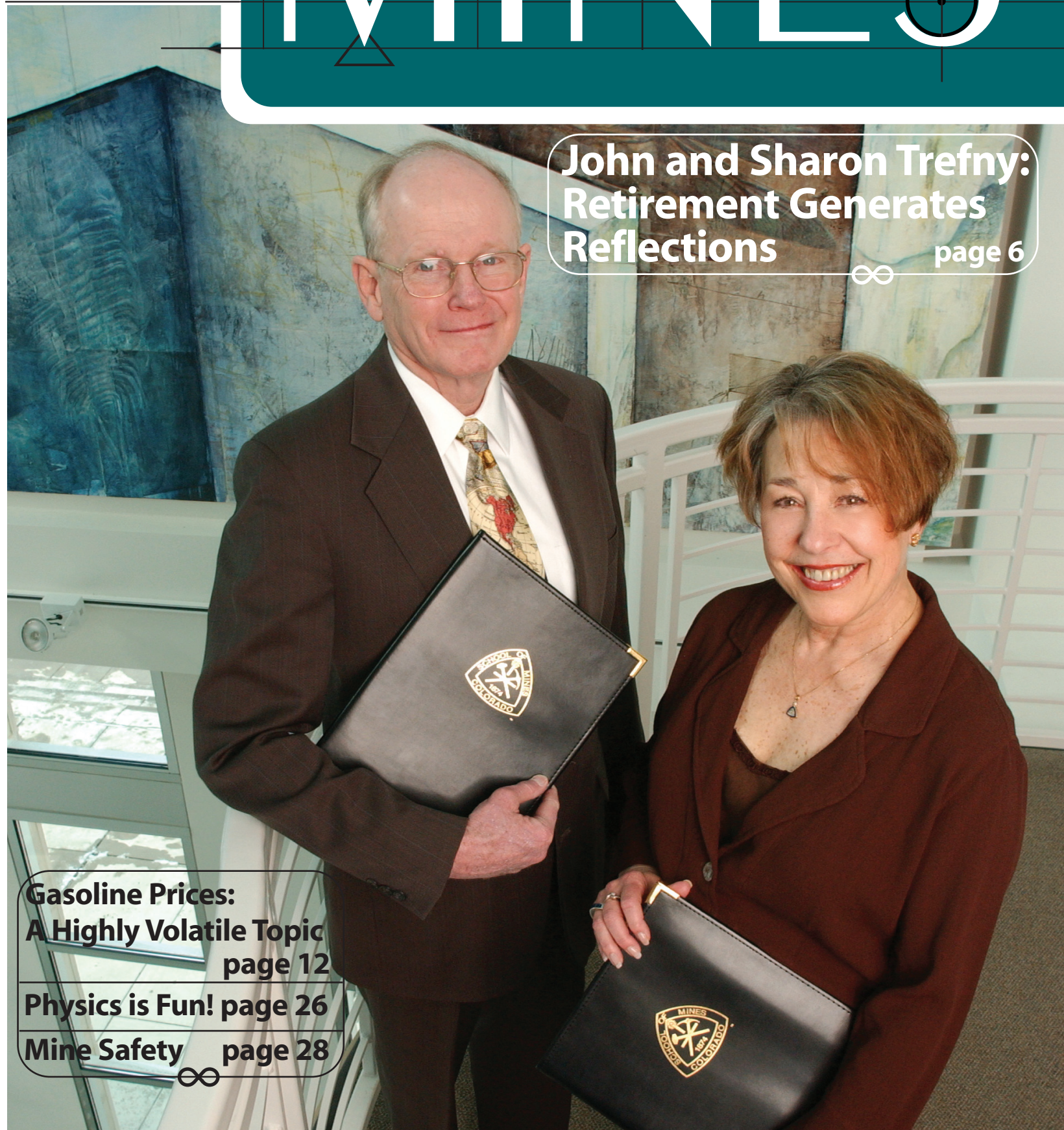


MINES

VOLUME 96 NUMBER 2
— SPRING 2006



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MINES SPRING 2006

Mines is published quarterly by the Colorado School of Mines and the CSM Alumni Association for alumni and friends of the School. *Mines* magazine is a critical communication serving the Colorado School of Mines community. Its mission is to keep readers informed about the School, to further the goals of the School and the Alumni Association and to foster connectedness.

Comments and suggestions are welcome. Contact us by writing to MINES, P.O. Box 1410, Golden, CO 80402; or call 303-273-3294 or 800-466-9488, ext. 3294 between 8 a.m. and 5 p.m. M-F, MST; or email magazine@mines.edu

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Letters to the Editor

Mine Safety

I have often wondered how new proposals are dealt with regarding mining safety technology and as an avid technologist myself, I was struck by the seeming lack of modern computer technology development in recent and proposed mining safety standards. Your recent exposure on CNN after the Sago mine incident and my concern prompted me to submit the following proposal for comment and consideration.

To me, one thing that stands out is that this old mining communication and security technology seems totally outdated. If it is important to WalMart to keep track of bars of soap with cheap new embedded radio chips, I cannot see why it would not be even more important to mining corporations, the miners and the community to keep track of human operators within these facilities with data chips as well.

Since normal radio transmission doesn't work reliably around bends underground and satellite signals cannot penetrate, the obvious solution is a daisy-chained series of both WiFi radio and wired networked communication and monitoring sentry workstations. Such a simple computer network based on low cost, overlapping WiFi laptops or PDA computers – each with an electronic chip detector/sensor that is chained along corridors located at strategic points to function as overlapping WiFi communication network access points and a sensing and telemetry system that continuously and automatically records and reports all movement of employee badges with embedded microchips, as well as collecting and reporting other atmospheric and operational telemetry – should replace the antiquated field telephones now in vogue.



Thus, not only could data and communication such as real-time video, audio and atmospheric telemetry be easily recorded going into and out of deep remote locations, the data trail for each employee badge-chip could also be tracked. This would allow both recent localization of all personnel maps and real-time communications at least until, and hopefully past the time, a serious safety event occurs. In extreme circumstances, or if the chain breaks, rescuers could be able to reconnect or interrogate the surviving units and surviving segments for more recently accumulated movement data during rescue work. Swiftly locating and communicating with personnel after a mining incident is critical to rescue, health and safety.

Overlapping installation so that units three to four locations apart can still use wireless WiFi – even if a few wires between are damaged – would ensure the greatest connectivity redundancy. And live WiFi throughout the mine would permit voice and video connectivity for workers, supervisory and rescue personnel.

The investment in computerization seems small compared to the cost of the lives currently unprotected.

Philip Stracke, Windsor, Ontario

To read more about CSM's national coverage regarding mine safety, see pages 28-29.

Correction: In last issue's Short Takes, Beta Theta Pi was named the overall winner of the castle of cans contest. The actual winner was Sigma Lambda.



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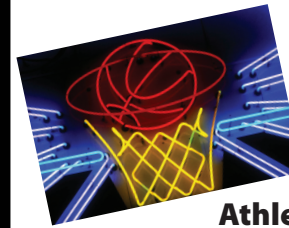
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Power Engineering Education: A Powerful Program
Mines' program is one of the best

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About Our Cover: President John U. Trefny and his wife, Sharon, retire in July after 29 years of service to the School. To read more, see the article on page 6. Photo by Tom Cooper.



Trefny Retirement

They have formed links everywhere. Around the campus, around the world. In teaching and research, administration and public service, John and Sharon Trefny have advanced their vision of an effectively connected learning community, committed to excellence and driven by a noble purpose. In partnership with one another, they helped establish the first tri-partnership in Colorado among a corporation, a public school district, and a university—Mines. It was the first of the Trefnys' many successful collaborations in support of education.

With a Ph.D. in physics from Rutgers University, John Trefny came to Colorado School of Mines in 1977 as an assistant professor of physics. He was appointed head of the Physics Department in 1990 and vice president for academic affairs and dean of faculty in 1995. He was named the School's 15th president in 2001 after serving as interim president the preceding year. On July 31, John and Sharon Trefny will retire leaving a long legacy of significant achievements along their path.



Teaching Highlights

"I can trace my interests in teaching as far back as age five when I recall holding short 'mathematics' classes for fellow students. Teaching, whether undergraduates, graduate students, professionals, or others, has been one of the most rewarding aspects of my career."

—John Trefny

As a professor of physics for more than 20 years, Trefny taught almost every physics course in the catalog, from freshman to graduate level, including the unique—and short-lived—Physics of Music. For the McBride Honors Program, Trefny taught a Chinese studies course and joined with former Governor Dick Lamm to teach a course in leadership. He particularly enjoyed advising M.S. and Ph.D.

Reflections Achievements and Connections



students, as well as coordinating K-12 Teacher Enhancement Programs. Trefny was honored with the Excellence in Science Teaching Award in 1992, the Amoco Outstanding Teaching Award in 1984, and the Brown Innovative Teaching Award in 1983.

Research Interests

"For me, the particular pleasures of doing research have had as much to do with the development of the students involved and our subsequent friendships as with the research itself. I have experienced the joys of discovering new scientific insights, but the discovery of the human potential of the students with whom I have worked has excited me even more."

—John Trefny

An expert in superconductivity, Trefny was awarded major grants and contracts to pursue research in cryogenics, the thermal properties of materials, acoustics and direct energy conversion. This research led to his authoring and co-authoring scientific and technical papers in a variety of publications. He also investigated advances in engineering education and co-authored papers on curriculum reform.

Administrative Initiatives

"It is interesting that I never applied for any of the administrative positions I have been privileged to hold. Nevertheless, I have found great satisfaction in helping others on the team see their individual and collective dreams fulfilled."—John Trefny

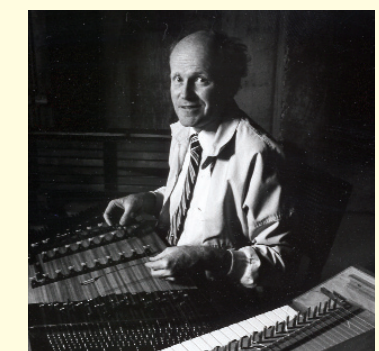
- During Dr. Trefny's years of administrative leadership, 1995 to 2006, the Connected Learning Community of Mines made remarkable advancements, elevating the School's reputation and expanding its contributions worldwide.
- A new Mines Advisory Board was appointed by the governor of Colorado and a new executive position, Vice President for Research and Technology Transfer, was established. Top-quality faculty were hired, and new endowed chairs were created. Applications to the School increased and enrollment grew.
- A Ten-Year Strategic Plan, as well as a Campus Facilities Master Plan, was developed, and athletic programs were restructured.
- A National Science Foundation grant was awarded to research and implement more effective practices in undergraduate engineering education, and a comprehensive curriculum reform was accomplished. The Women in Science, Engineering and Mathematics Program was initiated.
- The Colorado Energy Research Institute (CERI) was re-established, and new centers were formed, including the Center for Engineering Education, Chevron Center of Research Excellence and Colorado Fuel Cell Center. A memorandum of understanding was signed with the National Renewable Energy Laboratory.
- Construction was completed for the Center for Technology and Learning Media (CTLM), General Research Laboratory and Geology Museum, new sorority houses and Mines Park residences, and the Student Center expansion. Construction is underway or planned for CTLM phase 2, new playing fields, the new Petroleum Engineering building, and the Recreation Center.
- "Exemplary Institution" designation and "Enterprise Status" were granted from the State of Colorado, and new degree programs were approved by the Colorado Commission on Higher Education.
- A Joint Operating Agreement between the School and the Colorado School of Mines Alumni Association was established.
- The Petroleum Institute in Abu Dhabi, United Arab Emirates, was developed in a 10-year agreement between the School and the Abu Dhabi National Oil Company.
- The \$125 million goal set by the largest-ever fundraising campaign was surpassed.



Public Service

"There is no greater reward or joy in life than giving of yourself to others, particularly if your gift is intended to help make the world a better place to live. I have always tried to take every opportunity to give service, regardless of my circumstances."—Sharon Trefny

- **Dr. and Mrs. Trefny:** Honorees of the Golden Civic Foundation and Institute of International Education; Board Members of the Jefferson Symphony Foundation
 - **Mrs. Trefny:** Service to Foothills Art Center, International Center for Appropriate and Sustainable Technology, Namlo Foundation and Engineers Without Borders-U.S.A. Advisory Board
 - **Dr. Trefny:** Service to the Colorado Advanced Materials Institute, Colorado Oil and Gas Association, Governor's Blue Ribbon Panel on Higher Education, Lutheran Medical Center Community Foundation, Midwest Research Institute, NREL Education Advisory Council and National Advisory Board, Red Rocks Community College Advisory Council and Foundation, Rocky Mountain Regional Center of the Institute of International Education, and Sigma Xi
- Jefferson County Industry Appreciation Award, "Economic Developer of the Year," 2006
Colorado Alliance for Science James R. Wailes Award, 1997
Friend of Science Education, 1990



The Connected Learning Community

"We are in the business of creating the very future in which we, our students, and all humankind will live and work."—John Trefny

The future is brighter due to the extraordinary contributions of John and Sharon Trefny, and the Mines community is grateful.



With the Mines ore cart behind her, State Representative Gwyn Green read an E-Days proclamation to rain-soaked students April 7 on the steps of the state Capitol.

Claim to Fame

Emeritus Professor Richard W. Hutchinson is a 2006 inductee into the Canadian Mining Hall of Fame, established in 1988 as a way to recognize and honor legendary mine finders and builders in the Canadian mining industry. The Hall currently has more than 120 members.

An emeritus professor of geology and geological engineering, Hutchinson was the Charles Franklin Fogarty Professor in Economic Geology at Mines, where he served from 1983 to 1998. He currently resides in Forest, Ontario, Canada.

Hutchinson authored or co-authored hundreds of papers in numerous journals and he was the recipient of many prestigious



Richard Hutchinson, fourth from right, on a field trip with grad students to Michigan.

awards. However, according to the Canadian Mining Hall of Fame, "His industry peers maintain that his legacy is best reflected in the success of the many students in industry, academia and government whom he inspired and mentored."



Guns, Germs and Steel

Jared Diamond, author of the Pulitzer Prize-winning, best-selling book *Guns, Germs and Steel*, spoke to a crowd of almost 1,500 people at the Youngs' Environmental Symposium in April.

Diamond discussed his recent book, *Collapse: How Societies Choose to Fail or Succeed*, which tackles environmental questions about vanished societies, including those of Easter Island, the Anasazi, the Lowland Maya and others.



Herbert and Doris Young with Jared Diamond (center)

A recipient of the National Medal of Science and numerous other prestigious awards, Diamond is recognized as one of the world's most influential thinkers. His talk was free and open to the public.

The Youngs' Environmental Symposium was established by **Herbert Young EM '39** and his wife Doris.

SHORT STAKES



Kelly Fox, director of policy and planning, won the 2006 Connected Learning Community Award at the Mines' spring Administrative Faculty luncheon.

Fulbright Scholar

Ivar Reimanis, Metallurgical and Materials Engineering professor, has been selected as a Fulbright scholar grantee to India for spring 2007. Reimanis will be hosted by the Indian Institute of Science in Bangalore, where he will conduct collaborative work on a nanotechnology testing methodology.

According to the J. William Fulbright Foreign Scholarship Board, appointed by the President and responsible to the U.S. Congress, "Fulbrighters enrich the educational, political, economic,

social and cultural lives of countries around the world."



Ivar Reimanis



Tom Wildeman, back row center, recently received the award of Reclamation Researcher of the Year from the American Society of Mining and Reclamation. Wildeman, emeritus professor in the Department of Chemistry and Geochemistry, was cited for the publication of more than 30 papers at annual meetings over the last 15 years and for conducting numerous short courses on passive treatment and mine waste assessment.



Celebrating the state of Colorado's "College Friday" in April, Associate Vice President Dan Montez wore his Mines jersey to work. Governor Bill Owens and Denver Mayor John Hickenlooper planned the day to raise awareness about the importance of a college degree.

Weimer, a Legend

The American Geological Institute (AGI) has announced that Professor Emeritus Robert J. Weimer is the recipient of the 2006 Legendary Geoscience Award.

"Bob Weimer is most deserving of this honor for his exceptional service in advancing and representing the geosciences across many sectors. He has provided significant support and mentoring to his students throughout his academic career. Last but not least, he has made major contributions to improving our understanding of hydrocarbon

systems," said AGI Executive Director Marcus Milling.

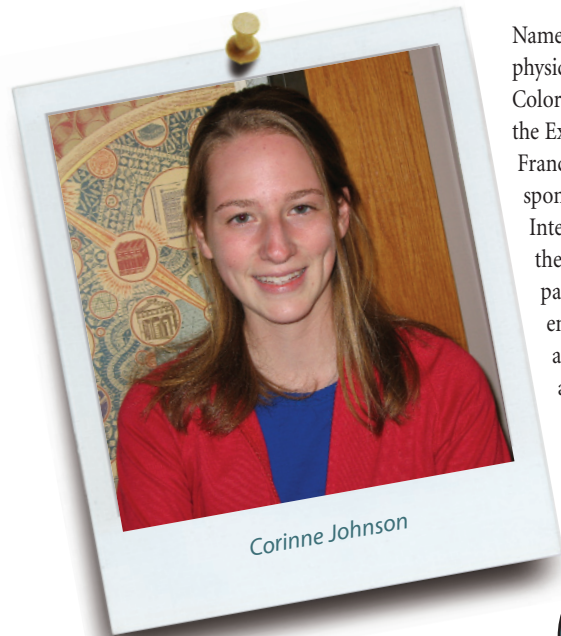
AGI is a nonprofit federation of 44 scientific and professional associations that represent more than 120,000 geologists, geophysicists and other earth scientists.



"Undergraduate Research at CSM: Selected Projects" featured poster presentations in the Coolbaugh atrium in March. The event was sponsored by the Center for Engineering Education, Sigma Xi and the Society of Women of Engineers.

Oppenheimer Award

Corinne Johnson is the winner of the fall 2005 Frank Oppenheimer Science and Society Award, created with the approval of the



Oppenheimer family to acknowledge excellence in first-year writing at Mines. Finalist papers are chosen from among 600 papers completed by students enrolled in the course Nature and Human Values.

Named after Frank Oppenheimer—a physicist on the Manhattan Project, a Colorado educator, and founder of the Exploratorium in San Francisco—the \$400 award is co-sponsored by the Liberal Arts and International Studies Division and the Physics Department. Johnson's paper unites the themes of environmental ethics with an analysis of the social, cultural and economic repercussions of building the Three Gorges Dam in China.

Van Kirk Lecture

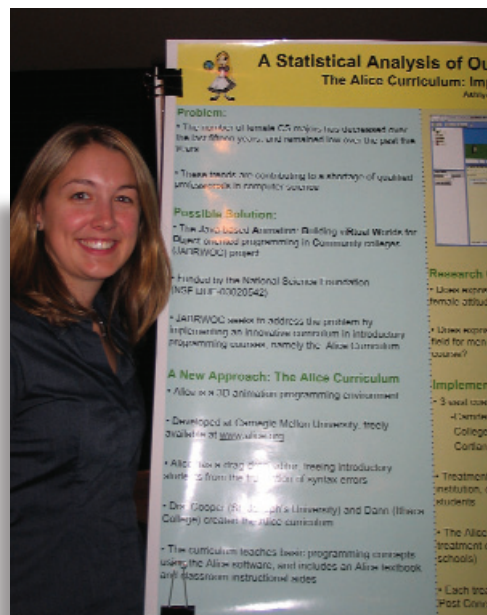
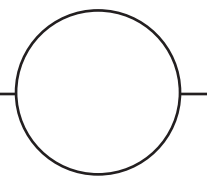
Craig Van Kirk PhD Pet '72, head of the Petroleum Engineering Department, was honored by his peers as the year's Faculty Senate Distinguished Lecturer. His February presentation was titled "On the Benefits of Multiple Perspectives."

Van Kirk noted, "One of the uncommon characteristics and strengths of CSM is its incorporation of multiple perspectives, arising from the worldwide variety of students, alumni, faculty, staff and global partners in research, service and exchange programs."



Mines' Society of Women Engineers (SWE) was awarded 1st Place Region I Collegiate Student Section at a SWE conference held in March at Kansas State University in Manhattan, Kan.

SHORT TAKES



More than 50 M.S. and Ph.D. students used poster presentations to share their research results at the Graduate Student Association's Research Fair, held in the lobby of the Green Center in April.



The Outstanding Student Chapter of the Society of Mining Engineers (SME) Award was presented to Mines students in March at the annual SME meeting in St. Louis. The group's faculty sponsor is Ugur Ozbay.

Promoting Mathematics

Graeme Fairweather, head of Mathematical and Computer Sciences, spent four weeks during fall semester visiting the Mathematics Department at Chiang Mai University (CMU) in Chiang Mai, Thailand.

His visit was supported by a grant that CMU received from the Thai government's Center for Promotion of Mathematics Research. Fairweather presented a two-day workshop and gave additional lectures to mathematics graduate students and faculty.



From left, CMU associate dean of the faculty of science, Dr. Ruangsri Watanesk; dean of the faculty of sciences, Dr. Mongkon Rayanakorn; Graeme Fairweather; and head of CMU's mathematics department, Dr. Suthep Suantai.

Salute to Moskal

Barbara Moskal, Mathematical and Computer Sciences, has received the Burton W. Jones 2006 Award for Distinguished Teaching of Mathematics at the annual meeting of the Rocky Mountain Section of the Mathematical Association of America. She is the 15th person, and the second woman, to receive the honor.

Gasoline Prices: a Highly Volatile Topic

The U.S. consumes an average of 61.5 million gallons of gasoline per day. The unprecedented gasoline price spike in late summer of 2005 generated an inflationary spike in the U.S. economy, angered consumers but, more importantly, presented a clear picture of the vulnerabilities of the U.S. transportation fuel industry. Following the Gulf Coast landfalls of hurricanes Katrina and Rita, retail gasoline prices rose from an August 2005 national average of \$2.49 per gallon of regular conventional blend to \$2.77 per gallon average for the following two months, a 13 percent jump. The single week high price during this period was \$3.04 per gallon, a 25 percent jump. Diesel fuel prices showed similar behavior. By the end of the year, three months after the hurricanes' landfalls, retail prices have fallen back to June 2005 levels. Crude oil prices, hurricanes, infrastructure limitations, corporate greed... everyone has an opinion of the cause of the price spike. Was there only one causative factor or was it a combination of events and circumstances? Was it a one-time coincidence or will it happen again?

I followed the events with great interest and incorporated the daily reports of damaged production platforms, destroyed infrastructure, inoperable refineries and gasoline price volatility in my undergraduate petroleum property valuation and economics course. It was a valuable (and sobering) look at the interconnectivity of the transportation fuel industry from production, transportation and refining through distribution. That interconnectivity was, I believe, the source of the price spike and probably exacerbated its magnitude. No one factor caused the spike. It was a combination of the hurricanes' timing relative to refineries' production planning, the high density of refining capacity in the stricken area, an aging refining industry forced to operate at high utilizations for too long, failures in the power grid, and fear of supply shortfall that drove spot price speculation on the trading floors and regional price dislocations. Let me lead you through my logic

The U.S. Transportation Fuel Industry and Natural Disasters

Refineries are built near crude oil supplies. As U.S. domestic production levels have fallen, refinery capacity has aggregated along the country's coastlines where supertankers and very large crude carriers (VLCCs) can cost effectively deliver the 60+ percent of our domestic demand from other countries. When harbors or tank farms are damaged, VLCCs cannot berth to offload oil. Refineries store millions of barrels of crude oil in tank farms. This storage capacity is intended to prevent shortfalls of raw material that would idle the refinery. Equipment malfunction and routine maintenance also shut down refining and distribution. As refineries age, maintenance must be conducted more frequently to avoid malfunctions. The most

recent greenfield refinery construction in the U.S. was in 1973, so the U.S. refining infrastructure will become more and more susceptible to interruptions. As with anything mechanical, overuse tends to increase the potential for malfunction. The domestic refining industry has been operating at an average of 91 percent utilization of operable capacity since 1990, with periods of utilization as high as 99.4 percent and only 15 percent of the time at utilizations below 90 percent. Consequently, the recent spate of explosions associated with equipment failures and unplanned maintenance-induced shutdowns are understandable given the aging and over-stretched facilities. All of these issues led to a domestic gasoline storage level shortfall of about 10 percent, relative to the five-year average. So, going into the arrivals of Katrina and Rita, the country's storage level was low by more than 20 million barrels of gasoline (15 days of consumption) to recent historical levels.

There is a high concentration of refining capacity along the U.S. Gulf Coast. From Pascagoula, Miss., to Corpus Christi, Texas, there are 6.655 million barrels per day of capacity with 3.0 million along the Houston Ship Channel alone. Hurricane Katrina forced the shutdown of 1.9 million barrels per day or 22 percent of the domestic capacity. Hurricane Rita forced the shutdown of an additional 0.66 million barrels per day refining capacity in the Port Arthur area. As of December 1, 2005, all but Louisiana's Belle Chasse refinery (ConocoPhillips, 250,000 barrels/day) were fully operational. Refiners sustained a minimum of 82 percent of production overall through the fourth quarter of the year, indicating that refineries were back on line sooner than expected post-Katrina and Rita.

On the product side of the refineries, several grades of gasoline, diesel fuel, heating oil and jet fuels are stored in tank farms awaiting pipeline capacity to move to regional distribution terminals. Interruptions in crude oil deliveries, electric power, work force availability and refined product pipeline capacity can result in inability to deliver gasoline to distribution terminals. During March and August, refiners move product emphasis from heating oil to gasoline in March and back again in August.

Refineries are not located near the regions of high population density, i.e., high demand. A handful of large pipelines transport gasoline and diesel fuel from refineries to local terminals where 6,000-gallon tanker trucks distribute supplies to individual service stations. The Colonial/Plantation is the major pipeline from the Gulf Coast refining region into the Atlantic

By Dr. Larry Chorn

Coast states and New England. It was shut down for several days when hurricanes Katrina and Rita damaged the electric transmission grid and left the pipeline without power. This outage led to local shortages, panic buying and a general price increase in areas served by the Colonial/Plantation pipeline backbone.

During this period, gasoline demand dropped by about 4 percent from a combination of disruption and dislocation along the Gulf Coast and an increase in price. No data is available yet to assess whether this demand decrease is temporary or permanent. Supply and demand theory suggests that decreased demand should decrease price, which has happened, but the cause of the price drop through November and December 2005 remains a choice of reduced demand or increased supply.

The hurricanes did major, albeit temporary, damage to the nation's ability to refine and distribute transportation fuels. To meet the shortfall, marketers imported an additional one million gallons of gasoline per day above the historical 6 million gallons imported per day on average between Sept. 9 and Dec. 1, 2005. Spare gasoline supplies in other parts of the world plus available tanker capacity allowed the U.S. to avoid significant shortfalls.

Based on these facts, viewed in hindsight, the abrupt rise in gasoline prices across the country was not caused by supply shortages except along the mid-Atlantic and East Coast where distribution was interrupted. Consumer panic buying causing local stock drawdowns and the market's anxiety regarding the magnitude of damage to refining capacity appear to be the source of price volatility.

Where is the weak link in the transportation fuel infrastructure? Supply is not the weak link, even though high quality, easily refined crude oils have recently moved to a new price plateau with little sign of decline. Given 150± days of gasoline demand in storage, we cannot say that the refining industry is the weak link unless there is widespread capacity loss for an extended period. This leaves transportation between refining centers and local distribution terminals. The transportation system requires high reliability in the pipeline system as well as a reliable electric power grid to run the pumps. Failure in either component could result in a temporary shortfall. In fact, Hurricane Rita's damage to the interstate natural gas transmission system at Henry Hub in Louisiana illustrated this again within five weeks of Katrina's impact on the gasoline distribution system. The pipeline system appears to be the most susceptible link within our control in the country's transportation fuel system. The

weakness could be mitigated with increased storage capacity in or near regions with high population density, but there is limited or no

economic incentive for transportation companies to make the investments.

The Future

Will gasoline price volatility return? Yes, given the necessity to import 60 percent of our crude oil requirements, localization of refining capacity in regions susceptible to hurricanes and the interrelated nature of the country's power and hydrocarbon (gasoline and natural gas) distribution systems, it is likely that we will again see price spikes caused by unforeseen events outside our control.

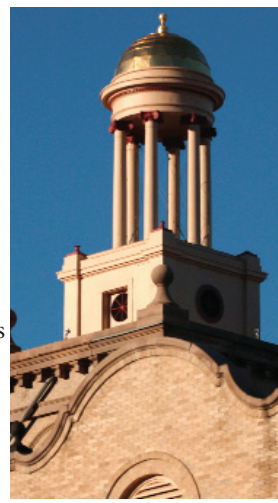
What are leading indicators of renewed price volatility? There are probably several that, in combination, would cause price spikes. For example, crude oil import curtailments from our principal suppliers (Saudi Arabia, Venezuela or Nigeria) would reduce refinery operations within one to two months resulting in extended gasoline supply shortages. Hurricanes, particularly high frequency, high impact landfalls on the Gulf Coast, will generate price volatility periods much like we just experienced. A serious production or transmission problem in the Southeast's power grid would cause temporary distribution disruptions to the upper Midwest, mid-Atlantic and New England. Accidental or intentional damage to one or more of the major pipelines, like the Colonial/Plantation, would cause significant, but temporary, regional supply disruptions.

The bottom-line? When any system is run at or near its peak capacity with minimal redundancy there are opportunities for disruptions. The U.S. transportation fuel system is highly efficient and well-run, but...

Larry Chorn is an associate professor of CSM's Petroleum Engineering Department

Introducing the Mines Power Network: A New Tool That Connects Mines to the Nation's Capital

By Jim Sims



Digging deep into the School of Mines network of alumni, parents, faculty and friends and mining a new source of influence in the nation's capital is the aim of a grassroots network the School launched in December.

The Mines Power Network is designed to leverage the enormous, influential – and largely untapped – resources of the thousands of men and women around the world who value their ties to Mines and want to help the School succeed in lobbying leaders in Washington, D.C. From legislation that affects the energy industry – and thus the prospects of Mines graduates – to appropriations to help enhance campus facilities and research programs, the School has much at stake in D.C.

“Month after month, leaders in Washington make decisions that can have deep and sustained effects on the School of Mines,” said President John Trefny. “The Mines Power Network will use the influence expertise of our people to engage the legislative and executive branch to help our School grow and prosper.”

Trefny said that in his travels around the nation and the world on behalf of the School of Mines, he was consistently impressed with the level of achievement of alumni and other supporters. Reflecting on the depth and the breadth of this accomplished group sparked the thought that Mines could – and must – use this influence to boost the School's future. Mines alumni and supporters have risen through the ranks of government, industry and the news media to positions of leadership.

The Power Network combines these solid connections with cutting-edge technology to help CSM supporters lobby and advocate from wherever they are in the world. And they'll work in a coordinated fashion as part of an integrated network. With the ability to speak out for Mines literally just a mouse click away, the Power Network will quickly become an influential tool to create new and important opportunities for the School.

The hub of that network is the online headquarters, which will connect supporters with key issues and provide those supporters with the action agenda they can pursue to help advocate for the School. And advocacy will be simple, taking just a few minutes, but having a strong effect on public policy.

By now, CSM alumni, faculty and friends should have received the inaugural edition of *Mines Powerline*, an

e-newsletter that provides the news, information and action agenda on the critical issues Mines is facing in Washington. Each edition of *Powerline* will provide easy links for Mines supporters to directly make their voices heard from the White House to key federal departments to the halls of the House and Senate.

In addition, through the *Mines Powerline* you can sign up to be part of the Mines Power Network Speakers' Bureau, which will provide insightful and compelling speakers at public events, Congressional hearings, and other venues on key topics.

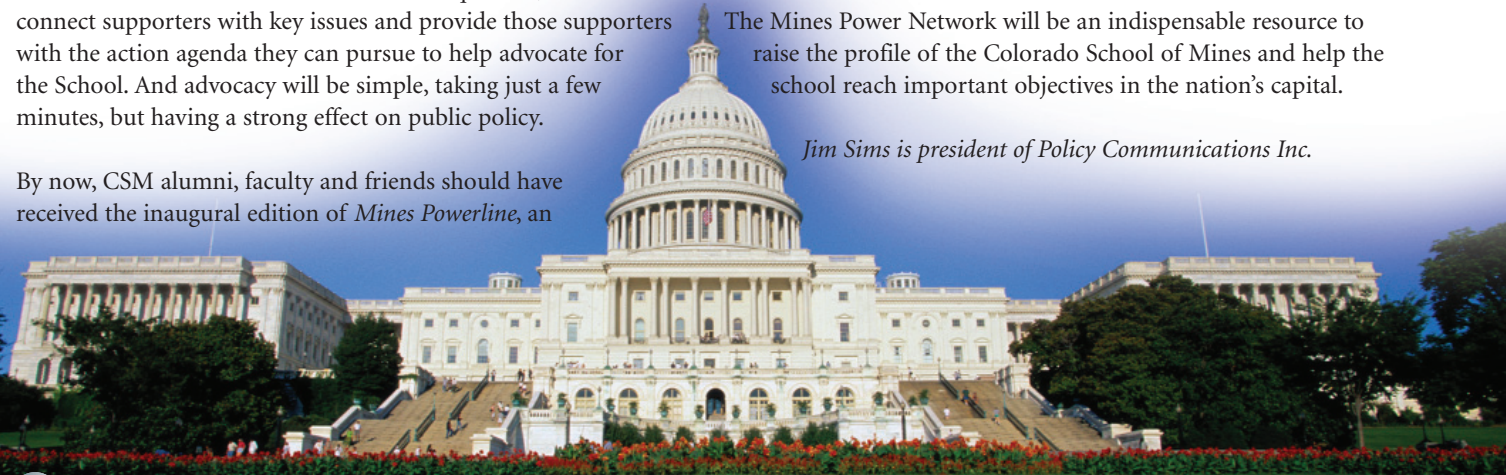
You are also encouraged to add your name to the Mines *Ask An Expert* database, which will provide Members of Congress, White House, Cabinet members and staff with a ready source of expert advice. Given the complexity and the high profile of many of the issues that the School of Mines is involved with – from energy exploration to emerging technologies – providing internationally known experts from the Mines family will ensure that leaders are well informed about the issues.

Mines alumni and friends in the Washington, D.C., area will receive personal invitations to the rollout of the Mines Power Network on Capitol Hill this spring. This will be the first in a series of “Mines Power Breakfasts” that will bring prominent leaders together with the Mines network. Senators, members of Congress, key committee staff, as well as leaders from the U.S. Department of Energy and other federal agencies will be featured.

“We see virtually unlimited potential to help take our School to the next level of national influence by using the Mines Power Network,” Trefny said. “I hope that friends and supporters from around the globe will join with us in speaking out for the Colorado School of Mines.”

The Mines Power Network will be an indispensable resource to raise the profile of the Colorado School of Mines and help the school reach important objectives in the nation's capital.

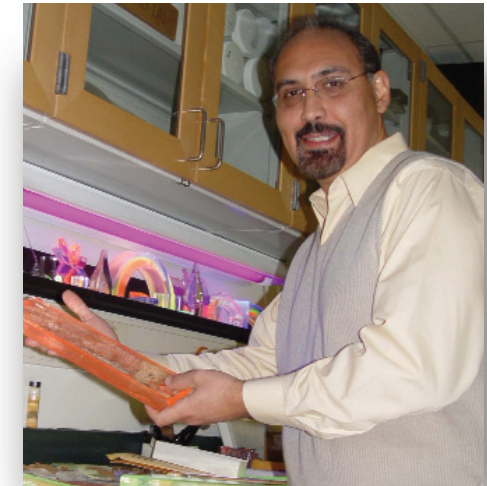
Jim Sims is president of Policy Communications Inc.



Alumni notes & quotes

Cornejo '91 Honored

The editors of *Hispanic Engineer & Information Technology (HE&IT)* magazine have selected **Iván A. Cornejo MSc Mat Sc '91, PhD Mat Sc '94** as one of the 100 most important Hispanics in technology and business. Honorees are chosen for this annual list because of their leadership and outstanding work in the field of technology. Cornejo is glass research manager at Corning Inc. in Corning, N.Y. Under his direction, his department has delivered ultra low loss fiber for telecom application, novel glass composition for LCD display, fundamental understanding of defects in high purity fused silica and new glass frits for display and energy applications. An awards ceremony will be held in September in Baltimore during Hispanic Heritage month. Cornejo and the other honorees will also be featured in an upcoming issue of *HE&IT* magazine.



Iván A. Cornejo

An American Hero Who Deserves A Posthumous Promotion

Joseph H. Sullivan Geol E '51 and his friend, Richard Mersereau, have embarked on a mission to have Col. Wendall W. Fertig posthumously promoted to brigadier general. Fertig, as many a Miner may remember, was a professor of military science and tactics. He received an honorary doctorate from Mines in 1951 and also served as Alumni Association director from 1960-1975. In 1965, Fertig was made an honorary member of CSMAA.

The colonel's real claim to fame, though, was as a World War II hero. In 1942 after surrender of the Philippines, Fertig, refusing to surrender, formed and led an Army of 35,000 guerrilla forces against the Japanese on the island of Mindanao until the war ended. His feat of heroism is detailed in *They Fought Alone* by John Keats.

“We believe the United States government owes a debt that can be easily made whole,” says Sullivan. “We believe Col. Wendell Fertig should be honored and promoted to brigadier general posthumously with no accompanying benefits other than the rank. We intend to pursue this endeavor with the help of Congress and wanted Mines alumni to know.”



Col. Wendall W. Fertig

Asian American Engineer of the Year

Chad A. Lensing BSc Met '91, MSc Met '95, PhD Mat Sc '01, a metallurgy/welding engineer with BP Corporation in Houston, was named Asian-American Engineer of the Year for 2006. The award is sponsored by the Chinese Institute of Engineers-USA and was first awarded in 2002.

“I was honored to be part of this prestigious event and to represent BP as well as Colorado School of Mines,” Lensing says. “I have to give great credit to Dr. [Dave] Olson, Dr. [Stephen] Liu ['84] and Dr. [Glen] Edwards ['61] for not only what I have learned but how to solve problems as an engineer and to effectively communicate that knowledge with others. I feel I still have a long career ahead of me but I know I can rely on the strong education/experiences I received at CSM to move forward.”



Chad A. Lensing



Dean Burger Fund

Helps Students Reclaim their Focus on the Future

By Trisha Bentz Kendall

Achievement at Mines requires dedication and perseverance – even through the toughest of times. Mines alumni and friends know the special characteristics that make CSM students unique and are familiar with their enduring passion for learning and unwavering drive to excel.

In his senior year at Mines, **Tshikut Binen “Pablo” Mbangu** faced a bleak situation. Having worked diligently at CSM for three years, and looking forward to completing his mining engineering

degree, Pablo was thrown off course when his home country suddenly cut off the funding they had provided him for both his school and living expenses. In addition, Pablo’s work permit was set to expire and he was having trouble finding a job that would allow him to cover all of his expenses on his own.

“I went through a very difficult time during my senior year,” said Pablo, “when I had no money to live my regular daily life or to finish up my studies.”

While most college students face trying circumstances and heightened levels of stress at various points in their

college careers, for some students a host of factors converge to turn otherwise manageable issues into seemingly insurmountable obstacles to finishing their education.

Achievement at Mines requires dedication and perseverance – even through the toughest of times. Mines alumni and friends know the special characteristics that make CSM students unique and are familiar with their enduring passion for learning and unwavering drive to excel. They have helped ensure that, despite even the most challenging situations, students have the resources they need to make their time at Mines a success.

When Mines students like Pablo truly find themselves at an impasse, they have somewhere to turn. Thanks to generous Mines alumni, emergency funds are available for students in dire financial situations who are at risk of withdrawing from school.

Pablo turned to **Harold Chevront**, vice president of Student Life and dean of students, for help. Dean Chevront was able to draw upon an endowment fund named for a previous dean of students at Mines, **William V. Burger**.

Burger joined Mines in 1947 as director of admissions and registrar, and in 1951 assumed the dean of students position, which he held until his retirement in 1964. Burger was known among students and faculty alike for his willingness to lend a hand and for his enthusiastic involvement in campus life.

The Dean Burger Memorial Endowment Fund was established by **Ben Fryrear ‘62** in 1988 to reciprocate the kindness and guidance that **Bill Burger** demonstrated throughout his 13 years as dean of students at the School.

Throughout his career, Dean Burger’s office was always open to any student in need of his inspiration and support. “Burger was never too busy to listen to students’ troubles and to help solve their personal problems,” the late **Fritz Brennecke**, a former athletics coach at CSM, once said. “In my 29 years here, I’ve heard more than a few students and alumni say, ‘if it hadn’t been for Dean Burger, I’d never have made it through Mines.’”

Indeed, emergency assistance from the Burger Fund enabled Pablo to stay at Mines and finish his senior year. “The money from the Burger Fund came at the right time, as my situation had become critical,” reflected Pablo. “The help I received made all the difference for me. It meant I could finish my senior year without having to struggle too much.” His Mines degree in hand, Pablo returned to the Democratic Republic of Congo and started his own mining consulting and communications companies. He hopes to one day contribute to the Burger Fund.

Donors to the Dean Burger Memorial Endowment Fund understand the tribulations some students inevitably face, and their vision has meant that over 40 students have been provided the crucial resources needed to complete their education at Mines. **Ben Fryrear** the Burger Fund’s largest benefactor, and other alumni and friends have contributed more than half a million dollars to the fund since its inception in 1988.

Fryrear is grateful that the Burger Fund is making a real difference in students’ lives. “I am pleased to know that alumni and others are contributing to this fund,” he said. “It is especially heartwarming to know that students who have been helped by the Dean Burger Fund desire to give back to the School after graduation. My only regret is that they did not have the opportunity to know the man – **Dean Burger** – and experience his enthusiastic and caring attitude toward students.”

Like Pablo, **Carolyn Houser ‘05** found herself facing tough decisions during her senior year at Mines. “There were many times I had to choose between paying my bills and buying food,” Carolyn explains. “When I received money from the Dean Burger Memorial Fund, I had exhausted every source I could find. I have no idea where else I could have turned. Without this assistance there was no way I could have finished college or achieved my degree.”



Assistance from the Burger Fund impacted Carolyn’s life at CSM, and ultimately her career. While in school she was able to focus on her studies, as well as serve as the fellowship vice president of Mines’ Alpha Phi Omega chapter – taking on a key leadership role in the service fraternity’s 2004 national convention. Carolyn’s accomplishments at Mines prepared her for success in the workplace. “I now have a full time position as a mine engineer at the Henderson Mine, and I absolutely love what I do,” she said.

As soon as she is financially able, Carolyn hopes to contribute to the Burger Fund and help others succeed. “My dreams would not have been possible without help,” she noted, “and I want to make sure others facing similar situations can also earn a degree.”

Eva Salas, a junior at Mines, shares Carolyn’s sentiments about the help she received from the Dean Burger Fund. For Eva, emergency funding not only helped her regain control over her financial situation, but also helped her regain hope in the face of her personal challenges.

“For me,” Eva said, “this endowment lets me know someone out there wants students who are in desperate situations to succeed. If they didn’t have these funds, these students would basically feel hopeless and give up. But when someone offers you a chance and tries to help you out, it’s definitely one of the most encouraging factors that keeps a student motivated.”

The encouragement Eva received from this opportunity to continue her education has helped her stay on track with her goals, both educational and personal. She will graduate in May 2007 with a degree in mechanical engineering, and has even found time between work and her course load to take on a leadership role as president of the Mines chapter of the Society of Hispanic Professional Engineers.

In her thank you letter to a Dean Burger Fund donor, Eva sums up what the extra funds have meant to her: “I experienced significant financial hardship this semester, almost to the point of giving up. But when I received the funds this year, I learned that people like you make it possible for students like me to remain tough and keep fighting the good fight.”

This is exactly the sense of optimism and determination that **William V. Burger** engendered in Mines students during his time at the School. He strongly believed that earning a Mines education was an achievement of immeasurable worth and that a “can do” attitude was the key to any student’s success.

Though **Dean Burger** passed away in 1982, his legacy of hope lives on through the Dean Burger Memorial Endowment Fund and through students like Pablo, Carolyn and Eva who are given an invaluable opportunity to triumph over adversity and achieve their full potential.



Storch '95 Sings for her Supper

What is a physics engineer/Web developer doing on the streets of Boston singing for spare change? Following her heart, replies **Teresa Storch BSc Phy '95**, who has found fulfillment as a singer/songwriter. "I've never been happier," she says. "I never knew I could be so happy." Although she works hard and doesn't make a lot of money (yet), she's doing what she loves.

A native Nebraskan, Storch came to Mines because she was a "math and science" kid and because she was following in the footsteps of her brother, **Peter BSc CPR '85**. But while attending a concert at Red Rocks her junior year, she realized what she really longed to do was perform.

After graduation, Storch moved to Boulder, Colo., and began an engineering physics career, switching to Web development a year or so later. At the same time, she also started guitar and voice lessons. She immersed herself in music, taking a course in performance. "This was a big step for me," she says. "It showed me that I really wanted to be a performer. Performing is frightening, but it's also a rush. It's almost an addiction."

Eventually, Storch chose Boston as her home base, attracted by its culture and music scene. In 2001, after being laid off from her software job, she decided to make music her career. She has since made two CDs, won awards for her songwriting, performed in cafes and clubs, at music festivals, for weddings, at colleges, tours throughout the United States, and even had a stint in Germany last October. She enjoys the freedom of the touring musician life and still performs on the streets and subways of Boston where she got her start. It's an activity that is more rewarding than one might think. "People aren't there to listen so if they stop, it's that much more of a compliment."

Storch supplements her income with part-time Web development and technical editing. She sells her CDs on

www.CDFreedom.com, a website she used to run until they wanted her to work full time. "It's nice to have something to fall back on," she says, "so I can do what I love." However, her goal has always been to make her way back to Red Rocks, this time on the stage. That and hopefully inspire others to do what they truly love doing.

You can find out where Teresa Storch is performing by checking out her website at www.teresastorch.com. She travels extensively and might be in a city near you!



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- With gifts of \$1,000 or more in value, you are recognized as a member of the CSM President's Council.

Undeveloped, revenue generating or environmentally sensitive land may be accepted by the CSMF Property Management Corp. The unique expertise and talents of the CSMF Property Management Corp. could help relieve you of the liability of property with environmental issues.

Gifts of property, stock or other capital assets can be used in making a charitable gift to your alma mater. As with any gift to the School, you will have the satisfaction of knowing that you are providing for future generations of students.

For more information, contact the Managing Director, CSM Foundation Inc. Linda M. Landrum at (303) 273-3142

Sports Camp in Africa Includes Life Lessons

James Trask BSc Eng '03 has been in the Peace Corps in Makiungu, Tanzania, since he graduated. He sent the following to family and friends about a seminar he held for primary school students:

On July 11th, I began preparing for the Youth Wellness Seminar, the fancy name I gave to the sports camp Komba [the academic master at Mungaa Secondary School] and I had organized. I decided to host 60 primary school students for a week at our school. In May, I wrote a grant to hold the seminar and feed the students for a week. Since all the available money sent to Africa these days is trying to prevent the spread of HIV, I decided to throw in a bunch of health classes too.

The higher-ups in Peace Corps approved the grant and before I knew it, 60 little kids (10 from each of the nearby primary schools) were staring at us in the classroom. Now in secondary school I struggle with the Swahili-English language barrier, but the primary school students took it to a whole new level: the Kinaturu-Swahili language barrier. They had a hard time understanding my American accent in Swahili, their second language, and they had an attention span of

about 10 minutes. The first day was very frustrating but thankfully, Komba and a slew of guest speakers stepped in to help out.

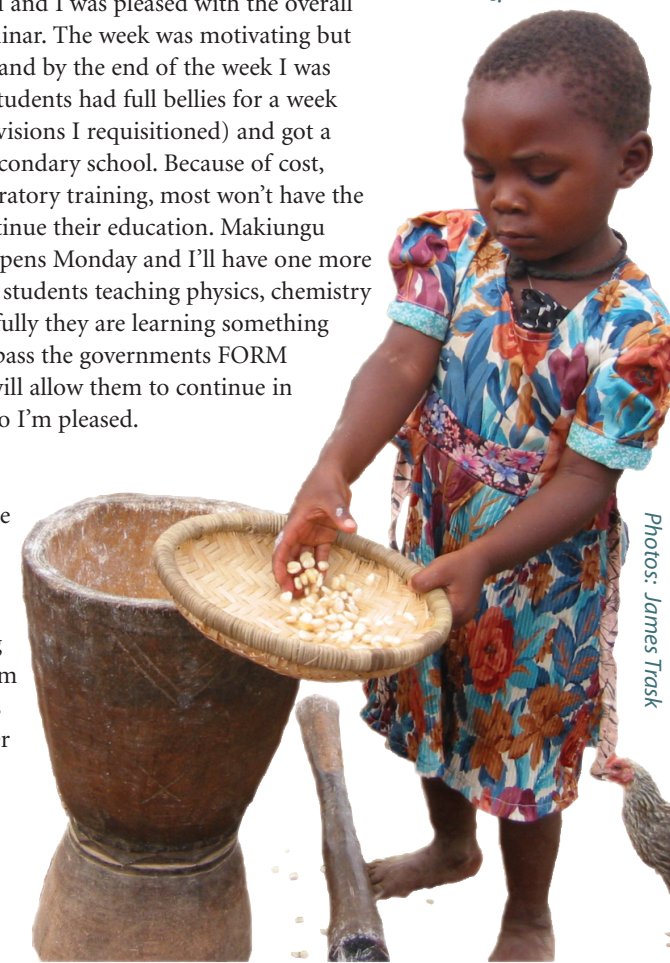
Under my direction, they taught the bulk of the classes. I listened as the kids discussed circumcision, drugs, alcohol, early pregnancy, diseases, nutrition, health, diets, HIV and AIDS. When classes finished, the students went to the soccer fields to play. Every evening I prepared lesson plans for the next day and then instructed the guest teachers to teach in their own style. Watching *them* teach the students made it all worthwhile, although I almost pulled my hair out a couple times when the doctor said toothbrushes and sweat could spread HIV.

The camp went well and I was pleased with the overall outcome of the seminar. The week was motivating but physically draining and by the end of the week I was exhausted. Yet the students had full bellies for a week (because of the provisions I requisitioned) and got a chance to see the secondary school. Because of cost, language and preparatory training, most won't have the opportunity to continue their education. Makiungu Secondary School opens Monday and I'll have one more term with my 100+ students teaching physics, chemistry and calculus. Hopefully they are learning something and will be able to pass the governments FORM class finals, which will allow them to continue in higher education! So I'm pleased.

It is winter here in Makiungu where the altitude is about 1,600 meters and it has been freezing cold due to a strong wind coming in from the West ... it makes me think of summer back in Colorado.



Trask, left, with students.



Photos: James Trask

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Power Engineering Education: A Powerful Program at Mines

By Maureen Keller

When we discuss the word “energy” at Colorado School of Mines, we usually think of oil, gas and coal. But about one fourth of the total energy usage in the United States comes in the form of electricity. “Only when there’s a massive blackout (like what happened in 2003) does anyone give it much thought,” says engineering Professor P.K. Sen. Electric Power Systems is very important and an integral component of the “big picture” of energy, though we take it for granted.

The broader issues regarding electric power and energy are complex and interdisciplinary in nature and include power generation and transmission, electric grid reliability and security, conservation and electric energy usage, renewable energy applications and sustainability, aging infrastructure, future industry trends, environmental impact and policy issues. Mines is the premiere institution of higher education in Colorado that addresses these issues at both the undergraduate and the graduate level and does so with a unique, nontraditional graduate program, Electric Power and Energy Systems Engineering. It is a research focus area within the Division of Engineering with about 40 graduate students, most of whom are practicing professionals and is headed by Dr. Sen. The group pursues both fundamental and applied research in a variety of interrelated areas of energy systems, renewable energy applications and electric power grid.

Sen also heads Mines’ Power Systems Engineering Research Center (PSERC), one of the most prestigious and successful multi-university (13 universities, www.pserc.org) research centers in the country. Founded in 1995 and funded by the National Science Foundation as Industry University Cooperative Research Center (IUCRC), the PSERC consortium addresses a variety of challenges faced by the electric power industry and facilitates the interchange of ideas between academia, industry and government. Thirty-nine industry members (including a number of international organizations) help sponsor the center nationally with the Western Area Power Administration (WAPA) and Tri-State Generation and Transmission being the local sponsors at Mines.

PSERC also promotes research at the undergraduate level, with rather impressive results from Mines’ senior design projects and other research efforts. Recently for example, eight undergraduate students – Ryan J. Hubbard, Christopher W. Mielke, Justin C. Ray, Dalton H. Shaffer, Jessica A. Miller, Saxon Paiz, Kris C. Koski, and Patrick E. Henderson – all 2005 graduates, looked at the School’s future energy needs to the year 2020 and beyond. The students examined current energy usage by the School including electric power, heating, ventilation and air conditioning, and steam, and also considered the political climate, reliability of electric power supply and the future of renewable energy before making recommendations for

one year, five years and long term (2020 and beyond). For the short term, the students discussed options and costs of providing an additional electric feeder to the campus. For the mid-term they suggested an economic feasibility study be performed to look into the possibility of adding photovoltaics to selected new buildings. The long-term recommendations include studying new renewable technologies.

“One of the most important tasks we at CSM perform is to educate and train some of the best young, and much needed, power engineers for the local industry,” says Sen. “Our power engineering students are hot commodities, always in big demand with multiple job offers at an excellent salary.”

Anthony Marroni, BSc Math ’71, BSc Phy ’71, MSc Phy ’74, a partner with Carollo Engineers, says, “Carollo Engineers feels that Dr. Sen’s power engineering program is one of the top, if not the very best, in the country. We have seven graduates in my office from CSM. Four of these engineers are directly from Dr. Sen’s program, and these four plus an additional engineer in my office are participating in Dr. Sen’s graduate program.”

One reason Mines does such a good job of educating and training power engineers is that the program caters to practicing professionals, some whom have been in the workplace for 10 years or more. “Most of the students come from the local power and energy industry. We teach the classes in the late afternoon to accommodate working professionals,” says Sen. Many of the graduate students already have one degree from Mines and have studied with Dr. Sen.

Because of the outstanding quality of the program, most of the graduate students are sent to Mines by their employers who also pay their tuition and books, travel and other incidental expenses. These employers also make it possible for the students to attend conferences by allowing flexible work schedules and reasonable time off. They also provide opportunities and resources for research facilities that Mines doesn’t have and actively support advancement for their engineers. Currently represented in the program are large utilities like Xcel Energy, Tri-State Generation and Transmission, government agencies including the Bureau of Reclamation, National Renewable Energy Laboratory (NREL), Western Area Power Administration, city and municipal utilities employees from Colorado Springs, Fort Collins and Longmont, and a number of small and large design and consulting engineering firms in the metropolitan area, to mention a few. Having such industrial support frees Sen from having to scramble for funding for his students. Local industry is extremely supportive of the power program, and it takes Sen only one phone call to get whatever he needs for his program.

The advanced level power engineering program at CSM is only three years old, but Sen has been in the field for decades. “I was at the National IEEE (Institute of Electrical and Electronics Engineers) Electrical Safety Conference in Philadelphia this

February and was surprised at how well known he is in the industry,” says Ravel Ammerman, BSc BE ’81, a long-time lecturer at Mines who is also a graduate student in the program, working on a PhD.

Sen joined CSM after 21 years at University of Colorado-Denver and Boulder campuses, where he also ran the similar electric power and energy program. “I was hired to cultivate the electric power program here,” he says, and he does so mostly by himself. The students – both undergraduates and professionals returning to school – are passionate about the program. “We put the young and the experienced students together for ultimate fun,” says Sen. The practicing professionals “bring their knowledge to the classroom and share. That’s the beauty of our program.”

“It’s a little intimidating,” says senior David Graham, one of the few undergraduates in the High Voltage AC and DC Transmission class. But it is also rewarding. Graham, who graduated in May with a job in the electric power and energy industry in hand, says he will use the knowledge he’s gained from the class almost immediately.

Working professionals say the same. Because Sen understands the power industry so well, “we can take what we learn right back to work and apply it,” says Eric Vaughn, an engineer with the Bureau of Reclamation and also a student in the class. “P.K. knows what industry professionals need to know,” adds PhD candidate Ben Kroposki, a senior engineer at NREL.

“Colorado School of Mines is one of the few schools left in the country that has a quality power engineering curriculum,” says Bert Milano, manager of Hydroelectric Research and Technical Services for the Bureau of Reclamation. “The School of Mines’ highly selective admissions criteria, in combination with the senior design project requirements and the rigorous power engineering curriculum, results in a cadre of excellent power engineering graduates that are second to none. The recent Mines graduates we have hired are well educated, articulate and are advancing very quickly in assuming technical and project management responsibilities.”

As a testament to Sen’s dedication to and recognition in the power engineering field, the local chapter of the IEEE created the Dr. P.K. Sen Senior Design Project Award. Each year, students or teams of students working on an undergraduate power engineering project are awarded financial support. “In the last four years, there have been six or seven cash awards given to students from CSM, CU-Denver, and CSU,” Sen says, adding that having the award named after him is his greatest honor.



CSM Track has 11 All-Americans

The Mines indoor track and field teams had the best seasons in School history this past winter as women placed tenth in the nation, while the men's squad was fourteenth overall.

The NCAA Division II Nationals were contested Mar. 10-11 at the Reggie Lewis Center in Boston.

Leading the way for the women's team was senior Heather Beresford who placed second overall in the mile run for the second consecutive year. Her time of 4:47.69 set a School record and was just .06 seconds behind the winner.

Beresford also anchored the Distance Medley Relay Team to a second-place showing in a School record time of 11:39.02. That bested the old School record by more than 33 seconds. Joining Beresford on the team were seniors Hannah Davey-Briggs and Serena Gardiner and junior Melanie Peddle.

The quartet earned All-American honors for their performance.

On the men's side, juniors Larry McDaris and Joel Hamilton earned All-American accolades in their individual events.



Heather Beresford placed second in the mile run for the second straight year.

McDaris placed fourth in the mile run with a time of 4:08.13, less than one second behind the top two finishers. Hamilton was sixth in the 5,000-meter run in 14:26.85.

The duo of McDaris and Hamilton also helped the CSM Men's Distance Medley Relay Team to an All-American showing as the team finished in fourth place in a School record time of 9:57.14.

The two were joined on the team by senior Ryan Miles and freshman Chris Fitzpatrick.

The performance at the Indoor Nationals came on the heels of a strong showing at the NCAA II Cross Country National Championships in November when the women's team placed fifth and the men were sixth.

Beresford, Davey-Briggs, Hamilton and McDaris were also All-Americans in cross country.

Men's Basketball Reaches RMAC Semifinals

The men's basketball team enjoyed its deepest run in the Rocky Mountain Athletic Conference Tournament since 1996.

The squad entered as the No. 7 seed and traveled to second-seeded Fort Lewis Mar. 1. The Orediggers raced out to a 10-point lead and hung on for a 72-71 win. It was the first time CSM had won an RMAC Tournament game since 1996.

In the semifinals, the Orediggers were knocked off by fourth-seeded Nebraska-Kearney, 71-57. UNK went on to win the tournament title.

The Orediggers opened the season with back-to-back wins over Nebraska-Omaha and Pittsburg State, teams that were nationally ranked in Division II. However, on Dec. 9, the injury bug

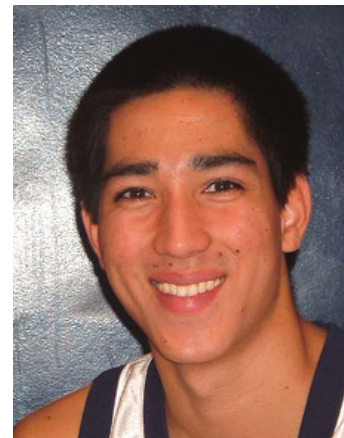
struck CSM and the team would not play with its full roster healthy until the RMAC Tournament game at Fort Lewis.

One of the biggest highlights of the season came on Jan. 20 when CSM went to Metro State and handed the Roadrunners a 69-65 loss in overtime. It snapped Metro's 47-game home win streak, which was the longest in the country at the time.

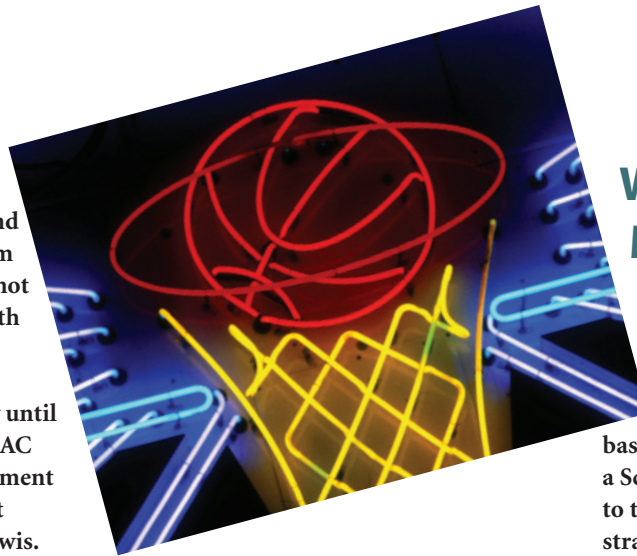
Freshman guard Kyle Pape led the team in scoring (14.0 ppg) and became the fourth player from CSM in the last five years to earn RMAC Freshman of the Year honors. He was an Honorable Mention All-RMAC East Division pick.

Junior center Ian Elseth was a Second Team All-RMAC East Division honoree after leading the league in field goal percentage (.591).

Senior guard Travis Test joined Pape on the Honorable Mention All-RMAC East Division Team after averaging 10.4 points per game and ranking among the RMAC leaders in assists and steals.



Freshman Kyle Pape



Women's Basketball Makes Magical Run as Gronewoller's Career Ends

Last season, the Mines women's basketball team made history by winning a School-record 19 games and advancing to the RMAC Tournament for the second straight year. With four starters gone from that team, nobody knew what to expect for the 2005-06 version of the Orediggers.

Following a slow start due to several new players trying to gel together on the court, the Orediggers once again made history.

After a loss at home to Fort Hays State Jan. 27, CSM stood at 10-8 overall and just 4-6 in the Rocky Mountain Athletic Conference. But the Orediggers won four of their next six games to all but clinch a berth in the RMAC Shootout for the third straight season.

CSM entered the tournament as the No. 8 and final seed and traveled to top-seeded Regis for a quarterfinal game Mar. 1.

Playing with nothing to lose, CSM upset the Rangers, 71-57, to clinch its first win



Ashley Gronewoller concluded her career at CSM as the all-time leader in points, rebounds, field goals and free throws made.

in the RMAC Tournament in eight attempts. It marked the first time a No. 8 seed had defeated a No. 1 seed in the 14-year history of the RMAC Men's or Women's Tournament.

The win also moved CSM to the tournament semifinals where they pulled off another upset, this time a 67-61 triumph over fourth-seeded Nebraska-Kearney, which advanced the Orediggers to their first ever RMAC Championship.

In the finals, CSM squared off against sixth-seeded Colorado State-Pueblo, a team they knocked off in Volk Gymnasium earlier this season. But this time, the Orediggers' magical run would come to an end as they fell to the Thunderwolves, 65-54.

The loss concluded the brilliant career of Ashley Gronewoller who was one of the greatest players to ever play in the women's basketball program.

The 6-foot-3 Gronewoller concluded her career with an outstanding tournament as she averaged 22.7 points and 10.7 rebounds per game in the three games. She recorded two double-doubles and was just one rebound short of another double-double in the win over Kearney.

For her efforts, Gronewoller, along with junior guard Iva Tomova, became the first CSM women's basketball players to earn RMAC All-Tournament honors.

In addition, Gronewoller earned her fourth straight selection to the All-RMAC East Division Team, her third straight selection to the First Team All-RMAC East Division and her first selection to the All-RMAC Team, which is comprised of the top five players in the conference.

Gronewoller, a native of Pagosa Springs, finished her career at CSM as the career record holder in points (1,466), rebounds (890), field goals made (589), free throws made (288) and field goal percentage

(.574). She finished the 2005-06 season with a CSM single season record 450 points and was also second on the all-time blocked shots list at CSM with 176.

Tomova was named to the Second Team All-RMAC East Division.

Digger Dirt

- The CSM football staff changed after the end of the 2005 season. Marty Heaton has joined the staff as associate head coach and defensive coordinator from Adams State. Curt Lessman comes from Northwest Missouri State as the new offensive line coach. Jason Koltz has been promoted to assistant head coach, while Jason Munoz was promoted to offensive coordinator.

- CSM placed 28 student-athletes on the RMAC Winter All-Academic Team. Those sports include men's and women's basketball, wrestling, and men's and women's indoor track and field.

- The CSM swimming and diving team had eight student-athletes named to the North Coast Conference Commissioner's Academic Honor Roll.

- Junior basketball player Davey Iverson was named to the 2006 ESPN The Magazine College Division Academic All-District VII Men's Basketball Team. He sports a 4.0 grade point average as an engineering physics major.

- Senior track star Heather Beresford was named the Female Athlete of the Meet at the RMAC Championships and was the RMAC Nominee for Regional Female Athlete of the Year.

- The CSM football program signed 29 student-athletes to National Letters of Intent. The football team will open the 2006 season Sept. 2 with a 1 p.m. kickoff at Washburn.

- Senior wide receiver Justin Gallas helped lead the West squad to a 49-28 victory over the East in the Sixth Annual Cactus Bowl Game Jan. 6. He finished the game with 108 all-purpose yards as he caught three passes for 86 yards and a touchdown and returned two kicks for 22 yards.

VIETNAM WELCOMES CSM: EXCHANGE PROGRAMS POSSIBLE

By Maureen Keller

Dr. Robert Siegrist, director of CSM's Division of Environmental Science and Engineering, was one of five U.S. scientists invited to Vietnam in November for its 10-year anniversary celebration of normalization of diplomatic relations with the United States. Siegrist's trip could mark the beginning of an exchange program that would bring Vietnamese graduate students to study at Mines.

Vietnam is the 12th largest country in the world by population with 82 million people. "I found them to be inquisitive, considerate and kind," says Siegrist. He was told that it took three generations to get past the Vietnam War period, but says he found no lingering resentments. "Vietnam is rapidly modernizing," he notes. "The people are focused and committed to what they are doing. It's an exciting place and it's just blossoming."

Siegrist was invited to the Southeast Asian nation to participate in the country's Science and Technology Days. According to U.S. Ambassador Michael W. Marine and vice minister of the Vietnam Ministry of Science and Technology Dr. Bui Manh Hai, "This event was designed to showcase U.S.-Vietnam scientific and technical achievements." The event included seminars on commercialization of technology, disaster-mapping technology, water pollution prevention technologies and promoting the effectiveness and linkage between research and education. "The country is rapidly industrializing," says Siegrist, "and it recognizes the potential impact that modernization can have on public health and environmental quality."

Within Vietnam, there is wide recognition of the importance of education and research and the Vietnamese want to enable appropriate environmental management systems so that their public health and environmental quality are protected. The country is also committed to cooperating with the United States and has established the Vietnam Education Foundation (VEF), which so far has placed 153 Vietnamese nationals at 46 top U.S. graduate schools with financial support for them to earn their Ph.D. or master's degrees.

The VEF has also arranged for scientific exchanges such as the one Siegrist participated in. During his visit, Siegrist took part in a seminar, "Improving the Effectiveness and Linkage between Research and Education in Vietnam," chaired technical sessions on water pollution prevention technologies, and

delivered a presentation on wastewater reclamation and reuse. In addition, he visited the Hanoi University of Civil Engineering, which has 20,000 students, met with the management board for the HaLong Bay UNESCO World Heritage Site and toured the Institute of Environmental Technology of the Vietnamese Academy of Science and Technology where he gave a presentation on remediation of contaminated land. At each meeting, Siegrist discussed various types of cooperative efforts between the United States and Vietnam. "They have interests and needs that span all of CSM's focus areas," he noted.

Siegrist hopes that Mines will develop collaborative research and educational projects with universities and research laboratories in Vietnam and become a destination for some of Vietnam's top students. "We need to communicate to them what we have here and how we can work together," he says. "This is a wonderful opportunity. Vietnam and the rest of Southeast Asia have major economic development prospects. CSM can contribute to and benefit from involvement."





Physics is Fun!

New teaching methods improve student success

By Maureen Keller



Tom Cooper

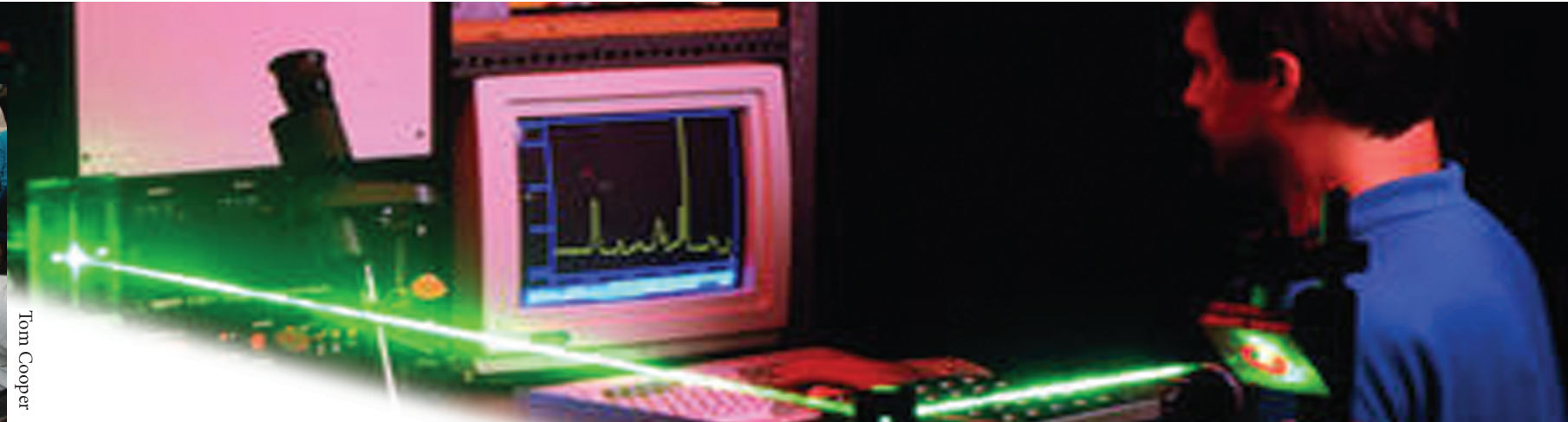
About 10 years ago, physics Professor Tom Furtak was leaving Meyer Hall when he overheard a student ambassador telling potential future freshmen that they'd probably want to avoid the physics building. He was dismayed but not surprised. The number of physics majors nationally had been on the decline for years. At CSM, interest in physics was stable, but the introductory courses were not working. More than 40 percent of the students who started Physics I received Ds or Fs or withdrew before the end of the semester.

"Introductory physics is very difficult for freshman. It comes just when they're learning what college is all about. It's their first real test," Furtak says. Physics is one of the gateway courses to getting a technical education. If students find it too difficult, it can keep them from going into science and engineering. So Furtak decided to find new ways to help students learn physics more successfully.

"I had been experimenting with more effective and engaging teaching methods in other courses," Furtak explains. "So I talked to the department head – who at the time was John Trefny – into trying some of these things in Physics I [formerly PHGN132]. John took a gamble and allowed me to fiddle with the course."

The results have been dramatic. Today, Mines has the largest undergraduate engineering physics program in the country according to a recent survey by Stephen Cobb at Murray State University. And it's growing. In 2000, 104 Mines students – 4.16 percent of the student body – were declared physics majors. Last year, 270 students, or 8.35 percent of the student body, were working toward degrees in physics engineering.

How did Furtak and the physics department accomplish such magic? They redesigned the way the course is taught. "People learn more effectively in a social environment," says Furtak. "They learn and remember more if they can articulate with others." The concept is called the learning studio classroom, first developed by Professor Jack Wilson at Rensselaer Polytechnic Institute. "Jim McNeil [current Physics Department head] and I recognized that this would be a good way to teach. Wilson visited us sometime in the late '90s and told us all about it. Then we put our own spin on it. Don Williamson, department head at that time, encouraged the development of a prototype studio classroom."



On the first day of class, students are randomly assigned into groups of three. Each group works together on lessons delivered through a computer that uses a large type font that can be easily read from a distance. The group learns together and each group progresses during a class period at its own pace. The classroom is staffed by a member of the physics faculty and several teaching assistants. They spend most of their time facilitating discussions and answering questions.

"It's an open environment," Furtak explains. "We get them to confront their misconceptions and fix them by talking. It's a challenging curriculum, but they're doing it with friends so it doesn't seem so hard." And, it is the embodiment of President Trefny's vision of an extended-learning community. "The social connections the students make in class continue beyond the classroom," Furtak says. If a student needs homework help, it makes sense to go to someone he or she already knows. Or, a student might run into a classmate at a party some night. "And who knows?" says Furtak. "The topic of physics might even come up."

Furtak began his experiment with two sections of about 20 students each in 1997. The Board of Trustees approved a modest investment to turn a Meyer Hall classroom into a physics studio with computers. With the help of graduate student Stan Vozella, Furtak made it work.

"Then came the opportunity to move it up a notch," says Furtak. When construction of the Center for Technology and Learning Media (CTLM) began in 2000, he lobbied to turn one of its new classrooms into a physics studio with 32 computers, enough for a class of 96. "In spring 2002, we took it to full scale. Now, everyone has the opportunity of taking Physics I in the studio." After working out the kinks, Furtak says, "It works very well." He knows because students are learning physics better. "They're getting higher grades and we've increased the standards, not lowered them. We've added calculus, which wasn't included before, and it's a harder course. But students are getting higher grades." Senior geological engineering student Jessica Spriet says she learned a lot in Physics I, but in Physics II, still taught the conventional way, that was not the case. Furtak says the department would like to

expand the studio concept to Physics II, but it will require the building or renovation of a dedicated classroom.

In addition to the learning studio classroom, which is now managed by instructors **David Flammer BSc Math & Comp Sci '00, BSc Phy '00, MSc Phy '01** and **Chris Kelso Math & Comp Sci '00, BSc Phy '00**, Physics I includes lectures presented in another CTLM classroom. This room, too, is equipped with new technology, infrared electronic keypad communicators for each student. Throughout the class, the teacher can ask questions and each student posts his or her response by clicking the communicator. That way, the lecturer can see if he or she needs to explain further or can move on because most seem to understand. It's instant feedback and Furtak credits physics Professor Frank Kowalski with making it happen at Mines. "I've been teaching for 26 years, 20 of them at Mines, and this is easily the neatest thing that's happened," says Furtak. "It creates the most amazing teaching environment."

The Physics Department has instituted other innovations that are catching on around campus, including the five-year program that allows students to begin taking graduate-level classes in their senior year so that they earn both an undergraduate and a master's degree. Mines has received national attention within physics professional societies for its innovations in teaching. In 2001, the teaching of Physics I was also named a "Program of Excellence" by the Colorado Commission on Higher Education.

In a recent straw poll of the freshman in Physics I, which asked how many wanted to major in the subject, nearly 100 of them raised their hands. "It starts with not turning students off," says Furtak. "All the students here are pretty bright. We can encourage them into careers in physics with just a positive introduction."



Tom Cooper

When coal mine disasters cost 16 West Virginia miners their lives, local and national media looked to Colorado School of Mines for accurate, up-to-date information about mine safety. Experts from the Mining Engineering Department, the Edgar Mine in Idaho Springs, and the Special Programs and Continuing Education Mine Safety Training program spent countless hours talking with television, radio and newspaper reporters around the country. The following story, written by Gargi Chakrabarty, ran in the Rocky Mountain News on Feb. 4, 2006.

Safety First

By Gargi Chakrabarty

Students pull insight from 1870s mine



Josh Gresham picks up a javelinlike pole and pokes at cracks on a dark wall of rocks, lit only by a small lamp perched on his miner's hard hat.

The U.S. Mine Safety and Health Administration, which regulates all mines, requires a mandatory 40-hour training for new miners.

A chunk of solid rock gives way and crashes to the uneven mine floor. Gresham's teacher, Bob Cooper, nods in praise.

The federal agency also requires miners to take an eight-hour refresher course each year. "We do miner training for anybody, for contractors, mine companies, people who work in tunnels, and students," said Bob Ferriter, director of the school's mine-safety training program and a former MSHA employee.

"Rocks get loose over time," Cooper explains, as Gresham listens to his instructions. "If you see cracks on one, it should be knocked off before it falls off and hurts someone."

"We do specific things such as mine ventilation, ground support so that the roof does not cave in, rescue training and breathing procedure."

Gresham's classmate, Kelly Michals, kneels at a nearby 1,000-gallon water tank and diligently plugs a pipe. With gloved hands, she wraps Teflon tape around the plug and wrenches it in the pipe.

Most important, the mine offers engineering students hands-on training that simulates a real-world situation.

"That will ensure against any leaks," Cooper says.

The mine owns equipment that mostly was donated by private companies. It is used for experiments not only by students of mining engineering but also other departments such as electrical and mechanical engineering.

Cooper is assistant manager at the Edgar underground mine in Idaho Springs, about 40 miles west of Denver.

In all, about 200 students go through the mine each year. Also, on average 200 to 300 professional miners and government rescue workers train at the mine each year. Dressed in thick overalls, steel-toed boots, safety glasses, air filters and hard hats, Gresham and Michals — both juniors in the engineering department — focus on their assigned jobs.

In the 1870s, the Edgar mine produced high-grade silver, gold, lead and copper. The Colorado School of Mines began using the mine in 1921, when officers of the then-bankrupt Big Five Mining Co. agreed to lease it to the school.

The school subsequently acquired the mine, along with nearby land, and created the research lab.

About 40 pounds of equipment, including an emergency breathing apparatus, batteries, tools and air detectors are strapped to their belts.

Now it is widely known as a premier research laboratory and is among a handful of actual mines used for training mining engineering students as well as professional miners and state officials.

"This is a nice relief from classes or reading books all the time," Michals says, as she rotates the wrench around the plug. "After the day is over, I feel like I have accomplished something. This work is so much fun."

In fact, the Colorado Division of Minerals and Geology uses it to train miners and other professionals in rescue operations.

In recent years, the school and the state division have worked closely with dozens of private mines to train new workers.

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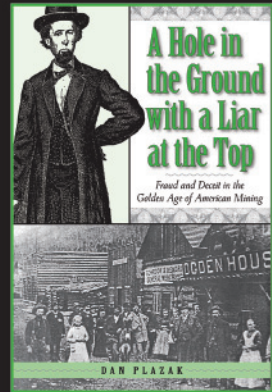
A Hole in the Ground with a Liar at the Top

Fraud and Deceit in the Golden Age of American Mining

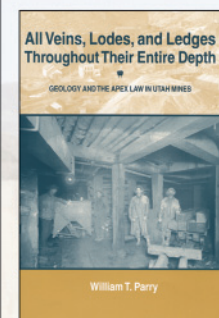
Dan Plazak

COAL, SILVER, GOLD...

there is something about the allure of finding hidden treasure that puts a glint in people's eyes—a glint that is sometimes blinding. An American saying, often attributed to Mark Twain, defines a mine as "a hole in the ground with a liar at the top." Delve into the curious mind of the con-artist with author Dan Plazak as he investigates the history of mining frauds in the United States from the Civil War to World War I.



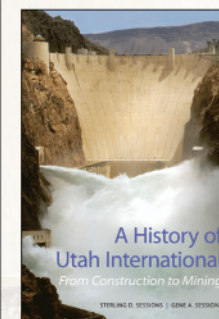
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Engineering his own fun Graduate student not starving for attention as mascot

By J.D. Harris

Colorado School of Mines mascot, Marvin the Miner, might be the smartest performer of his kind in Colorado.

The mascot, originally from Shippensburg, Pa., is a graduate student who earned his bachelor's degree in geophysical engineering last year and is now working toward a master's degree. When he isn't buried in his thesis, he dons the mascot uniform and rallies the home crowd at Oredigger sporting events. "They asked me to do it because I was a crazy fan who came to the games sober, and it was something I wanted to do," Marvin said.

The idea for a Mines mascot started two years ago as a brainchild of "Marvin" and Brandon Leimbach, the director of club sports at CSM. The mascot had to reflect the heritage of the university and was named after former Mines athletic director and coach, **Marv Kay EM '63**.

"We thought it would be great to have a real live mascot so we got online and saw a lumberjack we thought would be great for our mascot," Leimbach said. "Marvin" happened to be in the right place at the right time and he was the only person we interviewed for the job. He has done a great job for us and was a great selection."

When Leimbach brought Davis into his office and showed him the suit and asked him if he was interested in the job, Davis made a couple of conditions.

"The first thing is I'm not doing cheers with the cheerleaders because I want to have my own identity, and I want to get paid," Davis said. "I also wanted a trampoline, but since I couldn't get that, I got a springboard. I don't know any other college mascot who has a springboard."

Davis uses the springboard to get an airborne start for dunk attempts during halftime of men's and women's basketball games. He also tries a shot with his back to the basket at half court and gets close to converting the bomb as often as not.

While making those theatrical 3-pointers gets the crowd going at Volk Gymnasium where games average 300 people in attendance, Davis has also highlighted Marvin on the big stage.

During a halftime soccer game last year between mascots and fans at a Colorado Rapids game, Davis, who thought about playing Division III soccer before moving to Mines, scored a goal in front of a crowd of 55,000 thousand cheering fans.

"They went crazy so I ran to the center of the field and started doing my normal poses and I noticed I was on the Jumbotron," he said. "So I knew I had to do more and I started doing more poses. That was probably the most psyched I have ever been."

But his forte is intermingling with everyone at Orediggers' games. Marvin the Miner gives high-fives to players, coaches, fans, scorekeepers, press and officials, when they let him, and has his most fun chasing the kids who dare get near enough the human cartoon.

"A lot of college mascots just stay on the sidelines," Davis said. "I have to get into the crowd and get into everybody so at least when they go home, they remember something from the game."

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Mines Acknowledges Individual, Corporate and Foundation Donations

Recent individual gifts of \$25,000 or more to Colorado School of Mines include:

Charles "Scottie" Bruce '57 contributed \$461,010 in cash to establish his second charitable gift annuity with the CSM Foundation. The annuity residuum will be added to the Eileen Bruce Memorial Scholarship Fund.

A bequest of \$44,900 was received from **Richard J. Carlson '69** for the CSM Rugby Club.

John '52 and **Erika Lockridge** continued their support of CSM Athletics with a gift of \$36,635 toward the Blaster Current Basketball Scholarship Fund.

Richard '54 and **Janice Veghte** made a generous current gift of \$25,469 to establish the Harry W. Osborne Memorial Scholarship Fund, in honor of Mrs. Veghte's uncle. In addition, they contributed \$75,482 to set up a charitable remainder trust that will also support this scholarship fund.

Recent corporate and foundation gifts of \$25,000 or more to CSM include:

BHP Billiton Ltd. gave a gift of \$30,000 to support the work of Dr. John A. Scales in Geophysics.

The **Viola Vestal Coulter Foundation** gave gifts totaling \$73,000 to support the following: the Coulter Chair in Mineral Economics, the William Jesse Coulter Instructorship in Mineral Economics, the Viola Vestal Coulter Instructorship in Mineral Economics, the Mineral Economics Department for Professional Development Fund, the Mabel M. Coulter Student Health Center, Viola Vestal Coulter Foundation Graduate Fellowships, Viola Vestal Coulter Foundation Undergraduate

Scholarships, and William J. Coulter Outstanding Undergraduate/Graduate Stipends.

Lockheed Martin Corporation contributed to the Minority Engineering Program and to select Senior Design projects with a gift of \$25,000.

Medtronic SNT supported a Biomedical Engineering Fellowship with a gift of \$33,000.

The **Mikkelson Foundation** continued its support of the Engineering and Applied Technology program with a gift of \$26,000.

Phelps Dodge Corporation gave a gift of \$79,450 to support Jon Woodhead's thesis studies in geology.

Phelps Dodge Foundation contributed gifts totaling \$117,500 to support the Excellence in Mining Engineering program and the George R. Munroe-Phelps Dodge Foundation Scholarship.

The **Harry Trueblood Foundation** contributed \$27,000 to support scholarships in petroleum engineering.

Shell Oil Company contributed gifts totaling \$105,500 for department support, the Career Center, the Minority Engineering Program and the McBride Honors Program.

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Setting the Bar High

Scholarships boost achievement in the classroom and on the field

At Colorado School of Mines, excellence is a habit. The student body is made up of talented individuals who are accustomed to high level achievement in all of their pursuits – from band to baseball, photography to physics, thermodynamics to track and field. Fueled by students who aspire to make the best of all of their talents, Mines' campus pulses with purposeful activity.



Mines golfer Mark Vallee is a two-time All-RMAC honoree and carries a 4.0 cumulative GPA.

Outside of the classroom, athletics provides the most visible arena for achievement at Mines. Sports are a central part of this dynamic campus, providing students with competitive challenges that complement their rigorous course work. Teamwork, leadership and discipline, hallmarks of a Mines education, are reinforced on the field. And, in an era when the media tends toward critical skepticism, athletic achievements generate distinctly positive publicity for the School.

With their generous gift of \$1 million to fund endowed scholarships for Mines' student-athletes, **Steve BSc Geol '56** and **Gayle Mooney** have made an enduring contribution to the School's comprehensive culture of excellence. Mooney and his wife made the gift through their privately held company, Thompson Creek Metals, a leader in the development and mining of molybdenum.

The Mooneys' gift provides a welcome boost to sports programs that have endured cuts in scholarship funding during recent lean years for higher education. With a deeper pool of scholarship funds to draw from, sports such as baseball, cross country, golf, softball, swimming, and track and field now have greater potential to attract top-tier student-athletes.

Mines has seen its share of hard-working students who also bring their athletic talent to the School. However, Mines must be able to sustain a steady stream of academically inclined high-caliber athletes in order to field consistently strong teams. Athletic scholarships are essential tools for coaches to build a critical mass of talent that provides momentum for their programs.

Funding for athletic scholarships helps develop the competitive dynamic essential to building successful teams. Swimming and diving coach Dave Hughes finds that student-athletes who

consider attending Mines are individuals who are committed to fulfilling their potential, athletically and academically. While they know they will be challenged in the classroom, a top consideration among them is whether their teammates will help boost their performance to the next level. Hughes notes: "Swimmers get faster by racing top competition and by training with teammates who are faster than they are. Beyond the possibility of earning athletic scholarships, many parents and student-athletes have been primarily concerned about the level of competition within the team. Now with the return of scholarships, I can bring in high-level student-athletes to drive the train, providing leadership that is critical for our team to continue to compete on the national level."

However, the benefit of attracting top student-athletes goes well beyond the sports arena. Tom Spicer, Mines' director of athletics, notes that scholarship athletes number among the ranks of each of Mines' academic departments. In essence, an athletic scholarship not only brings talent to a sports program, it performs double duty by bringing top academic candidates to the School as well. Retired Athletic Director and Emeritus Professor **Marv Kay EM '63** points out that successful athletic teams also give the School regular opportunities for positive publicity that attracts other outstanding students. He notes, "Getting into the sports



Heather Frenier, recipient of the 2005 CSM Coaches' Award, carries a 3.9 GPA. The women's swimming and diving team has earned the College Swim Coaches Association Academic All-America Team award for five straight semesters.

section helps in recruiting students, whether they intend to participate in athletics or not. By showing the public that we have a vibrant campus life with successful athletic teams and recreational opportunities, we show them that Mines' students

can earn one of the finest technical degrees in the country while wholeheartedly pursuing athletic and extracurricular interests."

Mines student-athletes have proven that devoting time to sports doesn't detract from academics. Athletes at Mines have above-



Joel Hamilton and Larry McDaris receive All-Conference honors for the 2005 cross-country season. Hamilton went on to earn All-American status at nationals, where the team ran to a sixth-place finish. The men's cross-country team earned a 3.36 mean GPA last fall.

average grade point averages as a group, compared to the overall Mines population. The rigors of a 15- to 20-credit hour course load demand that student-athletes manage their scarce time efficiently. The time spent outside of class, labs and practice simply has to be spent hitting the books.

The Faculty Oversight Committee on Sports and Athletics interviews student-athletes who are completing their eligibility at Mines. According to geology professor Ric Wendlandt, who leads the committee, athletes recognize that participating in a varsity sport provides a beneficial mental break from academics, contributing to their sense of balance and well-being. Additionally, they often describe valuable lessons related to interpersonal problem-solving, overcoming adversity, and achieving goals that they learned from being a varsity competitor.

By Erica Siemers

Furthermore, they note that their participation in sports has provided them with extraordinary experiences such as the opportunity to travel, to forge close friendships and to develop leadership skills.

Such experiences prove tremendously valuable long after Orediggers turn in their uniforms. As Steve Mooney puts it, "Many people who have been successful in athletics end up in leadership positions throughout their adult lives. In the classroom and in athletics, leadership and teamwork are traits that are developed very well at Mines."

Paul Santi PhD Geol '95, geological engineering professor and faculty adviser for the track and field and cross-country teams, agrees that strong athletic programs help to create well-rounded students who develop outstanding organizational and teamwork skills: "In an academic climate that is so rigorous, it helps for students to have a focus outside of their studies that is considerably healthier than partying." He notes that student-athletes learn to set expectations of high quality and high performance for themselves, an ethic that the School strives to instill in all of its graduates.

Mooney concurs. "From the time when I was a student at Mines, there has been a constant drive for quality all across the board, in the students, faculty and facilities. I think the nature of the training is different at Mines. It leans toward the practical rather than the theoretical. I think people are tested when they're there. They learn something about what their limits are, and how to establish priorities. Those are important qualities in whatever endeavor you decide to pursue."

The Mooneys' gift will help to sustain the recent success of Mines' athletic teams. Last fall, CSM athletics ranked second among 278 NCAA Division II programs in the Sports Academy Directors' Cup standings, a national ranking based on team performances in post-season competition. A fifth-place finish in women's cross country, sixth-place finish in men's cross country, ninth-place showing in men's soccer and 33rd-place finish in volleyball earned Mines the number two spot. This achievement is particularly remarkable considering that Mines' admissions standards rank among the highest of any school in Division II. Even the most talented athlete cannot earn admission without meeting these benchmarks.

JAMES ROBERT "BOB" BOONE EM '39 of Tucson, Ariz., died Dec. 6 at age 92. He was a captain with the Army Corps of Engineers during World War II. After the war, he worked for Magma Copper, retiring in 1976. He served the Masonic Lodge for more than 50 years and was past Master of Temple Lodge No. 51 in Oracle, Ariz. He was also a member of the Scottish Rite and the Eastern Star. His volunteer activities included working with the Arizona Highway Patrol and Kino Hospital. In retirement, Boone and his wife enjoyed traveling and golfing. His wife of 61 years, Helen Shephard of Golden, Colo., predeceased him. A daughter, Sharon, survives him.

WARREN E. BUSH EM '41 died Aug. 31 surrounded by his family. He was 87. Bush



was born in Utah but moved to Grand Junction, Colo., when he was five. He lived there for 82 years. While at Mines, he was a member of Tau Beta Phi, the national honorary engineering fraternity and

Kappa Kappa Psi, the national musicians' fraternity. After graduation, he joined the Army Air Corps and, during a dance, he met Gwendoline W. Hawes. They married in England in 1945. Bush was a chemist for 34 years with Bendix Engineering. He was a lifetime member of the First United Methodist Church, past master of Grand Junction Masonic Lodge #173, 33rd degree Mason of the Scottish Rite, KYCH of the York Rite, past grand high priest of Colorado, personal representative of the Sovereign Grand Inspector General, past worthy patron of the Sunshine Chapter #53 Order of the Eastern Star and drillmaster for the Star Steppers. He also was a member of the American Legion, Gem and Mineral Club and was on the board of St. Mary's Life Center speech and language program for 17 years. Bush also enjoyed bowling, fishing, camping and travel. Survivors include his widow, a son, a daughter, a brother and four grandchildren.

WILLIAM A. COLBURN EM '47, MSC MET '51, DSC MET '54 died Sept. 24 at age 82.

Colburn was a Colorado native, retired engineer, inventor and former CSM professor. He was also a long-time member of the Alumni Association.

Colburn is survived by his widow, Cherie, daughters Celeste Blodgett, Renee Gillespie, son Brian and nine grandchildren.



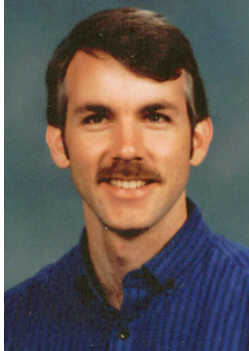
HARRY H. CUNNINGHAM GEOP E '57 died from a stroke Dec. 8 in Houston. He was 77.

After graduation from high school in Grand Junction, Colo., Cunningham worked for the Bureau of Land Management in Wyoming. He was drafted in 1950 and served two years in the Army Corps of Engineers. During that time, he met and married his wife, Mary Ann. Cunningham entered Mines in 1953 and his wife took a job in the School's athletics department. After graduation, he joined Atlantic Refining Company where he directed seismic data collection, reduction and interpretation. He also conducted independent research in applied geophysics. In 1960 he began a career in the space industry with the Martin Company. In 1968, he moved his family to Texas where he worked for TRW Systems and Lockheed Engineering. His expertise was in scientific software engineering in support of missile/space flight systems analyses and requirements definition, support of computer system and scientific software and consultant service sales in the petroleum exploration industry. He received many honors and awards from NASA. Outside of work, Cunningham's interests included reading, storytelling, fishing and family. He is survived by his widow, three daughters, two sons, three grandsons and a granddaughter.



JAMES N. "JIM" EAKINS BSC CPR '78 died Jan. 17, 2005 of a brain tumor. He was 48.

Eakins was an engineer at IBM and Lexmark. He also was a mentor to countless teenagers, a football coach to his sons, a tea party guest of his daughter's, an elder and youth director at Bible Chapel, a head counselor at Camp Elim, a Christmas pageant playwright, a hiker, a camper and a Civil War buff. Eakins is survived by his wife of 27 years, Cynthia, three sons, a daughter, his father, a sister, a brother and six nephews.



WILLIAM "BILL" A. ELSER PE '48 of Calgary, Alberta, died Nov. 30 at age 79 after a long battle with Alzheimer's disease.

Elser was born in Texas and raised in New Mexico and Colorado. While attending college, he served two years in the U.S. Navy and saw active duty in the South Pacific during World War II. After graduating, Elser worked for Standard Oil. He moved to Canada in 1950 and had various petroleum jobs. In 1982 he became executive vice president and chief operating office of ATCOR Resources Ltd., where he remained until retirement in 1992. Elser also served as president of the Independent Petroleum Association of Canada, a director of the Petroleum Recovery Institute and the Petroleum Communication Foundation and was a member of the U.S. Society of Petroleum Engineers, the Canadian Society of Petroleum Engineers and the Association of Professional Engineers, Geologists and Geophysicists of Alberta. Elser married Elizabeth Krysa in 1953 and together they raised six sons. He enjoyed woodworking, camping and sports, particularly golf. He was a member of the Canyon Meadows Golf and Country Club. He was active in Cubs



and Scouts and coached Little League baseball. He also raised and trained Irish Setters for show and obedience trials and was once an obedience judge for the Canadian Kennel Club. Elser is survived by his sons, 17 grandchildren, a brother and three sisters.

Major RICHARD C. GERHARDT MET E '59,



USAF (Ret.), 76, a resident of Albuquerque for over 30 years, died Dec. 30, surrounded by his family. Before graduation from Mines, Gerhardt

graduated from Aviation Cadets as a pilot in 1952. In 1962, he earned a master's degree in metallurgy from Denver University. Gerhardt's career included working at the weapons lab at Kirtland Air Force Base, N.M., doing research on early atomic testing. He was a math instructor at the Air Force Academy for three years, then was stationed in Arlington, Va., at the Defense Intelligence Agency. Gerhardt later returned to Albuquerque where he retired in 1976. He then began a second career as an engineer for Boeing both in Seattle and Wichita, Kan. Gerhardt is survived by his wife of 53 years, Shirley, and son Douglas. He was preceded in death by his son Richard J.

GUY GRIMES EM '32 died in Tucson, Ariz., Nov. 20 at age 98. He was born in a two-room log cabin with a sod roof in Webster, Kan. His family moved by wagon to Matheson, Colo., in 1911 where his father homesteaded, farmed and later became a merchant and auctioneer. Grimes finished

tenth grade in a one-room schoolhouse and moved to Denver at age 16 to further his education. He graduated from Parks Business School and worked as a bookkeeper. A fellow worker suggested that he attend Mines to further his education. After taking math and chemistry in night school, Grimes worked his way through by washing dishes, night clerking in hotels and surveying for the City of Golden. He also played in the Mines band. After graduation, Grimes found work for the Colorado State Highway Department. In 1938 he started what became a small chain of variety stores and dress shops in Denver, Arvada, and Lakewood. In 1956 he closed those and went back to the highway department as a designer. He retired in 1972 as chief of the right-of-way department. Grimes' wife of 72 years, Charlotte, predeceased him. He is survived by three children, Nancy, Roger and Gerald Met E '58.



RICHARD H. SCHAEFER GEOL E '54 of Willoughby, Ohio, died Dec. 12. He was 77. Schaefer was born in Cleveland, Ohio, and graduated from high school there. He served in the U.S. Army and attended Mines on the GI Bill. He was a member of Tau Beta Pi Honor Society. Schaefer was a geographical engineer for Gates Engineering Co. in Denver before his retirement. He is survived by a sister, a brother and many nieces and nephews.

SAMUEL Y. STENNIS MET E '38 of Amarillo, Texas, died Dec. 7. He was 88. Following his graduation from Mines, Stennis joined ASARCO zinc smelter as a chemist and later was plant manager from 1968 until it closed in 1975. He then became an assistant to the ASARCO copper refinery manager until he retired in 1982. Stennis served as an officer or director in many organizations including the Amarillo Board of City Development, the Amarillo Chamber of Commerce, the Rotary Club and the Amarillo Growth Association. He was active in Kids Inc., Boy Scouts, Girl Scouts, West Texas Chamber of Commerce, Salvation Army Advisory Board, Texas Association of Business and the American Institute of Mining and Metallurgical Engineering. As a leader of the Amarillo job matching fair for six years, Stennis helped place more than 1,500 unemployed or underemployed workers. He also helped raise about \$55,000 in cash and equipment to develop a machinist training program at Texas State Technical Institute. In 1981, he was named the Texas Volunteer Industrial Developer of the Year. Stennis is survived by his wife of 63 years, Elsie, a daughter, two sons, eight grandchildren, two great-grandchildren and a sister.

ROGER E. VONFELDT BSC ENG '05, of Arvada, Colo., died Aug. 4 after an automobile crash. He was to marry Lindsey Staggs Aug. 6. Vonfeldt graduated from Fort Lupton, Colo., High School in 1999. He was a member of the Future Business Leaders of America, was a wrestler and played football. He was employed as an electrical engineer with Shaw Stone and Webster. Vonfeldt is survived by his fiancée, his parents, two step-parents, six brothers and two sisters.

Also in Memoriam

ALVES BADINI PE '58

JUNE 2005

JAMES H. BARNETT MET E '50,
MSC MET '51

DEC. 4, 2005

RICHARD E. GERTSCH BSC MIN '80,
MSC MIN '93

2005

JOHN W. GETTMAN MET E '47

MAY 22, 2005

PROF. GEORGE W. JOHNSON

FEB. 12, 2006

OK J. KIM MSC GEOL E '52

2003

J.B. LONG BSC PET '71

MAY 2005

CHARLES C. LYFORD EM '54

JUNE 1, 2005

ROBERT H. SHANLEY EM '42

SEPT. 24, 2005

JOHN P. STORRS JR. BSC MIN '81

SEPT. 30, 2005

CHARLES M. TARR PE '38

SEPT. 26, 2005

ROBERT C. YOUNG BSC GEOL '79

JULY 4, 2005



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West

Seattle, Wash.

Several Miners, all Kappa Sigs, went to Lake Tahoe for a ski outing organized by Seattle Coordinator **Mitch Kruse '85**.



Seattle, Wash.

Gulf Coast

Bone Valley, Fla.

The annual alumni picnic, hosted by **Judge Holmes '60** was once again a big success!



Bone Valley, Fla.

Houston, Texas

The annual Houston alumni golf tournament raised more than \$29,000 for scholarships this year. The event was organized by **George Puls '75, Kim Harden '74** and **Dean Stoughton '75, '78**.



Houston: **Rod McNeill, George Puls '75, Sharon Trefny, John Trefny**

E-Days 'Round the World

Miners around the world got together to celebrate E-days memories on April 13. It was the first of what will become an annual event. Nearly 50 sections arranged get-togethers ranging from two to 30 participants.

Anchorage, Alaska

Hosted by **Dan Grunwald '99**.



Houston: **Steve Chesebro '64, Ken Spalding '60, Harry Briscoe '70, Jeff Bell '64**

Atlanta, Ga.

Hosted by **Holly Bellmund '94**.



Anchorage, Alaska

Bend, Ore.

Hosted by **Jay '95, '98** and **Jamie '04 Davenport**.

Back row from left, **Jamie, Jay, Shannon Taylor '99, Natalie Dotson '98**. Front row from left, **Terri Geisler '82, Bob Brookman '68, Ted Schassberger '50, Ruth Schassberger, Robert Lenny**.

Boise, Idaho

Hosted by **Jim Classen '57**.



Atlanta, Ga.

Boulder, Colo.

From left, **Kathy Breit, Nathaniel Putzig '86, Don Eldhart, Betty Gibbs '69, '72** and **Roger Phillips '63**.

Casper, Wyo.

Hosted by **Dave Scriven '70**.



Bend, Ore.

Colorado Springs, Colo.

Hosted by **Kenji Farinelli '74**. From bottom left and going clockwise, **Scott Eckels, Jennifer Eckels '98, Jessica Nesvold '99, Tim Nesvold, Christy Krenek, Dave Krenek '71**.



South Burlington, Vt.

Dallas, Texas

Hosted by **Cambrey Salazar '02**.



Boulder, Colo.

Denver, Colo.

Hosted by **Jim Larsen '65** and **Jim White '64**.



Casper, Wyo.

Glenwood Springs, Colo.

Hosted by **Steve Beckley '85** (left) and **Glenn Vawter '60**.

Golden, Colo.

Hosted by **Bob Pearson '59**.



Colorado Springs, Colo.

Midland, Texas

Hosted by **John Gould '80**, who says, "I would like to issue a challenge to the other sections to come up with two alums with a greater difference in graduation years than 66 years!"

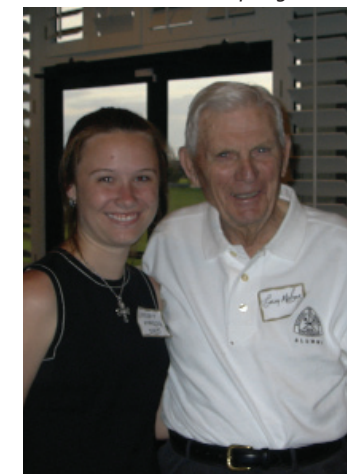
Group photo includes **Gould, Dave Percy '66, Van Howbert '51, Phil Philpy '49, Tim Lien '80, Larry Melzer '39, Deborah Melzer, Michael Pierce '90, Mark Linroth '82, Lindsay Maddox '05, Richard Dunham '74, Michael Banschbach '80, Gayle Banschbach, Jim Brayton '92, Shelly Worrell '83, Billy Harris '78, Tom Jonas '75, James Reeves '76**.



Dallas, Texas

San Diego, Calif.

Hosted by **Sam Przywitowski '94** and **Charley Crew '70**.



Midland, Texas

Singapore

Hosted by **Kim Lewis '92, '03**.



Denver, Colo.

South Burlington, Vt.

Hosted by **Carole Graas '89**.

Spokane, Wash.

Hosted by **Steve Harvey '63**.

Staying connected



Tokyo, Japan

Hosted by **Martin Castillo '99, '04.**

Washington, D.C.

Hosted by **Tom Deputy.**

Other E-days events were held in *Boston, Mass.*, hosted by **Hall Swaim '61**, *Calgary, Alberta*, hosted by **Harvey Klingensmith '75**, *Chicago, Ill.*, hosted by **Terry Cirbo '92**, *Corpus Christi, Texas*, hosted by **Liz Loveland '91**, *Fort Collins, Colo.*, hosted by **Anita Pariseau**, *Grand Junction, Colo.*, hosted by **John Howe '83**, *Houston, Texas*, hosted by **Duane Maue '90**, *Lafayette, La.*, hosted by **Steve Anderson '75**, *Lakeland, Fla.*, hosted by **A.L. "Judge" Holmes**, *Los Angeles, Calif.*, hosted by **Warren Hildebrandt '59**, *Mobile, Ala.*, hosted by **Gerry Keen '59**, *New Orleans, La.*, hosted by **Miles Barrett '78**, *New York, N.Y.*, hosted by **Stefan Magnusson '82, '85** and **Ellen Morris '83**, *Oklahoma City, Okla.*, hosted by **Joe Thompson '59**, *Omaha, Neb.*, hosted by **Frank Uhlarik '84**, *Philadelphia, Pa.*, hosted by **Greg Kazel '87**, *Portland, Ore.*, hosted by **Matthew Chase '01**, *Puget Sound, Wash.*, hosted by **Mitch Kruse '85**, *Reno, Nev.*, hosted by **Bill Bartlett '51**, *San Antonio, Texas*, hosted by **Robin Simmons '03**, *San Francisco, Calif.*, hosted by **Joni Stickney '77**, *Tucson, Ariz.*, hosted by **Gary Womack '91** and *Tulsa, Okla.*, hosted by **Ray Priestley '79.**

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 Michael R. May '90
 James E. Pittinger '72
 Yassir Sindi '88
 John Tanigawa '91
 Graham P. Vlcek '04
 Michael J. Young '89



Tokyo, Japan



Golden, Colo.



Boise, Idaho



San Diego, Calif.



Washington, D.C.



Singapore



Spokane, Wash.



Glenwood Springs, Colo.

The Mystery of the Stetson

By **Maureen Keller**

When **Chris Sheeran BSc Geol '75** was ready to graduate from Mines, he decided to commemorate the event with a senior Stetson signed by his classmates. "I conceived the idea for a 'class ring' of signatures instead of a traditional gold ring after a really old signed hat I saw at CSM during my time there," Sheeran recalls. "To me, the signatures and the memories they would bring meant much more to me than a gold class ring."

Alas, Sheeran left the country in 1986 leaving the hat behind in a museum display and when he returned, the Stetson was gone. "I was working at the U.S. Bureau of Mines Spokane Research Center [USBM-SRC] then and left for a couple of years to go to Central America. At that time, my hat was in the mining display case at the USBM-SRC on Montgomery Street where I had worked for five years as a mining engineer. I left the hat under the supervision of another Mines grad named **Ros Hill Geol E '67**. On my return from Guatemala, I was disappointed to find that the hat had disappeared from the display case and none of my friends there could tell me where it had gone. I guess 'disappointed' is too mild of a word for what I felt."

Ten years passed and in 1996, Mr. Milo Rude of Medical Lake, Wash., sent the Stetson to the Alumni Association with this note: "I found this hat some years ago in a trash can and was always meaning to try to find the owner. I hope you may be able to accomplish this for me."

The Stetson was displayed at the Association for the next nine years and then in the summer 2003 issue of *Mines*, a photo of the hat was published with a request for information about it. Sheeran was out of the country, didn't receive the issue and didn't see the photo. But his sister did.

Finally in December, the Alumni Association received a note from Sheeran: "I am down in Miami visiting my folks over the Christmas holiday. Also here is my sister, Pat, who married one of my good friends from my class at Mines, **Paul Daggett BSc Min '75**.

Yesterday, Pat mentioned to me that a picture of a curious senior Stetson had appeared in a recent alumni magazine. From her description of the signatures on it, I realized that it was my long-lost 'class ring' Stetson."

Sheeran went on to describe the hat and mentioned his friends who had signed it. "I was part of a group called the 'Randall Gang.' A picture of this group at the clay pits appears in the 1975 yearbook and I am the one with the banjo with a CSM logo on the head."

Today, the Stetson is back home with Sheeran in Waxhaw, N.C., where he is international e-mail administrator for Wycliffe Bible Translators. Sheeran also still plays his banjo with its CSM logo. Last year he and his traditional/old-time/bluegrass/gospel music group, Huckleberry Jam, made a CD that includes a photo of the banjo.

Sheeran says he would love to hear from old classmates. He can be reached at chris.sheeran@sil.org.



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Timothy Van Schmidt

The Mines team won second place in the Regional Steel Bridge Competition held in Rapid City, S.D. in April. They advance to nationals this month. Front row from left, Emily Dunham, Andrea Struble, Ryan Hollinshead, Chia An "Abe" Chen. Back row, Chad Crabtree, Jess Pedersen, Katilin Schmidt. At Regionals, the team took 20 minutes, 1 second to erect the bridge, which held 2,500 lbs. The bridge weighed 349 lbs. with a deflection from the loading of 0.71 inches.