

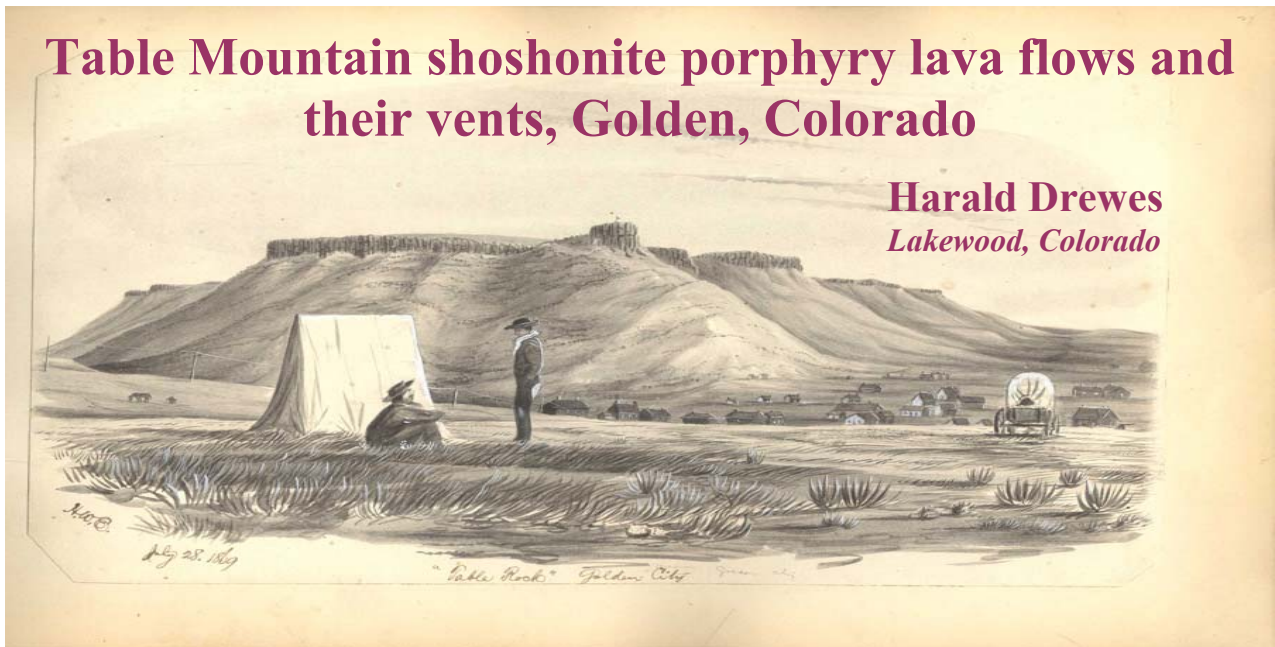


Colorado Scientific Society

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

Table Mountain shoshonite porphyry lava flows and their vents, Golden, Colorado

Harald Drewes
Lakewood, Colorado



Science and society: Cultural awareness in managing natural disasters

Tom Casadevall
*U.S. Geological Survey
Denver*



Thursday, October 21, 2004

American Mountaineering Center

710 10th St. (NE corner with Washington), Golden

Social half-hour – 6:30 pm. Meeting time – 7:00 pm.

Abstract

Table Mountain Shoshonite Porphyry Lava Flows and Their Vents, Golden, Colorado

By Harald Drewes, Lakewood, Colorado

During Early Paleocene time shoshonite porphyry lava was extruded from several plugs about 5 km north of Golden, Colorado, to form lava flows intercalated in the upper part of the Denver Formation. These flows now form the caps of North and South Table Mountains. Detailed field and petrographic studies provide insights into magma development, linkage between vents and flows, and the history of the lava flows.

The magma was derived from a deep crustal source, was somewhat turbulent on its way up, paused on its way up in a shallow-level granite-hosted chamber, and near the surface followed the steep Golden Fault and the thick, weak, steeply-dipping Upper Cretaceous Pierre Shale. At the surface the lava flowed out of several plug and dike vents in a non-explosive manner, at 4 times during a span of about 1 m.y. Potassium-rich material acquired in the shallow-level chamber produced distinctive textures and mineral associations in the igneous rocks.

Lava flows 1 (the lowest) and 2 are channel deposits derived from the Southeastern Group of intrusives, and flows 1 lie about 150 feet below the capping flows. Provisionally, an older felty-textured flow, 1a, is distinguished from younger blocky-textured flows, 1b. Flow 2, newly recognized in this

study, lies immediately beneath the capping flows. Lava flows 3 and 4, more voluminous than the first two, were derived from a plug vent 1-2 km farther north-northwest and flowed south-southeast across a broad alluvial plain. This plug is a composite body; the Rim Phase fed flow #3 and the Core Phase flow 4. During the lapse of time between the effusion of the four flows the composition of the shoshonite porphyry changed subtly, having picked up more alkali.

On North Table Mountain lava flows 3 and 4 form an elongate tumulus above an underlying, water-saturated, stream channel. On South Table Mountain a low broad dome on lava flow 3 forced flow 4 into channels now restricted to the west and northeast flanks of that mesa.

The mesa-capping lava flows 3 and 4 are broken by many small normal faults and are warped into open synclines, probably in response to local stresses associated with the settling of piedmont deposits into the Denver Basin. Mid-Tertiary deposits are inferred to have covered the upper part of the Denver Formation and its lavas, and to have been instrumental in changing the stream flow direction to the east before the onset of Neogene uplift and consequent canyon cutting across the flows.

Abstract

Science and society: Cultural awareness in managing natural disasters

By Tom Casadevall, U.S. Geological Survey, Denver

Natural hazards include a wide range of earth processes that are often perceived as risky or

dangerous such as earthquakes, floods, fires, landslides, and volcanoes. In the absence of people

and property, these natural events may go unnoticed. As the global population grows, more and more people and our supporting infrastructure are being built "in harms way".

Natural disasters often bring out the best behaviors in the global community to assist with disaster relief efforts and post-disaster recovery. Additionally, mitigating the threat of disasters often brings together scientists and managers to assist

with pre-disaster planning and development activities. Working effectively in these challenging situations requires that we be actively aware of the social and cultural environments in which we work.

This presentation will draw on examples from one type of natural hazard—volcano hazards—and show how these have been managed and mitigated in a variety of countries including the United States, Indonesia, the Congo.

Colorado Scientific Society President's Note—October 2004

By Emmett Evanoff

The CSS Fall Field Trip to the Black Hills and Badlands was held on September 23–26. Highlights of the trip included the Mammoth Site at Hot Springs, the five spectacular pegmatite mines shown to us by Jack Redden, fossil bones, the hike down the canyon with its puddles at Badlands National Park, Alvis Lisenbee's evening talk, and the hike around Devils Tower. We had a great turnout—16 participants. The weather was spectacular, and all three dinners in Custer and Rapid City were exceptional. Much thanks goes to John Lufkin for arranging a great program and writing the guidebook, and to those of you who drove, especially Terry Hiester, Chris Morrison, Bruce Bryant, Dave Majewski, and Peter Laux. Kathy Brill and Sue Hirschfeld did a great job preparing lunches before the trip.

I am currently arranging trips for 2005, which will include several small trips and a possible fall field trip to Yellowstone. Potential small trips include a tour of the basalts of North Table Mountain and the dikes of the Spanish Peaks. If you have ideas for trips, please contact me.

October has turned into month of turmoil and tranquility. The magma at Mount St. Helens has decided to come again to the surface, providing an exciting show to those of us who like natural disasters (most geologists). Many of us have been watching the events at Mount St Helens at the web site www.fs.fed.us/gpnf/volcanocams/msh/. The

political scene has also turned into a proverbial volcanic event. This November's election is the most important political event in decades, and I encourage everyone to vote. Many counties in Colorado are providing early voting opportunities during the last week of October. Those of you who have decided (most voters in this election) can beat the rush that will be on November 2. October is also the lull before the storm, with annual meetings of the Society of Vertebrate Paleontologists and the Geological Society of America coming in early November. After the mildest summer of recent memory, fall has been remarkable not only for its typical beautiful days but numerous rains. It's a great time to live in Colorado.

Colorado Scientific Society councilors and officers will meet on the afternoon of this month's meeting, October 21. If you have some business item that should be added to this month's agenda, please contact me. We still need membership and publicity chairs now and for next year.

Sue Hirschfield has just about seen through the completion of the interpretive signs at the Triceratops Trail in Golden and the Buffalo Bill Museum overlook. The Triceratops Trail signs will be presented at the open house event in Golden on Saturday October 16. Check out these signs in Golden that were sponsored by the Society.

A Welcome to New Members and...

By Emmett Evanoff

The Society's membership has increased in the last six months, and the following are our newly joined members:

James Cole

Andreas Dietrich

Thomas Dimelow

Thom Fisher

Glen Grantham

Kathy Honda

Eric Leonard

Jennifer McHarge

Beth Simmons

Chris Thurner

Susan Wagner

....a Plea for a Membership Chair

We welcome all these new members into the Society!

Many of these new members joined several months ago but have only now been entered into our membership listings. As a result, none of the

above new members have received the newsletter or are aware of our activities. This situation is because we do not have a membership chair to manage the information of new and existing members. A membership chair is **CRITICAL** for any organization such as the Society, so once again, I ask that someone in the Society please consider becoming the Membership Chair.

The Colorado Geological Survey Asks, "Did You Know?"

By Vince Matthews

Did you know that Colorado is one of the premier areas in the world for studying caldera-forming processes? Calderas form when large ash flows spew out of the earth creating voids that the overlying rocks collapse into; thus creating circular, or oval, structural depressions. These ash flows came out hot (1,100-1,300°F.), traveled up to 75 miles per hour, and spread as far as 90 miles from their source in Colorado.

Colorado has at least nineteen calderas including one of the world's largest, La Garita. It is so large (22 by 47 miles) that for a long time it was hard for geologists to realize that they were mapping in a giant caldera (sort of like discovering

a giant oil field and not realizing it until well into development). Several younger, smaller calderas are nested within the La Garita caldera. The ash flow that caused La Garita's collapse is also one of the world's largest, at ~1200 cubic miles of material. This Fish Canyon ash-flow tuff has a welded zone nearly a half-mile thick.

Colorado's calderas formed during ash flow eruptions between thirty-five and twenty-six million years ago and are concentrated in the San Juan Mountains, but are also present in the Sawatch Range. The towns of Creede and Silverton both lie within the walls of two large calderas. Rich ores are often associated with Colorado's calderas.

And...more Colorado mineral names

By **Richard M. Pearl**

10) **Tysonite** came from El Paso County, west of Cheyenne Mountain, near Pikes Peak. The mineral was named in 1880 after one of its discoverers, S.T. Tyson, who found it along with H.E. Wood. It occurs in pale, wax-yellow, hexagonal crystals and is a fluorite of the rare cerium metals, lanthanum, didymium, and cerium. Tysonite is now called fluocerite-(Ce). The name tysonite was dropped in 1921 when it was found to be identical with fluocerite. The original discoverers are listed as Allen and Comstock in the new *Minerals of Colorado* book. It comes from many locales in Colorado including the Henderson mine, St. Peters Dome, the South Platte district, the Redskin Granite of the Tarryall area, and from the Black Cloud pegmatite in Teller County.

11) **Ilesite** was discovered on the McDonnell mining property near Middle Swan Creek in Hall Valley, 13 miles from Webster in Park County. It occurs with iron and zinc sulphides, from which it alters, in veins 2 to 8 inches wide. Iles was the metallurgist of the Grant Smelter in Leadville. In October, 1884, Hillebrand observed the fresh mineral to be clear green instead of white as previously mentioned, but he found that the mineral lost water and turned white upon exposure to air, suggesting a different chemical formula. Wuensch first described the mineral in 1881.

12) **Kentsmithite** is a vernacular miners' name for vanoxite and corvusite mixture, a black vanadium-bearing sandstone from the Jo Dandy claim of J. Kent Smith in Paradox Valley, Montrose County. Frank L. Hess named the black mineral vanoxite in 1924. The sandstone is in the McElmo formation, which contains the vast carnotite deposits of Colorado.

13) **Crossite** is named for Whitman Cross, mapper of the Pikes Peak Folio for the USGS. He described the mineral in 1890 as a blue mineral of the amphibole group that he had found as a secondary growth on hornblende and pyrite in Custer County. Four years later, Charles Palache discovered some blue and yellowish-blue crystals in

a rock near Berkeley, California, and named the mineral crossite. In Colorado, crossite comes from Custer County in the Silver Cliff and Rosita districts and from Teller County in the Cripple Creek district where Cross first found it.

14) **Doughtyite** was named by William P. Headden after the owner of Doughty Springs in Delta County, where it was found. This hydrous aluminum sulphate was precipitated by the alkaline waters of the springs. According to *Minerals of Colorado*, doughtyite is no longer considered a valid mineral species.

15) **Rilandite** is a hydrous aluminum-chromium silicate mineral that was found on a claim located for carnotite by J.L. Riland, Meeker County newspaper publisher. The claim is in Rio Blanco County, a little over 13 miles east and a little north of Meeker. The mineral was found on the outer surfaces of petrified logs in sandstone of the lower beds of the Morrison Formation. It is massive, compact, dark brown to black, and resembles dull pitch, but its crystal system is undetermined. Its status as a mineral species is in doubt.

16) **Nicholsonite**, now considered to be a variety of aragonite, carries the name of S.D. Nicholson of Western Mining Company, who showed it to G. Montague Butler in 1913. The original assay of the mineral showed it carried 10 percent zinc and had greater density, brighter luster, and better cleavage than pure aragonite. It occurred with oxidized iron-manganese ores. Subsequent analysis of the same specimen showed no zinc but some strontium.

17) **Vandiestite** was found in the Hamilton and Little Gerald mines at an altitude of 13,000 feet on the side of Sierra Blanca by Peter H. Van Diest, director of the Lead Mining Company. Van Diest was president of the CSS in 1887. The telluride of silver and bismuth containing also some gold and lead, occurs in metallic threads associated with copper minerals and gold-bearing pyrite. Cumenge named the mineral in France on March 16, 1899, but Frondel discredited poor vandiestite in 1940. He

proved that the specimen was a mixture of the mineral tellurobismuthite, intergrown with hessite and occasional threadlike inclusions of native gold and specks of altaite.

18) **Overite** was named for Edwin Over, well-known prospector and collector from Colorado

Springs. Over and Arthur Montgomery of New York came across it at Fairfield, Utah, collected enough for study, and described it in May of 1940. These pale green and colorless glassy prismatic crystals occur in cavities in variscite nodules.

A View Through the Brown Cloud

By Lisa Ramirez Rukstales



It's almost election day and just when you think things can't get sillier...they do! The cigarette tax wars have begun and the anti-tax contingent must be

getting desperate because they are making the argument that grey-lungers are not an added burden on our beleaguered health care system because they DIE younger! Jeepers! And to think I considered this to be a minus and not a plus! I'm so naïve. There are moments (not many) when I actually feel sorry for the tobacco addicted, but this emotion is

always stubbed out because inevitably I'm in the car behind a dragon who throws his cancer stick out the window and onto the roadway. As the sparks fly I find myself screaming, "Since when did the Earth become your ashtray?" and there goes my blood pressure. Maaaaaybe...they should LOWER the cigarette tax because in their theoretical world this would encourage people to smoke, they'd continue to pollute our air and land (and die young), it would raise the blood pressure of petulant non-smokers who would die of heart attacks much earlier, thus freeing up even more of that theoretical health care (that the smokers aren't using).



Earth Science Meetings and Talks



Newsletter items must be received by the 25th of each month. Items may include special events, open houses, etc...thanks!

Colorado Scientific Society's regular meetings are held the 3rd Thursday of the month at the American Mountaineering Center 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 Emmett Evanoff at (303) 444-2644 or emmettevanoff@earthlink.net

Denver Mining Club meets every Monday (except when noted) at Country Buffet near Bowles and Wadsworth (at 8100 W. Crestline Ave.) 11:30 a.m.-1:00 p.m. **Recent exploration developments**, Oct. 18—Bob Barker, General Manager, American Exploration, Newcrest Mining, Ltd. **Producing gold value and growth: The Jerritt Canyon mine, northern Nevada, the 5th largest gold producer in the U.S.**, Oct. 25—John Haigh, Manager, Investor Relations, Queenstake Resources, Ltd.

Denver International Petroleum Society meets the second Friday of each month at the Wynkoop Brewing Co., 18th and Wynkoop Streets. Reception begins at 11:30 a.m., luncheon at 12 p.m., program at 12:30 p.m. Make reservations (required) by leaving message at (303) 623-5396. Reservations accepted after 8 a.m. on Friday until 10:30 a.m. on Wednesday prior to the meeting. Cancellations accepted until 11:00 am Wednesday prior to the meeting. Cost: \$15 for lunches; talk only is available for \$2 (make checks payable to "D.I.P.S."). Contact Keith Murray at (303) 986-8554 for information.

Denver Region Exploration Geologists' Society (DREGS) meets in the Mutual Consolidated Water Building, 12700 West 27th Avenue, Lakewood. Social hour 6:00-7:00 p.m. Technical presentation at 7:00 p.m. Meetings are normally scheduled for the first Monday of each month. **Geology, tectonics and mineral occurrences of central Lapland, Finland: Exploration potential for iron oxide-copper-gold deposits**. Nov. 1—Craig Horlacher, Principal Geologist Silver Crescent Exploration Inc., Lakewood, Colorado. 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 begins at 11:30 a.m., 18th and Wynkoop Sts. in Denver. Subject matter usually deals with the application of well logs to oil and gas exploration. **TBA**—May. Call Elice Wickham at 303-573-2781 for reservations. Web page: <http://dwls.spwla.org>.

Rocky Mountain Association of Geologists (RMAG) Reception at 11:30 a.m., lunch at 12:00 p.m., talk at 12:30 p.m. Reservations are taken by recording at 303-623-5396 until 10:30 a.m., Wed. before the luncheon. Cancellations are taken until 11:00 a.m. on Wed. at 303-573-8621. Luncheon cost is \$20 payable to RMAG at the door. Reservations are not required for talk only—cost is \$3. Meeting location: Denver Petroleum Club, Anaconda Tower, 555-17th St, 37th floor. Web page: <http://www.rmag.org>.

University of Colorado at Boulder, Geological Sciences Colloquium Wednesdays, 4:00-5:30 p.m., Rm. 180. Refreshments at 3:30 pm on the 3rd floor. For more information, call 303-492-8141. **Sediment transport, accumulation, and channel-floodplain interaction within pristine foreland basins**, Oct. 20—Rolf Aalto, Earth and Space Sciences, Univ. of Washington. **New ways of studying old dinosaurs: What geochemistry can tell us about their diet and ecology**, Oct. 27—Henry Fricke, Colorado College. Web page: <http://www.colorado.edu/GeolSci>.

Friends of Dinosaur Ridge meets at 7:00 pm at Red Rocks Elementary School in Morrison, Colorado. Join now. Web page: <http://www.dinoridge.org>. **Geology of Table Mountain**, Oct. 14—Harald Drawes, retired geologist. Admission is free, but donations are welcome. For more information please contact the FODR Visitor Center at (303) 697-3466.

Colorado School of Mines, Van Tuyl Lectures Fridays from 3:00PM to 4:00PM in Berthoud Hall room 108. **The search for life on Mars**, Oct. 22—Barbara-Ann Lewis, Northwestern University, Evanston, IL, AWG Distinguished Lecturer. **GE faculty research**, Oct. 29. For further information, check <http://www.mines.edu/academic/geology.html>

USGS Geologic Division Colloquium. Thursdays, 1:30 p.m., Foord Room, Building 20, Denver Federal Center. For more information contact: Peter J. Modreski, U.S. Geological Survey, Denver, Colorado tel. 303-202-4766, fax 303-202-4767 email pmodreski@usgs.gov

For a constantly updated, online geo-calendar, visit the Colorado Geological Survey at
<http://geosurvey.state.co.us>

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