

PICK&PACK

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VICTOR—COLORADO'S CITY OF MINES

BY STEVEN WADE VEATCH, C. ROBERT CARNEIN, MARGE BRETH, DAN ALFREY, WAYNE JOHNSTON, ROGER LOEST, DEE LOEST, MARY O'DONNELL, JO BECKWITH, JUDY ST. PETER, AND BRENT GERAUGHTY

Since its beginnings in 1891, the Cripple Creek district's 500 or so mines have produced an estimated 22 to 24 million ounces of gold—more than half of Colorado's total output of gold. The Victor area included the district's 4 richest mines. The Portland, Cresson, Ajax, and Independence mines together produced more than one-third of the district's gold, and total gold production for the Victor area is about 12.5 million ounces (Jensen, 2003). Victor is thus the heart of the most productive gold district in Colorado, and the third most productive in the U.S.

The city of Victor, on the southwestern side of Pikes Peak, was founded by Frank and Harry Woods. The city began to take shape in 1891, shortly after W.S. Stratton discovered gold nearby. Victor quickly grew from a camp of tents and miners' shacks on the side of Battle Mountain to a platted city by 1893. The following year, Victor was incorporated. Soon Victor was one of the most prosperous and largest cities in Colorado.

During the excavation of a hotel foundation in downtown Victor, workers discovered a rich gold vein. The Gold Coin Mine was quickly established to work this vein. The Strong Mine, another mine within the city limits, was also a big producer. Victor soon became known as the "City of Mines."

Today, Victor is one of the best preserved mining camps in Colorado, with period homes, turn-of-the century buildings, and historic gold mining structures. Currently, AngloGold Ashanti owns about 85 percent of the district's productive area, with recoverable gold reserves and resources amounting to several million ounces (Tim Brown, personal communication, 2008). Today, the Cripple Creek and Victor Gold Mining Company operates the largest open pit and heap-leach

mine in Colorado. Low-grade disseminated gold (native gold attached to pyrite or within the molecular structure of pyrite) is the target of current mining operations (Hunter *et al.*, 2009). Production for 2009 is estimated at 292,000 ounces of gold (Tim Brown, personal communication, 2009). A continuing exploration program, with the goal of defining additional resources, recently extended the mine's projected life to 2016.

More than 120 minerals have been reported from the ores and host rocks of the district (Carnein and Bartos, 2005), of which a small number are of economic or collector interest. The major historical ore minerals are calaverite,



Fig. 1. A beautiful specimen of rhodochrosite (botryoidal), celestine, and creedite from the Cresson open pit, 6 cm x 3.5 cm. C.R. Carnein Collection. Photo by S. Veatch.

AuTe₂, sylvanite, (Au, Ag)₂Te₄, and krennerite, (Au, Ag)Te₂. Because these minerals are difficult to distinguish, their relative importances are unknown, but indirect evidence suggests that calaverite is far more important than other ore minerals (Jensen, 2003).

CSMS is an incorporated non-profit 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 monthly to assist and promote the above.

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Attractive specimens of these and other minerals can be seen in museums and private collections, although native gold specimens of collector interest are very scarce. Other specimen-grade minerals include



Fig. 2. Creedite from the Cresson open pit, 1.3 cm across. C.R. Carnein Collection, Photo by S. Veatch

large amethyst crystals, yellow and purple fluorite, melonite, tellurium, turquoise, and, in a single occurrence from 2001, an attractive assemblage of botryoidal rhodochrosite (Fig. 1), purple creedite (Figs. 2 & 3), yellow and blue celestine, and gearsutite, all from the Cresson open pit.

Aside from the recent Cresson finds, poor records were kept with most historical specimens, and locality information for fine specimens was often fabricated. As a result, and because the geochemistry and mineralogy of the productive zones were relatively uniform across the district (Jensen, 2003), one cannot readily identify minerals that are unique to the Victor area.



Fig. 3. Acicular, radiating sprays of creedite. 3.5 cm across, C.R. Carnein Collection, Photo by S. Veatch

References

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Note: This article is a condensed version of a paper presented by the Lake George Gem and Mineral Club at the 2009 New Mexico Mineral Symposium held at the New Mexico Mining and Technical Institute.

PRESIDENT'S CORNER

BY RON YAMIOLKOSKI, CSMS



Season's Greetings, Folks!

I'm writing my President's Corner message a little early this month because of a busy schedule the latter part of the month. This makes it a bit difficult to congratulate the newly elected officers for 2010. I'm sure names and positions will be covered by Bob Germano in his minutes of the November Meeting, so I'll just say congratulations to all of the new and returning officers.

Mike Nelson has been working on a major problem for the Club. The recent elections created a problem for us and the place where we hold our meetings. Because of funding issues, the Senior Center will be forced to charge for the use of their facility, and we will be limited in the evenings we can use the facility. This will put a major strain on our budget and is forcing the Board to review how we spend all of our money, and what we can and cannot afford. How this will be resolved cannot be stated at this time, but there will be some changes for sure.

I'm not going to take space in this section to discuss our Annual Show on December 5th and 6th. I'll deal with it in a separate section in this issue.

Some of you folks have expressed an interest in the status of the Colorado Federation of Gem & Mineral Societies. There is quite a lot going on as it gets up and rolling. There are 16 "rockhounding" clubs in Colorado that are part of the Rocky Mountain Federation. As of this writing, 9 have committed to join the Colorado Federation, and another 3 are taking the subject to their membership. This means the Colorado Federation will have more than the majority of clubs in the state as members. As part of the effort to get the Colorado Federation going, there will be a meeting at 2:00 PM on Saturday, December 5th at the Phil Long Center in Colorado Springs during the Pikes Peak Gem & Mineral Show. All of the clubs in Colorado have been invited to attend, so you may see some different looking vests roaming around the hall. Say "hi", and welcome them to Colorado Springs.

December means our usual monthly meeting will be a bit different than most. It is White Buffalo time (the annual gift exchange with unknown recipients). Mike Nelson, our VP, said the gifts should be in the \$5 to \$10 range. The price of rocks and minerals is always hard to define to the dollar, but you get the idea. Also, don't forget to bring a food goody to share. Variety is the spice of life, so you can be a bit creative. Lastly, Mike thought that because times are tough for some in our community that it would be nice to bring some non-perishable food to the meeting that we can donate to one of the food banks in the area.

Before I close, I wanted to make sure that you all remember to place the Annual Banquet on your calendar. It will be on Thursday evening, January 21st, and we will try to make it even more fun than last year. Life Member Steve Veatch will be our speaker, and he will talk about the history of Victor, Colorado. I will try to spice up the "year in review and state of the club" message. Please try to make this special annual event. More information will be available in the Pick&Pack.

In case I don't have a chance to say it to you personally, I hope you have a happy and safe Holiday Season.

Regards,
Yam



AFMS NEWS . . . <WWW.AMFED.ORG>



2009-2010 Officers: President—**Emerson Tucker** (TX), President-Elect—**Bob Miller** (IN), 1st VP—**Rocky McCall** (WA), 2nd VP—**Ann Monroe** (GA), 3rd VP—**Judy Beck** (KS), 4th VP—**Marion Roberts** (CA), 5th VP—**Matt Charsky** (VA); Secretary—**Anne Cook** (OH), Treasurer—**Pat LaRue** (CA).

John Washburn, All American Award Chair, said that submitting an entry of the club's activities for 2009 is a great gift to give.

Fran Sick, Public Relations Chair, reported on the benefits of federation membership.

Dee Holland, Scholarship Foundation President, issued a challenge to clubs to support the Foundation; we are over half way to the \$24K goal at \$15K.

John Brace-Thomson, Junior Program Chair, reported that the 100th Rockhound Badge has been awarded! An Honor Roll of those who have earned this distinction is posted to the Kids Corner section of the web site. We have also distributed 1698 FRA Membership patches and have awarded 2904 activity badges.

Linda Jaeger, Bulletin Editors Advisory Chair, reminds us that the 2010 contest will be earlier than last year—June 18-10, 2010. She relayed the meaning of OBFUSCATE, to darken; obscure; hence to confuse; stupefy; bewilder. As authors and editors, we need to write for the general public and for an 8th grade reading level—keep it simple!

Owen Martin, Safety Chair, reminds us to wear eye, respiratory, hearing protection and the many hazards of electrical shock.

John Martin, Conservation & Legislation Chair, reported on the activities occurring in many states. The Colorado paragraph stated a well financed pro-environment wilderness bill is coming, "Hidden Gems Wilderness," which will encompass 600,000 acres and close them to all. Congressman Jared Polis is being pressured to introduce the bill.

Phyllis George, Web Site Contest Chair, listed the regional committee members, and encourage all clubs to enter their web site in the regional contests.

Loretta Ogden, AFMS Club Rockhound of the Year Chair, encouraged regional federations to submit their 100-word entries before Dec. 1, 2009.

RMFMS NEWS . . . <WWW.RMFMS.ORG>



2009-2010 Officers: President—**Bill Smith** (KS), VP—**DeLane Cox** (AR), Secretary—**Debbie Leschner** (NM), Treasurer—**Gene Maggard** (KS).

President **Bill Smith** introducing himself and reminded us about the 2010 RMFMS Show in Wichita, KS.

VP **DeLane Cox** introduced herself.

Treasurer **Gene Maggard** stated the dues deadline is 12/15 and reported that the 50/50 show profit share requirement was revised at the last RMFMS Show. Information packets for the 2010 show will be sent the Treasurer of each club.

Dale Watts relayed the 2009 Webmaster Contest winners and encouraged entry in the 2010 contest; entry deadline is January 10, and entry forms are available on the website.

WMMI HAPPENINGS

Polar Express Train Display:

Can you hear the sleigh bell ringing? Come to the Western Museum of Mining & Industry to see a Lionel model train-featuring scenes from the movie "The Polar Express". Display courtesy of Palmer Lake Fire Trustee Gary Coleman. Customary admissions apply. Come in for the exhibit and \$1 from each admission will go to support the Palmer Lake Fire Dept. Open Monday – Saturday 9:00a – 4:00p through December. Located at 225 North Gate Blvd. (I-25 at exit 156A). Visit www.wmmi.org for more information.



Final Weeks! 9:00a – 4:00p Mon-Sat.

Special Exhibit – Full Steam Ahead!

Please join the museum for an exhibit of William Henry Jackson's photographic images as reproduced in "Steam and Steel across the Great Divide." These magnificent prints are from the original old glass plates kept by the Western History Section of the Denver Public Library. The exhibit will explore photography's multiple roles as art, promotion, and documentation of the Denver and Rio Grande railroad. The exhibit will run until December 31, 2009.



EVENTS AROUND THE STATE

FROM PETE MODRESKI, USGS

Dec 3, Colorado School of Mines Geology Museum announces a new support group, Friends of the CSM Geology Museum; memberships are \$30 for individuals and \$50 for families. Ed Raines will be signing copies of his new book, Historic Photos of Colorado Mining, on Dec 3rd; copies of the book are available for \$39.95 plus tax. Bruce Geller, 303-273-3823, bgeller@mines.edu.

Dec 5-6, Annual Open House and Half Price Mineral Sale, Dave Bunk, <www.davebunkminerals.com>.

Dec 7-22, Holiday Sale at the USGS Map Store; 15% off all items, 303-202-4675. FREE maps for holiday wrapping.

Jan 8, Free GPS, Map, & Compass Classes at the Denver Federal Center, Lakewood, 303-202-4689, gpsworkshops@usgs.gov.

ASK A GEOLOGIST

BY MIKE NELSON, CSMS

Jack writes: *I read your last column on Utah agates (November P&P). Did you find agates on your trip to Moab?*



Jack, thanks for the questions, and I am happy that you read my columns! Moab is one of my favorite towns, and I try to make a visit yearly, usually in the fall (nice weather). I first saw Moab in 1967 when it was a sleepy little town without all of the hype associated with rock climbing, boating, ATViing, and biking. In fact, it was a town in trouble with the uranium in a "bust cycle" and potash production only partially taking up the slack.

Moab is a Colorado Plateau town located on the east bank of the Colorado River in the Grand Valley, UT and is the county seat of Grand County. It was first populated by permanent (Caucasian) settlers around 1880, mostly Latter Day Saints doing farming and missionary work. The first "mineral boom cycle" in the region was triggered by the need for radium and vanadium during the years prior to World War II. A few oil wells were producing in the 1950's, but the need for uranium to fund the Atomic Energy Commission (AEC) projects created a much larger boom in the late 1940's and 1950's and brought thousands of prospectors, miners, and merchants to town, including a "rags-to-riches" Texan by the name of Charlie Steen. His discovery, in 1952, of the Mi Vida (My Life) mine triggered a "uranium rush" to the Colorado Plateau that rivaled the fabled gold rushes of the 1800's. School teachers, insurance brokers, used car salesmen, and shoe clerks around the nation converged on the Colorado Plateau to seek their fortune. Even a group of high school students staked forty claims and later sold them for \$15,000. By the mid-1950s, almost six hundred producers on the Colorado Plateau were shipping uranium ore. Employment in the industry topped 8,000 workers in the mines and mills. Another bonanza in penny uranium stock established Salt Lake City as The Wall Street of Uranium. The AEC had turned *the tap and caused a flood* (Ringholz, 2009). By 1960, Utah was producing in excess of 6.5 million pounds of uranium; however, in 1964 the AEC decided to stop purchasing uranium, and the bust cycle was on (Ringholz, 2009). When I first explored the region in 1967, one could locate literally hundreds of abandoned but staked prospects. Much of the mined uranium came from the Jurassic Morrison Formation (~146—~156 MY; the famed dinosaur unit). The Morrison "looks like" the Cretaceous Cedar Mountain Formation (~97—~125 MY), and many uranium claims were established on this non-producing unit! It appears that not all of the prospectors had access to Geiger counters. In fact, during my most recent trip, I was still able to observe some of the old Cedar Mountain claims.

At any rate, since the 1960's, uranium production in the Colorado Plateau has waxed and waned several times. With the renewed interest in uranium-nourished power plants, the area has seen a resurgence of new claims.

Today, the economy of Moab is mostly fueled by tourists. It is the closest city to Arches National Park, Canyonlands National Park, and the La Sal Mountains. It is a mecca for bicycle riding and racing, kayaking and rafting the Green River, rock climbing, and riding off-road vehicles. It is a wonderful place to observe some really fantastic geology and to do some great rockhounding.

James Mitchell in his *Gem Trails of Utah* (2006) recorded a number of collecting localities near Moab, but I usually find guidebook listings as a hit or miss proposition and prefer to just explore the countryside. One of the "major" side roads leading out of Moab is UT 279, the potash road, heading southwest to the mine and processing plant but little else except open land. The road

follows along the north side of Colorado River and is a beautiful drive. After about 10 miles, there are a number of pull offs with great views of the river (Fig. 1). These areas have a thin veneer of gravel, and rockhounds should be able to gather a



Fig. 1. Collecting locality for cryptocrystalline quartz along the "potash road" near Moab, UT. The specimens are common in the near foreground. Photo by author.

nice supply of chalcedony and flint/chert. Most of the specimens are of a gray color, but they do make great tumbling material. I found a couple of poorly banded agates, but nothing spectacular or colorful.

South of the River is a road known as the Kane Creek Road leading out from the town to Kane Springs and the Lockhart Basin. I suggest a high clearance vehicle for the road passes over Hurrah Pass. After about 12 miles the countryside opens up, and prospectors may search the areas along the road for nice translucent pieces of chalcedony and some banded material called agate; however, the latter material is more of an opaque flint/chert with inclusions (Fig. 2). I also found concentrations of chalcedony



Fig. 2. Collecting locality, and there are many similar localities, along Kane Creek Road. Examine the open areas in near foreground for specimens. Photo by author.

chips that obviously represented an area of flint knapping by Early Americans. These were left undisturbed as Federal Regulations protect such assemblages.

Klondike Bluffs is an area well known to rockhounds, since the ground is littered with white, red, and orange chalcedony along with petrified wood fragments. The Bluffs are located north of Moab about 15 miles on UT 191 to Ten Mile Road just south of the Canyonlands Airport. Turn west for

about 2.75 miles. then take the right fork (at the junction with Old Dead Horse Point Road) for about 1.75 miles. If you continue on this road for another couple of miles to the intersection with Ruby Ranch Road, petrified wood is available. Another four miles will bring you to Floy Junction at I-70. If you return along Ten Mile Road turning south at Old Dead Horse Point Road, the first junction will lead you to Dubinky Well and the massive agate, flint, quartz, and jasper fields. Prospectors could easily pick up a bucket of specimens in 15 minutes; however, one needs to look a little harder for the reddish agates prized by collectors.

Finally, virtually everywhere the Chinle Formation (late Triassic) crops out near Moab (and all over the Colorado Plateau); collectors have a good chance of finding petrified wood. Most of the wood near Moab is not a really "good wood" for polishing large slabs. Some seems okay for tumbling while other pieces show great structure and make nice shelf specimens (Fig. 3).



Fig. 3. Petrified wood and cryptocrystalline quartz, Chinle Formation. Photo by author.

I have collected at a dozen other places near Moab and have always found decent specimens of the microcrystalline quartz minerals. The rocks are well exposed and a great number of the formations, especially Jurassic and Triassic, contain collectable minerals and petrified wood. And, the scenery is spectacular. Before you venture out consider purchasing a state geology map from the Utah Geological Survey <<http://geology.uteah.gov/>> and topographic maps from the U. S. Geological Survey, or at least a DeLorme Utah Atlas from the local bookstore. Do not travel in the rain, or when rain is expected, and pay attention to road markers and intersections.

I thank CSMS member Chuck Webb for pointing me to the Klondike Bluff locality.

"It was \$100 million before it was over with, and that was a lot of money in those days. We enjoyed spendin' it, because that's what money is made for", Charlie

Steen in talking about his uranium strike in 1952.

REFERENCES CITED

- Mitchell, J. R., 2006, Gem Trails of Utah: Baldwin Park, CA. Gem Guides Book Company.
Ringholz, R. C., 2009, Utah's Uranium Boom in Beehive 16, Utah History to Go: <<http://historytogo.utah.gov/>>

VOLUNTEERS NEEDED FOR THE ANNUAL SHOW

BY YAM YAMIOLKOSKI, SHOW CHAIRMAN

The first weekend in December is upon us and with it the **46th Annual Pikes Peak Gem & Mineral Show**. This is the first time that we have held the Show in December, so there are some differences. First, we have a number of new dealers joining us. Some of our regular dealers are not around to do a show in December, but as of this writing we have 39 dealers ready and waiting for customers. We also will have some exhibitors, the 3 Model Train Clubs, Gold Prospectors of Colorado and Bob King's Wooden Dinosaurs.

To pull it all off means we need folks to volunteer some time. A lot of you were at the November meeting and volunteered at that time, but some of you were not present and perhaps you can volunteer.

The big crunch is setup day (morning). Starting at about 8:00 AM on Friday December 4th, we need to convert an empty space into our show area. Some of the work will be done by AAA Rental, but setting up the tables, skirting tables, distributing chairs, setting up the display cases, running electricity, and dozens of miner tasks will require lots of help. Just marking out the space at the beginning will take several folks. The dealers and exhibitors will be trying to get in as soon as possible (they are scheduled to start moving in around 2:00 PM). Making sure that they get in the right places and are ready for operation will take the rest of the day (until as late as 8:00 PM).

Saturday, December 5th, will have some setup activities before 10:00 AM in the Kid's Area, Silent Auction Area, Hospitality Area, and Case Area. A key thing will be security and making sure that everyone has their wristbands. Mike Wheat will appreciate any help that he can get. At 10:00 AM we go to a live Show with the selling of tickets, manning of the areas just listed, and making sure everybody is happy. Last year we were a little shy of help at this critical time, and it made it difficult for those who were helping. People don't like to stand in lines. All during the day we can use help to relieve people that did morning shifts. The Show will close at 6:00 PM. We will need a few people to make sure that things are buttoned down for the night.

Sunday, December 6th, will have a few setup activities before 10:00 AM. Once again at 10:00 AM we will have the same needs as Saturday. The Show runs until 4:00 PM; and as soon as the last patron is out, we go into tear-down mode which consists of getting the dealers out as soon as possible so we can fold and stack chairs, remove skirting, fold and stack tables, breakdown the cases, take down all of the wires that supplied electricity, take down the drape walls, and reload our trailer. We need to be out by 8:00 PM; there is a lot to do.

So if you have the time, come on over and lend a hand for one hour, one morning, one day, or all three days. We'll find something for you to do, and if it is a little slow you can see the exhibits, talk to the dealers, make a couple of smart purchases, or just "jaw bone" with some fellow rockhounds.

Before I forget, we will need donations for the Kid's Area, Silent

Auction, and Door Prizes. If your basement or garage is a little full, please help us out. The proceeds from the Silent Auction support our Annual Scholarship, the Science Fair Prizes, the Florissant Fossil Beds National Monument Interns, and our annual donation to the Mining Museum. Without the resources, we will not be able to continue these important contributions to our community and to the study of the earth sciences.

This is YOUR show; please get involved to make it a success!

It's Show Time!

Nov. FOSSIL GROUP REPORT

BY MIKE NELSON, CSMS

Eighteen members of the CSMS Fossil Group met with leader Mike Nelson on Tuesday, November 17th, at the Senior Center. The discussion centered on "fish", starting with the early Paleozoic jawless forms including *Anatolepis* from the Ordovician rocks near Canon City, and the Pterapsids, Theolodonts, Anapsids, and Cephalaspids. The jawed forms such as the huge Placoderms (30 feet or so in length), sharks and their relatives, and the bony fish arrived in the Devonian. The sharks have left behind a rich fossil record in their teeth and collectors with Cretaceous teeth are urged to consult the following web site for help in identification, <www.oceansofkansas.com> Bony fish are the most successful of all vertebrates and inhabit a wide variety of fresh and marine water habitats.

Show and Tell featured the finds of several members, including a discussion of the local fauna at "Lingula Beach" (transition beds of the Cretaceous Pierre Shale and Fox Hills Sandstone).

As a cap to the evening, Mike had a DVD made from a 1951 8mm film documenting the collection of the famous "fish-within-a-fish" collected from the chalk beds (Cretaceous Niobrara Formation) of western Kansas.

The next meeting is scheduled for December 15th at the Senior Center.

CSMS DECEMBER HOLIDAY

EXTRA AGENDA

BY MIKE NELSON, CSMS

The CSMS December 17th General Assembly will feature both a White Buffalo gift exchange and a reception intended to stimulate your taste buds. In order to achieve the latter, the Board is asking all participants to bring a sample, for sharing, of your favorite holiday treat. This is an evening where calories and fat grams will not be counted! We also request that adult members bring a wrapped gift, in the neighborhood of \$5-\$10, for exchange among CSMS members. In order to better enjoy the treats, the Board will attempt to move the exchange along in a timely fashion. Festivities begin at 7:30 PMP at the Senior Center.

The Board is asking members to consider bringing a second gift—a non-perishable item(s) for donation to a community food bank.

The club will furnish drinks (that is, non-alcoholic beverages), and hopes that all members will attend this festive and thankful occasion.

Questions may be directed to Yam ron.yamiolkoski@aecom.com or Mike csrocguy@yahoo.com.

FROM THE LIBRARY

BY KEVIN WITTE, CSMS



Because the CSMS Show's theme is agates, I thought I would see what our library has to offer on the subject of agates.

The best reference material I found was a compilation of several articles entitled The Agates of North America published by the *Lapidary Journal*. The compilation of articles was undated, but most of the pictures with autos and author's hairstyles suggest the 1960s.

The book starts with an educational preface by John Sinkankas on the differences between chalcedony and agate and the latest theories of how agate forms. The bulk of the articles in the book discuss field trips that were made to find agate. Only one of the 38 articles discusses finding agates along the Front Range, and references South Park, CO. I did find chapters on finding agate fairly close to home for Wyoming, Utah, and New Mexico. Just remember most of these articles are nearly 50 years old, so sites may be depleted of agate or simply inaccessible. It would be prudent to cross check an article with more recent information prior to making a field trip based entirely on one of these articles.

A drawback to this book was the lack color pictures of agate. Black and white pictures just don't do justice to the colorfully banded agate. The last article in the compilation deals with rock cutting and cabochon making and is well written.

If you want to learn more about agates, you can read about a 1660 lb. agate found in British Columbia, or learn all about a very cheap mechanical agate locator.



CORRECTION . . .

Iwish to correct an error on a photo caption in Bob King's article, "Gem-O-Rama: Hanksite and Pink Halite," Nov *Pick&Pack*. The last photo, captioned "Best Halite Specimen" was actually Bob's "Best Hanksite Specimen."

Bob has forgiven my error and is bringing a display of his hanksite to our show. I look forward to seeing the difference between halite and hanksite ☺ Thank you, Bob.

We are also honored to have Bob's great, life-size, wooden dinosaur replica at our show—what a site to see!

CHASING MINERALS IN THE BLACK HILLS

BY MIKE NELSON, CSMS

I have had the opportunity in the last few months to spend time in the Black Hills and surrounding areas of South Dakota. The Hills, as they are affectingly known within the State, remain one of my favorite localities since I "discovered them" on a field trip way back in 1965. Although this early trip was designed to collect mammals, I spent much time looking at the rocks, picking up minerals, and trying to determine when and how I could return. Since those youthful days I have returned and collected and hiked and fished many times.



Fig. 1. View of the Etta Mine. Photo courtesy of Gary Arndt at <www.flickr.com>.

The Hills are a wonderful example of a Laramide anticline with Precambrian rocks in the center and a nice contingent of Paleozoic and Mesozoic rocks tilting up and encircling the central core (see August 2009 *Pick & Pack*). Unlike the Laramide ranges in Colorado (for example the Front Range) and other western states, the Hills are compact with few large scale faults to "mess up" the dome. The peaks, with Harney Peak at 7,244 feet, are the tallest east of the Rocky Mountains (in the lower 48). On the plains east of the Hills are fabulous outcrops of early and middle Tertiary rocks collectively known as the "Badlands". In addition to great exposures of rocks of many ages, the Hills have produced tremendous values of metallic ores and industrial minerals. Certainly the best known of the metals is gold (perhaps because of the ubiquitous Black Hills Gold Jewelry), first discovered by members of the George Custer army expedition near what is now Custer City in 1874. This discovery, of course, created numerous conflicts with the Native American population and many individuals on both sides of the argument lost their lives. The early gold rush focused on the alluvial gold and spawned such towns as Deadwood. Even today some of the streams can produce "color".

As the alluvial gold began to disappear, miners started to prospect for the source of the nuggets and the dust, and numerous hard rock mines were opened. Probably the most famous mine in the Hills was the Homestake Mine near Lead in the northern section. The Homestake, at the time of its closure as an active mine in 2002, was the deepest and largest mine in the Western Hemisphere. I once visited the mine on a tour (in the days before law suits and federal regulations) and went down a few thousand feet; however, at closure it was over 8000 feet deep. During its 125 year existence, the Homestake produced something like 40 million oz. of gold and close to 10 million oz. of silver. All of this production came from ore with an assay of less than 1 oz. per ton! Today the mine is known as the National Science Foundation Deep Underground Science and Engineering Laboratory and is used to study "dark matter" and neutrinos.



Fig. 2. Giant spodumene crystals in the wall of the Etta Mine near Keystone, SD. Note miner for scale. Photo taken in 1904 and courtesy of W.T Schaller and the US Geological Survey archives.

Besides the gold and silver, the Hills have produced a variety of other minerals with the most interesting being those from the pegmatites located in the Precambrian rocks: beryl, biotite, cassiterite, columbite/tantalite, lepidolite, muscovite, various feldspars, quartz (especially rose quartz), spodumene, talc, and wolframite. The Hills may have the one of the largest concentrations of rose quartz known, and mining remains active. The feldspar industry is particularly active near Custer, but most other industrial mineral mines are closed and generally off limits to collectors.



Fig. 3. Upper row, Teepee Agate slab with Fairburn nodule. Lower row, spodumene on left with microcline crystal on right. Note quarter for scale. Photo by author.

As a geology student during the late 1960's I had the opportunity to visit and collect many of these pegmatite mines and was astounded at the variety of minerals known from the rocks, but more so at the size of some of the crystals present in the rocks. Farrar (2002) noted that about 390 different minerals are known from rocks of the Black Hills with 22 new to science. Collectors here in Colorado Springs are aware of large crystals in the Pikes Peak Granite and may even know

about some of the huge smoky quartz crystals reported from Devils Head. However, some crystals in the Black Hills pegmatites are truly gigantic.

Perhaps the most spectacular mine that I visited was the Etta Mine near Keystone (Fig. 1), now in private hands and off limits to visitors. The Etta, originally a mica mine in a pegmatite, has produced monster crystals of spodumene, a lithium aluminum silicate. Hess (1939) noted that *huge crystals of spodumene are mixed at every possible angle like toothpicks in a translucent gel* (quartz). *In 1904, a crystal 42 feet long and 3 feet by 6 feet in*

cross section was found...The crystal weighed about 65 tons (Fig. 2).

I collected a small piece of spodumene at the Etta since it had a nice green sheen to it and then promptly forgot about it for several decades (Fig. 3). In thinking about this article, I brought out the specimen and still liked it! Wondering about the green color I was sort of amazed to learn that spodumene is the source of three gemstones—kunzite, hiddenite, and triphane. Kunzite is pink to lilac in color due to small amounts of manganese. Hiddenite, perhaps best known from the mines in NC, is the emerald green variety and is quite rare. Triphane, the colorless to pale yellow variety, receives any color from iron and



Fig. 4. Spodumene gemstones: colorless triphane, a faceted pale pink kunzite, and greenish hiddenite. Photo courtesy of Wikipedia Commons.

also is rare (Fig. 4). Roberts and Rapp (1965) reported all three gems from pegmatites in the Hills.

At the Bob Ingersoll Mine, also near Keystone, I once saw miners "highgrading" nice beryl crystals, most likely for the beryllium since the mineral is a beryllium aluminum silicate, or perhaps for their aesthetic value since they were beautiful six-sided crystals (I still have a small specimen). In the early 1900's, a large beryl crystal was exposed at the Ingersoll, a nearly perfect hexagon 46 inches across the face. In 1933, another crystal was found that measured 9 feet high and over 8 feet wide and produced 24 tons of ore (Loomis, no date). Gem grade beryl, mostly a green variety (colored by traces of chromium), perhaps like emerald, has been noted by Roberts and Rapp (1965). If I remember correctly, we were also looking for gem-grade tourmaline but were unsuccessful and only collected black schorl (which is abundant). The Ingersoll also was an important producer of lepidolite, another lithium mineral (potassium aluminum lithium silicate and a "mica"). In addition, certainly some of the largest feldspar crystals I have ever observed came from the Ingersoll (Fig. 5).

Almost all outcrops of pegmatites in the

Black Hills have nice crystals of feldspar and "mica". Pacer Minerals at Custer still mines potassium feldspar that is used in ceramics and tile. I was impressed as a field trip student to learn that the mineral is also a constituent of false teeth. In 1966 I collected a beautiful crystal of microcline feldspar (3.5 x 3.5 x 2.5 in.), bluish-green in color, almost like amazonite (Fig. 5). This last trip, I stopped and picked up a rather large hunk of pegmatite with large mica crystals, tourmaline, plus the feldspar and quartz. During and immediately after World War II, the Black Hills were the second leading producer of feldspar (NC was first). And, at one time, the Black Hills produced about one-third of the mica in the United States (Loomis, no date).

Most of the large open pit pegmatite mines in the Black Hills are currently closed to the general public; however, I believe the Helen Beryl Mine southwest of Custer is on Forest Service land and available for prospecting (disclaimer: check the landowner status personally). I have collected colored spodumene and beryl specimens, and the mine has produced aquamarine and hiddenite (Loomis, no date). In addition, I am certain that other mines are available for examination and suggest collectors check with the U. S. Forest Service in Custer and the rock shops in Keystone and Custer.

Since the CSMS Annual Show theme in 2009 is agate, I also wanted to visit the two major fields in and near the Black Hills—Teepee Canyon and Fairburn. The Teepee Canyon agates are located west of Custer along US 16 about 2 miles west of Jewel Cave National Monument. The "diggings" are very evident, since prospectors must quarry out large pieces of limestone and then break out the nodules, some large and some small. Be aware that you must use large crack hammers, large pry bars, leather gloves, steel-toed boots, and eye protection. I did not have these tools at my disposal so was relegated to looking for fragments and nodules overlooked by previous diggers. The endeavor was not very successful, but some small pieces of red to orange fortification agates were located. I ended up purchasing a beautiful specimen from the rock shop in Keystone (Fig. 4). As described in the October *Pick&Pack*, the collecting locality is in the late Paleozoic Minnelusa Formation and located on Forest Service land.



Fig. 6. Collecting agates in western, SD 1966. Photo by author.

The Fairburn Agates are found on the plains mainly east of the Black Hills (consult Zeitner, 1998 for directions). The best place to prospect is on lands listed as Buffalo Gap National Grassland. Fairburns have been hunted for decades, and it takes much walking in the beds to locate an agate. You might have company since I observed Fairburns for sale in the rock shops that exceeded \$1000 in cost. In addition to Fairburns, you are more likely to pick up Prairie Agates, chalcedony and jasper, all rather pretty in their own right. Prairie Agates are non-fortification types with variable banding and colors. The most desired chalcedony is blue in color and probably originated in the Chadron Formation (the Badlands) as veins. One time common,



Fig. 5. Giant feldspar crystal (orthoclase) exposed at the Bob Ingersoll Mine. Photo courtesy of Carleton College.

good specimens of blue chalcedony are rather rare except perhaps on non-collecting sites in Badlands National Park and the Native American reservations. Fairburns are most likely Teepee Canyon Agates transported to the plains; the source of the Prairie Agates is probably also in the Black Hills. I have a beautiful Fairburn collected in 1966 (Figs. 4 and 6) but was rather unsuccessful this summer except for a few Prairie Agates.

And finally, I was modestly successful in collecting baculites (no ammonites) in the Pierre Shale east of Rapid City near Wasta along I-90 and a few golden barite crystals from Pierre concretions east of the Hills along the Cheyenne River (mostly private property).

This article merely scratches the surface in describing the minerals and collecting localities in the Black Hills. See the following bibliography and simply spend some time with Google. The Hills make a wonderful trip and many minerals may be collected simply by stopping along the many roads, especially those maintained by the Forest Service. In addition, I can provide additional information if needed. And remember something, as you scramble around, that may be much more important than a shiny rock—*on all the peaks lies peace* (Goethe).

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- Farrar, B., 2002, Quoted in Loomis, unknown date, as Per. Com.
 Hess, F. L., 1939, Lithium: United States Department of Interior, Bureau of Mines, IC 7054.
 Loomis, T. A., unknown date, Black Hills Pegmatites: Matrix, v. 10, no.3, <www.dakotamatrix.com>.
 Roberts, W. L. and G. Rapp Jr., 1965, Mineralogy of the Black Hills: South Dakota School of Mines Bulletin 18.

UPCOMING SHOWS

Dec 5-6

46th Annual Pikes Peak Gem & Mineral Show, Phil Long Expo, Colorado Springs, CO; Ron Yamiolkoski, Ron.Yamiolkoski@aecom.com, 719-488-5526, Francine Jampetero, francijam@gmail.com, 719-634-4880

Dec 11-13

Flatirons Gem and Mineral Show, Boulder County Fairgrounds, 9595 Nelson Rd. (Nelson & Hover), Longmont, CO; see <http://bcn.coulder.co.us/community/fmc/>

Apr 23-25

RMFMS Show & Convention, Wichita, KS. <http://www.rmfmfms.org>

Jun 18-20

AFMS Show & Convention, La Habra, CA <http://www.amfed.org>

2010 CSMS OFFICERS ELECTED

Congratulations to the 2010 officers who were elected at the November General Assembly: President—**Ron Yamiolkoski**; VP—*Vacant*; Secretary—**Jennifer Bailey**; Treasurer—**Al Zele-nak**; Editor—**Betty Cain**; Membership Secretary—**Bill Cain**; Members-at-Large—**Sharon Holte** and **Bob Germano**.

OTHER NOTICES

- The November General Assembly Minutes were not available at press deadline.
- Registration form for the Annual Awards Banquet & Officer Installation is included on page 12. The deadline is Jan 15, 2010.
- Members Directory will be published with data as of 12/31/09.

DECEMBER

(LIBERTIES TAKEN ON THE POEM *NOVEMBER* BY C.L.J. VIA BEEHIVE BUZZER, 11/09)

When December comes, the wind gets cold.
 The days are short, and the bones feel old.
 One thing is sure, I'll give you a clue.
 Another year has passed, and
 Those blankety-blank DUES ARE DUE!

To continue all the fun of CSMS membership, please get your dues to the Membership Secretary before January 31, 2010; the price increases by \$5 on February 1st!

See you at the Show on Dec 5-6. Stop by the Hospitality Booth to pick up CSMS items for everyone on your Christmas lists. Give a CSMS membership to your best friend!



TIPS & TIDBITS . . .

More Comfortable Cab Cutting—Is the edge of your cab machine water trough sharp? When you're cutting a cab, does the edge dig into your wrist or arm? Here's an easy and inexpensive solution to end your discomfort. Get a piece of foam pipe insulation from the hardware store and place a piece of it over the edge of the trough. Voila, no more discomfort! And, you can easily remove the foam when you go to empty or clean the trough (from *Gem Cutters News* 6/08 via *The Rock-hounder* 11/09).

Working with Dark Colored Moss Agate—like the black Montana variety, small pits may sometimes appear on the finished, polished surface. The light colored polishing powders, such as tin oxide or cerium oxide, often pack into these small pits, making removal difficult and white spots surely distract from the stone's appearance. Try rubbing a small bit of black India ink into the spotted area, and then try to rob off the ink. The white spots will disappear (from *Rockhound Rambling* 9/08 via *Quarry Quips* 8/09).

Need a Compass?—If the sun is shining and you have a watch with an hour hand, you have a compass. Set the watch face up and arrange a slender object, a match or a flower stem, upright at the rim of the watch in such a way that its shadow lays atop the hour hand. No matter what time it is, halfway back from the hour hand to the number 12 is south (from *Petrograph* 4/04 via *Shawnee Slate* 9/09).

Keeping Ivory in Light—Don't put ivory in the dark! It is one substance that needs light. If it has started to yellow, take half a lemon and rub it in some salt. Then rub it over the ivory object. The lemon will work on the yellow discoloration. After it is dry, dampen a soft cloth with lukewarm water, and rub the ivory piece to give it a bright finish (from *the Petrified Log* via *Rocky Reader* 9/09).

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3 7p Board Meeting	4	5 46th Annual Pikes Peak Gem & Mineral Show
DECEMBER 2009 CSMS CALENDAR						
6 46th Annual Pikes Peak Gem & Mineral Show	7	8 7p Micromount Group	9	10	11 7:30p Crystal Group	12 1st Day of Hanukka
13	14	15 7p Fossil Group	16	17 5:15p Junior Mtg 6:30p Pebble Pups 7:30p Gen Assembly	18	19 10A—Micromount Group 2nd meeting 12n—Jewelry Group
20	21	22 7:30p Camera Group	23	24	25 Merry Christmas	26
27	28	29	30	31 2009 Membership EXPIRES!	1/1 Happy New Year	1/2

REFRESHMENTS FOR GENERAL ASSEMBLY MEETINGS
December — Everyone!



Area Code 719

2009 ELECTED EXECUTIVE COMMITTEE MEMBERS			
PRESIDENT	Ron Yamiolkoski	488-5526	Ron.Yamiolkoski@aecom.com
VICE PRESIDENT	Mike Nelson	522-1608	csrockguy@yahoo.com
SECRETARY	Bob Germano	487-8945	gliders1@hotmail.com
TREASURER	Ann Proctor	684-9010	annmgmt@msn.com
MANAGING EDITOR	Betty Cain	634-8205	bettycain3@comcast.net
MEMBERSHIP SECRETARY	Bill Cain	634-8205	billcain4@comcast.net
MEMBER-AT-LARGE	Laura Canini	260-6007	caninid@comcast.net
MEMBER-AT-LARGE	Charles Webb	392-7214	(none)
PAST PRESIDENT	Drew Malin	531-7594	advanceone@comcast.net
APPOINTED COMMITTEES			
FIELD TRIP CHAIR	Ron Yamiolkoski	488-5526	Ron.Yamiolkoski@aecom.com
HISTORIAN	Brenda Hawley	633-5702	bghsprings@hotmail.com
LIBRARIANS	Frank & Ellie Rosenberg	594-0948	emr80918@yahoo.com
PUBLICITY CO-CHAIRS	Mike Christianson Ann Schmechel	321-1739 488-2664	bigguglyxii@gmail.com annschmech@gmail.com
ROCK FAIR & SHOW CHAIR	Ron Yamiolkoski	488-5526	Ron.Yamiolkoski@aecom.com
SHOW CO-CHAIR	Francine Jampetero	634-4880	francijam@gmail.com
WEBMASTER	Allen Tyson	268-0775	allentyson@yahoo.com
VOLUNTEER SATELLITE GROUPS			
CAMERA GROUP	Roger Pittman	683-2603	rpittman@directv.com
CRYSTAL STUDY	Kerry Burroughs	634-4576	kburrou@comcast.net
FACETING GROUP	Dave Wilson	635-7891	dlwilson@pcisys.net
FOSSIL GROUP	Mike Nelson	522-1608	csrockguy@yahoo.com
JEWELRY GROUP	Bill Arnson	749-2328	ritaarnson@msn.com
JUNIORS & PEBBLE PUPS	Steven Veatch	748-5010	Steven.Veatch@gmail.com
LAPIDARY GROUP	Jennifer Bailey	638-3169	Notes_test@yahoo.com
MICROMOUNT GROUP	Phil McCollum		acc@frii.com

Locations

Board Meeting: 1st Thursday @ 7:00p. Senior Center, Mike Nelson, 522-1608

Camera Club: 4th Tuesday @ 7:30p, Senior Center, Roger Pittman, 683-2603

Crystal Study Group: 2nd Friday @ 7:30p, Senior Center; Kerry Burroughs, 634-4576

Faceting Group: 4th Thursday @ 7:00p, Senior Center, Dave Wilson, 635-7891

Fossil Study Group: 3rd Tuesday @ 7:00p every other month, Senior Center, Mike Nelson, 522-1608

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

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

Micromounts Group: 2nd Tuesday @ 7:00p, 1514 North Hancock, Phil McCollum, acc@frii.com, Moyra Lyne, 442-2673. **Additional monthly meeting**—3rd Saturday, 10a-4p, 3609 Windsor Ave, Marj Regel 599-3031



Colorado Springs Mineralogical Society, Post Office Box 2, Colorado Springs, CO 80901

APPLICATION FOR MEMBERSHIP

1. All memberships run from **January 1 to December 31** (except new members joining on/after October 1 of current year).
2. Any person joining the CSMS as a new member after June 30th shall pay half of the yearly rate. Any person joining as a new member after October 1st receives membership for the remainder of the current year plus the entire following year. The partial-year membership shall not apply toward the 25 year Lifetime Membership.
3. Anyone who has previously been a member **MUST** pay the full rate each year **REGARDLESS** of the time of the year they pay their dues.
4. Members who have paid their dues for 25 years will be awarded a Lifetime Membership on their 26th year. Life Members receive all of the CSMS benefits but no longer have to pay the annual dues.
5. Members in good standing receive the following benefits: 10 issues of the CSMS *Pick&Pack* newsletter, right to participate in all field trips (additional fees may be required on some field trips and members are responsible for all transportation to and from), participation in one or all Satellite Groups (some groups may request additional fees to help cover resource costs), free admission to the Western Museum of Mining and Industry, RMFMS & AFMS memberships, a year of learning and enjoyment, plus a lifetime of memories.

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HAVE YOU PREVIOUSLY BEEN A MEMBER OF CSMS NO YES WHEN

YOU ARE PAYING FOR THE YEAR

Each year the Colorado Springs Mineralogical Society publishes a Membership Directory. *The directory is distributed **ONLY** to CSMS members.*

Your dues **MUST** accompany this application Check if you do NOT want your name & address included

* Can you receive the newsletter via email? YES NO

	All Members	All Members	New Members Only	
	Before Jan 31	After Jan 31	After June 30	Oct 1 – Jan 31
<input type="checkbox"/> Junior Membership (12 –17 years old and parent is not a member)	<input type="checkbox"/> \$ 5.00	<input type="checkbox"/> \$ 5.00	<input type="checkbox"/> \$ 2.50	<input type="checkbox"/> \$ 5.00
<input type="checkbox"/> Regular Membership (18 and over)	<input type="checkbox"/> \$15.00	<input type="checkbox"/> \$20.00	<input type="checkbox"/> \$10.00	<input type="checkbox"/> \$15.00
<input type="checkbox"/> Family Membership (parents & dependents under 18)	<input type="checkbox"/> \$25.00	<input type="checkbox"/> \$30.00	<input type="checkbox"/> \$15.00	<input type="checkbox"/> \$25.00

YOUR INTERESTS <i>Please check ALL that apply</i>															
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Children & Ages:

Comments:

Sometimes knowing where our members are employed or retired from helps us when we are looking for special information or guidance in our activities. This information will not be published or accessible except by the CSMS Board of Directors.

I hereby agree to abide by the Constitution and By-Laws of the Colorado Springs Mineralogical Society.
 CSMS Constitution and By-Laws are available at our website: www.csms.us

Signature of Primary Applicant _____ Application Date _____

Mail this form and your payment to: Colorado Springs Mineralogical Society
 PO Box 2
 Colorado Springs, CO 80901



Colorado Springs Mineralogical Society 2010 Banquet Registration January 21, 2010

Embassy Suites
7290 Commerce Center Drive
Colorado Springs, CO

Cocktails – 6pm

Dinner – 7 pm

Program – 8 pm

Name(s) _____

Phone #:

Number of Chicken Dinners:

Number of Vegetarian Dinners: _____

Total Number of Dinners: _____

X \$20.00

Total Enclosed _____

Send check made payable to **CSMS** only along with this registration by 1/15/10 to:
Bob Germano, Secretary
1445 Tari Drive
Colorado Springs, CO 80921

DECEMBER 2009



Our Staff...

Betty Cain *Editor*
 Bill Cain *Mailer*
 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 JPG, BMP, TIF, or PIC format.

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

Mail or email to:
 bettycain3@comcast.net or
 Info@csms.us
 PO Box 2
 Colorado Springs, CO 80901
 Phone: (719) 634-8205

The Pick&Pack is published at least ten (10) times per year with email distribution and/or printed copies to 450 recipients per month (no issues in January or August); special editions may be distributed during January or August.

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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.



Merry Christmas!



CSMS Caps & Hats are now available.
Pick yours up at the next meeting

Last Chance—CSMS Membership Pins

2008 New Members who have paid their **2009 dues** are entitled to a **free one-year pin**, as are other members renewing on 5-yr increments. Please see Bill Cain, Membership Secretary, to receive your **award**.

All back-year pins may be purchased for \$5 ea.

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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. **Visitors are always welcome.**

CSMS also offers Satellite Group meetings that allow more focused attention in specific areas of our members' interests. Our current Satellite Groups consist of the following: Camera Club, 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 10.

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. **New Members joining now receive membership for the balance of this year plus all of next year. Prices go up \$5 after January 31st.**

Individuals—\$15

Family—\$25

Juniors—\$5

If you are interested in joining CSMS or would like more information, we encourage you to attend our next General Assembly meeting (see page 6 for details of the next meeting) or visit our web site at www.csms.us or send an email to Info@csms.us.