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THE COLLECTION OF ROCKS, MINERALS, FOSSILS, AND SEMI-PRECIOUS GEMSTONES ON PUBLIC LANDS MANAGED BY FEDERAL AGENCIES

BY DR. MIKE NELSON, CSMS

This article represents the view of the author and not the collective view of the CSMS Membership nor is it endorsed by the CSMS Board. It also represents the author's interpretation of the various federal laws, rules, and regulations. Individuals should always contact the appropriate federal agency before embarking upon a collecting trip.

The Paleontological Resources Preservation Act (PRPA) currently is before the U. S. Congress. At the time of this writing (late March 2009), the bill had passed the Senate and was scheduled for a vote in the House. I was buried in a much larger bill termed the Omnibus Land Bill or the Wilderness Land Bill. The PRPA is an emotional issue for many people and has caused a great deal of concern among the rock and mineral clubs in the U.S. In fact, the national and regional federations have come out strongly against the bill. I hope to present in this article information about rock, mineral, and fossil collecting on public lands as currently stated in a variety of laws and codes and then examine the laws proposed in the PRPA.

There are a variety of federal agencies that manage lands containing natural and physical resources such as rocks, minerals, and fossils. The Department of the Interior (DOI) is the nation's largest land manager and our principle conservation agency with a mission to protect "America's treasures for future generations". The DOI manages over 500 million acres (ma), about one-fifth of the surface land in the U.S., within the following agencies: 1) Bureau of Land management (BLM) with 256 ma; 2) National Park Service (NPS) with 84.6 ma; 3) Bureau of Reclamation (BOR) with 8.7 ma; 4) Bureau of Indian Affairs (BIA) 66 ma; 5) Fish and Wildlife Service (FWS) with 96.2 ma. In addition, the major federal research organization concerning geology, water, and biology is housed within the DOI—the U. S. Geological Survey (USGS).

The second major federal land manager is the Department of Agriculture (USDA) that contains the U.S. Forest Service (USFS) with a mission "to achieve quality land management under the sustainable multiple-use management concept to meet the diverse needs of people" and managing 193 ma of forests and grasslands.

Most of the federal land management agencies derive their authority to manage rocks, fossils, and minerals from the act that created the particular agency (such as the Organic Act of 1916 creating the NPS), the Federal Land Policy and Management Act of 1976 (FLPMA), the National Environmental Policy Act of 1969 (NEPA), and various sections of regulations found in the Code of Federal Regulations (CFR).

FLPMA is perhaps the most comprehensive of the laws and states that the public lands shall be managed in a manner that protects the quality of scientific and other values; requires that they be inventoried on a continuing basis; and that the use, occupancy and development of these lands be regulated through easements, permits, leases, licenses, published rules, or other instruments.

Unfortunately, the rules and regulations concerning the collecting of rocks, minerals, and fossils on federal land vary from agency to agency and often vary within a particular agency. It remains difficult to locate specific collecting rules on web sites and often an inquirer gets conflicting answers from personal questions posed

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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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in district offices. The passage of the PRPA may help alleviate some of these ambiguities.

The NPS, with a mission of "the preservation, protection, and stewardship of natural and historic resources in such manner and by such means as will leave them unimpaired for the enjoyment of future generations", seems to have the most straightforward rules on collecting—essentially you cannot collect anything: "collecting, rock-hounding, and gold panning of rocks, minerals, and paleontological specimens, for either recreational or educational purposes is generally prohibited in all units of the National Park System" ([36 C.F.R. § 2.1\(a\) and § 2.5\(a\)](#)). However, some units allow scientific research with a valid collecting permit and some Alaskan parks allow limited rock and mineral collecting.

The BOR has a mission to "manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public". Most land managed by the BOR is found around "water facilities" as the Bureau operates 348 reservoirs and 58 hydroelectric plants in 17 western states. Paleontological resources on BOR lands are protected and anyone wishing to collect fossils must first obtain a permit. Permits are only issued for scientific research (Secretarial Order 3104 delegates authority to BOR to issue paleontological resource use permits for lands under its jurisdiction). As best that I can interpret, causal and recreational collecting of minerals and rocks is not allowed on BOR land: "(a) You must not destroy, injure, deface, remove, search for, disturb, or alter natural resources or cultural resources, including abandoned buildings or structures, on or in Reclamation facilities, lands, or waterbodies except in accordance with §423.29(g) and other applicable Federal, State, and local laws."

The FWS has a mission of "working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people." The major responsibility of the FWS is the management of 550 national wildlife refuges and other units of the Refuge System, plus 37 wetland management districts. However, the FWS is heavily involved with endangered and threatened species. Rules for collecting appear to be similar to the BOR—causal collecting is generally not allowed and a permit is needed for scientific collecting. The National Wildlife Refuge System Administration Act of 1966 requires a review of proposed activities (i.e. survey and collection of fossils) to determine whether they require the issuance of a special use permit for the collection of natural objects (50 CRF 25 and 27).

The BIA's mission is to "... enhance the quality of life, to promote economic opportunity, and to carry out the responsibility to protect and improve the trust assets of American Indians, Indian tribes, and Alaska Natives." The authority of the Bureau of Indian Affairs (BIA) to manage fossil and mineral resources on Indian lands is limited and not mandated by statute. Indian lands are not public lands. Each parcel of Indian land is managed by the individually recognized tribe." Generally, collecting of any resource is prohibited.

CSMS members interested in collecting rocks, minerals, or fossils commonly will encounter lands managed by the BLM and their rules and regulations are clearly spelled out in various publications and on web sites, for example: http://www.blm.gov/co/st/en/fo/gjfo/mineral_material_sales/rock_hounding.html.

Rockhounding is allowed on BLM managed lands with the exception of developed recreation sites and special management areas or where otherwise prohibited and/or posted. In addition,

- semi-precious gemstones, petrified wood, common invertebrate and plant fossils may be collected on public lands without charge or permit in reasonable amounts as long as the specimens are for personal use only and cannot legally be sold or bartered.
- no undue or unnecessary degradation of the public lands is allowed during the removal of rocks, minerals, gemstones, or fossils.
- collection and removal must be done by hand tools only and cannot be aided with motorized or mechanized equipment. Metal detectors are acceptable except on historical sites.
- the removal of vertebrate fossils requires a permit.

The BLM Grand Junction Field Office has defined reasonable amounts for rocks, minerals, semi-precious gemstones and common invertebrate and plant fossils as quantities that can fit into a five gallon container. Collecting materials in excess of a five gallon container requires a permit and fee.

Petrified wood on BLM land is governed by its own law: 43 CFR 3610, 3621 and 3622. Individuals may remove 25 pounds in weight plus one piece per day, with a maximum amount of 250 pounds removed in one calendar year.

Most Colorado BLM districts follow these regulations as so well published by the Grand Junction Field Office. However, I did find that the Arizona BLM defines reasonable amounts for common invertebrate and plant fossils, semi-precious gemstones, minerals and rocks as identical to that of petrified wood.

The USFS has perhaps the most confusing regulations and rules of any federal land management agency. However, in their defense, it appears the Forest Service does not have the authority for the disposal of minerals, rocks, and fossils from USFS lands other than under the Mining Laws and 228 mining regulations. As for fossils, it appears that some in the higher echelons of the USFS believe that the agency does not have the authority to manage fossil resources because any potentially applicable laws used in other federal agencies (Antiquities Act, Organic Act) are constitutionally vague with respect to fossils.

Near Colorado Springs, the Pike National Forest specifically states that individuals must "have a permit to remove any minerals or wood products from the National Forest" (<http://www.fs.fed.us/r2/psicc/faq/index.shtml#Q48>). However, a personal visit to the Colorado Springs office produced the answer of "100 pounds per year mixed minerals, rocks and fossils" without a permit. The USFS Rocky Mountain Region web site states that "amateur rock hounds may collect rock and mineral specimens on Forest Service land if 1) the mineral rights are not owned; 2) rock and mineral collection is allowed in the area; and 3) no digging or excavating takes place". Since the hands of the USFS seemed tied with regard to rules of collecting, reality seems to indicate that most districts

allow for, or overlook, recreational/causal collecting of common invertebrate/plant fossils and minerals if the materials are for personal use (no selling or bartering) and the land is not disturbed (no digging).

As for petrified wood, the regulations of the USFS differ somewhat from the BLM. The federal code, 36 CFR 228.62 (e), states: "*Petrified wood*". A free-use permit may be issued to amateur collectors and scientists to take limited quantities of petrified wood for personal use. The material taken may not be bartered or sold. Free-use areas may be designated within which a permit may not be required." I have been unable to locate a definition of "limited quantities"; however, this definition may be left to the individual land managers since the CFR continues: "the rules may vary by area depending on the quantity, quality, and accessibility of the material and the demand for it".

All of the federal agencies managing lands do have at least five important rules in common: 1) the collection of vertebrate fossils is either prohibited or requires a permit; 2) the commercial collection (for sale or barter) of any specimen (rocks, minerals, semi-precious gems, common invertebrate fossils and plants) requires a permit; 3) land managers may establish special management areas where all collecting is prohibited (such as McInnis Canyons National Conservation Area and Rabbit Valley Research Natural Area near Grand Junction); 4) the collection of specimens is prohibited in developed recreation areas; and 5) if the collection of petrified wood is allowed, then it is governed by a special set of rules. In addition, it appears that land managers do a tremendous job with quite limited resources in protecting our natural resources.

The Paleontological Resources Preservation Act (PRPA as proposed) is an attempt to codify the numerous regulations and rules governing the collection of fossils on most federal lands, especially lands managed by the BLM and USFS. The Act continues the existing practice of requiring that vertebrate fossils and other rare and scientifically significant fossils be collected only by qualified researchers who obtain a permit. Collectors must then agree to deposit the fossils in public institutions which will ensure their future availability to researchers and the public. However, the Act strengthens the causal/recreational collecting as one of the purposes of the PRPA is "to ensure that amateur collecting of rocks, minerals, and invertebrate and plant fossils on Federal lands is not affected by this Act." It provides that "The Secretary, the Director, or any other Federal land manager, with the exception of a Federal land manager of land under the jurisdiction of the National Park Service, SHALL (emphasis mine) allow casual collecting of abundant invertebrate and plant paleontological resources, for scientific, educational, and recreational uses, without a permit, where such collection is not inconsistent with the laws governing the management of those Federal lands and this Act."

In my opinion, the PRPA strengthens the status of amateur collectors and gives additional collecting rights to members of rock and mineral clubs such as CSMS. However, much misinformation is being disseminated by groups who would stand to profit from the collection and sale of vertebrate fossils from federal land. Headlines such as "pick up a rock and go to jail" or "Boy Scouts will go to jail" do nothing but inflame the situation and are, in fact, dishonest and untruthful attempts to sway the opinion of amateur collectors. The truth is that the PRPA gives the needed Congressional authorization for amateur collecting on public lands.

In summary, I would like to point out the following:

Lands managed by the Bureau of Reclamation, the National Park Service, the Bureau of Indian Affairs, and the Fish and Wildlife Service generally prohibit the collecting of rocks, minerals and fossils. In some instances the agencies will issue a permit for collect-

ing by qualified personnel. Nothing is likely to change with passage of the PRPA.

Collecting of vertebrate fossils on all federal lands is currently prohibited. In some cases an agency may issue a permit for collecting by qualified personnel. PRPA will not change this regulation.

The commercial collection (for sale or barter) of rocks, minerals, semi-precious gemstones, common invertebrate and plant fossils is prohibited on all federal lands unless the collector has secured a permit. Currently, only the BLM and USFS are likely to issue such a permit, and it remains questionable if a permit would be issued for the commercial collection of **any** fossil. I note that the BLM in Utah specifically prohibits the commercial collection of fossils.

The recreational/causal collecting of rocks, minerals, semi-precious gemstones, and common invertebrate/plant fossils is allowed, but regulated, on BLM land. BLM districts vary in their interpretation of "reasonable amounts" but the "five gallon rule" (see above) seems common. The PRPA will not change this recreational collecting and in fact will give it "congressional approval".

The recreational/causal collecting of rocks, minerals, semi-precious gemstones on USFS land is governed by numerous mining laws and regulations. Legally (my opinion), it appears that you may not collect any specimen without a permit. However, these rules are often overlooked or not enforced. The PRPA specifically gives congressional approval for recreation/causal collecting on USFS lands.

The legality of recreational/causal collecting of common invertebrate/plant fossils on USFS lands is questionable and seems left to the discretion of individual land managers. It appears that PRPA will legally (my opinion) allow their collection as Section 15 specifically states: "Nothing in this Act shall be construed to ... apply to, or require a permit for, amateur collecting of a rock, mineral, or invertebrate or plant fossil that is not protected under this Act."

A concern among some rock and mineral groups is that the PRPA would require a "paper trail" for the sale of rocks and minerals and therefore harm rock, mineral, and gem shows. However, there is no requirement in the PRPA for certification or proof of ownership of rocks, minerals or fossils. Current law does require, under the Mineral Materials Act of 1947, that in order to collect, then sell rocks and minerals from public lands, any collector must have a mineral materials permit from the appropriate agency, and pay royalties to the government. The PRPA will not alter this law.

Some collectors are concerned about the false labeling aspect of the PRPA and be-

lieve that amateurs will be prosecuted for making an "honest mistake" in the identification of fossils. However, the false labeling offense applies when any false statement is made in association with a criminal offense under that section of the PRPA. This is not new authority as the agencies currently have authority to make a charge of "false labeling," and if applicable, would be made in association with a charge under theft of federal property.

Similar to the previous statement, some collectors are concerned their personal property could be seized for misidentifying and collecting rocks and minerals. First of all, the criminal and civil penalties in the PRPA would apply only to paleontological resources, not rock collecting. Any forfeiture could only occur after conviction. Congressional passage of P.L. 106-185, the Civil Asset Forfeiture Act of 2000, requires that in all suits or actions brought for civil forfeiture of any property, that the burden of proof is on the United States to establish by preponderance of evidence that the property is subject to forfeiture. Therefore, under the current theft of property statutes at Title 18, P.L. 106-185 would offer the defendant additional protection. In addition, the most recent version of the PRPA does not allow for the seizure of personal vehicles, a point of concern among many rockhounds (PRPA Sec. 6308(b) Forfeiture, "and all vehicles and equipment of any person that were used in connection with the violation" has been deleted in the most recent version of the bill. In my opinion, this forfeiture provision is going to apply to collectors deliberating quarrying vertebrate fossils or perhaps protected invertebrate fossils.

Some recreational "gold panners" are concerned that the PRPA will affect their hobby. Gold panning is often allowed on BLM and USFS lands and will not be affected by the PRPA.

As previously stated, the passage of the PRPA is an emotional issue, especially for those collectors without full knowledge of the proposed law. Therefore, I would encourage CSMS members to obtain a copy of the proposal (from the web or your senator or representative) and study it in detail.

APRIL PROGRAM

The April 16th General Assembly program will be presented by Glenn Landry, "Metal Detecting in the Pikes Peak Area". Glenn is a member of CSMS and Gold Panners and has been around the hobby for many years.

This will be a good time to bring all those questions you have about using a metal detector.

PRESIDENT'S CORNER

BY RON YAMOLKOSKI, CSMS



Well, March 7th was sure a busy day. Not only did we select three Science Fair winners, but we had our Silent Auction and Bake Sale. Bob Germano and Laura Canini served as judges selecting three outstanding entries as recipients of our prizes. Not to be outdone, Danny Canini helped out at the Silent Auction. Linda Laverty, Jim Bushnell, Charles Webb, Ann Proctor and, of course, Drew Malin along with others helped to make our first March Silent Auction a success. Thanks to everyone who made contributions with a special thanks to Drew and his company for picking up the cost of the room and refreshments at the Embassy Suites.

I think we can all agree that this has been a strange winter. A lot of people have been doing a lot of collecting throughout the winter. I've been out several times and even in Lake George the frost has been shallow and the snow virtually non-existent. Maybe April will provide some much needed moisture. April is the start of our field trip season, so I hope we get moisture during the week so our Field Trips don't need to be cancelled or rescheduled. Check the website and make your reservations early so you don't miss out.

Speaking of field trips and collecting, the Club could really use your donations. Steve Veatch tells me he has received some donations but needs more for his Pebble Pups and Junior Groups. We have more youngsters this year than in the past so more materials are needed. We will also need specimens for the Kid's Area at our June 20th Rock Fair at WMMI. Roger Pittman and the gang will be working with the kids, and my guess is that we will go through a lot of material.

I have received a number of questions about the Rock Fair at WMMI, so let me answer a few:

Q. Will I need to pay admission to the Rock Fair?

A. All members of CSMS presenting a valid 2009 or Life Membership Card will be admitted for free. Also, all volunteers will be admitted free.

Q. When will we start meeting to make plans for the event?

A. The first Rock Fair at WMMI committee meeting will be on Thursday, April 16th at 6:30 PM at the Senior Center. Everyone wishing to help is welcome.

Q. I understand there will be vendor booths available, can I get one?

A. There will be vendor booths available. Club members can get a 10'X10' space for \$20/space. The charge for non-members will be \$25/space. Contact me if you are interested. This is an outdoor show, so the space is just that—a hunk of ground at the WMMI.

Q. Will we have any displays?

A. I will be checking with WMMI to see if we can get some inside space for those members that wish to provide a display. There will be no judging or competition as part of the Rock Fair.

Q. How can I help?

A. We will need a variety of people for setup of the vendor space, to man the Kid's Area, to help with security and cleanup, to be speakers, to provide expertise on rock-mineral-fossil identification, etc.

Q. Will this take the place of our Annual Show?

A. No. Our Annual Show has been moved to the first weekend in December and will be the same great event that it has been in the past.

We have gained a lot of new members in the past couple of years. First let me say, welcome aboard. You have joined a great organization and will make some great new friend and have some real fun experiences. I encourage you to join one or more of the groups. When you join CSMS it is like joining a lot of clubs at once

if you take advantage of what is offered. I know the Camera Group has room for more participants and Dave Wilson and Paul Berry are always willing to help people get involved with faceting. Join a CSMS Group and have fun.

Lastly, a special thanks to Betty and Bill Cain. Both have been down with some sort of plague for the past several weeks and in spite of it have managed to get the Pick&Pack out. Let's hope they get well soon.

Take care out there,
Yam

RMFMS PRESIDENT'S LETTER

BY STAN NOWAK, RMFMS

I thank everyone in the Federation for continuing to locally advertise their clubs. Even though the Federation has tentatively lost two clubs, we have grown by almost 900 new or returning members in this past year. Give yourselves a pat on the back; that's great work. Keep it up! According to the latest reports, we now have over 8,000 members in the RMFMS.

A meeting was held March 3, 2009 at Cherokee, OK concerning the status of the hourglass selenite crystal digging area. Parsons Corp., a contractor to the U. S. Army Corps of Engineers, presented what has transpired since a vial of training chemicals was found by a Boy Scout from Bartlesville, OK in April 2007.

The area was combed for hazardous anomalies. A total of 155 vials were found near the same area. The digging area was scanned with a large metal detector on wheels. Digging was done only in the areas of anomalies. Only .2% of the anomalies produced any chemical agent identifications sets (CAIS). All info that concerns the digging area is available for public viewing in the Cherokee public library.

There were five proposed alternatives for the area. Alternative #1 was to open the site as is. Alternative #2 was to limit access to the area by certain personnel. Alternative #3 was to open the area to all with educational signs and pamphlets about possible hazards and what to do if any are found. Alternative #4 was to dig up all anomalies, even those that do not fit the profile of a CAIS. Finally, alternative #5 was to excavate & restore the entire area and possibly destroy the crystal forming environment.

The panel, which included Parsons Corp., U.S. Army Corps of Engineers, EPA, Fish and Wildlife, Oklahoma State Environmental etc. chose alternative #3 as the Preferred Alternative. A public comment period was open from February 16 to March 18 for written comments. I commented at the meeting that while it would be nice to just open the area by alternative #1, to promote health and safety concerns, alternative #3 was the best choice.

After public comment period closes, a summary of the comments will be written by the Tulsa District of the U.S. Army Corps of Engineers and presented April 17 to the Fish and Wildlife Service Regional Director in Albuquerque, NM who will make the ultimate decision. He does not have to agree to the preferred alternative although every one at the meeting hopes he does. Once I get the word of his decision I will notify the RMFMS and AFMS.

We need clubs to host federation shows over the next few years. We also need clubs to recognize members for the federation scholarship honorees. We have had numerous great honorees in the past and are sure there are others that deserve recognition.

Have you made an AFMS Club Rockhound of the Year (ACROY) nomination? Contact your editor for details.

AFMS NEWS

DEE HOLLAND, AFMS

We have a new twist to the way prizes for the Endowment Fund Drawing will be awarded. In the past, all the tickets were dumped into a single hopper and all tickets were drawn from there. Doing this sometimes produced a large number of winners for ticket holders in one federation and perhaps none for another. This year, we're going to ensure that at least one prize is awarded to someone in each of our seven federations!



Here's our plan. Tickets sold by each of the regional federation representatives will be held apart from all the others until we make the drawings on Saturday, August 1 during the AFMS/NFMS Convention in Billings, MT. We'll start the drawing by randomly pulling one ticket from each of the regional federation submissions. That way, each federation will have at least one prize winner.

After the first seven prizes are drawn, we'll dump all the remaining tickets together in a huge hopper, mix them thoroughly and proceed to draw tickets for the remaining prizes.

Another new twist. We're going to number each of the prizes as we've always done, but this time, after all the winning tickets have been drawn, we'll put them in a small container and select them again. The first ticket drawn would receive prize #1, second ticket, #2 etc. In order to be sure that you have a better chance of winning, don't send money to me for tickets. Instead, send for tickets from your regional committee member so you can get in on the regional drawing. This new idea has been suggested by a number of former and present regional committee people and we'll see how it works this year.

As in previous years, you will be able to purchase tickets at the show itself through Saturday morning. We'll hold the drawings on Saturday afternoon, possibly right after the Single Stone Auction. We'll announce the winners during the Awards Banquet on Saturday evening and of course via the AFMS Newsletter.

We do have prizes coming in including faceted stones, a meteorite and an intarsia. Here's a picture of one new prize that's been added to the engraved vase we featured last month. Prize #2 is an opal pendant featuring 7 Mexican opals and 6 diamonds. It's set in 14 carat gold and is on a 20 inch gold chain. The donation is from Joyce & Delbert Speed of the South Central Federation and has a value of \$150.



WMMI HAPPENINGS

Heritage Lecture - Ed Bathke presents stereographs & photography in the Gold Regions

Thursday April 2, 7:00pm



Mr. and Mrs. Ed Bathke will be presenting rarely seen stereograph photos from Colorado's gold rush era and also describe how photographs were taken during that time and how the unique stereograph process worked. Photography's development in 1839 and continued advancements coincided with the American West going through its pioneer phase. Travelers, adventurers, and those on assignment sent photos back east as a record of their travels and encounters in the west. Among the key individuals in the early days of photography was Edward Anthony who, along with his brother Henry, owned E. & H. T. Anthony, a photo supply photographic studio business in New York City. They produced many of the stereograph images that Bathke's will be showing, which includes a set of image called the "Gold Regions." Among the photographers represented in the images and who worked with the Anthony's are William Chamberlain, who photographed Colorado scenes from 1860 till the early 1900s and George Wakelym, who photographed Colorado at various times during the late 1800s.

Ed and Nancy Bathke are Wisconsin natives who have lived in Colorado since 1960. They have extensively researched Colorado history and are members of the Ghost Town Club of Colorado, Denver Westerners, and Pikes Peak Westerners. They presently live in the foothills southwest of Denver.

Reservations Required ~ Free to CSMS Members ~ \$5 Non-Members

CAMERA CLUB

BY ROGER PITTMAN

The CSMS Camera Club met Tuesday the 24th. Our competition was "Something Green". Eloise Berry won with a photo of Smithsonite with 29 points. A guest, Bev Millett, also scored 29 points with a photo of an insect taken by former member Frank Barnes. There was some discussion of the possible production of a CSMS mineral calendar. With the current cessation of mailing the newsletter, several members haven't received their copy and have not been able to keep up with current events. We also got to meet the newest Rieth grandchild, My Linh. My Linh (age 6) was adopted 3 months ago from Vietnam and has been making great progress learning English and our very different culture. As always, we had snacks and great fellowship.

PRINCETON SCIENTIFIC EXPEDITION OF 1877: THE FLORISSANT, COLORADO SEGMENT

BY STEVEN W. VEATCH, CSMS

Early scientific information and fossil specimens from what is now the Florissant Fossil Beds National Monument came from a group of college students who, in 1877, traveled to the Florissant area from Princeton (then the College of New Jersey). Original expedition documents and photographs from Princeton's Mudd Manuscript Library and other sources provide a clear and complete chronology of the Princeton Scientific Expedition and reveal new details of this early phase in the history of paleontology at Florissant.

While in their junior year (1876), three of Arnold Guyot's students, Henry F. Osborn, William B. Scott, and Francis Speir Jr., envisioned a scientific expedition to the West. They sought advice from the paleontological profession, but because of the feud between E.D. Cope and O.C. Marsh, such information was classified. Undaunted, they organized the expedition throughout their senior year. On June 21, 1877, the Princeton Scientific Expedition left New Jersey for the West. After arriving in Denver four days later, the students spent time buying equipment, wagons, mule teams, and recently captured Indian ponies. The students first explored the Garden of the Gods in Colorado Springs. Upon arriving in Florissant in mid-July, they camped near what is now the park's visitor center and began their search for fossils. The students soon made contact with Charlotte Hill, who collected fossils in the area and supplied them to visitors. Here is an interesting entry in the student's journal about Florissant and Charlotte Hill:

Wednesday, 11 July, 1877

"About 1.30 p.m. the usual mountain shower passed over us, but we were well protected by our ponchos and enjoyed the gentle and cooling rain as we always did thereafter. While galloping four abreast over a narrow road that wound through a pine wood, dear Hux collided with a tree and was nearly unseated. His poncho was rent after the manner of the ancient Hebraic sackcloth, and a roar of uncontrollable laughter burst from the others. This wanton merriment enraged dear Hux for the moment, and he galloped ahead (at his horse's) best pace but soon reigned into a clump of cottonwood bushes by the roadside for the laudable purpose of regaining his self-control. For Hux is a scripture-loving biologist and often ponders in the quiet way upon the pregnant maxim that "he that ruleth his spirit is better than he that taketh a city." By the time that the others had come up Hux emerged from his hiding place, his countenance filled with smiles and his benevolent glasses beaming peace, forgiveness and goodwill toward all men.

When we approached petrified stumps, we inquired the way to Mrs. Hill's, who we had been informed, was the owner of some valuable beds containing fossil leaves and insects. On reaching the house, we examined the specimens and were satisfied that we had "struck a find." While Hux united in this opinion as he found in Mrs. Hill a person obliging enough to repair his tattered poncho. It was but a short ride from Mrs. Hill's to Judge Castello's ranch at the post office in Florissant. Here we ate a good dinner, after which several of us set to work in a deposit containing leaves and fishes while Scott and Professor Brackett visited Mrs. Hill's to



make arrangements for the morrow. After extracting several fishes wanderers all came in, beds were laid in the hay loft, prayers were said (or forgotten) and we sank to pleasant dreams”.

The insects the students collected filled five trays. The collection of plants comprised 25 trays containing more than 900 specimens. At least 180 of the plant and insect specimens became type specimens. Samuel Scudder and Leo Lesquereux described many of these type specimens. Osborn, Scott, and Speir described a number of fish specimens collected at Florissant, including the new species *Trichophanes copei*.

The expedition diaries, journals, and photographs document a remarkable expedition and contribute to the history of paleontology in America. The fossils of the Princeton expedition have allowed researchers in the past, and will allow those in the future, to better understand the paleontology and paleoecology of the Florissant fossil beds.

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**Steven Veatch** is the author of a number of articles on earth science topics. He lives next to the Florissant Fossil Beds National Monument where he is a volunteer and serves as President of the Friends of the Florissant Fossil Beds, Inc. Steve is also a life member of CSMS and Pebble Pups/Junior Group Leader who has received numerous honors and awards.

## AMBER: NATURE’S WINDOW TO THE PAST

BY KURT LAHMERS, CSMS

**D**o you know what amber is? What termites eat? Well if you don’t, you will soon find out what the answers are to some of your questions on amber and termites. Amber is a fossil tree resin; it is also considered a gem stone—one of the few organic gemstones, like a pearl. If you think amber is tree sap, you’re wrong. Sap is a fluid transported in xylem cells or phloem tube elements of a plant (Aber, 1996-2008). In other words, it is the trees’ “blood.” Resin is a hydrocarbon secretion of many plants. Resin is mostly found in coniferous trees. Resin acts as an effective “band aide” when a tree has broken a branch. It covers the spot where the branch broke off so bugs and diseases don’t enter into the tree. Scientists do not fully understand why trees make resin, but table 1 shows the reasons they believe trees make resins (Aber, 1996-2008).

Resin is a hydrocarbon and is insoluble in water (Langenheim, 2009), this is very important in the process of preserving insects and other materials. Frankincense and Myrrh are the two most famous types of resin (Platt, 1998). Table 2 shows the common chemical information on amber.

| Why Trees Create Resin                                                                   |
|------------------------------------------------------------------------------------------|
| A defense against fungi and insect attacks                                               |
| A form of desiccation control (prevent water loss) via resin covering of leaves and bark |
| Reaction to storm damage (as cited in the text a self-made band-aid)                     |
| Bi-product of some growth process                                                        |
| Aid to reproduction by the attraction of insect pollinators                              |

**Table 1.** Some of the common reason trees create resin. (Aber, 1996-2008)

Tree resins go through an intermediate stage (called copal) in the transformation to amber. Copal is not yet fossilized (Aber, 2000). Amber is formed by the polymerization of resin. Polymerization is the linking of small molecules to make larger molecules (Polymerization, Answers.com).

| Chemical Properties |                                                                             |
|---------------------|-----------------------------------------------------------------------------|
| Chemical formula    | [C, H, O]                                                                   |
| Empirical formula   | C <sub>12</sub> H <sub>20</sub> O (general formula, other variations exist) |
| Composition         | Hydrogen – 11.18%;<br>Carbon – 79.94%;<br>Oxygen – 8.87%                    |
| Physical Properties |                                                                             |
| Color               | Yellow, brown, colorless, brownish red.                                     |
| Fracture            | Conchoidal                                                                  |
| Cleavage            | None                                                                        |
| Luminescence        | Fluorescent                                                                 |
| Crystal system      | Amorphous – no crystals                                                     |
| Hardness            | 2-2.5 – gypsum-finger nail                                                  |
| Optical data        | Isotropic, n=1.54                                                           |
| Luster              | Resinous                                                                    |
| Density             | 1.05 – 1.15, Average = 1.1                                                  |
| Molecular weight    | 180.29 gm                                                                   |

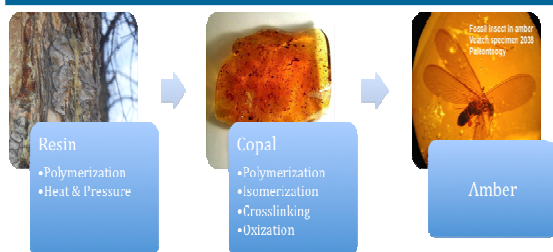
*Table 2. Amber Chemical and Physical Properties. Barthelmy, 2005)*

Isomerization and crosslinking also occur while resin is maturing (Amber, 11/6/01-2/7/09). Figure 1 provides an overview of how amber is formed. You can consider that amber is a “Mother-Nature-made plastic.” (Fossils, Windows to the Past, Univ. of Calif. Berkely Mus. of Paleo.)

Have you ever wondered why the insects in amber stay preserved? Well, now you will find out why. Resin seals out water and oxygen so insects don’t dry out and oxidize. It also protects the insect from other forces of nature, such as decay or being eaten by another organism. Although it takes a long time for resin to become amber, the insects inside do not decay. Since they don’t dry out and oxidize, scientists can learn about the past and how these insects lived.

Insects get trapped in resin by just walking into it. When the insect walks into the resin, it gets stuck. While the insect can’t move, more resin slowly flows over it. The first picture in Figure 1 shows a picture of tree resin slowly flowing down a tree and the process that turns the resin into amber.

The amber in figure 2 contains a well-preserved specimen of a termite. Biological classification puts termites in the order of Isoptera because termites have a unique ability: Termites are different from other insects because they are able to



**Figure 1. The Process of forming amber.** From left to right: photo 1 is resin (photo by K. Lahmers taken at Florissant Fossil Beds National Monument, CO.), photo 2 is copal (used by permission from I. Fischer, University of Wisconsin), and photo 3 is Amber (from the S. Veatch collection, photo by S. Veatch).

digest cellulose, the main chemical component of all plants (O'Toole, 2002). Table 3 shows the biological classification of termites.

The families of termites are divided into two groups by how they digest cellulose. The six lower termite families have protozoa in their stomach, which helps these termites



**Figure 2. Expanded view of the photomicrograph from figure 1.** Note how delicate details are preserved. Photo by S. Veatch.

digest cellulose, while the one higher family of termites lacks stomach protozoa, so they have bacteria and fungi to help them digest cellulose (Termite: Wikipedia).

Both lower and higher families of termites have a symbiotic relationship with the protozoa, bacteria, and fungi.

Although termites are sometimes called "white ants," they are not related to ants. The differences and similarities are shown on table 4.

Termites have a caste structure with a queen, king, reproductive adults, soldiers, and workers. From the small workers to the big queen, termites range in size and look very different from each other. A queen termite is the biggest in the nest and has a big abdomen used to produce lots of eggs. The king is the second largest in the nest. The reproductive adults are the only ones in the nest that have wings. Some soldiers have armored heads with large mandibles (jaws), while others have extended snouts to spray poison. The workers are the smallest and usually don't have eyes (Squire, 2003).

How termites survive is interesting. After the two reproductive adults mate and make a nest, the king termite always stays by the queen's side. Termites can build amazing homes. They can live in trees, or in mounds and under ground. Termites like to stay

|           |             |           |                                          |        |
|-----------|-------------|-----------|------------------------------------------|--------|
| King-dom  | Animalia    | Fami-lies | Mastotermitidae (1 species)              | Lower  |
| Phylum    | Arthro-poda |           | Hodotermitidae (3 genera, 19 species)    | Lower  |
| Class     | Insecta     |           | Kalotermitidae (22 genera, 419 species)  | Lower  |
| Sub-class | Pterygota   |           | Termopsidae (5 genera, 20 species)       | Lower  |
| Order     | Isoptera    |           | Rhinotermitidae (14 genera, 343 species) | Lower  |
|           |             |           | Serritermitidae (1 species,)             | Lower  |
|           |             |           | Termitidae (236 genera, 1958 species)    | Higher |

**Table 3. Termite biological classifications.** The first 6 families are considered lower termites, and the last one is considered a higher family. (Wikipedia, <http://en.wikipedia.org/>)

| Feature                    | Termites                                         | Ants                        |
|----------------------------|--------------------------------------------------|-----------------------------|
| King and queen             | Mate for life and king is always at queen's side | King dies soon after mating |
| Worker Caste               | Can be male or fe-                               | Usually only female         |
| Food                       | Eats cellulose                                   | Leaves and other insects    |
| Biological classifica-tion | Isoptera                                         | Hymenoptera                 |
| Related to                 | Cockroach and man-                               | Wasp and bees               |
| Nesting habits             | Forms large colonies                             | Forms large colonies        |

**Table 4. Termites vs. Ants.** The differences between termites and ants are numerous and obvious. (Squire, 2003; Greenland, 1985)

underground or in mounds where there is no sunlight and enjoy self-built air-conditioning. Their worst enemies are ants. When ants attack the termite mound, soldiers have a special defense. Some soldiers spray poison through their extended snouts while other soldiers, when ants enter the mound, clog the passageways with their big heads (Squire, 2003).

One of the most interesting facts that I came across in my research on termites was the fact that "termites may produce up to two liters of hydrogen from digesting a single sheet of paper, making them one of the planet's most efficient bioreactors" (Termite: Wikipedia).

Based on what I have learned about amber and termites, it appears that the termite in the amber specimen (figure 2) was a reproductive adult, because it has wings. It was probably out looking for a mate to start a new colony and build a new nest, but accidentally got trapped in some tree resin. So the next time you are walking through the forest, and you see an insect stuck in some tree resin, just think; in two million years it will be a piece of amber!

### References Cited:

- Aber, S. (1996-2008). Welcome to the World of Amber. Retrieved February 8, 2009, from Amber Webpage Web site: <<http://www.emporia.edu/earchsci/amber/amber/amber.htm>>
- Aber, S. (Feb, 2000 [updated Jan 16, 2004]). Copal-an Immature and controversial Resin. Retrieved February 8, 2009, from World of Amber Web site: <<http://www.emporia.edu/earchsci/amber/copal.htm>>.
- Amber. (11/6/01-2/7/09). In *Wikipedia* [Web]. Unk: Wikipedia foundation. Retrieved Jan 26-Feb 8, 2009, from <<http://en.wikipedia.org/wiki/Amber>>.
- Barthelmy, D (2005). Amber-Mineral Data. Retrieved February 8, 2009, from Mineral Database Web site: <<http://www.webmineral.com/data/amber.shtml>>.



Fossils, Windows to the Past: Amber. Retrieved March 19, 2009, from UC Berkely Musuem of Paleontology from <<http://www.ucmp.berkeley.edu/paleo/fossils/amber.html>>.

Isomerization. (author unknown). Answers.com-Isomerization. In *Sci-Tech Encyclopedia McGraw-Hill Encyclopedia of Science and Technology, 5th edition* [Web]. Unknown author: The McGraw-Hill Companies, Inc.. Retrieved Jan 26-29, 2009, from <<http://www.answers.com/library/Sci%252DTEch+Encyclopedia/Isomerization>>

Langenheim, J. Amber. In *McGraw-Hill Encyclopedia of Science and Technology* [Web]. McGraw-Hill. Retrieved Feb 1-7, 2009, from <<http://www.accessscience.com/abstract.aspxid=026800&referURL=http%3a%2f>>

O'Toole, C. (2002). *Firefly Encyclopedia of Insects and Spiders*. Buffalo, New York: Firefly Books Inc., 240p.

Polymerization. (author unknown). Answers.com-Polymerization. In *Sci-Tech Encyclopedia McGraw-Hill Encyclopedia of Science and Technology, 5th edition* [Web]. unk: The McGraw-Hill Companies, Inc.. Retrieved Jan 26-29, 2009, from <<http://www.answers.com/library/sci%252DTEch+Encyclopedia-polymerization>>

Platt, G. (1998, June 6). Types of Amber, copal, and Resin. Retrieved February 18, 2009, from Types of Amber, copal, and Resin Web site: <<http://www.qplatt.demon.co.uk/typesof.htm>>

Squire, A. O. (2003). *Termites, A True Book*. New York, New York: Scholastic Inc., 48p.

Termite. (Unknown author). In *Wikipedia* [Web]. Unk: Wikipedia Foundation. Retrieved Jan 27-Feb 8, 2009, from <<http://en.wikipedia.org/wiki/Termite>>

About the author: **Kurt Wei-Ming Lahmers** was born in San Diego, California and moved to Colorado Springs, Colorado in 1997. He is in sixth grade at Jenkins Middle School. His favorite subjects in school are Art, Science, and Math. Kurt's hobbies are drawing, collecting erasers, international travels (Ireland, Malaysia and Singapore), playing tennis and playing guitar. This year he is attending science classes and science activities after school such as the Colorado Springs Mineralogical Society's Pebble Pups, Science Bowl, Science Olympiad, Project Feeder Watch, and science related field trips. His intermediate goal is to attend college and major in either an Art or a Science/Math field.

## CSMS PHOTO CONTEST WINNER

BY MIKE NELSON

**L**aura Canini has won the "arch identification contest" sponsored by the CSMS Fossil Group. She correctly identified the arch as a feature in Ute Valley Park, a Colorado Springs undeveloped space accessed via Popes Valley Drive or Vindicator Drive. The arch, located at N 38°55.102' and W104°51.146' and at an elevation of 6433 feet, formed in a sandstone of the Laramie Formation. The Laramie is well exposed in Ute Valley Park and one of the included sandstones, most likely a beach sandstone, holds up the central mesa/hills and forms the arch. The Laramie represents the final regression, in the latest Cretaceous, of the vast Western Interior Seaway (see Pick&Pack v. 48, #4, May 2008). CSMS members may wish to join a field trip in Ute Valley Park on May 9 - see the most recent Pick&Pack for registration information or contact [csrockguy@yahoo.com](mailto:csrockguy@yahoo.com)

I have informally given the arch the name James Bond Arch (for the double O or two arch openings); however, the arch is unnamed and would make a good CSMS project. If a group is interested in such a project please contact me.

*Editor's Note: I think it should be named "Catchin' a Ride" because the formation looks like a frog perched on a turtle's back, especially during a snow fall. ☺*

## UPCOMING SHOWS

### Apr 24-26

Denver Spring Mineral & Fossil show, mzexpos@aol.com

### April 24-26

56th Annual Wichita Gem & Mineral Show, Wichita, Ks; Paul Hlava 505-255-5478

### May 1-3

17th annual McPherson, KS Gem & Mineral Club Rock Sale & Swap, Jim Nutter 620-241-2433

### May 16-17

Cheyenne, WY American Legion Post 6, Donna Durako 307-634-4229, bluebarite1@bresnan.net

### Jun 20

**CSMS Rock Fair** at WMMI, Colorado Springs, CO; Yam Yamiolkowski, 719-488-5526, Ron.Yamiolkowski@aecom.com

### Aug 14-16

Lake George Rock & Gem Show, US Hwy 24, Lake George, CO 8a-5p, FREE, John Rakowski 719-478-3861, rakgeologist@yahoo.com

### Dec 5-6

**46th Annual Pikes Peak Gem & Mineral Show**, Phil Long Expo, Colorado Springs, CO; Rick Copeland, 719-332-7915, rick@rockymountainwonders.com

## Upcoming Events

### May 16-17

New Member Orientation, WMMI, \$15, 719-488-0880

### May 20-25

Inter-regional Rockhound Rendezvous hosted by NFMS & CFMS; dickpankey@juno.comm; Davis Creek/Lassen Creek for Obsidian.

### Jun 19

Cave of the Winds: A GeoAdventure, 719-633-4991

### Jun 20

CSMS Rock Fair at WMMI.

### Jul 13

Kemmerer, WY field trip, \$60/pp. White Mnt Gem & Mineral Club; Eunice McQuiston, 928-536-7209

### Jul 30-Aug 2

AFMS Convention, Billings, MT; Doug True, 406-670-0506, dtruefossils@yahoo.com

### Oct 2009

The Chaparral Rockhounds will host the RMFMS Convention at its annual show "Roswell Rock Rendezvous"



# ASK A GEOLOGIST

BY MIKE NELSON, CSMS

Bill writes: *Could you please expand on your description (the CSMS banquet presentation) of Lake Bonneville and the large mammals found in the gravels.*



I would be glad to comply with this request as I spent a number of years in the 1970's and 1980's chasing down reports of bones in the numerous gravel pits found along the Wasatch Front in northern and central Utah. The Wasatch Front refers to the area immediately west of the north-south trending Wasatch Mountains in Utah (Fig. 1). Generally speaking, it is the area from Brigham City in the north to Nephi in central Utah. The Wasatch Mountains contain several high peaks over 10,000 feet and are anchored by Mt. Nebo at

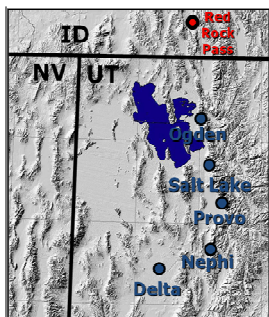


Fig. 1. Outline map showing Great Salt Lake and major Utah cities along the Wasatch Front. Map courtesy of Utah Geological Survey.

11,928' (southern terminus of the mountains) and Mt. Timpanogos at 11,749 feet (east of Provo). The Wasatch are part of the Rocky Mountains and are their westernmost range, uplifted during the great Laramide Orogeny (~70 to ~40 million years ago [MA]). Immediately to the west of the range, and separated from it by the Wasatch Fault, is the Great Basin, an area of inland drainage (no outlet to an ocean), extending west to the Sierra Nevada Mountains along the Nevada-California border. The Great Basin, part of the larger Basin and Range Province, is characterized by a series of north-south trending, isolated mountain ranges separated by rather flat valleys. The uplifted ranges are usually bounded by normal faults and are termed horsts while the down-dropped valleys are called grabens, or in some cases half grabens (Fig. 2). The Wasatch Fault is the easternmost bounding fault of the Great Basin. This episode

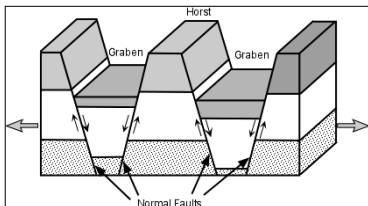


Fig. 2. Sketch illustrating horst and graben structure producing mountains and valleys in the Great Basin.

of faulting and uplift has been called the Basin and Range Orogeny and has a complicated history with some activity beginning perhaps 30 MA but continuing into the present. Major faulting events seem clustered at 23 MA and 12 MA. The Basin and Range is related to crustal extension or stretching while the Rocky Mountains to the east are related to crustal compression. Both orogenies can trace their origin to plate tectonic activity in the far west.

Today, the water that falls in the Great basin generally evaporates in the rather hot and dry climate. Some water does percolate down into the subsurface (the groundwater) while a few streams deliver runoff to small internal basins termed playas. The water in these basins almost is never permanent (they may exist from year to year in very wet or rainy years) and evaporates during the hot summer months leaving behind salt pans, alkali flats, etc. However, during the Pleistocene Epoch (~1.8 MA to ~10,000 years before present [YBP]), popularly known as the "Ice Age", a series of large lakes occupied some basins, on a rather permanent basis. Termed "pluvial lakes", they were related to a significant increase in precipitation, lower temperatures, and a decrease in evaporation. The two largest pluvial lakes in the Great Basin were Lake Lahontan in northwestern Nevada and Lake Bonneville in western Utah. Lake Lahontan, at its peak approximately 13,000 YBP, covered perhaps an area of 8500 sq. miles and, at its deepest, was 900 feet. By perhaps 9000 YBP the ancient lake had generally disappeared leaving behind a number of playas such as the Carson Sink and Humboldt Sink (both famous in the annals of western migration as tough places to cross in a covered wagon!). A few permanent lakes, as small remnants of Lake Lahontan, still exist as Pyramid Lake and Walker Lake.

The second large Pluvial Lake in the Great Basin is the better known Lake Bonneville, perhaps covering nearly 20,000 square miles and at its peak, 1000 feet deep. This lake, in turn, was part of a lake system that had previously existed in the basin for perhaps 2 million years (Madsen and others, 2001). The geologic history of Lake Bonneville is

rather complex but most geomorphic features (landforms) observed in the present day lake basin are associated with the final lake cycle termed the Bonneville Cycle. The transgressive, or deepening, phase of Lake Bonneville began approximately 30,000 YBP when the lake reached the Bonneville level and left behind the Bonneville shoreline (Fig. 3). Sometime shortly after 15,000 YBP the lake breached the "Zenda Threshold" in southern Idaho and began to cut downwards at Red Rock Pass and drain northwards into the Snake-Columbia River drainage (Fig. 1). The resulting flood was catastrophic as the lake level dropped over 300 feet in less than a year (Currey and Oviatt, 1985)!



Fig. 3. The Lake Bonneville beach (shoreline) at Point of the Mountain near the southern end of Salt Lake City. Photo courtesy of Utah Geological Survey.

The lake then stabilized at the Provo level for a few hundred years before entering a regressive (water level dropping) phase reaching modern level about 12,000 YBP (Madsen and others, 2001). Today, Lake Bonneville is represented by the Great Salt Lake (saline), Sevier Lake (saline and commonly dry), Utah Lake (fresh) and the numerous playa lakes and salt flats. The latter are well known to raceway fans as many of the land speed records have been established at the Bonneville Salt Flats in western Utah. (in 1970 Gary Gabelich, driving Blue Flame, was clocked at 622.41 MPH).

There are essentially two groups of Ice Age mammalian fossils connected with Lake Bonneville. Many of the large mammals were collected in the shoreline sands and gravels, especially in sand and gravel pits associated with the Bonneville level (the ancient beach). Most of the known smaller mammals have been collected from caves located along the shoreline. The cave fossils usually represent raptor, and in some instances carnivore, accumulations—the owls and the carnivores were using the small mammals as food! I refer the readers to a summary paper by Madsen and others (2001) for a description of Great Basin Pleistocene cavity faunas. It is interesting to note that a cave in Smith Creek Canyon is the type locality for the giant bird *Teratornis incredibilis* (now known as *Aiolornis incredibilis*), an incredible animal with a wingspan of ~17 feet.



The Bonneville shoreline fauna containing the large mammals is one that has attracted much attention since many of the fossils were collected in the urban areas along the Wasatch Front (Nelson and Madsen, 1987). In fact, a story in the May 17, 1871 edition of the Salt Lake Tribune and Utah Mining Gazette reported on the discovery of a "petrified buffalo head" uncovered by builders in the northern part of Salt Lake City. The skull, later identified as musk oxen, ultimately found its way into the Utah Museum of Natural History and was finally described in 1978 by Nelson and Madsen.

The Bonneville carnivores are represented by foxes, wolves, and bears (Nelson and Madsen, 1986). Two lower jaws, with associated teeth, of the Red Fox were collected from gravel pits near Salt Lake City. Red Fox are rare in Utah today.

Two jaw fragments, with associated teeth, of a very large wolf have been collected. Most likely the specimen represents a Gray Wolf rather than the extinct Dire Wolf. Today Gray Wolves are absent in Utah and are restricted to the Wyoming/Idaho and Wisconsin/Minnesota/Michigan areas.

In the recent past Black Bears were quite common in Utah; today they occur sparingly. I identified a single lower canine tooth from the gravels.

Perhaps the most exciting animal from the Bonneville gravels is the giant Short-faced Bear, *Arctodus simus* (Fig. 4). Once widespread from Alaska to Mexico, this long-legged animal was the most powerful predator in the Pleistocene (Ice Age). Skeletal elements indicate the Utah specimen is the largest bear on record.



Fig. 4. Left: Sketch illustrating size of adult Short-face bear. Sketch courtesy of Wikipedia <[http://en.wikipedia.org/wiki/Arctodus\\_simus](http://en.wikipedia.org/wiki/Arctodus_simus)>

Both mastodons and mammoths have been collected from the Bonneville gravels. The grazing mammoths are by far the most common and isolated teeth, tusks, and long bones are fairly common and, in fact, still turn up on a regular basis. In 1995 a "baby mammoth" jaw and teeth were collected from near Bear Lake along the Utah-Idaho border.

The browsing mastodons are actually quite rare in the Bonneville gravels, and I am only aware of perhaps three specimens. Mastodons have very distinct cusps on their large teeth while the mammoths have numerous ridges. As grazers, mammoths relied on grasses for food. The browsing mastodons were able to eat the rougher forbs and woody plants.

Bison and horses are common fossils in the gravels. All horses are assigned to the genus *Equus*; however, the lack of associated skeletal material does not allow a specific name. The bison in Utah are all short-horned forms; however, the Giant Bison, *Bison latifrons*, is known from southern Idaho, and perhaps the

Silver Creek fauna (see below).

A single specimen of the extinct Flat-headed Peccary was found in 1951 during the construction of a house near the Idaho-Utah border. These peccaries are rare west of the Great Plains.

Deer are represented by long bones of the Mule Deer, common in the state today, and a partial bone from an extinct deer known as *Navahoceras*. Deer fossils are rare in the gravels.



Fig. 6. The extinct Musk Ox, *Bootherium bombifrons*. Specimen in the Utah Museum of Natural History.

Isolated bones and teeth of the extinct Yesterday's Camel appear periodically in the Bonneville gravels. The best known specimen was located in a lava tube in central Utah (Nelson and Madsen, 1979).

The two most common animals found in the Bonneville gravels are Mountain Sheep (extant) and *Bootherium bombifrons*, Harlan's Musk Ox (extinct). Nearly 30 specimens of each animal are now known from the gravels, including an extraordinary number of skulls and horn cores (Fig. 5). The Wasatch Front has produced more specimens of extinct Musk Ox than any other locality in the U.S.

Recently the Utah Geological Survey reported the discovery of the extinct Giant Ground Sloth, an immigrant from South America.

There are scattered reports of other small mammals from the Bonneville gravels; however, they (mostly rodents) are best known from cavity deposits. Two other localities that do need mentioning, although they are not associated with Lake Bonneville, are the Silver Creek Fauna near Park City (east of Salt Lake City) and the Huntington Canyon Fauna in the High Plateau region of central Utah. Silver Creek has produced specimens of the extinct Dire Wolf, Ground Sloth (different from the Bonneville Ground Sloth), Giant Bison, and Saber-toothed Cat. Huntington Canyon produced a nearly complete skeleton of a Columbian Mammoth and an upper jaw of the giant Short-faced Bear.

Great Salt Lake, although an impressive body of water today, is but a small remnant of the Ice Age Lake Bonneville. In addition, the large mammal fauna alive today in Utah cannot begin to compare with the mammoths, mastodons, ground sloths, camels, and cats that roamed the lake's shoreline.

#### REFERENCES CITED:

- Currey, D.R. and Oviatt, C.G., 1985, Durations, average rates, and probable causes of Lake Bonneville expansions, stillstands, and contractions during the last deep-lake cycle, 32,000 to 10,000 years ago. *Geological Journal of Korea*, 10, 1085-1099.
- Madsen, D.B., Rhode, D., Grayson, D.K., Broughton, J.M., Livingston, S.D., Hunt, J., Quade, J., Schmitt, D.N., and Shaver III, M.W., 2001, late Quaternary environmental change in the Bonneville Basin, western USA. *Palaeogeography, Palaeoclimatology, and Palaeoecology*, 167, 243-271.
- Nelson, M.E. and Madsen, J.H., 1978, Late Pleistocene Musk Oxen from Utah. *Transactions of the Kansas Academy of Science* 81:4, 277-295.
- Nelson, M.E. and Madsen, J.H., 1979, The Hay-Romer camel debate: Fifty years later. *Contributions to Geology* 18:1, 47-50.
- Nelson, M.E. and Madsen, J.H., 1986, Canids from the late Pleistocene of Utah. *Great Basin Naturalist* 46:3, 415-420.
- Nelson, M.E. and Madsen, J.H., 1987, A review of lake Bonneville shoreline faunas (late Pleistocene) of northern Utah: in Kopp, R.S., ed., *Cenozoic geology of western Utah*: Utah Geological Association Publication 16, 319-333.

Have a question concerning geology? Send it to [CSROCK-GUY@YAHOO.COM](mailto:CSROCK-GUY@YAHOO.COM) and look for an answer in the Pick&Pack.



## CSMS FIELD TRIPS

### **Apr 11**

Behind the Scenes at the CO School of Mines Museum, Marj Regel, Marjory .regel@yahoo.com

### **Apr 25**

Holcim Cement Quarry, ron.yamiolkoski@aecom.com

### **May 3**

Fountain Creek Walk, Drew Malin, advanceone@comcast.net

### **May 9**

Geology of Ute Valley Park and Popes Bluff Area, Mike Nelson, csrockguy@yahoo.com

### **May 9**

Yellow Cat/Cisco, UT & Grand Junction Mineral Show Field Trip, Marj Regel, marjory.regel@yahoo.com

### **May 13**

Geology of Pulpit Rock, Mike Nelson csrockguy@yahoo.com

### **May 16**

Geology of Paint Mines Regional Park, Mike Nelson, csrockguy@yahoo.com

### **Jun 6**

Hartsel Barite, Mike Nelson, csrockguy@yahoo.com

### **Jun 14**

CSMS Claim, Ray Berry, rayber@q.com

### **Jul 11**

Peridot Claim Restaking, ron.yamiolkoski@aecom.com

### **Jul 18**

Gold Camp Road, Ray Berry, rayber@q.com

### **Sep 12**

Peridot Claim, ron.yamiolkoski@aecom.com

## FOSSIL GROUP

BY MIKE NELSON

The CSMS Fossil Group celebrated St. Patrick's Day by studying trilobites at their bi-monthly meeting. Triobites are members of the Phylum Arthropoda and are characterized by 3 vertical lobes with a calcium/calcium phosphate/chitin exoskeleton. They were part of the "Cambrian explosion" of animals and are the dominant fossils found in this time period. A few tripobites lasted until the late Paleozoic but all perished in the Permian extinction event. Locally, the Manitou Formation has produced a number of specimens, especially from the quarries north of Woodland Park. Mike Nelson lead the meeting and 15 very enthusiastic members traded information about trilobites in their collections at the "Show and Tell" session. Kevin Witte had collected in the Middle Cambrian Majum Formation in the House Range of western Utah. John Harrington and Oscar/Joyce Price had specimens from the Manitou. In addition to the trilobites, Mike explained the molding and casting process using latex rubber and plaster and exhibited several specimens. A special treat was shown by guest Gary who brought a large branchiopod with internal crystals of calcite and impressions of the brachida, a support system for the soft internal organ. The lapophore. The next meeting will be on May 19 with Show and Tell featuring Bivalves (pelecypod, clams, oysters, etc.).



## Earth Science

### **Earth Science Courses that Rock**

**Colorado Mineral Exploration Seminar (AKA New Member Orientation), May 16 and 17, 2009, Western Museum of Mining and Industry, Cost: \$15.00, Call 719 488-0880 to register**

Mineral deposits supply many of the raw materials that sustain developed societies. The minerals industry is currently in a "boom" period, in fact, the need for natural resources has never been greater. This increased demand for metals is from rapidly developing Asian countries (mainly China and India). The study of mineral deposits is one of the most fascinating fields in geology. The geological and economic nature of mineral deposits will be the focus of the seminar and will enable educators to better understand the geologic nature of mineral deposits, methods of mineral exploration and exploitation, and the environmental consequences of utilizing mineral resources.

This course has 0.5 semester of graduate credit from the Colorado School of Mines (tuition is a separate cost).

**Cave of the Winds: A GeoAdventure, June 19, 2009, Pillar Institute of Lifelong Learning, Call 719- 633-4991 to register Cost: TBD**

This adventure is designed for everyone! The morning will start with a PowerPoint lecture on the geology of caves at a Pillar classroom, and then entering a world underground, we will investigate cave formations in the cool air of the incredible Cave of the Winds. This is one of the more complex maze caves in the state. Skilled guides and Professor Steven Veatch will lead you into a surreal underground world of magnificent natural formations. Colorado Caves: Hidden Worlds Beneath the Peaks is included with this field trip. This 144 page book includes 158 beautiful full-color and historic black-and-white photographs and details the discovery, exploration, history, scientific study, surveying, commercial development, conservation, and photography of the state's unique collection of caves. After our adventure we will have a brown bag lunch in the area.

**The Fossil Record: An Introduction to Paleontology, June 20, 2009, Cripple Creek Park and Recreation, Cost: \$69.00 Call 719-689-3514 to register**

This class provides a basic introduction to paleontology, the study of the ancient life on earth and the fossils that remain behind. Paleontology is a field of continuous discovery where advances in technology and procedures of inquiry allow scientists to reconstruct earlier and very different worlds. Two field trips included. This course has 0.5 semester of graduate credit from the Colorado School of Mines. (tuition is a separate cost)

## MEMBERS HELP PEBBLE PUPS

BY STEVE VEATCH

CSMS members donated rocks, minerals, and fossils to the growing Junior and Pebble Pup program. The Juniors have about 15 students, and the younger Pebble Pups is going strong at 12 pups. Recently, **Don Bray** donated a 5 gal bucket full of very cool lava bombs and flows. These specimens were used with the volcano unit we just finished. **Kerry Burroughs** donated several boxes of rocks, minerals, and fossil specimens for the groups. **Ray Quinn** provided a flat of barite specimens from a large nodule. **Kaye & Jack Thompson** have donated materials last year and this year. **Roger Pittman** is bringing geodes for each student to saw at our April meeting. The Pebble Pups and Junior program leaders appreciate these members providing material for the groups.

| <i>Sunday</i>                     | <i>Monday</i> | <i>Tuesday</i>                  | <i>Wednesday</i>                             | <i>Thursday</i>                                                                                                 | <i>Friday</i>                                   | <i>Saturday</i>                              |
|-----------------------------------|---------------|---------------------------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------------------------------------|
|                                   |               |                                 | <b>1</b>                                     | <b>2</b><br>7p Board Meeting                                                                                    | <b>3</b>                                        | <b>4</b><br>12n Lapidary Group               |
| <b>APRIL 2009 — CSMS CALENDAR</b> |               |                                 |                                              |                                                                                                                 |                                                 |                                              |
| <b>5</b><br>Palm Sunday           | <b>6</b>      | <b>7</b><br>7p Micromount Group | <b>8</b><br>Passover begins at sundown       | <b>9</b><br>Passover                                                                                            | <b>10</b><br>Good Friday<br>7:30p Crystal Group | <b>11</b><br>CO School of Mines Field Trip   |
| <b>12</b><br>Easter               | <b>13</b>     | <b>14</b>                       | <b>15</b>                                    | <b>16</b> Passover Ends<br>5:15p Junior Group<br>6:30p Pebble Pups<br>6:30p Rock Fair Mtg<br>7:30p Gen Assembly | <b>17</b>                                       | <b>18</b><br>12n Jewelry Group               |
| <b>19</b><br>Orthodox Easter      | <b>20</b>     | <b>21</b>                       | <b>22</b><br>Administrative Professional Day | <b>23</b><br>7p Faceting Group                                                                                  | <b>24</b>                                       | <b>25</b><br>Holcim Cement Quarry Field Trip |
| <b>26</b>                         | <b>27</b>     | <b>28</b><br>7:30p Camera Group | <b>29</b>                                    | <b>30</b>                                                                                                       | <b>5/1</b>                                      | <b>5/2</b>                                   |

#### REFRESHMENTS FOR GENERAL ASSEMBLY MEETINGS

Apr—Crystal  
Jul—Jewelry  
Oct—Micromounts

May—Faceting  
August—Picnic  
Nov—Projects

June—Fossil  
Sep—Lapidary  
December—All



| Area Code 719         |                         |          |                               |
|-----------------------|-------------------------|----------|-------------------------------|
| PRESIDENT             | Ron Yamiolkoski         | 488-5526 | Ron.Yamiolkoski@aecom.com     |
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| MANAGING EDITOR       | Betty Cain              | 634-8205 | bettycain3@comcast.net        |
| MEMBERSHIP CHAIR      | Bill Cain               | 634-8205 | billcain4@comcast.net         |
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| MEMBER-AT-LARGE       | Charles Webb            | 392-7214 | (none)                        |
| PAST PRESIDENT        | Rick Copeland           | 332-7915 | rick@rockymountainwonders.com |
| FIELD TRIP CHAIR      | Ron Yamiolkoski         | 488-5526 | Ron.Yamiolkoski@aecom.com     |
| HISTORIAN CHAIR       | Brenda Hawley           | 633-5702 | bghsprings@hotmail.com        |
| LIBRARIAN             | Frank & Ellie Rosenberg | 594-0948 | emr80918@yahoo.com            |
| PUBLICITY CHAIR       | (Vacant)                |          |                               |
| SHOW CHAIR            | Rick Copeland           | 332-7915 | rick@rockymountainwonders.com |
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| 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            |
| LAPIDARY GROUP        | Drew Malin              | 531-7594 | advanceone@comcast.net        |
| JUNIORS & PEBBLE PUPS | Steven Veatch           | 748-5010 | Steven.Veatch@gmail.com       |
| MICROMOUNT GROUP      | Phil McCollum           |          | acc@frii.com                  |
| PROJECTS GROUP        | Mike Nelson             | 522-1608 | csrockguy@yahoo.com           |
| WEBMASTER             | Allen Tyson             | 268-0775 | allentyson@yahoo.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

**Lapidary Group:** 1st Saturday @ Noon, 3085 Rhapsody Drive, Drew Malin, 531-7594

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

**Project Group:** Meeting time TBD, Mike Nelson, Ron "Yam" Yamiolkoski, Steven Veatch

# MARCH 19TH GENERAL ASSEMBLY MINUTES

By BOB GERMANO, CSMS SECRETARY

The CSMS meeting was called order by President Ronald "Yam" Yamiolkoski at 7:34PM.

We saluted the Flag and continued with the introduction of 2009 Science Fair Winners. Due to circumstances beyond his control our first place winner, Mitch Gemignani, could not attend our meeting, however we were able to enjoy the presentation of our second and third place winners. CSMS Judges were Bob Germano and Laura Canini.

First Place: **Mitch Gemignani**, Topic: Mass Wasting, School: Russell Middle School, Grade: 7<sup>th</sup>, Teacher: Ms. Lois Vavra (CSMS member)

Second Place: **Jordan Bushnell**, Topic: Weathering/Degradation of Anthropogenic Formations in Granite and Marble, School: Irving Middle School Grade: 7<sup>th</sup>, Teacher: Mr. Chris Smith

Third Place: **Jonathan Mancini**, Topic: The Effects of Expansive Soil, School: Classical Academy Junior High, Grade: 7<sup>th</sup>, Teacher: Ms. Julie Mintz

Due to illness, our P&P editor, Betty Cain, was unable to distribute the March 09 P&P to all our members; therefore, the approval of February 19, 2009 minutes as they appeared in Pick&Pack was postponed until April meeting.

Ann Proctor provided the Treasurer's Report indicating the CSMS is doing well. She also reported our March Silent Auction yielded moderate profits.

There were no new members in attendance at the March meeting, but we did have one guest attending, Mr. Steve Kassuth.

## Chair's Group Reports:

Camera Club—Roger Pittman: 4<sup>th</sup> Tuesday of the month at 7:30 PM at the Senior Center.

Crystal Study Group—Kerry Burroughs: 2<sup>nd</sup> Friday of the month at 7:30 PM at the Senior Center. The topic of study for the April 09 meeting is emeralds; the presentation will be conducted by Kerry Burroughs daughter.

Fossil Study Group—Mike Nelson: 3<sup>rd</sup> Tuesday of every other month (January, March etc.) at 7:00 PM at the Senior Center

Micromount Group—Phil McCollum (Moyra Lyne): 2<sup>nd</sup> Tuesday of the month at 7:00 PM at the Senior Center

Faceting Group—Dave Wilson: 4<sup>th</sup> Tuesday of the month at 7:00 PM at the Senior Center

Lapidary Group—Drew Malin: 1<sup>st</sup> Saturday of the month at 12:00 Noon at Drew Malin's house (see Drew for his address)

Jewelry Group—Bill Arnson: 3<sup>rd</sup> Saturday of the month at 12:00 Noon at Bill Arnson's house - 1560 Alta Plaza Circle, Peyton, CO. The topic for the April meeting is Lost Wax Casting.

Pebble Pups/Juniors—Steven Veatch: 3<sup>rd</sup> Tuesday of the month at the Senior Center. Juniors meet at 5:15 PM and Pebble Pups meet at 6:30 PM. The topic(s) for the April meeting are volcanoes and lava.

Librarians—Ellie & Frank Rosenberg: Frank reported the contents of the CSMS library will be posted on our web site very soon and a procedure of "book check out" will be developed. Scholarship Chair—Mike Nelson: Mike report correspondence has been sent to all eligible colleges and universities detailing our updated application rules.

Annual Show Chair—Rick Copeland indicated 75% of last year's dealers/vendors showed an interest in our December 09 show and he is actively pursuing other dealer/vendors to participate.

Field Trip Chair—Ronald "Yam" Yamiolkoski reported 12 field trips as listed on our website. Currently an insurance glitch exists concerning the April 11 field trip to Table Mountain, sponsored by the Flatiron Mineral Club from Boulder, but Ann Proctor reported it should be resolved long before the

April 11th trip. Please note the date change for Drew Malin's annual Fountain Creek walk from May 2<sup>nd</sup> to May 3<sup>rd</sup>.

Publicity Chair—is currently vacant, and we are actively seeking a volunteer.

CSMS Historian—Brenda Hawley

Project Group Chairs—Mike Nelson, Ron "Yam" Yamiolkoski and Steve Veatch

- Tufa formation near Penrose, Colorado
- The CSMS Colorado Minerals Calendar
- Coal Mining in the Colorado Springs area.

Meeting of the Project Group: Monday February 23<sup>rd</sup> at 6:00 PM at the Senior Center - Multi-media Room. **VIRTUALLY**

**NO ONE CAME.** The lack of participation noted at the first meeting prompting Yam to explain each of the three projects and ask the General Membership if there was enough interest to continue. Four additional members indicated interest, so another meeting will take place in April. The date will be announced by "Blast-O-Gram".

Rock Fair Chairs - Drew Malin & Ronald "Yam" Yamiolkoski

Name: **Rock Fair at WMMI, sponsored by CSMS**

June 20<sup>th</sup> 9:00 AM to 3:00 PM at WMMI

First Fair meeting will be April 16<sup>th</sup> at 6:30 PM

President's Report (Yam):

We need a Publicity Chair.

I would like the various Group Chairs to provide an occasional article for Pick&Pack that describe their activities. This would help Pick & Pack be considered more complete and will help our new members determine their interest in the various groups.

Vice Presidents Report—Mike Nelson: Nothing to report or discuss.

Members-at-Large Report—Laura Canini & Chuck Webb: Nothing to report or discuss.

Annual Show Report—Rick Copeland: December 5<sup>th</sup> & 6<sup>th</sup> at the Phil Long Center

Field Trip Report—Yam: Sheets available and check website: <www.csms.us>

Membership Report—Bill Cain: Due to illness there was no report.

Pick&Pack—Betty Cain: Due to illness there was no report

Web Master—Allen Tyson: No report.

Break—Sponsored by the Camera Club

Introduction of Speaker - Mike Nelson provided a detailed power point presentation and talk on the S-22 - The Omnibus Land Management Act of 2009, subtitle: Paleontological Resources Protection Act. He explained the current situation/rules for collecting on federal land. Efforts are in progress to make the existing Federal collection rules more uniform. While there are strict guide lines currently in place for collecting just about everything, including artifacts and vertebrate fossil specimens, the overall rules for collectors will remain basically unchanged as a result of this bill.

## Final reminders:

- Check the CSMS website periodically for updates on Field Trips. There will be a listing for a Field Trip to North Table Mountain on April 11<sup>th</sup> if final details can be arranged. I'm still looking for more Field Trips.
- If you have not paid your dues as yet, please get them to Bill Cain as soon as possible.
- The Crystal Group will provide cookies etc. for the April General Assembly Meeting. Contributions by other members are always greatly appreciated.
- Don't forget to sign up for the Nature and Science Writing Workshop taught by Steve Veatch at the Florissant National Monument on March 21<sup>st</sup> starting at 9:00. Call the Monument to reserve a space: (719) 748-3253. Cost is just \$3.00.





### 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 TIF, BMP, JPG, 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; 350-375 copies mailed per month (no issues in 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.

### MINERAL SALE

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CSMS T-Shirts, Badges, and Pins are available for sale at each meeting. See Treasurer, Ann Proctor.

### Have You Picked Up Your Membership Award Pin?

If you celebrated a CSMS anniversary in 2007, 2008 or 2009, your year pin award is available from the Membership Secretary, Bill Cain. Last call for 2007 pins.

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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 11.

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

Individuals—\$20

Family—\$30

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 2 for details of the next meeting) or visit our web site: [www.csms.us](http://www.csms.us).