Colorado Scientific Society

News and Information: December 1999

Scott Lundstrom, CSS Newsletter Editor

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Abstract of 1999 Presidential Address

THE YELLOWSTONE HOTSPOT, GREATER YELLOWSTONE ECOSYSTEM, AND HUMAN GEOGRAPHY

Kenneth L. Pierce
U.S. Geological Survey, and President, Colorado Scientific Society

The landscapes of the Greater Yellowstone ecosystem (GYE) are shaped by geologic processes of volcanism, faulting, and uplift, all of which we associate with the Yellowstone hotspot. As the North American Plate moved SW, hotspot volcanism progressed NE and arrived at Yellowstone 2 Ma. Thousands of feet of recent uplift of the GYE have resulted in ongoing erosion of deep, steep-walled valleys in readily erodible rock.

Modern and Pleistocene weather and resultant vegetation patterns strongly relate to hotspot topography and its Snake-River-Plain track. Moist Pacific airmasses traverse the Snake River Plain and rise onto the Yellowstone Plateau and adjacent mountains to produce deep snows, and east of the mountains, a precipitation shadow. Such deep orographic snows produced extensive Pleistocene glaciers that covered the core GYE and produced many of the landscape features on which modern soils have formed, as well as outwash gravels (commonly covered with sagebrush-grassland) and silty lake sediments (commonly covered by lush grassland such as Hayden Valley).

Rhyolitic hotspot volcanism constructed the Pleistocene Yellowstone Plateau. Streams eroding the steep edges of this plateau form scenic canyons and waterfalls. Rhyolite is poor in nutrients and forms sandy, well-drained soils that support the monotonous, fire-prone, lodgepole pine forest of the Yellowstone

Plateau. Older andesite and other rocks surround this plateau and support more varied vegetation, including spruce-fir and whitebark pine forests broken by grassy meadows. Upwelling waters heated by hotspot magmas drive Yellowstone's famed geysers, hotsprings, and mudpots which provide habitat for specialized, primitive ecosystems of algae and bacteria.

Human settlement and use of the GYE reflects the hotspot processes of uplift, volcanism, and faulting. Uplift formed a remote highland from which streams drain radially outward like spokes from a hub. Humans have settled around Yellowstone along these drainages and established roads, irrigation systems, and political associations along them. Decision-making involving the GYE is complicated by multiple jurisdictions athwart this hotspot highland, including 18 counties, seven National Forests, three states, and two National Parks.

This talk is based on a manuscript written with co-authors Don Despain, Lisa Morgan, and John Good.

P4 - President Pierce's Purple Prose

This is my last column as President of the Colorado Scientific Society (CSS). President-Elect Mark Hudson will take the reins in January when the major event will be the Emmons Lecture by Doug Burbank. This is also a time of transition for me personally, as I will be leaving Colorado early next year for Bozeman, Montana, to help establish a new USGS Center there. I will miss the Society, its program, and collegiality.

Those that did not come to the Student Night missed three excellent presentations; the speakers had previously won competitions at CU, CSU, and CSM. The judging committee had a difficult choice in picking a winner from three outstanding talks.

Some highlights for the Society this year were: (1) a strong program and good attendance (once overflowing), (2) about 100 new members, (3) a good, well-attended field trip to the Arkansas Valley, (4) support of twelve graduate students with grants totaling $11,190from our Memorial Funds, and (4) a great new meeting place in Golden at lower cost. I wish to thank Mike Machette (Treasurer and much more) for helping guide me through this past year. Finally, I am delighted that the Society will enter its 3rd century with a strong membership and resources, whose objective is "to promote the knowledge and understanding of Earth Science, and its application to human needs."

The final meeting of this year is very early in next month, on December 1. Please come, and have a Merry Christmas.

-- *Ken Pierce*

S.F. Emmons Lecture, January 20, 200

Green Center, Colorado School of Mines

We are pleased to announce that the annual S. F. Emmons Lecture on January 20, 2000, will be given by Douglas W. Burbank of Pennsylvania State University. Dr. Burbank's talk "Interactions of climate and tectonics in orogenesis" will test large-scale models for the influence of climatically driven erosion on mountain building using a variety of scientific disciplines (geomorphology, fission-track dating, structure, landscape evolution, glaciation, etc.).

Status of Endowment and Memorial Funds, 1999

Status of Endowment Funds, 1999

The Colorado Scientific Society Endowment Fund was started in 1990 at the suggestion of Barney Poole (1987 CSS President) in order to cover unanticipated increases in our operating expenses or to fund special activities. This past year we used the fund to seed the Snyder Memorial Fund ($750), to conduct a membership drive ($750 for 80 new members), to sponsor two student's attendance on GSA field trips ($190) and one youngster's attendance at Dinosaur Camp ($75, Friends of Dinosaur Ridge).

We typically receive about $500-$750 in donations to this fund each year. As Treasurer of the Society, I invest this fund in bonds (proven, but low yield), preferred stocks (higher yield), and mutual funds (no yield, but potential capital gains) as per the suggestions of our Financial Advisor (Jennifer Elmore) at Dain Rauscher. As of December 1, 1998, the total value of our Endowment Fund investments was projected to be about $19,500 (this includes about $2,200 that will be transferred to our bank account to cover Endowment expenses and overages in the 1999 budget). Thus, the closing balance for the Endowment Fund should be about $17,300 at the time of the annual Business meeting.

Status of Memorial Funds, 1999

Tweto Fund and has blossomed to include five funds, the most recent addition being the George Snyder Fund in 1998. As a result of generous contributions by family members, friends, and Society members, each of these funds have grown substantially since their inception. As of December 1, 1999, the total value of our Memorial Fund investments is projected to be about $140,700 (this includes about $10,000 in interest reserved for the 2000 Memorial Fund awards). The Memorial Funds honor the following individuals and primary objectives:

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

As you may know, we only use interest from the Funds to finance the awards, so the financial condition of the Funds parallel short- and long-term interest rates (6-6.5% in 1999). During 1999, we earned fixed interest income from GNMA and FNMA bonds that mature over the next 5-10 years and preferred corporate stocks (which fluxuate in value with the market). Most of the stocks were purchased in March 1998, after many of our bonds were recalled as a result of declining interest rates. As a result, we now receive an average of about 7.5% interest from our investments.

Over the past 15 years, the Society has awarded 109 scholarship grants for a total of almost $80,000. As a result of your fund contributions, the number and dollar amount of awards have generally increased each year (see table below). However, our long-term goal is to increase the average amount of individual

grants to at least the $1000 level. Therefore, your continued support of this important and highly visible program will be much appreciated. Contributions to any or all funds can be made on the attached Dues Form. Please remember that your entire contribution goes towards generating interest for the grants and that your contribution is 100% tax deductible since the Society is a non-profit Section 501 (c)(3) organization.

Michael Machette, CSS Treasurer

Number of Awards Amount of Awards ($)

(Partial grants co-sponsored by 2 funds)								(* No research proposals received this year)					
Year	Tweto	Oriel	Eckel	Pierce	Snyder	Total		Tweto	Oriel	Eckel	Pierce	Snyder	Total (aver. per grant)
1984	3					3		1,300					1,300 (433)
1985	3					3		1,050					1,050 (350)
1986	2	0				2		650	0				650 (325)
1987	2	1				3		1,700	400				2,100 (700)
1988	1	1				2		900	450				1,350 (675)
1989	2	1				3		1,940	530				2,470 (823)
1990	3.5	1.5	0			5		2,910	1,190	*0			4,100 (820)
1991	4	2	1			7		3,100	1,500	650			5,250 (750)
1992	5	2	2			9		3,500	1,890	1,270			6,660 (740)
1993	4.5	1.5	2			8		3,030	1,290	1,000			5,320 (665)
1994	5	2.5	2.5	0		10		3,590	1,600	1,450	*0		6,640 (664)
1995	5	2	2	1		10		2,900	1,400	1,200	850		6,350 (635)
1996	4	3	2	2		11		2,900	1,800	1,300	1,900		7,900 (718)
1997	4	3	2	1		10		3,900	2,400	1,750	1,700		9,750 (905)
1998	5	3	3	0		11		3,545	2,100	1,972	*0	*0	7,617 (692)
1999	5	3	1	2	1	12		3,975	2,500	1,500	2,465	750	11,190 (933)
Totals	58	26.5	17.5	6	1	109		$40,890	$19,050	$12,092	$6,915	$750	$79,697 (731)

CSS Newsletter email option

In response to the informal poll last month on interest in receiving the newsletter through email, enough positive responses were received that we will make this option available. To elect this option at this point, you must check the box on your dues renewal statement and be sure to include your current email address.

New Editor for the New Millenium

Margaret Hiza, of the USGS Earth Surface Processes Team (303-236-0075, mhiza@usgs.gov) will take over as the next CSS Newsletter editor, beginning with next month's issue.

Rivers: The Song of Life Exhibition

Foothills Art Center, 809 15th St., Golden will present a major exhibition:

RIVERS: THE SONG OF LIFE

January 15, to March 12, 2000

Five interrelated exhibits will celebrate the beauty and historical significance of rivers of the world, including displays on scientific and historical aspects; the art of fishing; photography of rivers and riverlife since the 19th century; and paintings and sculptures by 18 top artists from Colorado and throughout the U.S. Admission is free. Hours are 10 am - 5 pm Monday-Saturday: 1-5 pm Sunday.

Contact Carol Dickinson, Director for more information (303-279-3922) or fac@foothillsartcenter.org.

Slide-Talks associated with this exhibition, and co-sponsored by the Colorado School of Mines take place at 7:00 pm, Green Center, CSM, and are free:

Tuesday, January 18 John Fielder presents Colorado 1870-2000, followed by reception and book signing at Foothills Art Center

Tuesday, February 1 Charly Heavenrich, a Colorado river guide, presents Dancing on the Edge, followed by reception and book signing at Foothills Art Center

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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.

Earth Science Meetings and Talks

Colorado Scientific Society's regular meetings are held the 2nd Wednesday of the month (unless otherwise advertised). Social time begins at 7:00 p.m. and program is at 7:30 p.m. For more 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 Spancers (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. Meetings are normally scheduled for the first Monday of each month. For information contact Jim Cappa, (303) 866-2611, or the website http://www.dregs.org/.

Colorado School of Mines Van Tuyl Lectures
For information call the Dept. of Geology at (303) 273-3800.

Colorado School of Mines Carl Heiland Lectures
4:00 p.m. on Fridays. For information contact Michelle Szobody at (303) 273-3451.

Colorado State University Geology Lectures
Mondays at 4:10 p.m. in room 109 or 316 of the Natural resources building. For information, call the Department of Earth Resources at (970) 491-5661.

University of Colorado at Boulder, Geological Sciences Colloquium
Wednesdays, 4:00-5:30 p.m., Benson Earth Sciences Building, room 180. For more information and schedule, contact Kathy Madsen at (303) 492-8141.

USGS Geologic Division Colloquium
Thursdays, 1:30 p.m., Foord Room, Building 20, Denver Federal Center. For information, contact Pat Poole at ppoole@usgs.gov