purgatory.



The .2 mile walk led us to this plain, and we were standing on dinosaur tracks!



They were big,



little,



and numerous!



Another shot of the river—underwater ripples are where the water is flowing fast.



Here's a cemetery- last date was 1895, which was also the timeframe at the end of the Dust Bowl. Note: the cross in the backwall of the chapel is the original.



We are finally going home at 5:40 p.m., got home at 9 p.m.



This is a telephone pole installed in 1880 to a ranch in the valley.



PRESIDENT'S CORNER

by Ron Yamiolkoski, CSMS

Greetings folks!

No snow yet. I imagine some of my friends are still out there finding goodies. This fall has sure been amazing. I know we are living on borrowed time, so every-

one enjoy it while you can. The official field trips are over for the season, but because of the RMFMS Conference/Pikes Peak Gem & Mineral Show/Rock Fair at WMMI next year we will be putting together a bunch for next spring, summer and fall. I'll be checking with folks early to make it all happen.

November is election month for both politicians and CSMS. We did not assemble a Nominating Committee this year, so we will be running the elections on the floor at the November General Assembly meeting. I urge you all to attend this important meeting because virtually all positions are up for grabs. As I have said several times, I will not be running for President, but will instead take the position of Past President which has not had representation in some time. We need officers to run the club, so please step up to the plate. Self nominations will not be discouraged!

The Holiday Party (December 16th) has long been a tradition of CSMS. Last year there was some concern about the White Buffalo portion of the event. A lot of folks felt it dragged on too long and that there was too much re-gifting of non-club appropriate items. Things like shampoo and dishes didn't make members feel happy about what they got or the process. I see two ways around this. One is to not have the White Buffalo or to just insist that only "Club Appropriate" items be shared. Perhaps we could just have a gathering with some nice treats (beyond cookies) and share each other's company. It would also be fine to do a little rock swapping. Let me know your thoughts either by e-mail or at the November meeting and we'll try to make the event a little more fun for all.

The Annual Banquet in January will be a bit different this year. We are planning on having it catered at the Senior Center. The Club will supply soft drinks at no additional charge and we have arranged for those of you who wish to bring their own wine and/or beer to do that without breaking the law. No hard stuff allowed in the Senior Center. We will also have a cake to celebrate the 75th Anniversary of the Colorado Springs Mineralogical Society. Plan to be there and share this wonderful evening with your friends and fellow rockhounds.

In case some of you missed the announcement at the last meeting, Sharon Holte will be taking over the Lapidary Group. She is in the process of getting her garage ready and having the equipment moved there. Many thanks go to Jennifer Bailey for being our host for these many months. She has sold her house and has taken a job up in Denver. I truly hope that we still get to see her. If you do, please say thanks. In the meantime, let's give a big thanks to Sharon for being our new Lapidary Chair. (Special thanks to Bob Germano for moving around equipment for us again.)

Don't forget, if you want to help with next year's "**BIG SHOW**", the Show Committee meets the 3rd Thursday of each month (except January) at the Senior Center at 6:30 PM (before the regular meeting). We need lots of help because of the complexity of the event and the two venues. If a lot of people take small pieces of the effort, it will not be as hard on a few.

Have a happy Thanksgiving,

Yam



RMFMS PRESIDENT'S LETTER

BY BILL SMITH, RMFMS

On hiatus until next month, Bill



ASK A GEOLOGIST BY MIKE NELSON, CSMS



Keri write: Rockguy, can you tell me what glauberite pseudomorphs are? I bought one at a rock shop. Thanks.

Thanks for the question, Keri. I will try to give an answer without being too technical; however, some knowledge of chemistry would be helpful.

One of the more interesting groups of minerals is those termed pseudomorphs, or false form minerals. Essentially a new mineral recrystallizes and replaces the original mineral. During this chemical change the replacing mineral takes on the crystal form of the original mineral and that crystal form commonly is atypical for that particular replacing mineral. That is, the shape of the original mineral is maintained by the replacing mineral.



easiest to observe when one examines pyrite cubes that are replaced by goethite (Fig. 1). In this reaction, pyrite, the iron sulfide (FeS₂), has the sulfur ions replaced by oxygen and hydrogen and the result is a new mineral goethite (FeO(OH)), an iron oxyhydroxide. Pyrite crystallizes in the cubic

This process is perhaps

Fig. 1. Pyrite cubes replaced by goethite—a pseudomorph. Photo by author.

crystal system with the actual crystals commonly manifested in cubes, octahedrons, and pyritohedrons. Goethite is orthorhombic and commonly occurs as needle-like crystals or in a massive form. Pelican Point on Utah Lake near Provo is a world class collecting locality for these pseudomorphs. What one observes are beautiful cubes, originally pyrite, but now goethite (Fig. 1). I collected crystals many decades ago but am now uncertain as to the land status and collecting possibilities.

Another common pseudomorph is the replacement of pyrite by limonite. In this scenario, pyrite, an iron sulfide (FeS₂), oxidizes in either air or water, loses the sulfur ions and forms an oxide-hydroxide, limonite (FeO(OHO-nH₂O)). However, the confusing part is that limonite is not actually a true mineral but a mixture of iron minerals including goethite! So, I often have a difficult time identifying limonite from goethite in these pseudomorphs. Goethite seems to be shiny black whereas limonite is more of a yellow brown color. So, I have some pyrite pseudomorphs that have an inner black color but a yellow-brown surface so I presume this is limonite! Or is it goethite?

Both azurite and malachite are quite recognizable copper minerals with azurite blue in color and malachite the bright green. Both are copper carbonates with azurite $(Cu_3(CO_3)_2(OH)_2)$ crystallizing usually as prismatic crystals while malachite $(Cu_2CO_3(OH)_2)$, crystals are often slender prisms. Azurite is unstable and with weathering some of the carbon dioxide (CO_2) chemically changes into water and the +++copper cation becomes ++copper cation. A fairly complex chemical change for such beautiful minerals. Near Lake George in the pegmatites of the Pikes Peak Batholith, hematite is a pseudomorph after siderite. Hematite is an iron oxide (Fe_2O_3) and often a weathering product, in this case of siderite, an iron carbonate ($FeCO_3$) with a rhombohedral form.

Keri, the pseudomorphs you inquired about form when calcite, aragonite or gypsum replace the mineral glauberite, a sodium calcium sulfate $(Na_2Ca(SO_4)_2)$. You might recognize the name similarity between glauberite and Glauber's salt, the latter a



Fig. 2. Calcite pseudomorph after glauberite. Specimen is ~5 cm. in length. Photo by author.

sodium sulfate decahydrate (Na₂SO₄-10H₂O), for which the mineral was named. In past years some glauberite was mined to produce Glauber's salt, a substance used in the chemical industry. Glauberite itself is mostly colorless to cream to gray in color, rather soft at 2.5 on the Moh's Scale, and has a white streak. What is impressive about the mineral is the unmistakable, large, well-formed, tabular- to wedge- shaped crystals that define the mineral (Fig. 2). This characteristic shape seems enough to distinguish the mineral from others. However, there is a problem--glauberite is unstable and often is replaced by other minerals producing pseudomorphs and they seem more common in the record than true glauberite crystals!

Fig. 3. A salt mine and gypsum mine in the Verde Formation indicate deposition of evaporitic minerals in the lake. Map from Ayres (2009).



Most of the glauberite pseudomorphs on the market have been collected from near Camp Verde, Arizona, north of Phoenix. At this locality exposures of the Verde Formation are well-exposed in an abandoned salt mine (Fig. 3). The Verde was deposited in a large lake (Fig. 4) that occupied a tectonic basin in central Arizona during the Pliocene and Pleistocene epochs, approximately two to eight million years ago. Near the end of the lake cycle the water became quite saline and evaporitic minerals such



Fig. 4. The Verde Formation was formed from the sediments of a freshwater lake that filled the basin 2.5 million years ago. Map from Ayres (2009).

as halite and glauberite were deposited.

Continued on Page 12

Continued from Page 11

I am uncertain about the chemistry but sometime in the last two million years carbonates,

calcite (CaCO₃) and aragonite (CaCO₃), or a sulfate, gypsum (CaSO₄-2(H_2O)), replaced the unstable glauberite as a pseudomorph. I presume that groundwater percolating through the sediments and rocks provided the appropriate replacing elements.

In my collecting at the salt mine I was able to secure: 1) a beautiful large specimen of several crystals of gypsum that were pseudomorphs of glauberite (Fig. 5) and a "typical" crystal of calcite pseudomorph after





Fig. 5. Gypsum pseudomorph after glauberite. Specimen is ~10 cm. in length. Photo by author.

an Arizona geologist identified as thenardite (a mineral that was unfamiliar to me). Thenardite is a sodium sulfate, Na_2SO_4 , that also precipitates in evaporitic lakes and playas. Interesting, but perhaps confusing to non-geochemists, are the facts that thenardite: 1) is the salt of sulfuric acid; and 2) and becomes Glauber's salt with the addition of water!



Fig. 6. Glauberite crystal dyed with copper sulfate and marketed as "malachite pseudomorph after glauberite". Photo courtesy of www.the-vug.com.

A couple of other interesting comments about glauberite might be in order. In New South Wales, Australia, opal is found as a pseudomorph after glauberite. At Watchung, New Jersey, both prehnite (a calcium, aluminum phyllosilicate, Ca₂Al(AlSi₃O₁₀) (OH)₂)) and quartz (SiO₂) occur as pseudomorphs after glauberite in basalt cavities. A scam reported by The Vug (http://the-vug.com/) concerns the sale of "malachite pseudomorphs after glauberite" (Fig. 6). Actually these crystals were the calcite pseudomorphs dyed with a solution of copper sulfate. And, if you need to communicate more closely with the outside world consider wearing some glauberite around your neck as, glauberite appears to confer the ability of human skin to receive information more directly from the environment. This appears to shift how you interface with the world, affecting sense of touch, sense of embrace, willingness to receive information from anything you should touch... The ability to communicate with ob*jects is also enhanced*...(Pegasus Products, Inc). However, the photo with this quote appears to be a calcite pseudomorph rather than true glauberite but perhaps both minerals enhance communication skills. Let me know if this works for you!



Fig. 7. Drainage and location map of the Salton Sea. Map courtesy of Wikimedia Commons.

And finally, last winter I was fortunate in being able to camp on the shoreline of the Salton Sea in south central California. This is a fascinating geological area as the Salton Sea is a saline lake located directly on the San Andreas Fault in a tectonic basin 226 feet below sea level. The trough has been occupied by a series of lakes for the last two or three million years and ancient

shorelines are quite evident. However, prior to 1905 the basin was "between lakes" and the area was dry. In that year heavy precipitation caused the Colorado River to flood, overflow some head gates, and head north! For something like two years the Colorado River flowed into the Salton Sink, rather than the Sea of Cortez, and created the Salton Sea (Fig. 7). Today, water levels are receding with the major input being seepage from crop irrigation (bringing phosphates, nitrates, and "salt"). Since the lake does not have external drainage, the water is quite saline (44 ppt compared to the Pacific Ocean's 35 ppt) and life seems restricted to the fish, tilapia. Past lakes were also saline and typical evaporitic minerals such as halite and glauberite were deposited. I was able to collect samples.

I am somewhat out of my realm of comfort here since I am not a mineralogist or geochemist and do not fully understand some of the processes taking place during the formation of pseudo-morphs. However, the glauberite pseudomorphs are quite interesting and make excellent display specimens. For additional information on the Camp Verde specimens please see Thompson (1983).

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Ayres, S., 2009, The Verde Formation: A Story That Holds Water: Verde Independent (newspaper), November 18, 2009.

Thompson J. R., 1983, Camp Verde Evaporates: Mineralogical Record, Vol. 14 No. 2, p. 85-90.



From Egyptian Beads article by CSMS Juniors.

Continued from Page 5

Copper

The civilization of Ancient Egypt was one of the most technologically advanced civilizations of their time. During their existence they went from using stone to more advanced metals like iron. The Egyptians' Chalcolithic Period, or Copper Age, lasted from around 4000 B.C. to 3150 B.C. (Reshafim, 2003).



Figure 6. This ancient copper bead was beaten into this shape by Egyptian craftsmen. Copper was for everyday use in ancient Egypt. Photomicrograph by Victor Gordillo.

There are many applications of copper. In the Egyptians' case, the first use of copper was to make beads and small tools (Reshafim, 2003). Copper was also used in the making of the only remaining Ancient Wonder of the World, the Giza Pyramid, along with the other pyramids. Egyptians formed copper into small wedges that were pushed into fractures in the rock in order to break them into usable sizes for pyramid building (Morell, 2001). Furthermore, masons used copper



Figure 7. Copper in Egypt often contained natural arsenic, making the copper particularly hard. The dry climate of a dark Egyptian tomb kept this bead from corroding. Photomicrograph by Victoria Argrooves in rocks before quarrying (Morell, 2001). Not only was copper used for beads and tools but later on copper was used in everything from weapons, vessels, and plates to axes, statues, and knives Reshafim, 2003).

to

cut

blades

In order to use copper though, the Egyptians first had to discover it, mine it, smelt it, and cast it. Copper was mined all over their territory. Copper mines were located at Buhen, Hamash, Wadi Araba, Wadi Sitra, and Serabit el-Khadim in the Sinai Peninsula (Quirke, 2001). Egypt also imported copper from Cyprus and the Near East (Quirke, 2001).

Once mined, the process of smelting began. Copper was melted in primitive furnaces which were heated from charcoal made from acacia wood (Reshafim, 2002). The ventilation for these furnaces was initially provided by blow holes and later by bellows (Reshafim, 2002). As soon as the copper was melted it was casted by lifting the pot off the fire and pouring the molten copper into a clay mold, which created the copper item (Reshafim, 2002).

The Egyptians use of copper helped them advance their civilization to great achievements. One of those achievements can still be seen today: the Pyramid of Giza.



References: Bishop, A.C, Woorley, A.R., and Hamilton, W.R., 2005. Guide to Rocks & Fossils, Firelfy Books. 336 p. Coles, J., 1995. Fun with Beads Ancient Egypt, The Metropolitan Museum of Art, New York, 96 p.

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Quirke, Stephen., 2001. Digital Egypt for Universities. Copper in Egypt. [Online] University College London, 2001. [Cited: April 2, 2010.] http:// www.digitalegypt.ucl.ac.uk/metal/copper.html#. Reshafim, Kibbutz., 2002. Foundry Workers. An Introduction to the History and Culture of Pharaonic Egypt. [Online] 2002. [Cited: April 2, 2010.] http:// www.reshafim.org.il/ad/egypt/trades/ bronze_casting.htm.

-., 2003. Metals: Sources, Technologies, Uses. An Introduction to the History and Culture of Pharaonic Egypt. [Online] 2003. [Cited: April 2, 2010.] http:// www.reshafim.org.il/ad/egypt/trades/metals.htm. Author contributions: designed research, performed the research, analyzed the data, and wrote the paper. These students worked under Steven Veatch, leader for the CSMS and LGGMC youth.

CSMS FIELD TRIPS

Field Trips for 2010 have already come and gone—were you able to participate? As usual, check the CSMS website (<u>www.csms.us</u>) for the latest list of Field Trips. Also, if you have an idea about a field trip or would like to lead a field trip, contact Yam our Field Trip Chair at <u>ron.yamiolkoski@aecom.com</u>. We are looking for ideas and leaders for the 2011 Field Trip Season!

FROM THE LIBRARY by Joni Peterman, CSMS

While Frank and Ellie are on the adventure of a life time to the land down-under, Joni Peterman is staffing the CSMS library. Remember this is your library, so CSMS members take advantage of the extensive learning resource data available.

Be sure to look at CSMS website to make your selection then Email Joni at <u>rp_colorado@hotmail.com</u> We greatly appreciate donations from everyone. We don't accept only books; bring in DVDs, videos, and magazines, anything relative to CSMS.



This is your library. We encourage all CSMS members to take advantage of our fairly extensive inventory of reading material. Check the CSMS website to make your selection then Email or call Frank or Ellie to make your request. We appreciate all mineralogical book donations.

Dave Bunk Minerals Annual Open House

We at Dave Bunk Minerals are having our annual Open House. We will have a large selection of minerals both wholesale and retail. The dates for the sale are Saturday December 4th and Sunday December 5th.

Dave Bunk Minerals Attn: Mike Jensen

1441 West 46th Ave., #8 Denver, CO 80211 303-477-6897 www.davebunkminerals.com

THE SUBURBAN ROCKHOUND

The Suburban Rockhound has taken a short hiatus—there will be 2 articles next issue. Many thanks to The Suburban Rockhound for informative and entertaining articles.

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|--------|---------------|--|-----------|---|--------|--|
| | NOVEMBER 2010 | - CSMS CALEND | DAR | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| | | | | 7 p.m. Board Meeting | | |
| 7 | 8 | 9 Micro-Mounts Cancelled until Jan. 7 p.m. Fossil Group | 10 | 11 | 12 | 13 12-4 p.m. Lapidary Group— 6811 Mission Rd., Sharon Holte's place. |
| 14 | 15 | 16 | 17 | 18 7:30 p.m. General Assembly 5:15 & 6:30 Pebble Pups & Juniors | 19 | 20 12 p.m. Jewelry Group |
| 21 | 22 | 23 | 24 | 25 7 p.m. Crystal Group 7 p.m. Faceting Group | 26 | 27 |
| 28 | 29 | 30 | | | | |

REFRESHMENTS FOR GENERAL ASSEMBLY MEETINGS Feb—Crystal May—Jewelry Aug—Picnic

Mar—Faceting June—Lapidary Sept—Projects April—Fossil July-Micromounts Oc

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| ct | t—Board | |

| | | Area Code 719 | |
|------------------------|---------------------------------|-----------------|---|
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| Secretary | Jennifer Beisel | 434-2574 | jenniferbeisel@comcast.net |
| Treasurer | Al Zelenak | 598-3515 | adzelenak@comcast.net |
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| Member-at-Large | Sharon Holte | 217-5683 | SHolte@csu.org |
| Member-at-Large | Bob Germano | 487-8945 | (gliders1@hotmail.com |
| Past President | Drew Malin | 531-7594 | advanceone@comcast.net |
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| HISTORIAN CHAIR | Brenda Hawley | 633-5702 | bghsprings@hotmail.com |
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| Social Committee Chair | Maria Weisser | 229-1587 | mariaweisser@yahoo.com |
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| WEBMASTER | Allen Tyson | 268-0775 | allentyson@yahoo.com |

Locations

Board Meeting: 1st Thursday @ 7:00p. Senior Center, David Olsen: 495-8720

Crystal Study Group: 4th Thursday of the month @ 7:00p, Senior Center; Kerry Burroughs: 634-4576

Faceting Group: 4th Thursday @ 7:00p, Senior Center, Paul Berry, 578-5466

Fossil Study Group: 1st Tuesday @ 7:00p, Senior Center, Mike Nelson, csrockguy@yahoo.com

Jewelry Group: 3rd Saturday @ 12:00p, 15610 Alta Plaza Circle, Peyton, Bill Arnson, 749-2328

Juniors & Pebble Pups: 3rd Thursday @ 5:15p & 6:30p, Senior Center, Steven Veatch, 748-5010.

Lapidary Group: 2nd Saturday @12:00p, 6811 Mission Rd., Sharon Holte.

Micromounts Group: 2nd Tuesday @ 7:00p, 1514 North Hancock, Phil McCollum, acc@frii.com, Moyra Lyne, 442-2673

Project Group: Meeting time TBD, Ron "Yam" Yamiolkoski

November 2010

PICK&PACK

OCTOBER 21, 2010 GENERAL ASSEMBLY MINUTES

By JENNIFER BEISEL, CSMS SECRETARY

The meeting was called to order by Ronald "Yam" Yamiolkoski at 7:32 PM, followed by the salute to the flag.

The approval of the September, 2010 Minutes as they appeared in Pick & Pack was postponed since the Pick & Pack went out about 3pm.

Treasurers Report - Al Zelenak

New members, Jeff & Jan Spencer, were introduced as were guests.

Chair's Group Introductions:

Fossil Study Group – Mike Nelson – meets the 1st Tuesday of every other month (January, March etc.) at 7:00 PM at the Senior Center

Micromount Group - Phil McCollum (Moyra Lyne) – meets the 2^{nd} Tuesday of the month at 7:00 PM at the Senior Center and the 3rd Saturday of each month (except December and June thru August) from 10:00 AM to 4:00 PM at 3609 Windsor Avenue in Colorado Springs, CO. The Micromounts Group has a couple of problems. First, they need a new chair. Phil can no longer make meetings on a regular basis. Anvone who would like to lead this group please contact me so we can arrange for an appointment. Second, with the unfortunate death of Randy Stapleton, we need a place to store about 75 boxes of rocks for the Micromounts group. In addition, we will need some fresh flats and help with the transportation of the materials from Marg Regel's garage. She picked them up from Randy's house and is currently storing them in her garage, but would like to have them removed before the snow flies so she can put her vehicle there.

Lapidary Group – Jennifer Bailey/**SHARON HOLTE** – meets the 2nd Saturday of the month from 12:00 PM until 4:00 PM 6570 Ramrod Road, Colorado Springs, CO. As of this coming weekend the group will be meeting at 6811 Mission Rd, COS, 1 block south of galley at Hathaway. Contact Sharon for access or questions. Bob will deliver the big saws Monday. Intend to keep same meeting time but if you have rocks to cut, call.

Librarians – Ellie & Frank Rosenberg (Joni Peterman) If you want a book get a hold of Joni.

Rock Fair Chair – Ronald "Yam" Yamiolkoski – The committee met 6:30 to 7:25 and plans are coming together well. The favors for the dinner will be pins commemorating our 75th anniversary. We'd like to get an interview for the paper rather than just an announcement.

Field Trip Chair – Ronald "Yam" Yamiolkoski -Last official FT this weekend to the Dinosaur Tracks. Social Committee Chair – Maria Weisser/Ann Proctor - We'll have a food tasting with Chef Chris in the next 3 weeks for the banquet. We'll have wine & beer but no hard alcohol.

Presidents Report (Yam):

- I am looking for volunteers to serve on the nominating committee. Please see me at the break. Elections are next month and we need folks to run for various offices. We'll take nominations from the floor at the next meeting.
- The WMMI is having a Geology Day on January 8th and needs some CSMS folks to help identify Minerals and Fossils for folks. We should have membership info available. I need volunteers to be there all day. Asked for volunteers: Mike Nelson, Ray Berry, Jack & Yam volunteered.

Our December Meeting – What do you want to do?????

Editors Report – Teri Stoiber/Ann Proctor – Since people are having trouble getting hard copies, Ann Proctor, Roni Poteat, & Teri will try to figure out what's going on.

Final reminders:

I am still looking for Field Trips to offer to our members at low altitudes. Please help out. It's easy and fun.

Lastly, thank you to Maria Weisser our Social Committee Chair and the Board for tonight's treats.

The meeting was adjourned and Dave introduced tonight's speaker, Joe Dorris.





Our Staff... Teri Stoiber and Ann Proctor *Editors*

CSMS Members Reporters

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

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

The ability to write well is NOT a requirement. We will fix the grammar while keeping the author's voice, style, and work intact.

Handwrite it, type it, or email it. Format does not matter. All submissions are welcomed.

DEADLINE for items to be included is the Saturday after the General Assembly every month.

To submit an item, please use the following:

For hardcopy photos or articles, mail to the address below or bring them to the General Assembly 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.

All articles not shown with an author are provided by the Editor.

Mail or email to: b | a c k | a b a c c o u n t ing@gmail.com PO Box 2 Colorado Springs, CO 80901

The PICK&PACK is published at least ten (10) times per year; 350-375 copies e-mailed/ mailed per month (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. We would like to thank all the contributors to the Pick & Pack—without you, there would be no articles, photos, or a Pick & Pack, for that matter. Anyone who went on a field trip this year is encouraged to send an article about their experiences and finds...If you led a field trip, and took photos, please send them as well...

If you are a student of any age, or a Pebble Pup, your articles about the Club, and related experiences are welcomed! (Check out the article by CSMS Juniors starting on page 4 of this issue—well researched and the microphotographs are amazing!)

Also, if you know of anyone who has been recognized for their efforts in the "rocking" industry, please let us know—we will include that info, and hopefully a picture, in the Pick & Pack. For that matter, if you want to recognize someone's hardwork and efforts, please send an article with whom and why...

Thank you to our regular contributors, Mike Nelson, Steven Veatch, and Yam—your articles are educational, informative, and entertaining.

Respectfully, Teri & Ann

CLASSIFIEDS . . .

NOTICE—Items listed for sale in the Pick & Pack are displayed only as an informational service to our members and advertisers. CSMS and/or the Pick & Pack do not promote nor warranty any item displayed. The sellers and buyers are responsible for the condition and ownership of any item shown.

CSMS T-Shirts, Badges, and Pins are available for sale at each meeting. See Store Keeper, Ann Proctor. Have You Picked Up Your Membership <u>Award</u> Pin?

If you celebrated a CSMS anniversary in 2007, 2008 or 2009, your year pin award is available from the Storekeeper, Ann Proctor. Last call for 2007 pins.



Postage Here



PICK&PACK P.O. Box 2 Colorado Springs, CO 80901-0002



Time Value Do Not Delay Nov2010

Joining the Colorado Springs Mineralogical Society (CSMS)

General Assembly meetings are held the third (3rd) Thursday of each month, except January & August, beginning at 7:30 p.m. at the Colorado Springs Senior Center, 1514 North Hancock Blvd., 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, see page 13.

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—\$25 Family—\$35 Juniors—\$10 Corporate—\$95

If you are interested in joining CSMS or would like more information, we encourage you to attend our next General Assembly meeting or visit our web site: www.csms.us.