



# Colorado Scientific Society

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

## 1998 Emmons Lecture

### Evidence for Life in a Martian Meteorite (! or ?)

**Harry Y. McSween, Jr.**

**University of Tennessee**

Wednesday, January 21, 1997

Petroleum Hall, The Green Center, Colorado School of Mines

Golden, Colorado

Meeting Time: 8:00 p.m.

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# President's Column

Welcome to 1998! I look forward to an engaging and active year for the Colorado Scientific Society. I hope to maintain the society's strengths while adding an academic perspective from my roost at Colorado State University. Although I may not be down the hall from fellow Colorado Scientific Society members, all should feel free to contact me by phone (970 491-6375) or e-mail (erslev@cnr.colostate.edu) when the need arises.

As I received the silver gavel from *Karl Kellogg* at the December 9<sup>th</sup> business meeting of the society, my mounting panic was quelled by my knowledge of the depth of support given to the society by its officers and members. Karl will get a much deserved break from the day-to-day affairs of the society, yet he is already sending out announcements of the upcoming student grants funded by the memorial funds. *Mike Machette* will continue as treasurer—I know of no one I'd rather see monitoring the crucial monetary details of the society. *Dave Nealey* will continue as the newsletter editor and will get production assistance from *Karl Kellogg*, *Scott Minor*, *Dave Moore* and *Dave Lidke*. *Aaron Kullman* (arrangements), *Robert Bucknam* (database manager), *Bruce Bryant* (best paper award), *Marge MacLachlan* (history), *Pete Modreski* (outreach), *Dave Moore* (publicity), and *Randy Schumann* (webmaster) all return to chair their committees for another year! *Ken Pierce* has agreed to be president-elect for 1998, giving us a strong president for 1999.

*Eric Nelson*, who gave us a stellar array of speakers as last year's program chair, hails from the Colorado School of Mines and continues his commitment to the society as a new councilor. He and *Ted Ball*, a geological consultant, will join councilors *James Cappa*, *Richard Wanty*, *Michelle Tuttle*, and *Bill Nesse* to fill out the council for 1998. *Ian Ridley* has claimed the important program chair - get any hot scoops on interesting speakers to him ASAP! *Lee Shropshire*, another academic soon to retire from the University of Northern Colorado (at least he isn't a structural geologist!), has volunteered to take on the familiar role of field trip chair.

At this moment, we still need a membership chair and a science fair chair. *Mary-Margaret Coates* is retiring as membership chair so we need someone to entice and welcome new members. *Bonnie Crysedale* is starting up a new business and must give up the science fair chair. Having served as science fair chair myself, I am hoping to find another supportive soul who likes kids, science, and playing "Santa" in April by rewarding Colorado's young science enthusiasts with encouragement, C.S.S. paperweights, and cash.

So, help us launch the Colorado Scientific Society into 1998 by coming to our 37th annual Emmons lecture on Wednesday, January 21st at 8:00 p.m. We hope to pack Petroleum Hall at the Green Center of the Colorado School of Mines to hear *Hap McSween* tell us about "Evidence for Life on a Martian Meteorite (! or ?)." See you there!

\_\_\_\_\_  
*Eric Erslev, President*



# Emmons Lecture

## Evidence for Life in a Martian Meteorite (! or ?)

**Harry Y. McSween, Jr.**

Department of Geological Sciences,  
University of Tennessee, Knoxville, TN 37996

### ABSTRACT

The controversial hypothesis that the ALH84001 meteorite contains relics of ancient Martian life has spurred new findings, but the question has not yet been resolved. Organic matter probably results, at least in part, from terrestrial contamination by Antarctic ice meltwater. The origin of nanophase magnetites and sulfides, suggested, on the basis of their sizes and morphologies, to be biogenic, remains contested, as does the formation temperature of the carbonates that contain all of the cited evidence for life. The reported nanofossils may be magnetite whiskers and platelets, probably grown from a vapor. New observations, such as the possible presence of biofilms and shock metamorphic effects in the carbonates, have not yet been evaluated. Regardless of the ultimate conclusion, this controversy continues to help define strategies and sharpen tools that will be required for a Mars exploration program focused on the search for life.

## What is the S.F. Emmons Lecture

The S.F. Emmons Lecture, a tradition which began in 1962 with Colorado Scientific Society President R.J. Ross, is a highlight of the Societies' activities and contributes not only to our standing in the scientific community but to the intellectual growth of our members and colleagues. The series is named, of course, in honor of the Societies' founder--S.F. Emmons.

Samuel Franklin Emmons (1841-1911), an economic geologist, graduated from Harvard University. He later studied at the Ecole de Mines in Paris and at the Bergakademie in Freiberg, Germany. His career included work on the geological exploration of the 40<sup>th</sup> parallel, the Comstock Lode (Nevada), Leadville, Crested Butte and Den-ver basin areas (Colorado), and on the Tenth Census Survey. Clarence King, first Director of the U.S. Geological Survey, appointed him as geologist-in-charge of its Rocky Mountain Division, headquartered in Denver. In addition to his importance as founder and first president of the Colorado Scientific Society (1882), Emmons was one of the founders and president, in 1903, of the Geological Society of America, and general secretary of the International Geological Congress in 1891. He served as an officer in several other scientific organizations. Columbia and Harvard Universities honored him with D.Sc. degrees in 1909. Generally held in January, the S.F. Emmons lectures feature a speaker who is recognized nationally or internationally as in the forefront of research in some important facet of Earth science. Almost without exception the Emmons lectures have been notably successful in enriching the knowledge and interest of the large audiences that each has attracted.



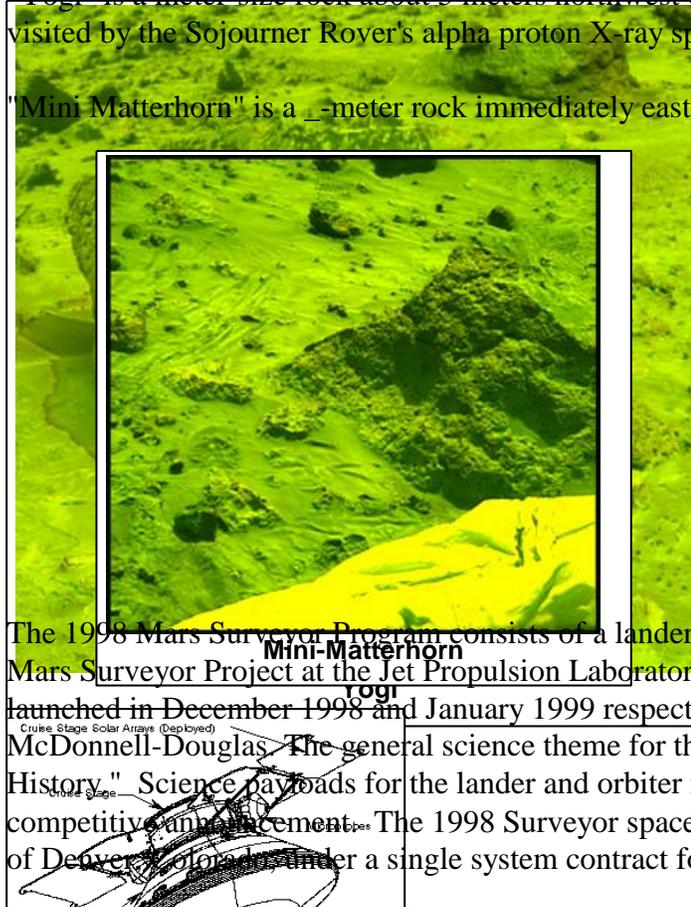
Speakers commonly are invited to the Past-President's Dinner, which is an annual gathering of past presidents, and current officers and councilors. The Emmons Lecturer commonly receives a modest honoraria and travel expenses for their courtesy in sharing their research results and philosophies.

## Interesting Websites

Periodically we enhance the speakers' abstracts with information concerning websites that offer science over the Internet. This month, we direct your cyber-attention to: <http://mpfwww.jpl.nasa.gov>, <http://cmex-www.arc.nasa.gov/>, and <http://www.fas.org/mars/marslife.htm>.

"Yogi" is a meter-size rock about 5 meters northwest of the Mars Pathfinder lander and was the second rock visited by the Sojourner Rover's alpha proton X-ray spectrometer instrument.

"Mini Matterhorn" is a 1-meter rock immediately east-southeast of the Mars Pathfinder lander.



The 1998 Mars Surveyor Program consists of a lander and an orbiter mission both managed by the 1998 Mars Surveyor Project at the Jet Propulsion Laboratory for NASA. The orbiter and lander spacecraft will be launched in December 1998 and January 1999 respectively, on separate Med-Lite launch vehicles built by McDonnell-Douglas. The general science theme for the 1998 Surveyor missions is "Volatiles and Climate History." Science payloads for the lander and orbiter missions were selected by NASA through a competitive announcement. The 1998 Surveyor spacecraft is being built by **Lockheed-Martin Astronautics** of Denver, Colorado, under a single system contract for both the lander and orbiter flight systems.

## A Member's Unusual Hobby

The science of ostrich farming is one CSS member's business these days. Ken Turnbull is owner of Struthious Farms in Highlands Ranch. Ken started the farm about three years ago. The farm holds open houses on Sundays from noon to 3 p.m. but call Ken first at 790-7070.



## Student Research Grants

Every year, the Colorado Scientific Society invites graduate students to apply for research grants, which this year will be awarded in early May. These grants are awarded from four Memorial Funds: The Tweto, Oriel, Eckel, and Pierce Funds.

The first two provide approximately eight grants, ranging from \$500 to \$1200 each, for field-oriented research on the geology, geochemistry, and geophysics of the Rocky Mountain region. The Eckel Fund awards grants as large as \$1000 for engineering geology research with no restriction on the geographic area of interest, and the Pierce Fund awards one grant as large as \$1000 for studies of the Heart Mountain fault in northwestern Wyoming.

Applicants must be enrolled in a Masters or Ph.D. program at an accredited college or university. Interested students can obtain application forms and additional grant information directly from the Society website at: <http://rainbow.rmi.net/~css/> or by mail from *Karl Kellogg*, Chair of the Memorial Funds Committee, Colorado Scientific Society, P.O. Box 150495, Lakewood, CO 80215-0495 ([kkellogg@usgs.gov](mailto:kkellogg@usgs.gov)). Deadline for applications is April 3, 1998.

## Earth Science Meetings

**Colorado Scientific Society's** regular meetings are held the 2<sup>nd</sup> Tuesday of the month (unless otherwise advertised). Social time begins at 7:00 p.m. and program is at 7:30 p.m. Contact for information contact Eric Erslev at (970) 491-6375.

**Denver International Petroleum Society (DIPS)** meets the 2<sup>nd</sup> Friday of each month at the Wynkoop Brewing Co., 18<sup>th</sup> 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 Kristine Peterson (303) 980-6770. 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: \$13 for lunches; talk only is available for \$2 (make checks payable to "DIPS"). 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. For information contact Jim Cappa, 866-2611.

January 12—Bill Atkinson, University of Colorado, "**Geology and Mineral Zoning of the Los Pelambes Copper Deposit, Chile**"

February 2—Speaker to be announced

## Colorado School of Mines Van Tuyl Lectures

For information call the Dept. of Geology at 273-3800.



## Colorado State University Geology Lectures

All presentations are at 4:00 p.m. in room NR 316, with the exception of the AAPG Distinguished Lecture, which will be at NOON. For information, contact Eric Erslev at (970) 491-6375.

**Denver Mining Club** meets Thursdays from 11:30 a.m. to 1:00 p.m. at the Country Harvest Buffet at Villa Italia, 7200 W. Alameda Avenue, Lakewood. For more information contact Dick Beach at (303) 986-6535.

January 15—Fred Barnard, Consulting Economic Geologist (Title to be announced)

January 22—Michael Peelish, Director of Safety, Cyprus Amax Minerals Co. "**Diesel Emissions Management (Underground Mining)**"

January 29—Speaker to be announced.

February 5—J. Robert Clark, General Manager, ACTLABS "**Using Enzyme Leach to Detect Deep Mineral Deposits**"

## Museums and News

**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 Morrison Town Hall, 110 Stone Street in Morrison starting at 7 p.m.

**Morrison Natural History Museum**...is open 1-4 p.m., Wednesday through Sunday. The Museum is located on State Highway 8, \_ mile south of Morrison. Fireside chats are cosponsored periodically by Friends of Dinosaur Ridge (see above).

## New Members

The Colorado Scientific Society welcomes the following new members:

*Wayne R. Belcher, Craig Harran, Brook Holcombe, Alexander Iriondo, Michal R. Kaplan, Aaron J. Kullman, Jay L. McGrew, Daniel P. Miggins, Christine M. Phillips, Max Scuta, Janine and Charlie Sturdavant.*

## Avalanche Field Trip in February?

The Society may hold a winter field trip that focuses on avalanche awareness. Trip details are still evolving, but the likely target date is in mid-February. If you are interested in this, watch for the February CSS Newsletter. Attendance may be limited and there will be a modest fee to reimburse our instructor (Bill Hotchkiss, WRD).

## 1997 Past Presidents' Award

James H. Butler of the NOAA Climate Monitoring and Diagnostics Laboratory, Boulder, won the Past Presidents' award for the best paper presented during regular meetings of the Society in 1997. His paper, "Quantifying the sources and sinks of atmospheric methyl bromide," presented at our September meeting, topped a field of interesting and overall excellent presentations scheduled by the Program Committee chaired by Eric Nelson. The Past Presidents' Award Committee consisting of Kathy Haller, Dean Kleinkopf, Karl Kellogg *ex officio*, and Bruce Bryant, evaluated the papers for 1997, which was the 37<sup>th</sup> year this award has been given.



# 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.

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

(Last Name)	(First Name)	(Middle)	
(Address)	(Telephone)	(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



## Colorado Scientific Society Officers, Councilors, and Chairpersons

### OFFICERS

**President:** Eric Erslev, CSU, (970) 491-6375  
**President-Elect:** Ken Pierce, USGS, 236-1244  
**Treasurer:** Michael N. Machette, USGS, 273-8612  
**Secretary:** Stephen F. Personius, USGS, 273-8611  
**Past President:** Richard F. Madole, USGS, 236-4612

### COUNCILORS

**1995-97:** Ted Ball, Consultant  
**1995-97:** Eric Nelson, CSM, 273-3811  
**1996-98:** James A. Cappa, CGS, 866-2611  
**1996-98:** Richard B. Wanty, USGS, 236-1819  
**1997-99:** Michelle L. Tuttle, USGS, 273-8626  
**1997-99:** William D. Nesse, UNC, (970) 351-2830

### COMMITTEE CHAIRPERSONS

<b>Arrangements:</b>	Aaron John Kullman, CSM, 384-2011
<b>Database Manager:</b>	Robert C. Bucknam, USGS, 273-8566
<b>Best Paper Award:</b>	Bruce R. Bryant, USGS-retired, 236-1234
<b>Field Trips:</b>	Lee Shropshire, UNC
<b>History:</b>	Marjorie E. MacLachlan, USGS-retired, 986-7192
<b>Membership:</b>	Vacant
<b>Memorial Funds:</b>	Karl Kellogg, USGS, 236-1305
<b>Memorial Funds Treasurer:</b>	Michael N. Machette, USGS, 273-8612
<b>Newsletter Editor:</b>	L. David Nealey, USGS, 236-0249
<b>Outreach (signs):</b>	Peter J. Modreski, USGS, 236-5639
<b>Program:</b>	Ian Ridley, USGS, 236-5558
<b>Publicity:</b>	David Moore, USGS, 236-1271
<b>Science Fair:</b>	Vacant
<b>Webmaster:</b>	Randy Schumann, USGS, 236-1525



**\*\* NOTE: Please help us with publicity by posting copies of the Newsletter on bulletin boards.**

