

PICK&PACK

THE BULLETIN OF THE COLORADO SPRINGS MINERALOGICAL SOCIETY Published Since 1960

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PICK&PACK
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A WALK IN THE MOUNTAINS: HORSESHOE CIRQUE

MIKE NELSON, CSMS

The State of Colorado is blessed to have a variety of scenic features associated with mountain glaciers. These glaciers, "large, slow-moving rivers of ice, formed from compacted layers of snow, that slowly deformed and flowed in response to gravity and high pressure" (Wikipedia 1, 2008), occupied mountain valleys across most of the State's high mountain ranges during the Pleistocene Epoch. The Pleistocene, also called the *Ice Age*, began perhaps as early as 1.8 million years ago and ended ~11,500 years ago. The glaciers, some many hundreds of feet thick, ebbed and flowed throughout the Pleistocene but geologists have determined that the two most recent glacial peaks were approximately 130,000-200,000 years ago (Bull Lake Glaciation) and about 110,000-11,500 years ago (Pinedale Glaciation) (Wikipedia 2, 2008). Most Colorado glaciers had receded/melted by about 12,000 years ago (Matthews 2003).



Fig. 1. Horseshoe Cirque in Mosquito range

During these periods of mountain glaciations, larger continental glaciers covered parts of Canada and the northeastern United States. The Pinedale Glaciation (western mountains) is roughly equivalent to the Wisconsin Glaciation (Northeast/Midwest) where ice sheets reached as far south as the State of Wisconsin. The Bull Lake Glaciation (western mountains) is about the same as the Illinoian Glaciation in the Northeast/Midwest where continental ice sheets reached as far south as southern Illinois. Previous continental glacial events in the Northeast/Midwest, referred to as the Kansan and Nebraskan, are difficult to identify in the mountains of Colorado.

Perhaps the premier location in Colorado to observe landforms resulting from Pleistocene glaciation is in Rocky Mountain National Park. Here, where one can often observe from high lookouts, a living wonderland is portrayed for both the professional glaciologist and the casual interested observer. Numerous publications and websites describing the geology are readily available (for example see: <<http://www.nps.gov/features/romo/feat0001/-GlcBasics.html>>). Although I recognize the majestic beauty of the Park, I have come to appreciate greatly the glacial topography of other Colorado mountains, especially the Mosquito, Sawatch, Collegiate, (See *HORSESHOE* on pg 4)

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CSMS is an incorporated nonprofit organization with these goals:

- To promote and disseminate knowledge of the earth sciences, especially as they relate to mineralogy, lapidary, and fossils.
- To encourage study, collection and fashioning of minerals.
- To accomplish the same through social meetings, lectures, programs, displays, shows, and field trips.
- The Pick&Pack is published monthly to assist and promote the above.

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Colorado Springs Mineralogical Society

Founded in 1936

Lazard Cahn

Honorary President

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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 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.

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PRESIDENT'S CORNER

BY RICK COPELAND, CSMS



Rick Copeland

**NEXT GENERAL ASSEMBLY PROGRAM**

The October 16th General Assembly presentation will be by Brian Small of the Denver Museum of Natural History.

LIKE A GOOD NEIGHBOR...

BY BETTY CAIN, EDITOR

The Canñon City Club has asked Steve Veatch to assist them in establishing a Junior and Pebble Pups program in their club! After the rousing success of our new Junior program, he will be sharing curriculum, teaching materials, and time to get their new programs started. Steve has a dedicated staff of CSMS volunteers to fill any voids that may occur in our programs while he assists our neighbors to the south.

Thank you, Steve, for once again being a wonderful advocate of CSMS and the rockhounding hobby. I know the Canñon City Pups will be as enthusiastic as ours are. And thanks to our loyal volunteers!

THE AMAZING STORY OF GUFFEY

Geologist **Steven Wade Veatch** will present "The Amazing Story of Guffey" at a community potluck supper at the Guffey School on Thursday, October 16, at 5:00 PM.

Steve is president of the Friends of the Florissant Fossil Beds and a volunteer there. He and several members of the Lake George Gem and Mineral Club have been doing research for nearly a year. They will share their photos and discoveries.

If you would like to hear about volcanoes, meteorites, blue agates, soda springs, and the archeology of the area, join them at the Guffey Community Charter School, 1459 Main Street in Guffey, at 5:00 PM on October 16. Please bring a dish to share for our potluck.

If you miss this presentation, an encore will be presented by Steve at our November General Assembly.

AFMS NEWS

BY SHIRLEY LEESON, AFMS PRES

Editor's Note: We were disappointed that this year's AFMS Show had to be canceled because of damage from Hurricane Ike, and our thoughts and prayers are with the Houston-area rockhounds.



For me this has been a hectic two months. As I write this last message as AFMS President we haven't yet had our convention meeting. There are so many things on the agenda for the meeting...Next month as your Immediate Past President, I will lead you through all that has been accomplished during the last year. And your new President, Joy Borne, will lead you into the future.

The Paleo bill (HR 554) opposition gained momentum in a big way just before the House and Senate convened for their "late summer vacation". We were energized by Cong. John Culberson, R, 7th District West Houston, TX who is a rockhound himself and said he needed each rockhound throughout the U.S. to contact their congressman and let them know their feelings on the issue. We believe this bill will go directly to the floor for a vote. That's why we need you to contact your own congressman. There is a wonderful letter that was sent to a congressman in San Diego County by a rockhound/professional geologist who tells it like it is and will be if this bill is passed. One line of his inspirational letter is this: "...no one should have his access to knowledge restricted so that only a few anointed experts can pursue fossil collection and study. A few paleontologists want to restrict their fellow Americans so that they alone can pursue their hobby. It is a hobby for them too, because people cannot make a living as paleontologists unless we taxpayers support them with grants of our money." Remember, this land they are taking away from us for the collection of fossils is YOUR land.

While attending the Canadian Federation's show in August, it was abundantly clear that Canada is having the same issues with access to their public lands and sales of privately collected fossils. As part of our visit, we publicized the 2009 AFMS Convention and Show being hosted on July 30-Aug 2 in Billings, Montana. Our Canadian neighbors were enthusiastic about the opportunity to participate in our show and have placed it on their calendars. Billings Gem and Mineral Society will be the host club.

Condensed by the Editor from the October 2008 AFMS Newsletter.

WMMI HAPPENINGS

FAMILY EXPLORATION DAY: ART ROCKS!

SATURDAY, OCTOBER 11, 2008

1:00-3:00 P.M.



Get a new perspective--see the museum through the eyes of an artist! In conjunction with the museum's new exhibit, Lure of the West: The Katherine and Frederick Farrar Collection, visitors will learn how art and geology are related. Landscapes are based on structural geology, and children will be choreographed to become living folds, faults, and volcanoes. Through the exploration of the museum's 30-foot wall mural and the Farrar exhibit, participants will gain an understanding of the compositional elements of art. Additionally, adults and children alike will participate in mineral identification and learn about the rocks in their art! Finally, our guests will demonstrate their own artistry by making a work of art to take home as a souvenir of the day. Free admission to the Museum with CSMS membership. Advance reservations are required for this event. Please call (719) 488-0880 by Friday, October 3.

Location: Just off I-25 at the Gleneagle exit, #156A. Just across from the north entrance to the U.S. Air Force Academy. Free admission with CSMS membership card.

DON'T FORGET THE HAUNTED MINE OPENS AT 7:00P 10/3

UPCOMING SHOWS

Oct 11-12

Topeka Gem & Mineral Show, Ag Hall, Kansas Expo Centre, Topeka, KS, Rock2Plate@aol.com 785-267-2949

Oct 11-12

Payson, AZ, Rec Cntr, Hwy 87 by Mazatzal Casino, Barry Jones 928-476-3513 froggie1048@msn.com

Nov 7-9

RMFMS Show, Tulsa, OK
www.rmfmms.org

Dec 5-7

El Paso Mineral & Gem Society, 6331 Alabama, El Paso, Gem Center@aol.com

Dec 12-14

Flatirons Mineral Club, Boulder County Fairground, 9595 Nelson Rd. (Nelson & Hover), Longmont, CO

CSMS FIELD TRIPS

Sep 27—Pebble Pup Leadville Pyrite, 10a. 1.7mi E on 5th street off Harrison St(Hwy24) in Leadville. Contact Roger Pittman, 683-2603

Sep 27 & 30—Peridot Claim, 9a. Hart-sell Coffee Shop

Oct 18—April Fool's Claim, 9a. Meet at Forest Service Station in Lake George

More trips are still being planned—check the website or watch for members email notices as the trips are finalized. In work, more Peridot Claim, Florissant Fossil Beds, and Walking Geology tours. If you don't have access to the web, call Yam at 488-5526 and ask for the latest trip news.

Have you visited mindat.com lately? CSMS is now listed under Mineralogical Clubs!



Wall mural of George Jackson discovering gold.

HORSESHOE CONT'D FROM PG 1

Sangre de Cristo and Ten Mile ranges. One can easily hike or drive to many of the features, and the crowds are few and far between. Often, on my hikes, I never see another person.

One of the most recognizable glacial features in Colorado, Horseshoe Cirque, is located in the Mosquito Range west of Fairplay

(Fig.1). There are two major reasons the Cirque is so unique: 1) the glacier carved the Cirque in sedimentary rocks; 2) the sedimentary rocks are dipping steeply to the east. Most high mountain ranges (Horseshoe Mountain has an elevation of 13,898 feet, Fig. 2) in Colorado have igneous or metamorphic rocks at their summits. These "hard" rocks are usually Precambrian in age (older than 600 m.y. in age) or were emplaced during the Laramide Orogeny (see below). In both instances, the sedimentary rocks have been eroded away and are usually absent; Horseshoe Cirque is an anomaly. In addition, igneous and metamorphic rocks are usually massive and continuous sharp bedding planes may not be readily evident. At Horseshoe Cirque, the upper walls expose the Mississippian Leadville Limestone (marine rocks) and a few Laramide igneous sills (magma intruded parallel to the bedding planes) (McGookey, 2002). The lower Cirque walls expose the Cambrian Sawatch Sandstone (marine shoreline/beach deposit) and older Precambrian granites (Fig. 1). In all instances the bedding planes are prominent and the dip of the beds is quite evident.

The Laramide Orogeny is the mountain building event most closely associated with the current ranges in Colorado. Beginning in the late Cretaceous (about 70 my ago), and continuing for perhaps 30 m.y.a. into the Tertiary, the Laramide was responsi-



Fig. 2. Summit of Horseshoe Mountain at 13,898 feet. The surface rocks are frost-shattered pieces of Leadville Limestone.

ble for forming the major faulted and folded ranges and accompanying basins in Colorado. Near Fairplay, the Mosquito Range was uplifted as part of the larger Sawatch Uplift (the Rio Grande Rift, now holding the upper Arkansas River Valley, separated the Mosquito Range from the Sawatch Range in the mid Tertiary) and most exposures of the sedimentary cover were eroded away with the sediments being transported into the nearby basins. An exception was the sedimentary section at Horseshoe Cirque.

Leading away, and trending east from the Cirque, is a tributary to Fourmile Creek; the streams flowing in a typical U-shaped glacial valley (Fig. 3). Near the headwall of the Cirque is a small lake called Leavick Tarn (tarn is the geological term for a cirque lake) (Fig. 3). Additional unnamed lakes are also present near the threshold of the Cirque. Also of interest are the glacial erratics scattered in the morrainal material down valley (Fig. 4). These erratics, mostly pieces of Leadville Limestone, were dropped by the receding glacier.

The Leadville Limestone, the major host rock for precious metals west of Horseshoe Cirque near the town of Leadville, also has been mined near the Cirque and adjacent Peerless

Mountain and small glory holes and exploration pits are scattered all over the area (Fig. 5). Most of the mining occurred post-1870 after Samuel MacMillian discovered silver near the head of Fourmile Creek. In 1880 the Mudsill Mine was

opened on the north rim of Horseshoe Cirque (McConnell, 1966). Mining must have continued well into the 20th century as "modern looking" equipment is scattered about at several localities (Fig. 6).

Although Horseshoe Cirque may be observed at a distance while traveling US 285 south of Fairplay, the Cirque is best seen in a close-up view. Travel US 285 for two miles south from Fairplay and turn right (west) on Park County 9 (Fourmile Creek Road and access to Mt. Sherman). Depending upon your vehicle (PU's/SUV's OK), travel west on PC 9 for about 11 miles, passing the mill at the ghost town of Leavick, and turn left on a 4-wheel drive road for about two miles. Horseshoe Cirque then looms directly ahead. You may want to walk up the road to Finback Ridge and hike the north rim of the Cirque to the summit of Horseshoe Mountain. At 13,898 feet it is among the 100 highest peaks in Colorado.

May your trails be crooked, winding, lonesome, dangerous, leading to the most amazing view. May your mountains rise into and above the clouds. Edward Abbey



Fig. 3. U-shaped valley of Fourmile Creek (looking east from Horseshoe Mountain) with Leavick Tarn in the foreground.

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- McConnell, V. *Bayou Salado, the Story of SouthPark*. Denver: Sage Books, 1966.
- McGookey, D. P. *Geologic Wonders of SouthPark, Colorado*. Midland, TX: Donald P. McGookey, 2002.
- Wikipedia (1) 2008: <http://en.wikipedia.org/wiki/Timeline_of_glaciation>
- Wikipedia (2) 2008: <<http://en.wikipedia.org/wiki/Glacier>>



Fig. 4. Glacial erratics, mostly pieces of Leadville Limestone, left behind by the Horseshoe Glacier.

Fig. 5. Glory Hole on the flank of Horseshoe Mountain.



Fig. 6. Structures associated with mining near Finback Ridge.

FIELD TRIP DO'S & DON'TS — THINGS TO THINK ABOUT

BY BILL CAIN, CSMS

Okay, you've decided to make a field trip—let's **think** about it first. Where are you going? Is it a Club trip or are you going alone? Alone; not really a good idea but okay with proper planning.

Let's talk about personal safety and the things you will need for those mountain trips:

- **Water**, more than that half empty 8 oz. bottle you had last week. Take at least two 2-liter bottles of water. The Colorado mountains are high mountain desert; you may not realize it, but you lose a lot of body fluids at altitude and you must replace it.

- **Clothing**. It's 90° here in the Springs, but where you're going is well above 10,000'. It's going to be cooler, and if a storm comes up you may find yourself in the middle of a summer snow storm! That's right, in the middle of summer it can snow in the mountains. Be prepared for any kind of weather. Oh, yeah, a couple of blankets wouldn't be a bad idea, you know, just in case.

- **Sunscreen**. Why? Because you're closer to the sun, and up here you don't have all that dirt and stuff in the air to help block out the sun's rays. A nice broad-brimmed hat would help, too. Maybe even a pair of sunglasses. Long sleeve shirt and, by all means, a good pair of blue jeans.

- **Shoes and Socks**. If climbing, a decent pair of leather shoes or hiking boots are required. Tennis shoes are for just what the name implies. If you're going to be near or working in water, how about a pair of dry socks and then those tennis shoes, that is if you're finished rock hunting.

- **First Aid**. Blisters, splinters, bug bites, and oh that thumb that somehow got between the hammer and that rock. A simple first aid kit along with a quality snake bit kit are essential. That's right, we have snakes in Colorado—Western Diamond Back Rattle Snakes. May not be as big as in Texas, but still just as nasty. And those critters hide everywhere. So, just maybe a flashlight would be a good idea as well. You don't want to stick your hand in that hole until you know what's in there!

- **Snacks**, Nothing heavy; sport snacks are good, but if you'll be up there for a while, you may want to pack a couple of sandwiches before you leave home. Don't forget a cooler for those sandwiches and drinks you brought. Stay away from high sugar drinks at altitude; they only make you thirstier.

- **Necessities**. You know that roll of white paper that hangs quietly in your bathroom? Well, you just might want to bring along one of those and a sealable bag. Hey, when nature calls, it's best to be prepared. Why the bag? As a serious rockhound, we don't leave behind our trash of any kind PERIOD!

Now, about that ride of yours. Yeah, the car, truck, or that fancy 4x4. That vehicle is most important to getting you there and back home safely and out of any trouble you might find. When was the last time you checked the tires, the fan belt, engine fluids? How about that spare tire; does it have the proper pressure in it? Oh, gees, where did I put that jack and tire tool? I wonder if the guys at Yreka Lube checked the battery water. If your 4x4 has a winch, (See *FIELD TRIP* on pg 8)

RMFMS - AFMS CLUB ROCKHOUNDS OF THE YEAR



FROM THE AFMS NEWSLETTER, OCT 08
AS SUBMITTED BY HOWIE WHITING, RMFMS

The Colorado Springs Mineralogical Society is very fortunate to have **Roger and Pat Pittman** as members. They are true-life examples of what CSMS is all about. As "Ambassadors of Rock", they exemplify why our club was formed in 1936—to provide education and encourage the study of earth sciences.

These two wonderful people tirelessly devote many hours of hard work each year presenting their knowledge and love of rockhounding to many of our Colorado Springs school children. They created over 350 plaster 'dinosaur footprints' that contained treasures for our Kids Mine at the recent show, worked the area from can to can't, donated thousands of mineral specimens for the kids to take home, and made sure each little future rockhound had a safe and wonderful time in the mine.

They assist in whatever capacity is needed with our Pebble Pups program, conduct field trips for both pups and adults, lead the CSMS Camera satellite group, and have served in many Officer and Executive Committee CSMS and RMFMS positions. They even gave up a recent holiday to conduct a field trip for a visiting Missouri science club when no other Colorado rock club responded to inquiries for assistance.

We are very proud to nominate Pat and Roger Pittman as the CSMS 2008 AFMS Rockhounds of the Year.

Congratulations,
Roger & Pat!

Submitted by Betty Cain
Editor, CSMS Pick&Pack



Peridot Claim

OUR PERIDOT CLAIM

BY YAM YAMIOLKOSKI, CSMS

After many weeks of work, we are finally ready to announce our Peridot Claim. Thanks to club member **Bill Battin**, who alerted us to the claim because he knew the previous claim holders, we have been able to secure four claims of Badger Creek Peridot. We have filed our paperwork with the BLM, Park County and the US Forest Service. Work on this was done by Secretary **John Casto** and Vice President **Ron "Yam" Yamiolkoski** with assistance from members **Bill Battin**, **Kerry Burroughs**, **Pete Modreski**, and **Jack Boyers**. A hearty thanks to all for assisting CSMS in tying down approximately 73 acres of land for the collection of peridot crystals by CSMS members!

The next step was to set all of the posts to "stake out" our claim. Yam prepared all (13) of the wooden stakes. Basically they were 4' long 4X4 cedar posts painted white with specific claim information written on them. The Corner Posts are topped with red paint and the Points of Discovery (located at the center of each of the 4 claims) are topped with green. Rather than digging holes Yam decided to use 3' long "T" posts driven into the ground approximately 18" and then attach the wooden posts with 4 deck screws. This will allow for easy replacement of posts in the future and will probably extend the life of the posts, because they will be less likely to rot out.

The work of installing the posts was done as a combined work and collecting Field Trip on September 6th. On that date 14 hearty soles gathered at Bayou Salado in Hartsel for coffee and ice cream before proceeding to the Peridot Claim area which is south of Hartsel. Joined at the Claim by 4 others the group went to work installing the posts. With GPS units in hand, groups of 2-3 set off to place the Corner and Points of Discovery Posts. I must admit that the youngest member of this fearsome group, **Wyatt Wilson** (2 years old) did not help but it was not from a lack of willingness.

Besides a beautiful day with temperatures in the high 60's and a very willing crew, we had the extra benefit of **David** and **Cathy Key's** ATV. David with the help of several members took off and placed a number of the posts so that the whole effort took less than 1½ hours. This left the rest of the time for collecting, talking, and enjoying a wonderful day.

CSMS wants to thank all of those who joined in on this effort: **Danny Canini; Bob Germano; Al Zelenak; Kevin Witte; Bill Cain; Khya Prewitt; Mike and Lorrie Hutchinson; Rod, Jodi and Wyatt Wilson; David and Cathy Key; Glenn and Carla Landry; Bill Battin; Ray Wilson;** and Field Trip Leader Yam. It should be pointed out that our Membership Chairman was their not only to help but to sign up new members **Glenn** and **Carla Landry** who joined on site so that they could help.

For those wondering if anyone found any Peridot the answer is a definite YES. Everyone found peridot – although I'm not sure of whether or not young Wyatt Wilson did. He did move some dirt around with his toy trucks.

There are two more Peridot Field Trips planned for this year. They are on Saturday, September 27th and Tuesday, September 30th. We may need to make some stake adjustments during these trips but these will be primarily collecting trips. See the CSMS website for details.

One last thing to mention is that there are rules that need to be followed in visiting our Claim. Many of these rules are just a matter of courtesy, while some are (See PERIDOT on pg 9)

THANK YOU, CSMS

BY STEVEN VEATCH, CSMS

EDITOR'S NOTE: CSMS has been contributing to the support of paleontology interns under Steve Veatch for several years.

I work directly with these interns and provide career guidance, mentoring, and other help as needed. In my role as the President of the Friends of the Florissant Fossil Beds, I have the opportunity and pleasure to work directly with these students. I took one of the interns on a field trip 3 years ago where the intern discovered a significant fossil. We are still working on the specimen and will soon publish a paper on it. This program of support that the CSMS participates in is one of the most important things CSMS does. The club provides financial support for the paleontology interns, and the Florissant Fossil Beds National Monument provides an opportunity for the interns to gain valuable experience in research, field collecting, and specimen curation. This program truly changes lives.

The support that the CSMS provides reflects well on our organization. I was invited 2 years ago to a Federal Paleontology Conference held in Albuquerque, NM. Paleontologists that work for the federal government (U.S. Forest, BLM, National Park Service, USGS, etc.) attended this conference. I was invited to do a presentation on how the Friends of the Florissant Fossil Beds and partner organizations (CSMS) provide innovative programs and financial support of interns. Last year, I presented a similar program at the annual meeting of the Geological Society of America in Denver. I was able to tell a large audience of how our partnership works and describe how the CSMS supports the internship. I am very proud to be a member of such a fantastic organization—the CSMS!

August 27, 2008

Dear Colorado Springs Mineralogical Society,

My name is Bret Buskirk, and I was the paleontology intern at the Florissant Fossil Beds National Monument during this past summer under the Geological Society of America Geocorps program. I cannot even begin to express my heart-felt thanks for the support that you and your organization have given me. The opportunities available to gain experience in the field of paleontology were vast. And not only did I grow as a scientist, but I also learned important life lessons while working with other people of different backgrounds. My time spent here has been amazing, and I want you to know that without your organization, my summer would not have been as educational or exciting as this one has been.

As many of you know, the Florissant Fossil Beds is a national monument that protects and preserves countless fossil specimens preserved in lake shale and mud flows from 34 million years ago. Working as the paleontology intern this last summer, I was fortunate to work very closely with these fossils and in some cases I was able to participate in test excavations to discover more specimens. One of the most exciting things about my summer was the discovery of a fossilized Ginkgo leaf; I unearthed it during one of the paleontology crew's test excavations. To be the first ever to discover a ginkgo here at the park is quite exhilarating and has only served to fuel my passion for paleontology that much more.

The main project that I worked on during the summer was a resource management project called Inventory and Monitoring. This job kept me outside most of the days hiking, requiring me to visit most of the paleontology sites here in the monument. My job was to capture photos, sometimes multiple, at each of the sites. The

purpose of this project was to record how each of the sites were faring each year and if there should be any mitigation taken to better protect these sites. This was a great job, and I enjoyed it thoroughly; it definitely taught me valuable resource and data management skills, and I especially enjoyed it since it kept me active outside all summer long.

Working as part of a team here at the Florissant Fossil Beds has been a great lesson in understanding and dealing with persons of different backgrounds. The experiences and lessons that I have gained over the summer have been some of the best in my life. I again want to thank you for without the support of organizations like yours, programs and internships in the sciences would be next to non-existent. Your continued support ensures that the future of educational programs in the (earth) sciences will be strong for years to come. By simply working in a retail position, I certainly wouldn't have had all these amazing experiences and opportunities.

Thank you, and I hope that you continue supporting those like me!

Sincerely,

*Bret Buskirk
Paleontological Assistant
Florissant Fossil Beds National Monument*

Florissant Fossil Beds National Monument, Florissant, Colorado



Photo from <<http://www.nps.gov/flfo/>>

Beneath a grassy mountain valley in central Colorado lies one of the richest and most diverse fossil deposits in the world. Petrified redwood stumps up to 14 feet wide and thousands of detailed fossils of insects and plants reveal the story of a very different, prehistoric Colorado.

FIELD TRIP CONT'D FROM PG 5

when did you last check it and where is the controller? Just what I thought—you can't remember. Well, you better remember because that draw didn't look that steep going down, did it? You may need help ascending it on the way back.

Rockhounding Tools. what are you looking for and where are going to find it? This is somewhat sticky. If you're going to be breaking up larger rocks, you sure don't want to bring that tennis racket. But, by the same token, if you're working a creek, what's the jack hammer for? Simple basic tools can be had for very little. A good rock hammer and a 3-5 lb engineer's hammer for those larger rocks. Some fellas even care a 20-lb sledge for those really big rocks. A small chisel and a good pry bar comes in handy now and then. Bring GLOVES, SAFETY GOGGLES, and some good sense.

Bring along newspaper or paper towels to wrap that really special piece you found and perhaps a few large pill bottles for the smaller samples, and don't forget to label them—where you found them and what you think they are. If you're looking for really small stuff, a good pair of tweezers and a hand magnifier would be mighty handy. Also a few plastic bags for the odd stuff, and don't forget to label them, too.

Alright, now that you think you have it all together, how do you get there? A map? Gee, I never thought of that! A *Colorado Tourist* map sometimes has more information on it than the regular road maps have. Or, you can go to a really good map store and get topographic or county maps with the jeep trails, fire roads, and some of them even show mine areas. A good compass or even a simple GPS unit would be excellent to have.

I probably forgot something, but at least you now have an idea how to get started. If there's anything you might like to add or you have some tips for our hobby, please submit your info to the Pick&Pack Editor. Don't be bashful; she won't bite. ☺

Hey, people, please don't just up and take off. Let someone know where you're planning to go and what time you'll return. Search and rescues ain't no picnic!

ASK A GEOLOGIST

BY MIKE NELSON, CSMS

An anonymous junior geologist writes: *I found a fossil south of town. My teacher told me that I found a baculite. What is a baculite? What is it related to?*

I am pleased that your teacher recognized the find as a "baculite". The Pierre Shale, exposed at many localities in south Colorado Springs and along I-25 to Pueblo, contains a variety of fossils but none so common as "baculites". The term "baculite" (bak·u·lit) is sort of a generic name for any of the fossils belonging to the genus *Baculites* (bak·u·lit·ees). Paleontologists and biologists name animals and plants with a system called the Linnaean Taxonomic Hierarchy (LTH), named after the Swedish scientist Carl Linnaeus (see web bibliography at <<http://www.ucmp.berkeley.edu/history/linnaeus.html>>). The LTH is a formal system for classifying and naming living things based on a most general to most similar hierarchical structure. In other words, who are the organism's relatives---from close to distant. The terms in general use include (using modern humans as an example): Kingdom Animalia (multicellular without cell walls; [plants have cell walls]), Phylum Chordata (bilaterally symmetrical body; hollow nerve chord; our spine), Class Mammalia (milk by mammary glands), Order Primates (lemurs, lorises, apes, chimps, humans), Family Hominiidae (great apes, humans), Genus *Homo* (modern humans and close relatives), Species *sapiens* (modern humans).

The genus (generic name) and species (specific name) is called a binomial system of naming organisms and each unique organism has a binomial name (in Latin, a "dead" language not changing). Scientific rules call for italicizing the formal name when word processing, or underlining the name when handwritten. In addition, the generic name is always capitalized and the specific name is lower case.

In the case of *Baculites*, the classification is as follows: Kingdom Animalia, Phylum Mollusca (clams, oysters, squid, snails), Class Cephalopoda (octopi, nautiloids, cuttle fish), Order Ammonitida (shells w/ complex chambers;), Family Baculitidae (extinct group; straight shells), Genus *Baculites*, Species: numerous species named. So, in the big scheme of things, the baculites are related to oysters and snails but on a smaller scale are more closely related to squid and octopi. *Baculites*, translated as 'walking stick rock', had a shell that was generally straight and internally was divided into a number of chambers. These chambers contained some sort of a gas and the animal was able to regulate the pressure and control buoyancy as a tiny tube, the siphuncle, connected the chambers. The number of chambers increased in number as the animal aged and the soft parts of the animal occupied the final and largest chamber. As with other cephalopods, the head contained a number of tentacles surrounding the mouth and the animal was a predator.

One of the more interesting aspects of *Baculites*, and of most other shelled cephalopods, is the arrangement of the shell chambers. The chambers are separated from each other by a shell wall termed the septum. The area where a septum meets the external shell wall is termed the suture and the pattern created by this junction is the suture pattern. Baculites have a very complex su-



ture pattern with many different folds and indentations; these patterns are used to identify individual species. Often the fossil breaks along these suture patterns and creates sort of an odd looking creature.



Many of the fossil baculites found in the Pierre Shale are internal molds or steinkerns. That is, all of the external shell material has been dissolved away and only the internal "mud" (since turned to stone), with the suture pattern, remains. A more valuable specimen, from an aesthetic point of view, is one that has retained the fossilized external shell in its radiant beauty. Very few baculites are found complete and a single individual could, in the right condition, contribute a number of fossils as it breaks into numerous pieces.

Baculites was an extremely successful animal but only lived during a limited time period, the late Cretaceous, ~100 mya—65.5 mya. As with the dinosaurs, and many other marine animals, none survived the massive extinction event at the end of the Cretaceous (~ 65.5 mya). Geologists and paleontologists have completed extensive work on *Baculites* and have found it to be an excellent index fossil, an organism used to define/identify specific and small periods of geologic time. It appears that individual species of *Baculites* only lived for short periods of geologic time and since each species had a unique suture pattern geologists can use the fossil to zone certain rock formations. The Pierre Shale is one of those formations that contain abundant baculite fossils (and other coiled ammonites) with a rapidly changing population of individual species.

Since *Baculites* became extinct over 65 m.y.a. paleontologists need to locate other closely related animals in order to study their ecology. Unfortunately, the Cretaceous extinction event also killed off all other ammonites, both coiled and straight, except an animal called *Nautilus*. Although *Nautilus* is an extent coiled cephalopod, it is a much more primitive animal that has been around, as a group, for perhaps 500 my and has changed very little.



Two of the major differences between *Baculites* and *Nautilus* are: 1) the suture pattern of the former is quite complex while that of the latter is a simple, slightly wavy line; and 2) *Nautilus* has a coiled shell while *Baculites* has a straight shell. However, perhaps they lived in a similar manner, moving up and down in the water column as they changed the pressure in the shell chambers.

So, anytime you are traveling in the area and notice outcrops of a black, finely bedded shale, the Pierre Shale, take a closer look and perhaps you too will find an example of a "baculite". They make wonderful display specimens, and I have seen some really nice specimens in the collections of CSMS members.

If you have a question for our geologist, please send it to Mike Nelson at csrockguy@yahoo.com.

PERIDOT CONT'D FROM PG 6

while some are necessitated by Federal Regulations. Please follow all of them. If you want to visit the Peridot Claim on your own, as a member you are welcome to do so. Just contact Ron "Yam" either by email (ron.yamiolkoski@dmjmharris.com) or by phone (719-488-5526), and he will record your visit (required) and provide directions to the claim site.

STAUROLITE FIELD TRIP TO TAOS, NM

BY ROGER PITTMAN

Nine CSMS members, including new member **Karen Simmons**, went on the "Arroyo Hondo" staurolites field trip on Sept 6th. We met with **Marge Regel** and **Don Bray** who have the most experience in the area and proceeded to "The Arrogant Bastard", named for the beer bottles that were found there. This short but very



steep hike was hampered by thousands of staurolite fragments which caused most of us to stop several times to scratch around in the top few inches on decomposed mica schist yielding dozens of crystals usually of the 60° twin form but occasionally the nearly 90° form was found.

When we stragglers arrived at the A.B., **Andy K.** had dug a 6' trench 3'



deep in more compact schist, finding fewer staurolites than we had found in the loose soil, but his were larger and cleaner. Our lone junior member, **Danny Hillman**, found some very nice 90° twins.

Don Bray discovered a large snake that only wanted to be left alone—Don complied.

Five of us camped out under a few billion stars Saturday night, and the 8,000' elevation cooled off to the high thirties during the night, reminding us that winter is just around the corner.

Sunday morning several of us went up the road a little way where we collected garnets and staurolites on matrix; an ant hill yielded many small loose garnets. Others returned to the A.B.

Everyone on this trip collected many examples of the most common staurolite twins, saw great scenery, and most importantly—had fun! 😊

TIPS & TIDBITS:

 **How to Break Rocks for Tumbling** — A question that comes up frequently since small sized rocks are not always available in the gemstone material you want. You can prepare the rocks yourself with a rock hammer or pick, small sledge, Eastwing's crack hammer, or just a normal hammer and a heavy bag such as one made of denim. Bags can be made by sewing up an old Levi pants leg, a gunnysack, or a doubled up old pillowcase. Fold the bag opening under so that no rock chips fly out. Always be sure to wear safety glasses and gloves when crushing stone, especially when handling and removing the material from the bag—the edges may be sharp. Some like to break the stones in a box, which will help corral the flying chips. If you have a corner to work in, this will also help corral the chips on at least 2 sides, while you hammer the chips on a hard piece of steel, andiron, etc. If you have several pieces of rock to break up, only place rocks of the same hardness in the bag. You won't have to hit obsidian as hard as a piece of agate, and you don't want the softer material completely crushed.

Do not discard those very small fragments. Use them in your tumbler over and over again because they speed up the tumbling process. All of these small chips are rubbing the grit on your rock in a multitude of places which speeds up the process and makes a smooth, shapely stone.

To get a mental picture of what's going on in the tumbler, try picturing marbles in your tumbler. How many places are being touched with grit when the marbles rub on one another during the grinding and shaping of the marbles or stone? The small stones or filler will go between these larger spaces and will help accelerate the tumbling process. Some rocks are more fragile or brittle; for those stones, it may be best to slab in the approximate thickness you want, and then with a hammer and chisel, break them into sizes close to your preference. *Source: Rock Chips 03/08 via T-Town Rockhound 09/08.*

 **Is it Real or Manmade?**—A synthetic diamond will stick to a magnet, but natural ones will not. *Source: Rock Chips 07/07 via Mineral Minutes 09/08.*

 **Got Algae or Lichen?**—Soaking specimens in ammonia water followed by the use of a stiff brush will remove them. (Some minerals, like calcite, will dissolve in ammonia; check your chemistry before you do it!) *Source: Rock Chips 07/07 via Mineral Minutes 09/08.*

 **Epoxy Tip**—If it is necessary to separate an epoxy joint, simply heat it as epoxy disintegrates at a temperature of 250° F. This should be a warning to those who use heat to set epoxy. *Source: Rockpile 04/07 via Mineral Minutes 09/08.*

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Contact Yam to add any CSMS equipment or property you may have to the Inventory List.

GENERAL ASSEMBLY MINUTES

SEPTEMBER 18, 2008

BY JOHN CASTO, CSMS SECRETARY

President Rick Copeland called the meeting to order at 7:30pm; a motion to accept the July minutes was made, 2nd, and approved as printed in the Pick&Pack. New members **Bob & Eva Germano** and visitor **Maria King** (who later joined) were recognized.

Treasurer's Report was given by Rick Copeland for Ann Proctor who couldn't attend due to surgery from a broken leg! Rick also reported that the Show results are still being tabulated and will be given at an upcoming General Assembly meeting.

Phil Long Ford is raising the cost next year. Although we are hopeful that we can work with them to use their location, we are looking into other possible venues that could host our show. They are: Western Mining Museum, Penrose Sports Center, and the Crown Plaza Hotel.

Sub Group Reports – Meeting Times and Locations were reported. Pebble Pups report they have formed a Junior Group of District 11 middle and high school students. The main focus is to work on real Science Fair projects to enter into area competitions. They will also be having a special field trip to Leadville just for kids on September 27!

Membership Chair Bill Cain reports we have 95 new members this year plus the 15 Junior members who joined tonight – that is certainly a record! We signed up 45 new memberships at the show.

Field Trip Report – We have 3 new trips this next week alone and more being planned. Check the web site for the most current list. Yam has done an amazing job on the field trips this year, and winter is around the corner; so get out while you can!

The Board is working on a list of CSMS Assets and Property. If you have possession of or know the location of CSMS property or equipment, please let Yam or any Board Member know. Please tell us what the item is, its condition, and the location.

Roger Pittman gave a brief report on the Denver Show; most notably, it is the 2nd largest in the world. He will give a slide show featuring the show at a future general assembly.

Jack Thompson reported on MM6, a group of museum curators from around the world, that only meet every 4 years in locations around the world; this year they chose Golden, Colorado. He had the honor of driving 3 of them on a recent field trip and learned quite a bit. One poor fellow handles such expensive mineral specimens that he is not allowed to personally own any!

We were again encouraged to support for the current movement for birth stones as U.S. stamps.

Announcement - Dennis Beals will be having an upcoming open house, date to be announced.

Tom Towles worked with Rock & Gem Magazine at the Denver Show and shared that they will take article submissions and pay up to \$250 for articles of 1500 words. Rock & Gem has a Kid's Corner and gives 5 Prizes per month for answers to the Kid's Quiz. This is a national publication, but last month they had only 3 kids respond. So if your child enters, they have a great chance to win!

Betty Cain has the new CSMS back patches in for only \$4 each.

The General Assembly ended, refreshments and socializing were enjoyed, and then an informative and light-hearted Rock Tumbling presentation was given by Rick Copeland.

**The Colorado Springs Mineralogical Society's Pebble Pup
and
Junior Member Division
Announce:**



"No Child Left Inside" - The 2008 Earth Science Week Theme will focus the nation on learning about the Earth sciences in their natural setting—outside. Schoolchildren across the nation will turn off the TV and step away from their computers to discover the rocks, soil, watersheds, and weather patterns in their community. "The best Earth science classroom, any geoscientist will tell you, is the outdoors," says Ann E. Benbow, AGI Director of Education and Outreach. "We're encouraging students, teachers, and everyone interested in Earth science to learn by experiencing it firsthand during Earth Science Week 2008. That means hiking over and digging into the Earth, taking water samples, making cloud observations, and more." Earth Science Week is supported by the U.S. Geological Survey, the AAPG Foundation, and many other geoscience organizations. The Pebble Pup and Junior Member groups will celebrate Earth Science Week by getting outdoors for a special field trip.

AGI Announces Contests for Earth Science Week 2008 The American Geological Institute (AGI) is sponsoring three national contests in conjunction with Earth Science Week 2008 - "No Child Left Inside", October 12-18. All U.S. residents are encouraged to enter "Earth Science Beyond your Front Door" the 2008 photography contest. This contest asks people to explore the geologic world through the camera. Students grades K-5 who enter the Visual Arts Contest "Studying our Earth" should show themselves as an Earth scientist actively studying our planet, through drawing or painting. The Essay Contest, open to students in grades 6-9, is themed "Earth Connections." Entrants are asked to discuss the interconnected geologic processes that take place in their community and how those processes in turn affect them. All entries must be either postmarked or received digitally by 5:00 pm EDT on October 17, 2008 (Steven Veatch, chair of Pebble Pups and Junior program, will facilitate the electronic submissions).



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