

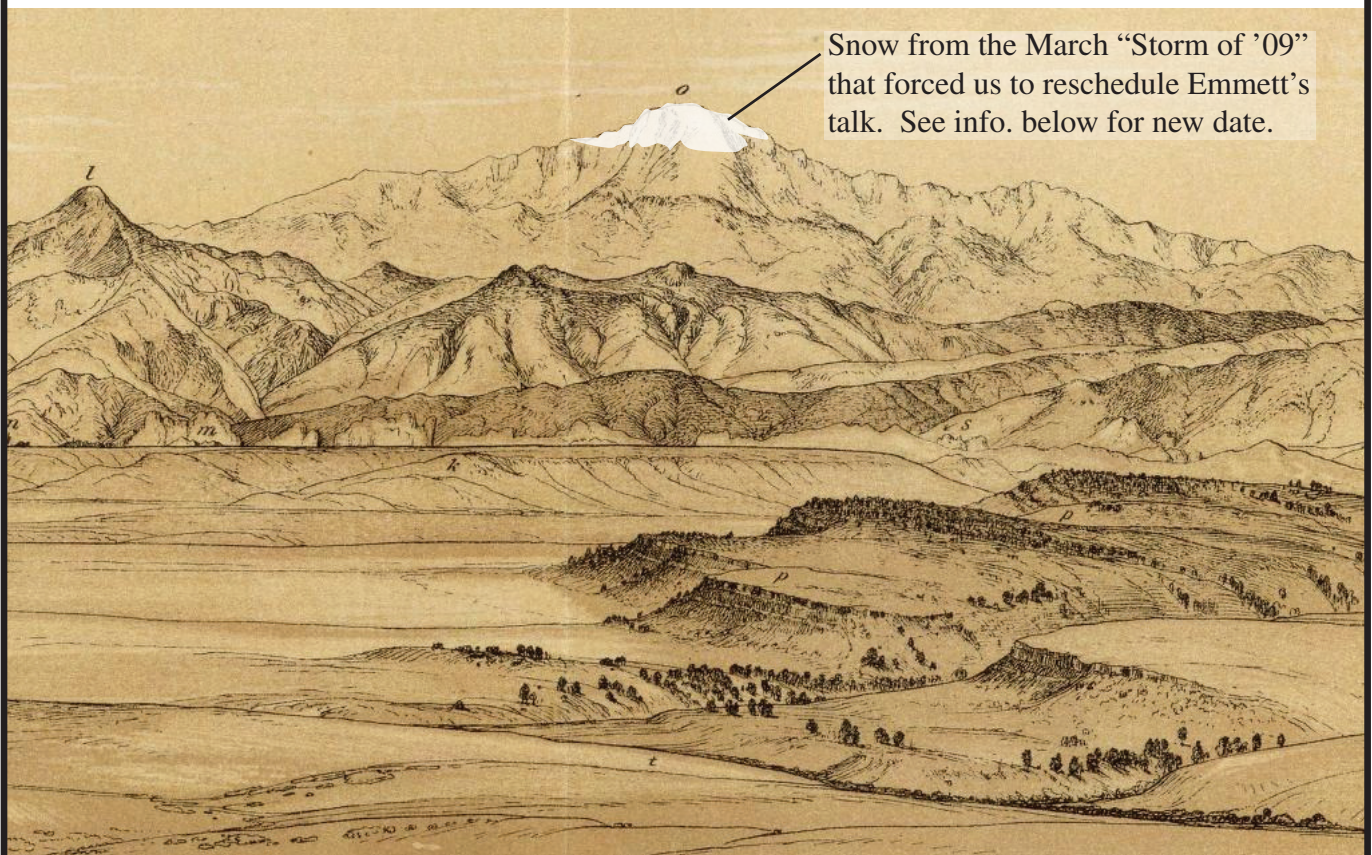
Colorado Scientific Society

*The objective of the Society is to promote
the knowledge and understanding of Earth science,
and its application to human needs*

Colorado and the Four Great Geological Surveys of 1867–1878

By Emmett Evanoff

University of Northern Colorado, Greeley



Snow from the March “Storm of ’09”
that forced us to reschedule Emmett’s
talk. See info. below for new date.

NEW Location!!



Note Date Change!!

Thursday, April 30, 2009

See map inside!!

**Colorado School of Mines—Department of Geology and Geological Sciences,
Berthoud Hall, Room 241, Golden, CO**

Social half-hour—6:30 p.m. Meeting time—7:00 p.m.

Colorado and the Four Great Geological Surveys of 1867-1878

By Emmett Evanoff, University of Northern Colorado, Campus Box 100, Greeley CO 80503;
emmett.evanoff@unco.edu

After the Civil War, the United States shifted its attention to the development of the West. Not only was the transcontinental railroad built, but mining districts were discovered and eventually agriculture spread throughout the Great Plains and Rocky Mountains. Along with this expansion was a need to learn the distribution and amounts of geologic resources such as mineral ores, coal and eventually oil. The science of geology had also developed through numerous state geological surveys, so that new techniques in mapping and geologic interpretations were available. Four geological surveys were funded by Congress in the late 1860's and 1870's to describe the geology of the West. They included the Geological and Geographical Survey of the Territories led by Ferdinand Vandeveer Hayden, the Geological Survey of the 40th Parallel led by Clarence King, the Geological and Geographic Survey of the Rocky Mountain Region led by John Wesley Powell, and the U.S. Survey & Explorations West of the 100th Meridian led by Lieutenant George M. Wheeler. These Four Great Surveys are known as the Hayden Survey, King Survey, Powell Survey, and Wheeler Survey.

Colorado benefited from all of these geological surveys. All four surveys overlapped somewhere in Colorado, but Colorado was the main focus of the Hayden Survey between 1873 and 1876. The Hayden Survey was divided into 4 groups that made topographic maps and outlined the geologic features of the entire state. The topographic mapping of Colorado by Hayden's surveyors was so good that their work was not superseded until after World War II. When the Colorado Atlas was published by the Hayden Survey in 1877, Colorado became the only state that had a detailed geologic map published on a topographic map base. The King and Powell surveys overlapped with the Hayden Survey in northwest Colorado, but the greatest overlap was with the Wheeler Survey that extended into the southwest and south-central part of Colorado. Conflicts arose between the Hayden and Wheeler surveys, both in the field and in Congress.

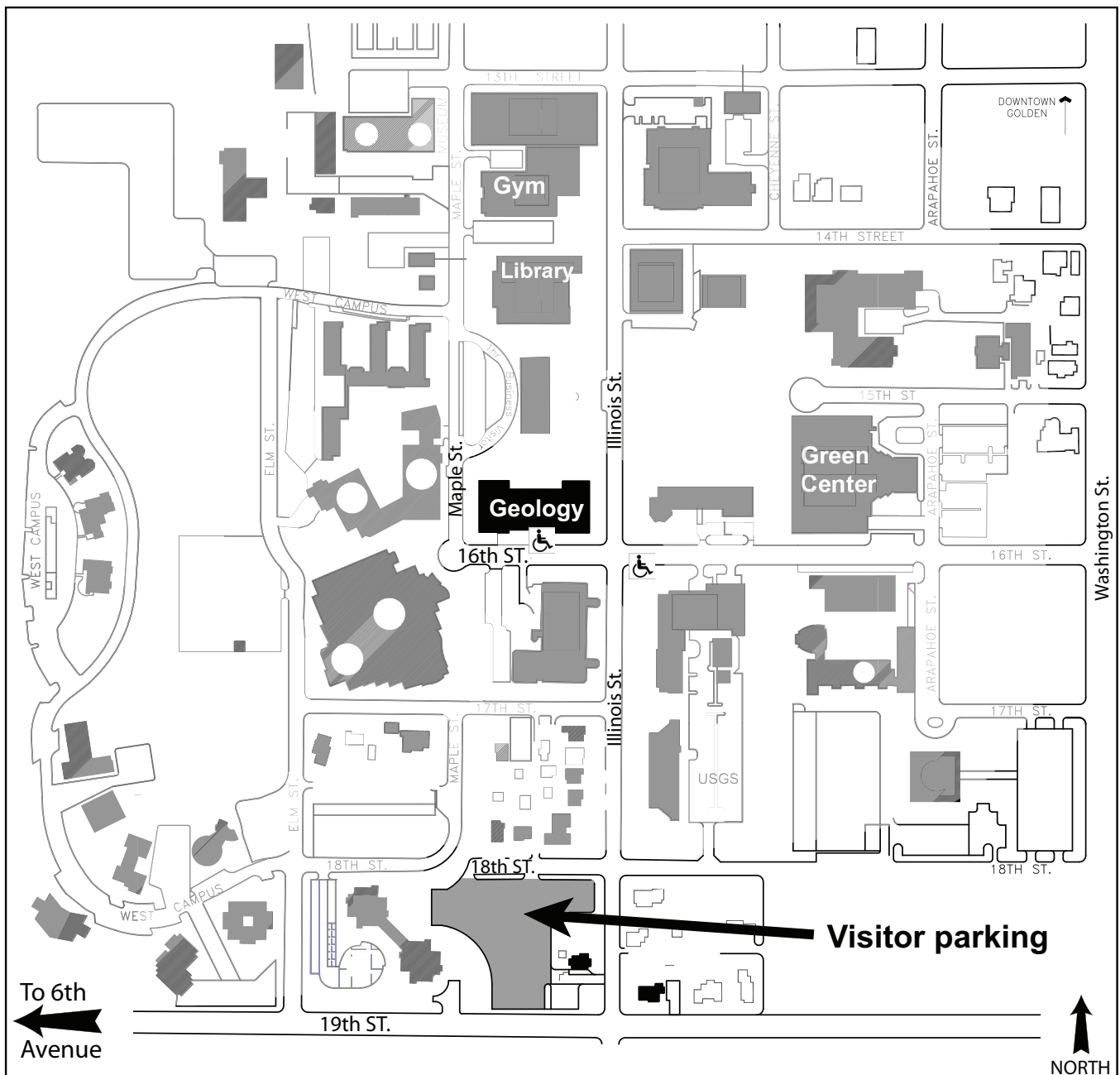
From the conflicts of the overlapping Surveys in the 1870's, and the great expense of supporting 4 geologic surveys, Congress combined all four surveys into the U.S. Geological Survey (USGS) in 1879. The first Director of the USGS was Clarence King, who served for one year and then was replaced by John Wesley Powell. Hayden was shunted to an administrative role in the early USGS, but his Colorado Atlas became the guide for the USGS maps published after 1879. The USGS set up a Rocky Mountain Division that was based in Denver. This division was headed by Samuel Emmons, who was a member of the King Survey and became one of the founding fathers of American economic geology. Emmons described the geology of the Leadville mining district, and many other mining districts throughout Colorado. He was the first president of the Colorado Scientific Society, founded in 1882.

*Illustration by W.H. Holmes with Hayden's surveyors
A.D. Wilson and Frank Rhoda on top of La Plata Peak.*

Emmett adds:

Just a short note to let you know that after my talk, I will be asking the audience for any thoughts or anecdotes about the early geologists in Colorado, and that we want YOU (the audience) to bring to the meeting maps, monographs, and other publications from the early Surveys and early days of the USGS to share and discuss with others.





Reminder!!!! CSS evening lectures: Same time....DIFFERENT place!

Just a reminder that the Colorado Scientific Society evening talks have **MOVED to a new location**. Talks are held at the Colorado School of Mines campus, Berthoud Hall, Department of Geology and Geological Sciences, Room 241. **Berthoud Hall** (labeled “Geology” on the accompanying map) is at the corner of Illinois and 16th streets, near the center of the CSM campus.

PARKING: On-street parking is available around the building **AFTER 5 p.m.** A “visitors parking lot” is at the corner of 19th Street and Illinois Street; from there it is a short two-block walk north to the geology building. Handicapped spaces are around the building, with a few more “kitty-corner” to the SE on 16th. Watch for the blue curbs and (or) blue signage.

GETTING TO THE LECTURE ROOM: Room 241 is located on the second floor of the geology building, at the north end, in what used to be the geology museum. From the entrance on the east side of the building (off Illinois Street), you will find stairways a short distance along the first floor corridor; ascend to the second floor and proceed westward almost all the way down the hall to Room 241. Room 241 will be on the left side, near the end of the hallway.



Univ. of Colo. Museum of Natl. History Henderson Bldg., 15th & Broadway (next to the UMC), Boulder, 303-492-6892, <http://cumuseum.colorado.edu>

SEE YOU AT THE MUSEUM ON SATURDAYS!!!

Join us for a variety of fun and educational Saturday family events.

May 2, 1:00–3:00pm: Eggs! Parent-Child Workshop. Celebrate spring by exploring eggs—from dinosaurs to platypus to birds. Create egg crafts from recycled materials. FREE for all ages with a parent.

June 6, 10:00am–12:00pm: Spring Flowers Parent-Child Workshop. Explore ways to preserve the beauty of flowers by pressing, pounding and drying. Make your own flower press to take home. All ages, with a parent. Reservations/fee required*.

*Workshops with a fee cost \$8 per person; \$5 if a museum member at the Family Membership level. All supplies will be provided. Advance payment/registration required: please call 303-492-1666. See our online calendar at: <http://cumuseum.colorado.edu/Calendar/>

Tues., Apr. 21, an Earth Day (April 22nd) geology/natural history/nature hike on Green Mountain, Lakewood, will be led by USGS geologist Pete Modreski. It will be a short, late afternoon/early evening hike, 4 p.m. to dusk. Meet at 4 p.m. at the Green Mtn. Park trailhead on Rooney Rd. (~1/2 mile north of Alameda and Dinosaur Ridge, or about 2 miles south of Colfax Ave.). This will be a mostly uphill hike to the top of Green Mtn. & return, about 2 miles round-trip hike. *All are welcome; contact Pete, pmodreski@usgs.gov or 303-202-4766, for more information or in case of inclement weather.*

Sat., May 9, a second “Earth Day” nature hike on Green Mountain, led by geologist Pete Modreski and others. Sponsored by the Green Mtn. Civic Association, but open to everyone. For an easy 2-hour hike, meet at 9 a.m. at the cul-de-sac at the end of W. Exposition Dr., 5 blocks west of S. Alkire St., Lakewood. For more info. please contact Pete at email or phone number listed above.

April 18. Colorado School of Mines Geology

Museum’s first “Garage Sale.” 9 A.M. to 4 P.M.

Location: Museum at 1310 Maple St. (SW corner of 13th and Maple Streets), Golden, Colo. There will be a wide assortment of rocks, lapidary equipment, furniture, and miscellaneous items (excavated during spring cleaning of our warehouse.) Our Gift Shop will have a 20%-off sale on our entire stock that day. Additionally, we will be dedicating our newest treasure, a fabulous mineral donation from the Oreck family. Weekend parking is usually never a problem. For further information please phone Bruce Geller at 303-273-3823.



April 24-26

Colorado Mineral and Fossil Show

Retail and wholesale dealers, minerals, fossils, gems, jewelry.

10–6 Friday and Saturday, 10–5 Sunday

Holiday Inn-Denver Central,
4849 Bannock St., Denver; (frontage
road on west side of I-70)

Free parking and admission.

The Colorado Chapter of the Friends of Mineralogy will hold its annual silent auction of mineral hobby items on **May 16** at the Clements Community Center, 1580 Yarrow (near Colfax and Wadsworth), Lakewood, Colorado, 1:00 to 3:00 P.M. This auction features reasonably priced minerals, faceted stones, books, and mining paraphernalia for the general public. There will be a special verbal auction at 2:00 P.M. of museum quality specimens donated by special dealers. **Admission is free.** All interested sellers and buyers are invited to phone Larry Havens at 303-757-6577 for more details.

Sign-up for the 2008 Colorado Scientific Society Spring field trip: The Victor Mine and Front Range Geology. Saturday May 16, 2009

Join us and be immersed in the innards of the ancient volcano at the Victor Mine outside of Cripple Creek, Colorado. Strange rocks and volcanic structures of many types will be seen—phonolites, lamprophyres, and volcanic cooling columns. Looking at the high wall, tunnels of the old mine workings lend a respect for the immensity of the present operation.

Next the tour will go to the crusher building with its primary cone crusher and secondary crushers that prepare the ore for the leach heaps. The final stop is the Ed Hunter mill building where the solutions come from the leach pads into the charcoal filtering vats. From there the gold is poured... but no one but very trusted employees are allowed in that room!

We will make several stops as we drive down from Lakewood through the Pikes Peak Batholith, the Great Unconformity and the Cambro-Ordovician section, highly fractured and re-cemented sandstone dikes in the Sawatch Formation, and the Tertiary Divide gravel. The mine tour guides (Tim Brown and others) will meet us in Victor at 1:00

p.m. to give us a brief history of the town and mine and then we will head up to the mine for a 2.5-hour tour.

We will leave from the Cold Springs Park-and-Ride at the northwest corner of the Federal Center at 7:30 a.m. We will return to Cold Springs Park-and-Ride about 5:30 p.m. Bring your own sack lunch, beverages, cameras, and rain gear. Cost, including transportation (vans) will be \$20.00/person. Student grants from the Pillmore Fund are available to cover student expenses. Contact Lee Shropshire, 970-352-8778, leeshrop@comcast.net, to apply for a grant. Contact Cal Ruleman (cruleman@usgs.gov; (303) 236-7804) for questions or additional information about the field trip. Send the sign-up form below with remittance (checks written to Colorado Scientific Society) to:

Cal Ruleman, Colorado Scientific Society, P.O. Box 150495, Lakewood, CO 80215-0495.

Deadline is May 9 (but sooner is very much appreciated).



Photograph from www.ccvgoldmining.com.

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Victor Mine and Front Range Geology field trip sign-up form Saturday, May 16, 2009

Name(s) _____

Address: _____

Phone: _____ E-Mail _____

Number of registrants ____ x \$20 = _____ (enclosed)

Write checks to: Colorado Scientific Society

Update from Van Williams, Lusi Mud Flow Adviser, USAID/USGS Emeritus

Scientific American has published a short online article about the mud flow. Van says, "We have been trying to push it in the direction of truth."

The article may be viewed at:
<http://www.sciam.com/article.cfm?id=indonesian-mud-volcano-also-spewed-oil>

View of the mud eruption from the summit of Pananggungan volcano without telephoto. Area covered is about the same as the Federal Center.



Dwight "Rocky" Crandell died Monday (April 6) of a heart attack at a hospice in Wheat Ridge, Colo. He was 86. In addition to his two daughters and their husbands, Dr. Crandell is survived by three grandchildren and one great-grandchild. His son, Tom, died in a river-rafting accident in 1965. A service will be held April 18 at Jefferson Unitarian Church in Golden, Colo. To read the full article go to: http://seattletimes.nwsourc.com/html/localnews/2009016972_crandellobit10m.html

DONKEY RAFFLE

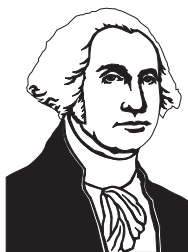
Young Don moved to Colorado and needed a pack animal for field work so he bought a donkey from a farmer for \$100. The farmer agreed to deliver the animal the next day. When the farmer drove up, he said, "Sorry son, but I have some bad news. The donkey died." Don replied, "Then give me my money back." The farmer said, "I can't do that. I went and spent it already." Don said, "OK then, give me the dead donkey." The farmer asked, "What ya gonna do with it?" Don said, "I'm going to raffle him off." The farmer said, "You can't raffle off a dead donkey!" Don said, "Sure I can. Just watch me. I just won't tell anybody it's dead."

A month later, the farmer met up with Don and asked, "What happened with that dead donkey?" Don said, "I raffled him off. I sold 500 tickets at two dollars apiece and made a profit of \$898.00." The farmer said, "Didn't anyone complain?" Don said, "Just the guy who won. So I gave him his two dollars back."

Don is now Treasurer of a local non-profit group...



President's Message by Don Sweetkind



The big March snowstorm that unfortunately forced us to cancel our meeting last month also tested our ability to contact our membership on short notice. With 50% of our membership not on email and no webmaster to quickly post an announcement on our web site, we had to rely on getting word out through those who did have an email address and hope common sense took care of the rest!

For the next few months, we will hire a local web-design company to run our web site and make some much-needed repairs and upgrades. At the same time, we will be developing a better membership email list and inventing new ways to communicate with you and disseminate information.

April is traditionally the month where we try to do a family-based activity; instead we have rescheduled Emmett Evanoff's talk. We have plans in the works for a family-friendly activity at some later date (TBD) at the CSM Geology Museum that would include a cookout and walking tour of the clay pits. My thanks go to member Chuck Weisenberg for another year of representing the Colorado Scientific Society as a judge at the Colorado State Science Fair. Prize money awarded to four hard-working and highly deserving high school students totaled \$300.



Earth Science Meetings and Talks

Newsletter items must be received by the 25th of each month.



Colorado Scientific Society's regular meetings are held the 3rd Thursday of the month at the Colorado School of Mines Geology Building in Golden (unless otherwise advertised). Social time begins at 6:30 p.m. and talks start at 7:00 p.m. For more information, contact Don Sweetkind, at 303-236-1828, dsweetkind@usgs.gov

Café Scientifique Wynkoop Brewery, evening science talks at 6:30. Free, except for beer. <http://www.cafescicolorado.org>

CO-AIPG (American Institute of Professional Geologists, Colorado Section) 11:30 a.m. social gathering; Noon luncheon and subsequent speaker presentation. **Apr. 21**—*Dr. Carl A. Koval, Faculty Director, University of Colorado-Boulder Energy Initiative, "CU-Boulder's Renewable and Sustainable Energy Initiative."* 2009 luncheons to be held at the Petroleum Club (in the Denver Athletic Club building), 1325 Glenarm Street, Denver. Please make an advance reservation so seating and food preparation are adequate to cover attendance. Cost is \$25 with advance reservation and \$30 at the door. Paid parking is available along the street (metered) or in the adjacent parking lots and parking structure. Contact Jim Russell by Noon on Apr. 16 for reservations: 303-278-4456 (hm), 303-815-3901 (cell), or e-mail at summitdatasvcs@msn.com

Colorado School of Mines, Van Tuyl Lectures Thursdays from 4–5 p.m. in Berthoud Hall room 241. **April 23**—*Suzanne Paschke, CSM M.Sc.Geol. Engr. 1992, Ph.D.-Geol. Engr. 1998, USGS, TBA.* <http://www.mines.edu/academic/geology>

Colorado State University, Dept of Geosciences, Rm 320 Warner College of Natural Resources Bldg., Mondays, 4:00 p.m. 970-491-5661. **Apr. 20**—*Simon Klemperer, Stanford Univ. NSF Margins Distinguished Lecturer, "Main Ethiopian Rift: Continental rifting above a plume."* <http://welcome.warnercnr.colostate.edu/geo-training/index.php>

Desk & Derrick, Industry Awareness Luncheon **May 12th**—*Sarah Andrews – Literary agent, geologist, and mystery writer. Sarah is also a Geology lecturer at Sonoma State University. Many of her novels take place in the Rocky Mtns. region of the United States.* Meetings are held on the second Tuesday of each month at 11:30 a.m. at the Denver Petroleum Club, 1325 Glenarm Place. For reservations please contact Sandra Thompson, Sandra.Thompson@anadarko.com

Denver Mining Club, Ltd. **April 20**—*William Langer, Research Geologist, Mineral Resources Team, U.S. Geological Survey, "The History of Aggregate Mining in Colorado."* **April 27**—*Peter Barkmann, Hydrogeologist, Colorado Geological Survey, "Denver Basin Cross Section Project: A Dynamic Tool for Regional Groundwater Management."* Meetings held at: Country Buffet, 8100 West Crestline Ave, SE corner at Wadsworth, Littleton. Purchase of buffet lunch required. Every Monday, except when noted. 11:30 a.m. - 1:00 p.m. (+/-). VISITORS ALWAYS WELCOME! <http://www.denverminingclub.org>

Denver Museum of Nature and Science—Continuing through May 3, *Nature Unleashed—Inside Natural Disasters*, see the DMNS website, <http://dmns.org/natureunleashed/>, for more information about this special exhibit. For related lectures and special programs go to: <http://www.dmns.org/main/en/General/Education/AdultProgram/Lectures>

Denver Region Exploration Geologists' Society (DREGS) meets in the Mutual Consolidated Water Building, 12700 West 27th Avenue, Lakewood. Social 6:30–7:00 p.m. Presentation at 7:00 p.m. Meetings are normally scheduled for the first Monday of each month. For information contact Jim Piper, (303) 932-0137, or the website <http://www.dregs.org>

Denver Well Logging Society (DWLS) meets on the third Tuesday of each month, Sept. through May. Lunch and a technical talk at the Wynkoop Brewery (Mercantile Rm.) begins at 11:20 a.m., 18th and Wynkoop Sts. in Denver. Call Noga Gardiner at 303-831-1515 by prior Thursday for reservations. **Apr. 21**—*Gustavo Ugueto, Shell E&P Americas, "Pressure Information in Tight Gas, Implications for Sand Connectivity and Well Spacing in Pinedale."* <http://dwls.spwla.org>

Rocky Mountain Association of Geologists (RMAG) **May 1**—*John Webb, "Mesaverde of the Uinta and Piceance Basins."* Reception at 11:30, lunch at noon, talk at 12:20. Reservations by recording at 303-623-5396 until 10:30 a.m., prior Wed. Luncheon \$30. Talk only (no res.)—\$5. Location: Marriott City Center, 17th & California. <http://www.rmag.org/events>

Univ. of Colorado, Boulder, Geol. Sciences Colloquium Weds., 4:00 p.m., Rm. 380. Refreshments at 3:30 p.m. on the 3rd floor. **Apr. 22**—*Lang Farmer, "Special event."* <http://www.colorado.edu/GeolSci/>

Rocky Mountain SEPM **Apr. 28**—*Jennifer Aschoff, Asst. Prof. CSM, "Recognition and Significance of Ancient Bayhead Delta Deposits: Examples from the Western Interior, Uinta Basin, Utah, USA."* 11:30 Reception, lunch at noon, speaker at 12:30. Reservations: luncheons@rmssepm.org, before noon of preceding Friday. \$20.00 lunch, \$3 talk only. Wynkoop Brewing Company, 1634 18th St., Denver. <http://www.rmssepm.org/luncheons.shtml>

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