



Colorado Scientific Society

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

BLASTS FROM THE PAST: WHEN THERE WERE HUGE VOLCANOES IN COLORADO

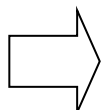
Peter Lipman, U.S. Geological Survey, Menlo Park, CA

Since about 20 Ma, mountainous parts of Colorado have been sites of relatively small infrequent basaltic eruptions. In contrast, from 35 to 23 Ma at least 25 gigantic explosive eruptions generated enormous silicic ash flows that avalanched as much as 100 km from large caldera sources, mainly in the Sawatch and San Juan Mountain areas. Because of the size of these eruptions and the erosional dissection of internal structures of caldera volcanoes, the middle Tertiary volcanism in Colorado provides instructive comparisons and contrasts with recent explosive eruptions such as Mount St. Helens in 1980 and Pinatubo in 1991. Especially impressive, in terms of ash-flow volumes, caldera size, and magma-production rates is the 28-26 Ma central San Juan caldera cluster, where recent studies provide new insights into processes of silicic magma generation, pyroclastic eruptions, and caldera formation.

ITALY, "TERRAEMOTUS" COUNTRY: A BIRD'S-EYE VIEW ON THE 1997 ASSISI EARTHQUAKES

Paolo Marco De Martini, Istituto Nazionale di Geofisica, Rome, Italy

In 1997, a series of devastating earthquakes struck the central Apennines, which are the structural backbone of the boot of Italy. The September 26th earthquake (M6), caught the attention of the world because it caused 12 deaths, 4 from within the Basilica of St. Francis de Assisi. Italian seismologists, geologists, and geophysicists working together have been able to capture 3-dimensional data on the faults that caused these historic earthquakes. Satellite-based laser interferometry shows a striking pattern of general subsidence and localized uplift associated with the faults and geodetic releveling of pre-earthquake surveying stations confirm the same general pattern. These data, plus geologic studies of the surface ruptures, give us a bird's-eye view on the 1997 Assisi earthquakes.



Note Change

Tuesday, March 9, 1999

**City Lights II Room (left at top of stairs) in the Sheraton Hotel
360 Union Boulevard
Lakewood, Colorado**

**Social Half-hour: 7:00 p.m. (bar available downstairs)
Meeting Time: 7:30 p.m.**



P x 4 (President Pierce's Purple Prose)

Our February 9 meeting filled the room, aisles, and front area in the Theatre at the Sheraton. Al Bartlett's discussion of "Arithmetic, Population and Energy" was forceful. He described the concept of the doubling time idea for populations and energy use as compared with the limits of resources and space. If you would like to purchase a video of his talk, it is available from the Univ. of Colorado (303 492 7017, or Kathleen.Albers@colorado.edu). Kudos to Eric Nelson, Program Chair, for this and other programs. Our schedule is now complete with Kirk Johnson of the Denver Museum of Natural History agreeing to speak at family night on October 12 on the environment of the dinosaurs that once roamed the Denver area.

The Society is a CoHost for the Geological Society of America meeting this October 25-28. CSS members have the same advantages as GSA members as far as fees for field trips, registration, etc. at the GSA meetings. Field trips include a number led by CSS members, including Chuck Pillmore (K-T boundary), Eric Erslev (two, northern Front Range, northeastern Front Range) and Bob Scott (salt tectonics, Eagle valley).

A mailing has gone out to 1500 earth scientists in the Denver area, inviting them to attend our meetings and go on our field trips. Thanks to Dean Kleinkopf and the crew that got this mailing out: Bill Calkin, Mary Margaret Coates, Denise Dundon, Gary Meyers, Mike Machette, Ken Pierce, Pat Poole, Cindi Rice, and Michelle Tuttle. It would be great if you would make an effort to personally welcome new people at our next meetings.

Our meetings in April and May will feature these speakers:

April 13	Emmett Evanoff	Upheaval in the Southern Rockies: Climate vs tectonics for stream incision in the Late Cenozoic
	Bob Kirkham	Dissolution of evaporites causes widespread active collapse in west-central Colorado
May 11	Julie Cole	El Niño: Geological evidence for past events
	Dave Crow	Growth of gold nuggets during active mountain building

Applications for CSS grants supported by our Memorial funds are due soon, so encourage students that have appropriate proposals to apply (see below).

Research Grants Available

The Colorado Scientific Society invites graduate students to apply for research grants to be awarded in April 1999. Applicants must be enrolled in a Masters or Ph.D. program at an accredited college or university. Approximately eight grants, ranging from \$500 to \$1200 each, will be awarded for field-oriented research on the geology, geochemistry, and geophysics of the Rocky Mountain region. In addition, grants as large as \$1000 are awarded for engineering geology research (with no restriction on the geographic area of interest), and one grant as large as \$1000 is offered for studies of the Heart Mountain fault in northwestern Wyoming. Interested students can obtain application forms and grant information directly from the Society web site at: <http://shell.rmi.net/~css/> or by mail from the Chair of the Memorial Funds Committee, Colorado Scientific Society, P.O. Box 150495, Lakewood, CO 80215-0495. Deadline for applications is March 20, 1999.



1998 Contributions to Memorial & Endowment Funds

The Society thanks its members & friends who contributed \$19,770 to our Memorial and Endowment Funds during 1998. (Contributions made in the memory of another are shown in brackets, whereas those contributing \$100 or more are indicated by an asterisk.) As of December 1, 1998, the total value of our Memorial Funds investments was roughly \$142,000 (this includes about \$9,000 in interest reserved for the 1999 awards). The Memorial Funds honor the following individuals and primary objectives:

- Ogden Tweto (1984): Field-based earth-science research in Colorado & adjacent areas
- Stephen Oriel (1986): Geologic studies of the Idaho-Wyoming thrust belt & associated topics
- Edwin Eckel (1990): Engineering geologic studies in the United States
- William-Pierce (1994): Studies of the Heart Mountain fault, Wyoming, & associated problems
- George Snyder (1998): Studies of Precambrian igneous/metamorphic geology & basement tectonics in the Rocky Mountain region.

Since the Memorial Fund Program started in 1984, the Society has awarded 96 student research grants in Earth Sciences for an aggregate value of \$67,807. The George Snyder Memorial Fund was established in October 1998 with a generous gift of \$10,000 from Sandy Jackson, executor of George's estate. Please remember that your **entire** contribution goes towards generating interest for the grants & that your contribution is 100% tax deductible (the Society is a non-profit Section 501 (c)(3) organization).

Eckel Fund (\$733)

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 Anonymous
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Joint Petroleum Society Meeting

The RMAG, DGS, DIPS and SEPM organizations in the Denver area will co-host a luncheon reception at the Denver Petroleum Club on May 28, 1999. The purpose of the meeting will be to facilitate and expand opportunities for business in all phases of oil and gas exploration and development, both domestic and international. Individuals and companies active in all aspects of the industry are encouraged to attend. Lunch will be buffet style with no lecture apart from introductory comments. Tables will be marked with areas of interest or expertise to make it easy to find what and who you need to contact. Go there, get fed, and CONNECT! Reservations may be made by phone to the DGS office at (303) 820-0501, or by email to: dgs@denvergeo.org before Friday, May 21.

K-T Boundary Symposium, March 20-21

The Western Interior Paleontological Society will be convening a symposium on
The K-T Boundary: Extinction and Emergence
at the Green Center, Colorado School of Mines on Saturday, March 20 from 8 a.m. to 5 p.m. The program will feature poster sessions, fossil exhibits, and over a dozen speakers, including the following keynote speakers:

Dr. Anthony Fiorilla	Taphonomy at the K-T Boundary
Dr. Louis Jacobs	Mass Extinctions: Similarities and Differences
Dr. Kirk Johnson	The End of an Era: Evidence of Ecosystem Devastation at the K-T Boundary in Southwestern North Dakota"
Dr. James Kirkland	Patterns of Extinctions during the Cretaceous: Contrasts to the Terminal K-T Boundary Extinction
Dr. Douglas Nichols	End of an Era: Evidence for a Continent-Wide Catastrophe at the K-T Boundary

A field trip on Sunday March 21 will go to Dinosaur Ridge and South Table Mountain to view the K-T Boundary. For registration and other information call 303-948-1184, or visit the website www.wipsppc.com

Museums

Friends of Dinosaur Ridge For information call 697-DINO. Visitors' Center is located at 16831 West Alameda Parkway (north side of Alameda, just west of the C-470 overpass). Open 9 a.m. to 4 p.m. weekdays and weekends. Fireside chats are held at the Red Rocks Elementary School Cafe, in Morrison starting at 7 p.m. On March 10, Christine Turner will speak on "Paleoenvironments of the Morrison Formation".



New Members

The Colorado Scientific Society would like to welcome the following new members!!!

Theodore R. Brandt

Hugh M. Davidson

Michael R. Sherwood

Geoffrey Snow

Bill Spence

Robert J. Webster

James C. Yount

Earth Science Meetings and Talks

Colorado Scientific Society's regular meetings are held the 2nd Tuesday of the month (unless otherwise advertised). Social time begins at 7:00 p.m. and presentations start at 7:30 p.m. For information, contact Ken Pierce at (303) 236-1244 or kpierce@usgs.gov

Denver International Petroleum Society (DIPS) meets the 2nd 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 calling or leaving message with Dan Spencers (303) 446-5701. 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. The next meeting is on March 8. (Meetings are normally scheduled for the first Monday of each month.) For information contact Don Bryant, (303) 733-2358, or the website <http://www.qadas.com/dregs>

Colorado School of Mines Lectures For Heiland Lectures at 4:00 p.m. on Fridays, contact Michelle Szobody (303) 273-3451. For information on Van Tuyl Lectures, call the Dept. of Geology at (303) 273-3800

Colorado State University Geology Lectures Mondays, 4:10 p.m. in room 109 or 316 of the Natural Resources Building. Call the Dept. of Earth Resources at (970) 491-5661 for further details.

University of Colorado at Boulder, Geological Sciences Colloquium

Wednesdays, 4:00-5:30 p.m., Rm. 180. For schedule, contact Kathy Madsen 303-492-8141

USGS Geologic Division Colloquium

Thursdays, 1:30 p.m., Foord Room, Building 20, Federal Center. For information, contact Pat Poole at ppoole@usgs.gov. On March 4, John Behrendt will speak on "Americans in Antarctica; from the International Geophysical Year (1957) to the Environmental Protocol (1998)"

The Geological Society of Nevada will be convening a Symposium on *GEOLOGY AND ORE DEPOSITS 2000: the Great Basin and Beyond* on May 15-18, 2000 in Reno/Sparks, Nevada. There will be ten field trips. For more information contact GSN, PO Box 12021, Reno, NV 89510 or visit the website <http://www.seismo.unr.edu/GSN>



Visit CSS at <http://rainbow.rmi.net/~css/>

Invitation to Join the Colorado Scientific Society

The Society is dedicated to the advancement of science through open forums and activities. We sponsor lectures, field trips, student scholarship grants, and discussions of scientific matters of public concern. Please help us enlist new members.

I hereby apply for _____ membership in the Colorado Scientific Society.
 (Regular, Corresponding, Student)

 (Last Name) (First Name) (Middle)

 (Address) (Telephone, with area code) (e-mail)

 (City) (State) (Zip)

 (Company/Agency/University)

 (Mailing address if different than above)

 School Degree Year Major

Main Scientific Interests

DUES—Your dues are for the calendar year and help support the newsletter, monthly meetings, two field trips each year, family night, and the Emmons Lecture.

Regular Member (\$15) _____
 Corresponding (outside Denver metro area) Member (\$10) _____
 Student Member (\$5) _____

Please make your dues payable to Colorado Scientific Society. Thank you!!

The success of certain Colorado Scientific activities depend on your volunteer help. Please circle those activities for which you can provide assistance. We will pass your name on to the appropriate Committee Chairperson.

- | | | | |
|-------------------------|---------------------|-------------------|----------------------|
| <i>Arrangements</i> | <i>Fund Raising</i> | <i>Newsletter</i> | <i>Publicity</i> |
| <i>Best Paper Award</i> | <i>History</i> | <i>Outreach</i> | <i>Science Fairs</i> |
| <i>Field Trips</i> | <i>Membership</i> | <i>Program</i> | <i>Web Site</i> |

I certify that all statements in this application are correct and, I agree to promote the objectives of the Society and to abide by its Constitution, Bylaws, and Rules.

Applicant's signature

Date

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



Visit CSS at <http://rainbow.rmi.net/~css/>

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