

Colorado Scientific Society

*In pursuit of the promotion of knowledge,
the understanding of science,
and its application to human needs.*

The Surprising Discovery of Oil and Mesozoic Sediments in the San Luis Basin, Saguache County, Colorado

Tom Watkins, Lexam Explorations (U.S.A.), Inc., Wheat Ridge, Colorado
John Belcher, Peak Energy, Denver, Colorado
Robbie Gries, Priority Oil & Gas, Denver, Colorado
Mark Longacre, MBL, Inc., Denver, Colorado

The discovery of live oil in mineral exploration drill holes, followed shortly thereafter by the identification of Mesozoic sediments in outcrop and the subsurface, has resulted in a new geologic interpretation for the northeastern San Luis Basin. Oil, sourced from Cretaceous rocks, is present in fractured Precambrian gneiss and Mesozoic sediments along a strike length of more than four miles. Mancos Shale, Dakota Group and Morrison Formation sediments have been observed in 17 shallow drill holes. These are the first occurrences of Mesozoic sediments discovered in the basin. Previous investigations had concluded that the entire Mesozoic section was eroded from the San Luis uplift during the Laramide.

A low-angle, detachment-style fault, related to development of the Rio Grande rift, forms the northeastern margin of the San Luis Basin. Immediately adjacent to the mountains, the detachment separates Tertiary, basin-fill sediments of the Santa Fe Formation from Precambrian basement. Southwest of the mountain front, Mesozoic sediments comprise the hanging wall of the detachment. Gravity, magnetic and seismic data place the east margin of the Baca graben three miles southwest of the mountains, creating an intermediate fault block between the Sangre de Cristo Range and the basin.

Structurally, the Grant Canyon, Bacon Flat and Blackburn fields in Nevada are excellent analogs for the northeastern San Luis Basin. A thick section of Mesozoic sediments, which represent favorable source and reservoir rocks, is interpreted to be present in the hanging wall of the detachment fault. Seismic data suggest that the sediments are cut by a series of listric normal faults which merge with the detachment.

Active Volcanoes in the Goma Region, Zaire And Their Role in the Rwandan Refugee Crisis

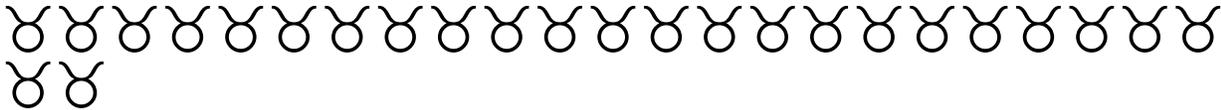
Thomas J. Casadevall
U.S. Geological Survey
Volcano Hazards Program

In July, 1994, ethnic violence and civil unrest in Rwanda prompted a flood of more than one million Rwandan refugees into eastern Zaire. These refugees settled in camps on the slopes of Nyamuragira and Nyiragongo volcanoes, both of which were in eruption at the time. Concern that eruptive activity would affect the air relief effort as well as refugees settled on the volcanoes, prompted an international response

by volcanologists from the USA, Zaire, France, and Japan to evaluate the eruptive activity, to assess the volcanic hazards facing the refugees and air relief operations, and to make recommendations to United Nations officials managing the relief effort.

In this presentation, I'll discuss the volcanological field studies which were carried out in the Goma area, and how those studies were integrated with other considerations of the refugee crisis. This talk weaves together the roles of ethnic differences, civil unrest, and the two active volcanoes to explain the current refugee crisis.

Society Notes



Rescheduling of the Colorado Getaways Feature on the Colorado Scientific Society

The Colorado Scientific Society is now to be featured this April 29 as a "Colorado Historical Moment" on the **Colorado Getaways** television program of Denver station KCNC, channel 4. The show airs at 6:30 p.m. Society memorabilia_the logo, banner, silver gavel, pictures of the founders and inventors, etc._and a brief text will describe our past and present activities. A videotape copy of this segment will be provided to the Society by the station.

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Colorado Scientific Society Spring Field Trip

The Spring Field Trip will be on Sunday, May 14.

We will visit South Park with an emphasis on the famous Pleistocene mammal site at Porcupine Cave.

Don Rasmussen and Steve Sonnenberg will lead a van caravan across the western flank of South Park. Come with us to examine the structural complexities of this area. Recent oil drilling and reflection seismic data permit new insight into the structural history of this area. Come learn of the extent of the ancestral Front Range and examine evidence for the longevity of the Eocene erosion surface. Come see the effects of pre-Laramide karstification and ponder the fate of the Pleistocene animals who wandered into (or were carried into) Porcupine Cave. Don Rasmussen will review the ongoing research efforts on this cave which involve the Denver Museum of Natural History, the University of Kansas, and the U.C. Berkeley. These studies have revealed the most extensive collection of Irvingtonian age land-mammal fauna in North America. The visit to the cave will highlight the trip; this easily accessible cave presents a very unusual preservation situation in which access was only available for a limited period of time in the Late Pleistocene, after which the cave was naturally sealed until broken into by miners about 100 years ago. We will follow the miner's adit to examine the cave and its fossils. In the vicinity of the cave we will discuss the evolution of the landscape of South Park with emphasis on the

effects of Late Tertiary volcanism, peat bog development, and ancestral drainage networks dating back to mid-Tertiary times.

Costs for the trip will be close to \$40 and will cover transportation and a picnic lunch. The cave access is by horizontal adit and ladder; those not wishing to descend into the bowels of the cave will have the opportunity to get a sense of the setting by examining the adit, which is reached by a gentle walk along a quarter-mile trail through pine forests.

Please call Bob Raynolds at 762-9379 to reserve a place and to obtain particulars on meeting time and place.

Results of the 1995 Colorado State Science Fair

The 1995 Colorado State Science Fair was held on the Colorado State University campus in Fort Collins on April 13-15. Lisa Bader (USGS), Bonnie Crysdale (USGS), and Eric Erslev (CSU) attended as judges for the Colorado Scientific Society. We spent Thursday afternoon viewing a remarkable array of science projects. Most of our time was spent with earth science projects at both the senior and junior high school levels. After interviewing many excited and promising young students, we decided on the following awards, which included a check and a Colorado Scientific Society paperweight. As has been common in the past, the junior division had more inspired projects, so we decided to give one senior division award and three junior division awards.

First place, Senior Division (\$100): Amber Croft, 10th grade, Cedaredge High School, Cedaredge, "An ecological analysis of soil salinity and vegetative cover according to elevational differences of Mancos Shale badlands in western Colorado".

First place (tie), Junior division (\$75): Sara McDonnall, 9th grade, Lamar High School, Lamar, "The river wild: A study of the pollutants of the Arkansas River in Colorado".

First place (tie), Junior division (\$75): Sonja Skovsted, Southern Hills Middle School, Boulder, "Gone with the wind - The effects of barriers and soil types on wind erosion".

Second place, Junior Division (\$50): Adrian Pyrih, 8th grade, Our Lady of Fatima School, Golden, "The cleanup of contaminated soils by natural bacteria".

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New members of the Colorado Scientific Society

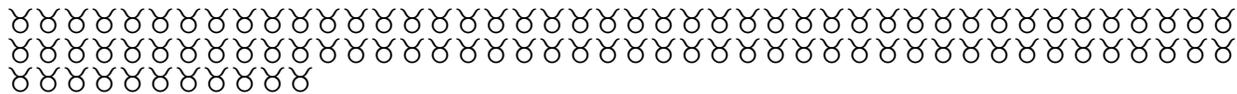
Welcome!! Alaric E. Struass
Joseph J. Kerski

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Contributions to the Memorial Funds and Endowment Fund

The Society thanks the many members and friends who contributed to a total of \$19,302 to our four Memorial Funds and the Endowment Fund between April 20, 1994, and April 15, 1995. (Contributions made in the memory of another are shown in parentheses, whereas those contributing twice in the reporting period are indicated by an asterisk.) Contributions to the funds generally decreased in 1994 (compared to previous years), but the newly established Bill Pierce-Heart Mountain Fund nearly doubled in value as the result of another generous gift of \$10,000 from the Bill and May Bell Pierce Trust. Please remember that your contributions to the funds are 100% tax deductible and, with the exception of mailing costs, all of your contribution goes towards supporting student research. For 1995, the Society received an all-time high of 48 student research proposals and anticipates funding 9 or 10 of these from our 1994 earnings (interest).

Earth Science Meetings



Colorado Scientific Society. The next regular meeting will be held on September 12, 1995, in the Green Mountain Room (second floor, southwest corner), Sheraton Hotel, 360 Union Boulevard, Lakewood, Colorado. Social time is 7:00 p.m., meeting starts at 7:30 p.m.

Rocky Mountain Association of Geologists. Regular meetings, held on the first and third Fridays of each month, consist of a lunch at 11:55 a.m. and a lecture at 12:25 p.m. in the New Banquet Room of the Wynkoop Brewing Co., 18th and Wynkoop Streets, lower downtown Denver. Cost of the luncheon buffet is \$11. Reservations are taken on a recording line (303-623-5396) until 10:30 a.m. on the Wednesday before the luncheon. Reservations are **not** necessary to attend the talk only; however, there will be a \$2 charge at the door.

May 5 "Natural Gas Supply and Production Dynamics" by Philip H. Stark, Director, New Ventures, Petroleum Information Corp., Denver, Colorado

May 19 "Sequence Stratigraphy: So What's the Big Deal?" by Jeffrey A. May, Consultant, Littleton, Colorado

June 2 "Rocky Mountain Arsenal Cleanup Review" by Colonel Doc Bishop, U.S. Army Program Manager, and Mike Anderson, Shell Oil Project Manager

June 16 "Energy Supplies Twenty-First Century United States and World" by Jack Edwards, Energy & Minerals Applied Research Center, Dept. of Geological Sciences, U. of Colorado at Boulder

Denver International Petroleum Society ("D.I.P.S."). Meetings held on 2nd Friday of the month at the Wynkoop Brewing Co., 18th and Wynkoop Streets, lower downtown Denver. Reception at 11:30 a.m., luncheon at 12:00, program at 12:30 p.m. Reservations required by calling RMAG recording line (303-623-5396). Reservations accepted after 2:00 p.m. on Friday and before 10:30 a.m. on Wednesday before the meeting. Cost: \$13.00. Contact Keith Murray, 303-986-8554, for information. Next luncheon to be held May 12.

Denver Mining Club. All regular meetings are on Thursdays, from 11:30 a.m. to 1:00 p.m. at

the Denver Federal Center, Building 41 Cafeteria (south entrance), Lakewood. For more information call Jane Ohl, Program Chairperson (303-237-4043).

May 4 To be announced

May 11 "Our favorite frauds" by David M. Abbott, Jr., Regional Geologist, and Carleen Achuff, Senior Geologist, U.S. Securities & Exchange Commission

May 18 "Exploration for and discovery of the Sleeper gold deposit, Humboldt County, Nevada" by Stanley K. Hamilton, Consulting Geologist

May 25 "Demonstration biooxidation project_Gold Quarry" by Thomas C. Logan, Newmont Gold Company

June 1 "Wyoming bentonite_chemistry, mineralogy, and markets" by W.J. (Bill) Miles, Chemist, Bentonite Corp.

Rocky Mountain Section-SEPM (Society for Sedimentary Geology). All lectures held at the Denver Press Club, downtown Denver, 1330 Glenarm Pl., 2nd floor, unless otherwise noted. Cash bar at 11:30 a.m., lunch at 12:00, speaker at 12:30 p.m. For reservations, call and leave message at 303-697-6698 by 5:00 p.m. of the Friday prior to the luncheon. For further information, call Dave Eby at 303-738-9697. Lunch reservation **not** required to attend lecture.

May 23 "Dolomites from Barbados" by Dr. John D. Humphrey, Dept. of Geology & Geological Engineering, Colorado School of Mines

Application of Surface Geophysics to Environmental Problems: A Field-Oriented Course. June 9-10. Sponsored by the Environmental and Engineering Geophysical Society (EGS). Contact Mark Cramer at (303) 771-6101.

Colorado School of Mines Department of Geology and Geological Engineering, Golden: Van Tuyl Lecture Series. Lectures are on Thursdays at 4:30 p.m. in Berthoud Hall, Room 108, followed by a social hour in the Fireside Lounge at the Student Center. For further information, call Greg Holden (303-273-3855) or the Geology Department (303-273-3800).

Lectures are on Thursdays at 4:30 p.m. in Berthoud Hall, Room 108, followed by a social hour in the Fireside Lounge at the Student Center. For further information, call Greg Holden (303-273-3855) or the Geology Department (303-273-3800).

The lecture series will resume on August 31, 1995

American Institute of Hydrology - International Mine Water Association. The next annual meeting "Water Resources at Risk" will be held on May 14-18, 1995, at the Red Lion Hotel near Stapleton Airport in Denver, Colorado. For more information, contact Joe Downey or Ed Gutentag at 303-425-0419; fax 303-425-1053; Internet e-mail address is 76330.3650@CompuServe.COM.

Association for Women Geoscientists. New and prospective members are encouraged to find out more about AWG. For information contact Peggy Ganse, AWG President, 303-832-9636; fax 303-832-9616.

Teacher's Workshops. The Dinosaur Ridge Teacher's Workshop, a two-day one-credit class about Dinosaur Ridge for teachers, will be held on July 10 and 11. Register with the Colorado School of Mines Continuing Education Office at 273-3303. The continuing education fee is \$85.00.

Tracking Dinosaurs Exhibit. A new exhibit on "Tracking Dinosaurs" opened in November, 1994 at the University of Colorado Museum, Henderson Hall, Boulder Campus (near Euclid and Broadway). The exhibit will remain open through 1995. The exhibit includes casts of iguanodon tracks newly discovered at Dinosaur Ridge during excavations of the past several years.

Friends of Dinosaur Ridge. Friends of Dinosaur Ridge and cooperating institutions conduct guided tours for visitors to the Ridge, and many people visit on their own. In all, at least 38,000 people visited Dinosaur Ridge during 1994. Friends wishes to spread the word that they plan to accommodate all groups interested in a tour, but do need to schedule groups in advance to avoid conflict. Groups can call Friends at **303-697-DINO** to schedule a tour or for information about Dinosaur Ridge activities and location of lectures. In addition to tours of the Ridge, Friends can provide talks, lectures, and slide shows. Call Bob Kosiba at 303-399-7556 and he'll arrange a trained volunteer to speak to your group.

"Open Ridge" tours of Dinosaur Ridge will take place on the following dates during 1995. All are Saturdays except July 4th.

May 13, June 10, July 4, August 12, September 23, and October 14.

On each of these days, Alameda Parkway will be closed to traffic, tour guides will be posted all along the Ridge, and a bus will be available to give rides one-way for a fee of \$2 per person (over age 3).

The Friends have received a grant of \$125,000 from the Great Outdoors Colorado Trust Fund. They applied for these funds, derived from State lottery income, a few months ago. Dinosaur Ridge is one of 18 parks and recreation projects statewide to share in \$1 million in grants which were announced on March 23. The application was based on the design study conducted by the firm of Andrews and Anderson, funded with an original grant of \$11,500 from the Rocky Mountain Association of Geologists Foundation. The GOCO grant will pay for about half the projected cost of turning a ranch house into a fully functioning Visitors Center; major initial expenditures will probably be to upgrade road access, parking, fire safety, and rest room facilities.

Summer Camp for Dino Kids through Friends of Dinosaur Ridge

A pilot day camp program is in the planning stages for 1995. Applications for grants have been submitted, camp directors are being interviewed, and options evaluated. The focus of the camp will depend on grant money. If Friends receives sufficient funding, they will sponsor kids (10-12 year old) who are potential scientists, but who could not otherwise afford to attend. If grant money is not available, they will scale back plans and look for budding scientists who can pay for the camp program.

The focus of the camp will be hands-on projects planned by the students with the help of professional teachers. In the name of science, they will get a taste of strenuous hikes to paleontological sites, of careful measurements and sketches and of the thrills of discovery. The majority of the work will be on Dinosaur Ridge and at the Visitors Center. In addition, other consortium members_the Lookout Mountain Nature Center, CSM Museum, and Lakewood's Historical Belmar Village_will each prepare half-day programs in fields related to their specialties.

By May they expect to have the details of camp operation worked out. Call the Friends Visitors Center (697-DINO) for more information.

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USGS Environmental Geoscience Seminar Series

This series, presented by members of the U.S. Geological Survey, included presentations with discussion and questions to follow. The seminar series was sponsored by the Environmental Team and Center for Environmental Geochemistry and Geophysics. The final talk will be held May 3 at 1:00-2:30 p.m. in Lecture Halls A & B, Building 25 of the Denver Federal Center, Lakewood, Colo.

May 3 "Mineral Environmental Studies" by Roger Clark, John Gray, and Sherm Marsh

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Fund-raising Mineral Auction

The Friends of Mineralogy, Colorado Chapter, will hold its annual auction of mineral specimens and related items on Thursday, May 18, 1995, 7-10 p.m., at the Denver Museum of Natural History. All interested persons are invited to attend; there will be complimentary refreshments and a cash bar. Proceeds from the auction will be used to help pay for preparation and printing of the new edition of Minerals of Colorado (originally U.S.G.S. Bulletin 1114), for which publication is anticipated in 1996.

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Mineral Development and Land Use Symposium

The Rocky Mountain Mineral Law Foundation is sponsoring a two-day institute in Denver on Mineral Development and Land Use, May 4 & 5, 1995. This program presents a comprehensive look at fundamental issues sweeping the West regarding the escalating and contentious conflict between mineral development and competing land uses. This will be a pioneering, intensive examination of the role of government and the competing rights of mineral developers and property owners in determining the location, scope, timing, and nature of mineral development. The program will consist of scholarly presentations on these issues as well as debates among program participants and is intended to present both the theoretical and the practical aspects of resolving these conflicts.

Contact the Foundation at (303) 321-8100 for additional information.



1995 Dues and Memorial Fund Contributions



Have you paid your dues for 1995? Check the mailing label on your Newsletter; you are current if "95" appears in the first line. If you are not current please return the dues and Memorial fund notice from the April newsletter and your check made payable to Colorado Scientific Society, P.O. Box 150495, Lakewood, CO 80215-0495. Prompt payment of dues will help your society meet expenses. Don't forget that it is never too late to make a contribution to the Memorial Funds.

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Colorado School of Mines Alumni Association Charity Golf Tournament

The 11th annual Colorado School of Mines Alumni Association Golf Tournament will be held Thursday, June 1, 1995, at the new West Woods Golf Course in Arvada. Proceeds from this event will benefit the CSMAA Student Financial Assistance Program. More than \$50,000 has been raised over the past ten years for this much needed program.

The tournament, a three flighted team scramble limited to 144 players and open to all interested golfers, alumni and non-alumni, begins with a 7 a.m. shotgun start and ends with a noon barbecue at a neighboring park. An entry fee of \$75 per person includes a \$30 tax-deductible contribution to the CSMAA Student Financial Aid Program, green fee, cart, beverages, lunch, and prizes. Individuals who enter may form their own team, or be placed on a foursome by the golf committee.

A tournament patron who donates \$250 will receive name recognition at a designated tee box and green. Sponsors who donate \$100 will earn name recognition at a designated tee box. Donors who contribute prizes or cash will also be recognized at the tournament. All tournament contributors will be recognized in the Mines Magazine. All patron, sponsor and donor contributions are 100 percent tax-deductible.

For more information, contact Mary Jo Giddings at the CSM Alumni office, (303) 273-3290.

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Wyoming Geological Association 52nd Annual Field Conference

August 19-22, 1995

Rock Springs, Wyoming

For more information call Rod De Bruin or Dan Hausel (307) 766-2286

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Items for Newsletter



We would like to include any items of general interest regarding members, new programs, scientific meetings, etc., in future newsletters. Please submit materials (hardcopies and/or computer disk) to Brad Van Gosen, USGS, Box 25046, M.S. 905, Denver Federal Center, Denver, CO 80225, or call (303-236-

1566) or fax (303-236-5603). Please send items to the editor before the 20th of the month to ensure inclusion in the next newsletter.
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Colorado Scientific Society
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Lakewood, CO 80215-0495

Colorado Scientific Society

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