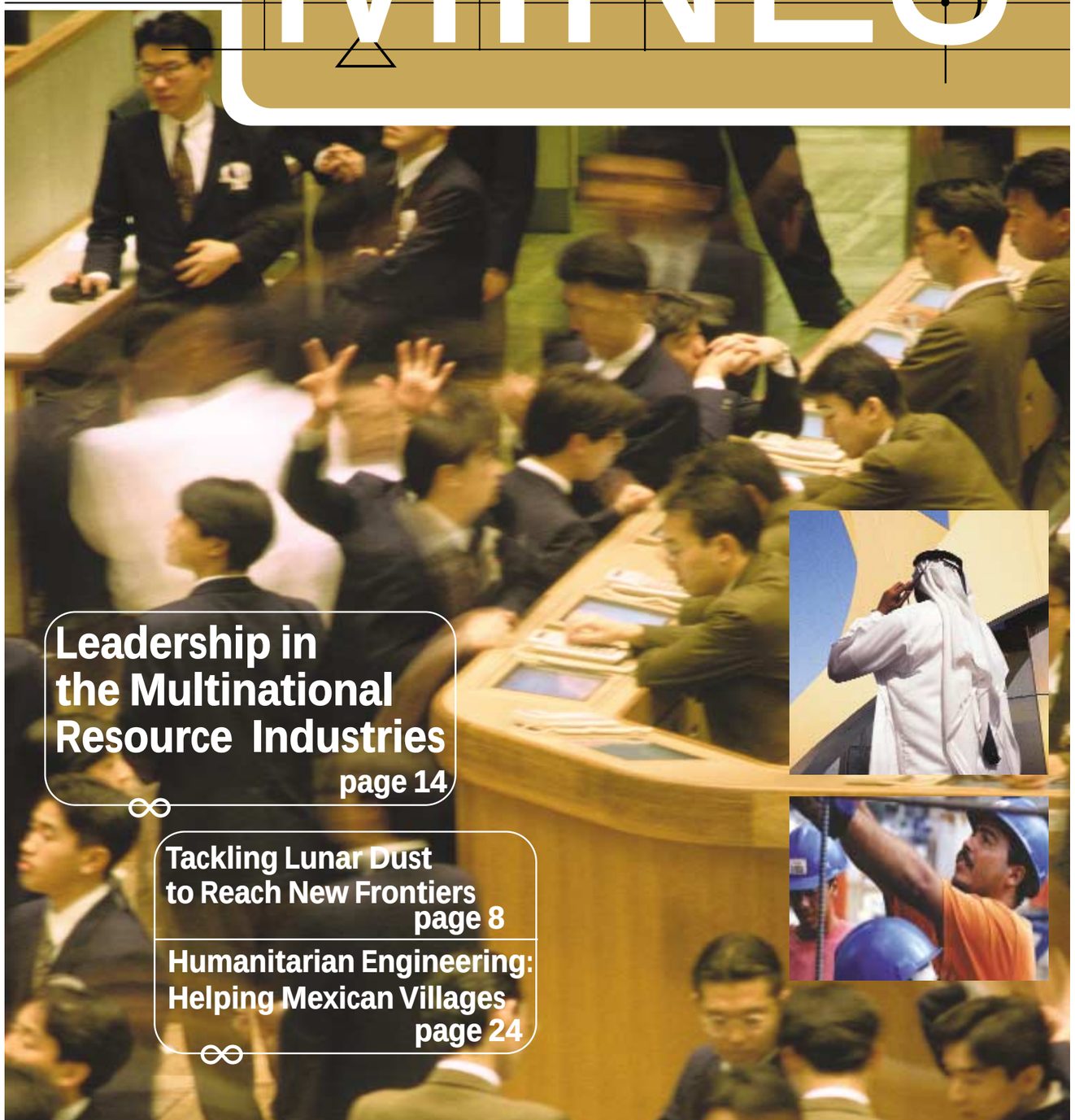
The Magazine of Colorado School of Mines

MINES

Volume 95 Number 3
Summer 2005



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MINES
SUMMER 2005

Mines is published quarterly by the Colorado School of Mines and the CSM Alumni Association for alumni and friends of the School. The magazine is a merger of *Mines Magazine* (founded in 1910) and *Mines Today* (founded in 1986). The merger took place in 2000.

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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Printing
American Web
CPM Number # 40065056

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Letters to the Editor

Kudos to Mines Little Theater

My husband, **Dick Collins '61, '74**, is a proud graduate of Mines and upon being advised that opening night of *Guys and Dolls* was on tap for alumni, we drove down from Georgetown to check it out. I was surprised to learn there even was a drama or musical department at Mines. We were pleased and delighted with the *wonderful* job done by everyone involved. The orchestra held its own and the set was most inventive. The actors were very, very good. The accents were accurately rendered; the action and dancing were played exceptionally well and each of the characters personified his or her role accurately and with real enthusiasm.

Please convey our congratulations to one and all. We hope we'll be seeing more of these multi-talented folks!

Susy Collins

Hugh Evans' Chevy

Thanks much for the excellent and well deserved article on Hugh Evans in the spring 2005 issue. The caption under Hugh's Chevy took about five years off the age of the car. Perhaps you can arrange for a similar reduction in the ages of Hugh's classmates.

Karl W. Mote Met E '49

Peak Oil and Global Warming

I find Dr. Nummedal's proposed research on capturing anthropogenic CO_2 for use in extracting more petroleum interesting and worthwhile. I wish him well on the project.

I am, however, disturbed by the apparent method of marketing the idea. The article contains this sentence: "Finally, the direct linkage between increases in global temperature and industrial production of CO_2 has now been demonstrated beyond any reasonable scientific doubt." This statement is untrue. Also, as apparent justification, you show a graph of temperature change over time, but that's all it shows. It does not show any correlation with CO_2 concentration. There has been some short-term apparent correlation of CO_2 concentration with temperature in the last half of the previous century. But, such short-term correlation does not prove cause and effect.

In fact, the geologic record shows there is no correlation between surface temperature and CO_2 concentration. For instance, in considering the glacial-interglacial transitions of the last half million years, we see that increases or decreases of CO_2 did not precede temperature changes, but followed them. Also there were long periods of time when CO_2 remained stable but temperatures dropped, as well as times when CO_2 concentrations dropped but temperature remained stable or even rose.

Jonathan DuHamel, Geol E '66, MSc Geol '68

It seems to me that if Dr. Nummedal wants to say something sweeping like "the direct linkage between increases in global temperature and industrial production of CO_2 has now been demonstrated beyond any reasonable scientific doubt," he needs to use something more meaningful than Figure 1 as proof. All I see is a warming trend that begins somewhere before the graph starts until about 1100, then a cooling trend that lasts from 1100 until 1600, then a warming trend from 1600 until now. I doubt if industrial CO_2 production even entered the picture in a meaningful way until 1900. Is there some evidence that industrial CO_2 production has contributed significantly to our current warming trend, or is it completely anecdotal?

Doug Brandon BSc Geol '79

Much of what this article purports to inform the reader about is pure conjecture. There is no proof whatsoever that anthropogenic carbon dioxide is the cause of global warming. It is not hard to find valid scientific evidence supporting this conclusion by the merest investigation.

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About Our Cover:
Representing the increasingly multinational and global scope of the professional practice of engineering, the Tokyo stock exchange, United Arab Emirates and Latin America are featured on the cover. To help train future leaders, Mines has proposed a new master's degree, described on page 14.

Mines President Announces Retirement

28 Years at Mines

"Sharon and I have been privileged to serve this great institution,"said President John U. Trefny.

President John U. Trefny has notified the Colorado School of Mines Board of Trustees that he will retire July 31, 2006. Board President Michael S. Nyikos said, "President Trefny has led Colorado School of Mines with great vision, and he has applied his extraordinary leadership skills to making that vision become reality. He has led with integrity and a clear commitment to excellence in all that Mines represents — now and in the future. I personally admire President Trefny as a colleague, friend and outstanding chief executive. The Board is proud of his impressive list of accomplishments."

Trefny has been president for five years, including one year as both interim president and vice president for academic affairs and dean of faculty. He has served the School continuously for 28 years—longer than any president in the School's history—beginning as an assistant professor of physics.

"I am not retiring immediately," said Trefny. "There is still much to be accomplished as I work with the Board to set forth goals and objectives for my final year in office. My wife, Sharon, and I will do everything possible to achieve a successful transition and the continuation of important, ongoing initiatives at this School, which will always be our professional home."

Deeply committed to the students Mines serves, Trefny often speaks of providing "an education that works." From K-12 to undergraduate, graduate and professional outreach programs, "it's all about teaching—working with students," Trefny told a reporter recently. He has won several teaching excellence awards, including the James R. Wailes Award by the Colorado Alliance for Science in 1997 and the Excellence in Science Teaching Award in 1992 from the Colorado Association of Science Teachers.

Throughout his presidency Trefny has also emphasized the important role research plays in the advancement of humankind and in the cultivation of a dynamic and rigorous intellectual learning community.

Mrs. Trefny has fulfilled her many duties with skill and grace, taking a special interest in Mines' humanitarian engineering efforts by serving on the boards of Engineers Without Borders, the Namlo Foundation and the International Center for Appropriate and Sustainable Technology. She has also served the Golden community through board memberships with the Jefferson Symphony Orchestra and the Foothills Art Center.

"Under President Trefny's watch, Mines has made great strides in education, research and public service, and has gained considerable prestige around the world," said CSM Alumni Association President Alan Mencin '79.

Trefny came to Mines in 1977 after holding faculty positions at Cornell and Wesleyan universities. Beginning as an assistant professor in the Department of Physics, he was promoted to associate professor and later professor. He became head of the department in 1990, and served in that capacity until 1995 when he became vice president for academic affairs and dean of faculty. Trefny was named the School's 15th president August 1, 2001, after serving as interim president the preceding year.

A respected scholar, Trefny has authored technical publications on such topics as quantum mechanics, the thermal properties of organic materials, superconductivity, acoustics and direct energy conversion. Active in community service, he has served on numerous boards and councils, including Sigma Xi, the scientific research society, the National Renewable Energy Laboratory, Red Rocks Community College, the Midwest Research Institute, the Colorado Oil and Gas Association, the Rocky Mountain Regional Center of the Institute of International Education, the Jefferson Symphony Orchestra and the Lutheran Medical Center Community Foundation. He holds a B.S. in physics from Fordham University and a Ph.D. in physics from Rutgers University.

Mines Achievements During Trefny Presidency

- Development and adoption of a Strategic Plan and a Campus Facilities Master Plan
- Growth in the student body, research and Mines' public service activities
- The hiring of exceptional new faculty, administrators and staff
- Construction of major new facilities, both completed and in planning stages
- Strengthening of relationships with the School's Alumni Association, the city of Golden, NREL and other partners
- A restructuring of the School's athletic programs, contributing to unprecedented achievements for Mines athletes
- Extension of the School's global influence through the success of The Petroleum Institute in Abu Dhabi and other international initiatives
- Significant support for the School's efforts to recruit and retain women and minorities
- A new relationship with the state of Colorado, beginning with the designation of Mines as the state's first "exemplary institution" of public higher education and continuing with the granting of "enterprise" status later this year
- The undertaking of the School's largest ever fundraising campaign, expected to be successfully completed soon.

Letters to the Editor

Peak Oil and Global Warming

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The same is true as to the amount of recoverable hydrocarbons left to be found in the world. Ever since 1870, naysayers have been predicting the demise of the petroleum production business. Long before there's any scarcity of naturally occurring oil and gas in the world, new technologies will lead to the forced decline of oil and gas production on account of price competition, engendered by the capitalistic system.

John F. Austin PRE '55

Parts of your recent Peak Oil and Global Warming article were good, but I object to the statement "...direct linkage between increases in global temperature and industrial production of CO_2 has now been demonstrated beyond any reasonable scientific doubt." I have tried to keep current as to climate change and spend considerable time reviewing technical information as it becomes available. I still have considerable doubt that man has materially altered climate changes. The climate in short term may be slightly warmer. There has been a measured increase in CO_2 in our atmosphere. I do not know if more CO_2 is good or bad, as we know it has been significantly higher in the past. There is no smoking gun connecting the burning of carbon and possible overall warming with certainty.

As to the CO_2 injection into certain reservoirs to enhance recovery of liquids, it works great in some types of oil. We use CO_2 from local areas of "cooked" carbonates as our source. I cannot imagine the energy costs involved in CO_2 extraction from flue gas or other sources. Most of our energy comes from fossil fuels, so using that source is currently not going to be a net viable methodology. I would have preferred that your article contain a few "we believe" or "possibly" thrown in instead of such a definitive position on a current theory to explain possible global warming on a long-term scale.

Jim Classen Geol E '57

I found the article on peak oil and global warming interesting. It reminded me of another use of CO_2 from industrial operations: the recovery and sale of food-grade CO_2 from refinery flue gas streams. This CO_2 ends up in carbonated beverages. Unfortunately it is a temporary storage of CO_2 with most of it eventually returning to the biosphere. Same result may be true for using CO_2 in EOR or IOR since mixing liquid CO_2 and oil will result in CO_2 release as the oil is processed.

I am surprised by the narrow view of the oil and global warming espoused by CERI. They make no mention of reducing the use of fossil fuels by means of alternative forms of electrical generation that do not depend on burning carbonaceous materials, forms such as wind, solar and nuclear. The latter is used in France for over 70 percent of the electrical energy. The U.S. makes almost 20 percent of its electrical energy from nuclear power. Doubling that amount in the U.S. would significantly lower the release of CO_2. Even China recognizes this fact as they are embarking on a major program of development of nuclear power plants.

Using CO2 for EOR may be a good idea from an economic viewpoint for old oil fields, but I remain unconvinced that it will provide significant help in reducing CO2 levels worldwide. Alternative energy, especially nuclear energy, clearly will.

Willard C. Gekler PRE '54

Dag Nummedal responds:

The IPCC (Intergovernmental Panel on Climate Change) report from 2001 documents very well how the CO2 concentration explains the long-term global warming trend since the industrial revolution. Also, a series of other papers over the past 10 years have presented CO2 data from ice cores, which document a close correlation with the temperature curves that I used as illustration in Figure 1, which was compiled by Richard A. Kerr, news correspondent for Science Magazine, *based on a series of independently derived global temperature histories. The most recent study on atmospheric CO2 variations over the past 1000 years is based on pore-space density in needles of hemlock trees from the U.S. Pacific Northwest. The data demonstrate a close correlation to the global temperature histories and demonstrate that the major temperature changes lag the changes in CO2 by several decades.*

The IPCC report also documents how variations in solar luminosity and volcanic aerosols explain the high-frequency (decadal time scale) changes in global temperature and how these signals cause such transient cooling episodes as the one we experienced from about 1950 to 1970.

On the longest time scale of interest – the last several glacial periods – the data from the Vostok ice core demonstrate that present-day atmospheric CO2 concentrations are about 30 percent higher than those during any of the previous four interglacials. During these 450,000 years, the atmospheric CO2 concentrations have ranged from about 280 – 290 ppm during the interglacials to about 200 ppm during the glacials (including the last ice age). During the past 1000 years, the concentration of atmospheric CO2 averaged about 280 ppm and then began a rapid rise to the present level of about 370 ppm about 200 years ago. This rapid rise of atmospheric CO2 coincides with the period of global industrialization.

The many factors affecting the global system make it impossible to say with absolute certainty what the relative impact has been of natural vs. man-made factors in the climate history of our planet, but the data do show rapid global warming over the past 200 years. The physics behind the greenhouse effect is well understood. The geological record of CO2 concentrations is consistent with published historical temperature trends. Therefore, I conclude that taking corrective action now to reduce global warming is the prudent way to manage the risk of major and costly dislocations of natural resource-based industries across the globe.

As a final note, in mid-June 2005, the National Academies of Science of all eight nations in the G8, plus many others, submitted a joint note in preparation for the upcoming G8 summit in Britain, in which they declared that the science behind global warming is unassailable.

Tackling Lunar Dust to Reach New Frontiers

By Nicholas Sutcliffe

Dust, a mundane irritation to many of our terrestrial activities, represents one of the most significant challenges to NASA as it seeks to send manned missions back to the moon and later to Mars. In their bid to overcome these problems, NASA has awarded a $14.6 million contract to a research team headed by CSM Mining Engineering Professor Masami Nakagawa.

The team is charged with developing design guidelines and recommendations to mitigate a wide range of dust-related problems that a manned mission to the moon will encounter. The group includes NASA, a research partnership named Institute for Space Resources, several commercial partners, and faculty and students from Mines and other universities.

There is a great deal of dust on the moon. In fact, the entire surface is blanketed with the stuff. Referred to as "regolith," this material is the result of billions of years of bombardment from micrometeorites, cosmic rays and particles of solar wind which have broken down surface rocks. While this powdery substance allowed Neil Armstrong's historic "one small step" to be so vividly captured on film, it was in every other regard a major problem for the six Apollo missions that landed.

Lunar dust bears little resemblance to the substance we wipe from our TV screens and dashboards: it's finer and a great deal more abrasive. Erosion from wind, water and other dynamic forces on Earth smooth the edges of our finest particles—not so on the moon. Philip Metzger, a physicist at NASA Kennedy Space Center says, "[Lunar dust is] almost like fragments of glass or coral—odd shapes that are very sharp and interlocking." In addition, they tend to be elongated with jagged arms protruding that adhere, Velcro-like, to all but the smoothest surfaces.

After only short moon walks, Apollo 17 astronauts found dust particles had jammed the joints of their spacesuits and, in some cases, dust penetrated spacesuit seals and caused several to leak. "Maintaining effective seals is obviously crucial to survival on the moon," Nakagawa points out, "but it's extremely hard in the presence of so much dust. During the Apollo program, we transported many canisters of lunar soil and rock back to Earth in containers designed to maintain the near-perfect vacuum of the lunar environment. Every single one leaked because dust compromised those seals."

"Dust is the number one environmental problem on the moon," said Apollo 17 astronaut Harrison Schmitt, who experienced an alarming allergic reaction to lunar dust during his 1972 mission. Without adequate cleaning systems in the airlock, a lot of dust was tracked back into the lunar module where it became airborne, particularly under zero gravity on the return journey.

Thankfully, neither Schmitt nor any Apollo astronaut experienced long-term health problems linked to inhaling lunar dust, but their exposure was relatively short compared to the missions currently being planned. There is speculation that astronauts may be at risk for developing silicosis—a condition identified after hundreds of West Virginian miners died in the 1930s half a decade after they had been exposed to very fine silica dust. The minute particles became embedded in the miners' lungs and stayed there because they were too small for the body to expel. Although lunar dust particles tend to be a little larger than the silica that causes silicosis, they are more jagged and may be equally hard for the body to remove. With these concerns in mind, research on effective air filtration is going to be a major research focus for Nakagawa's group.

While the project will be focused on problems associated with moon dust, Nakagawa says that NASA's sights are set on Mars. While there are many differences between the Martian environment and the moon, they are both very dusty. Successful mitigation strategies for lunar missions are likely to work on Mars too.

Although the scope of the project is very broad, Nakagawa has clear objectives: "We have to minimize attracting dust in the first place, we need to remove dust without damaging the surface we are cleaning (brushes are out); we have to be able to make perfect seals in a dusty environment; and we need to be able to efficiently filter the air." Although Nakagawa and his team won't be providing NASA with any specific products, they will be providing detailed design specifications and recommendations.

For much of his research, Nakagawa will be working closely with Dr. Gary Olhoeft in the Department of Geophysics, whose lab includes a unique vacuum chamber left over from the Apollo era. The drum-shaped chamber, six feet in diameter and seven feet long, was designed to simulate conditions on the lunar surface. It has a temperature range of -150 degrees to 100 degrees Celsius, and can achieve a vacuum even greater than on the surface of the moon.

Although Nakagawa is the lead investigator for the four-year project, many parties will be participating from across the country, including three NASA centers, five universities and nine industrial partners. Involvement from the CSM campus will include the Mining Engineering Department, the Geophysics Department and the NASA-funded Institute for Space Resources.

Awarding a contract like this is unusual for the space agency. "It is a new paradigm for them. NASA has never funded a large university-led project like this. In the past, they have coordinated almost all of their own research, awarding smaller grants to universities for much more specific projects. We have been awarded considerable resources to study a very open-ended problem," says Nakagawa.

Finding solutions soon is going to be important—NASA is planning an extended manned mission to the moon for 2020. By making significant progress in dust mitigation over the next four years, Nakagawa and his team will provide valuable information for this historic return to the moon. And by helping to make possible this relatively small step back to the moon, he and his team may well make critical contributions toward the very much larger leap out to Mars.

Nick Sutcliffe is a freelance writer in Colorado.

Design Team Wins $18,000 Award

A team of engineering students from Mines and Universidad Tecnologica Centroamericana in Honduras received an $18,000 prize at the DaimlerChrysler and UNESCO Mondialogo Engineering Award presentation in Berlin, Germany, May 30. Competing against 110 international teams, the students' design for a water and sanitation system in Colinas de Suiza, Honduras, earned them one of 21 cash awards. The Mondialogo Engineering Award will be used by the team to help fund the comprehensive solar-powered water pumping and sanitation system, a project estimated to cost $1.3 million. The team hopes that this prestigious award will assist them in securing additional funding from other sources.

Mines engineering student Maricela Johnson works with townspeople in Colinas de Suiza.

Attending the Mondialogo Engineering Award presentation were David R. Muñoz, interim director of the Engineering Division; Emily Allen, student team leader of the Honduras Project; Lic. and Rafael Delgado, Jefe de Proyectos at Universidad Tecnologico Centroamericana, San Pedro Sula, Honduras.

Mines students, led by civil engineering major Emily Allen, made an investigative trip to Honduras in October 2004. They plan to return in August with their faculty adviser David Muñoz to present their design and develop a project implementation schedule. For more information on the award-winning design project, go to <*www2.mondialogo.org/mea/winners/?&L=en*>.

Board of Trustees President Michael S. Nyikos (left) met with U.S. Senator Wayne Allard prior to a town meeting held on the Mines campus in April. Participants at the public meeting discussed federal issues in Congress and Colorado.

Professors of Eminence

At the faculty convocation marking the end of the 2004-2005 academic year, Executive Vice President for Academic Affairs Nigel Middleton announced the recipients of distinguished faculty awards:

- **Paul Santi '95**, Geology and Geological Engineering Department, received the Alfred E. Jenni Faculty Fellowship for teaching effectiveness and educational scholarship.
- **Sam Romberger**, Geology and Geological Engineering Department, and **Todd Ruskell**, Physics Department, received Alumni Teaching Awards for superior teaching at the undergraduate level.
- **John Speer**, Metallurgical and Materials Engineering Department, received the Dean's Excellence Award for significant and meritorious achievement in teaching and scholarship.

30 Years of Blood Drives

Bonfils Blood Center has presented Mines with a "30 Years of Saving Lives" award for hosting blood drives to support the community blood supply. Members of Pershing Rifles currently coordinate eight drives per year for a total of more than 350 blood donations.

Supplying blood to more than 115 healthcare facilities, Bonfils Blood Center needs to collect 4,350 blood donations weekly to meet the needs of the community and to be prepared for unexpected events.

From left, Vice President of Student Life Harold Cheuvront and student member of Pershing Rifles Brian Curkendall receive an award from Bonfils Blood Center representative Jay Connors.

Marr Named Humboldt Scholar

David Marr, Chemical Engineering Department, has been named a Humboldt Scholar for the summers of 2005, 2006 and 2007. The Alexander von Humboldt Foundation grants up to 100 Humboldt Research Awards annually to scientists and scholars with internationally recognized academic qualifications.

Marr is recognized for his academic achievements in the category of Engineering: Mechanics, Thermodynamics, Optics. He has been invited to carry out research projects of his choice in Germany in cooperation with colleagues for three summers.

Mining Medalists

First in surveying, second in gold panning and third in jacklegging, Mines students at the 27th Annual International Intercollegiate Mining Competition in Reno, Nev., performed well in seven timed events based on old-time mining techniques. Other events at the competition sponsored by the University of Nevada were mucking, Swede saw, hand steeling and track stand. Competing in the men's division, the Mines team included two women.

From left, Graden Colby, Robert Wagner, Erik Jones, Brandi Dahl, Kelly Michals and Tim Smith won three mining medals in April.

SHORT STAKES

Elementary Science

Students at Centennial Elementary School in Colorado Springs conducted science experiments led by students from Mines. They did electrical experiments, from homemade motors to wiring a house, a reaction time experiment, a lung demonstration and weather-related experiments. Other projects involved a hydroelectric dam, robots and a "Pin-the-Organ-on-Bob" display.

The educational project was developed by a team of five Mines students for their Engineering Division senior capstone design course, with funding from the Hewlett Foundation for K-12 studies. The team noted: "Our ultimate goal was to give the students hands-on experience with science, sparking an interest that will stay with them for the rest of their lives."

The Centennial Elementary School project tied for first place at the Senior Design II Trade Fair.

Senior design students developed fun science activities for fourth graders.

Commencement Comments

Charles M. Vest, who served as president of Massachusetts Institute of Technology from 1990 through 2004, spoke at commencement ceremonies held May 13.

"Take your education, your talent, and your energy, and build a nation and a world community that consider knowledge a gift to be shared, a healthy planet a place to be cherished, and human dignity and opportunity fundamental conditions to be enjoyed by all people," Vest told the graduates.

Of the 531 degrees confirmed, 397 were bachelor of science degrees, 105 master's degree and 29 doctorate degrees.

Honorary degrees were awarded to Vest and to George Tchobanoglous, professor emeritus of the University of California, Davis. Distinguished Achievement Medals were presented to **Joe W. Gray Phy E '68**, **Marcus Randolph BSc Min '77** and **Sandra Stash BSc Pet '81**. A Mines Medal went to Mohamed Zainal.

Student speakers, Paula Schmitz (left) and Michelle Moorman

George Tchobanoglous

Joe Gray

Marcus Randolph (right)

Sandra Stash

Charles Vest

NEAT!

With the Mikkelson Foundation's sponsorship of the New Engineering and Applied Technology (NEAT) program, Mines students are contributing to the continuing education of K-12 educators, who then utilize the teaching tools in their classrooms.

A new addition to the six-year NEAT program is the RoboLandminer Competition. After learning to construct and program robots, teachers pass on their knowledge and enthusiasm to their K-12 students. The competition, developed by Mines students in the Engineering Practices and Introductory Course Sequence (EPICS), challenges K-12 students to create mobile robots that can navigate a simulated desert to locate and remove simulated landmines.

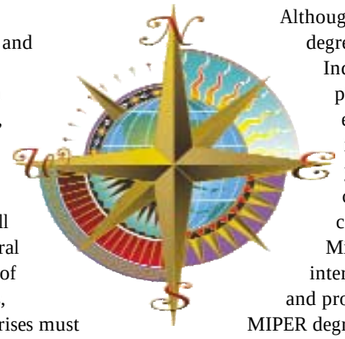
Mines students Joe Ronevich and Meagan Stephens oversee a NEAT robotics competition held during the spring Engineering Division Senior Design Fair.

SHORT STAKES

Carl Wieman (left), winner of the 2001 Nobel Prize in Physics, was on campus to lecture on "Using the Tools of Science to Teach Science." John Fenn, winner of the Nobel Prize in Chemistry 2002, also presented a lecture to Mines faculty and students.

Guests at the Max Bowen Mineral Processing Laboratory dedication were given demonstrations by students in the Mining Engineering Department. ***Max Bowen EM '24*** *was the president of the Golden Cycle Corporation and served as president of the Colorado Mining Association. He also served on the Mines Board of Trustees for 12 years and received a Mines Distinguished Achievement Award. The support of Robert Maytag made the new laboratory a reality.*

PREPARING ENGINEERS
for leadership in the multinational resource industries



The professional practice of engineering is intrinsically, and increasingly, multinational and global in scope. Technical leaders work in a world arena that includes the rapid integration of markets and a borderless financial structure, the growth and spread of knowledge assets in new economies, international trends and regional requirements in environmental protection and sustainable development, as well as areas of unrest stemming from ethnic, cultural and religious conflict. While the consequences of globalization have many technical implications, engineering executives in multinational enterprises must steer their work and decisions within the context of these differing economies and political and cultural environments. This is especially relevant in the resources, energy and environmental sectors, where the overlay of people and their politics, local economics, development and the geography of nations are not necessarily aligned to the world's distribution of natural resources.

Mines, with its unique mission in energy, mineral and material science and engineering, and associated engineering fields, has a responsibility to address the impact of globalization and the influence of varying national political economies on the practice of engineering in the multinational resource industries. To this end, the School believes that a new degree, entitled *Master of International Political Economy of Resources* (MIPER), would be appropriate, timely and attractive. This non-thesis degree would be configured to meet the needs of today's and especially tomorrow's professionals in a wide range of for-profit ventures related to engineering, applied sciences and technology that are linked to the industries served by Mines. In addition, professionals who work for non-profit entities such as U.S. governmental agencies and other nations, regional alliances and non-governmental organizations whose missions are resource-oriented can also benefit from this degree. The degree would also serve students who are simultaneously pursuing a bachelor of science in engineering or applied science and the MIPER at Mines, as well as technically qualified graduate students from the United States and abroad who seek to earn an advanced degree to further their academic and professional career goals.

Although the motivations that call for the MIPER degree are escalating, they are not entirely new. Indeed, Mines began responding to these phenomena some 15 years ago when it established an undergraduate minor program in international political economy. Then, four years ago, with rising student demand and complementary recommendations from our corporate, industry and government advisers, Mines established a graduate certificate in international political economy. This evolutionary and proven track heralds the concept of the new MIPER degree.

The MIPER degree would incorporate the traditional empirical and analytical approaches to political studies, economics, history, sociology and resource development with the addition of the critical perspectives of culture, geography and interdisciplinary environmental studies, as well as a segment of science and engineering analysis that would set it apart as a Mines degree. The goal is to provide students with a full understanding of the operational dimensions of increasingly globalized interstate-market relations that are defined and shaped by the rapid, dynamic and complex integration of trade, finances, technology, politics, societal and environmental constraints and treaty obligations, especially as these relate to the resource industries. To do so requires that students be educated in the interconnections of institutional, cultural, geographic and environmental factors, and the political risks inherent in engaging in commercial crossborder activities in the global economy.

We know of no peer programs elsewhere in the world with an international political economy of resources approach. At several other universities – such as Harvard's Kennedy School of Government, Thunderbird, Emory University, the University of Puget Sound and Johns Hopkins' School for Advanced International Studies – international political economy is offered as a concentration field within traditional departments of political science or international relations. But they do not place an emphasis on resources or specifically target the professional engineering and applied science communities. Furthermore, none of these programs add MIPER's proposed dimensions of culture and environment to the traditional state-market perspective of international political economy.

A Mines MIPER degree would be structured on the School's institution-wide 36 credit-hour curriculum model for non-thesis master's degrees. The integrative degree would build upon the existing international political economy Graduate Certificate, which has been available since 1999. The difference between the certificate and the master's degree is that the degree would include examination of the role of resources in global trade, finance, development, and the environment, with a clear orientation to engineering and quantitative decision-making. It would also include the basics of the certificate, which requires international political economy foundation courses: theories and methods relevant to international political economy, international political economy of a region (Latin America, Asia Pacific, the Middle East, Sub-Saharan Africa or Europe), economic or political geography, global environmental politics and policy, and international political risk assessment and mitigation.

The field of international political economy has a broader and better known history internationally than it does in the United States. Programs exist at various universities in the United Kingdom (e.g., Kent, Newcastle, Warwick and Hull), while courses in international political economy are offered as part of international studies or international relations at Manchester, the London School of Economics, Leeds and Wales. Programs also exist in Canada (York University and Carlton), Malaysia (National University), Australia (National University) and the International University of Japan, but, again, none focuses on resources. We wish to build on the strengths and reputation of Mines' mission-related areas and its focus on engineering and the applied sciences to develop the MIPER degree as a niche specialty.

The School's prediction of student enrollment in such a degree is guided by recent trends in the Graduate Certificate program and by an assessment of potential interest among our undergraduate students. A total of 485 undergraduate students were surveyed during spring 2002 to establish a sense of the local campus market for a MIPER-type degree. Of those who responded, more than 85 percent expressed enthusiasm for the proposed program or expressed the intention of entering it. Contacts with post-1990 Mines graduates, including international students who took courses in the undergraduate international political economy minor while at Mines, stress that the proposed program would enhance the ability of our graduates to work more successfully in the international engineering environment.

Most importantly, however, is the repeated feedback from prospective students as well as those who are in or have completed the Graduate Certificate: what really matters most to them and to future employers is the credibility carried in a master's degree. Recent nationwide surveys indicate that many high school students now enter college intending to obtain a master's degree. And among the professional engineering societies, it has long been argued, and increasingly demonstrated, that the four-year engineering degree is only marginally sufficient as an entry-qualification into the profession. Therefore, we are confident that demand for a MIPER degree would be significant and long-term among current and prospective students and advantageous among our recruiters and industry constituents.

We expect that students who complete such a degree would have enhanced capabilities beyond the necessary high quality technical education of engineers and applied scientists. Those enhanced capabilities will be contextualized in technology and the resources arena germane to the Mines' mission. Over the past three years, the Graduate Certificate program has been successful in placing its international political economy certificate holders in global resources industries. The demand for such individuals has been recognized by Mines' external Visiting Committee for the Division of Liberal Arts and International Studies and by a committee of CSM-relevant CEOs and industry leaders that was created to provide guidance and support to international political economy of resources programs.

The concept of the MIPER degree has been discussed vigorously and supportively on the Mines campus and with the Board of Trustees. Thus far, the Colorado Commission on Higher Education has been hesitant to support it because of its perceived incompatibility with Mines' statutory role and mission, and programmatic details are presently under consideration in an attempt to resolve this matter.

Nigel Middleton is executive vice president of academic affairs and dean of faculty. He would like to acknowledge the contributions of the IPER faculty in the Division of Liberal Arts and International Studies to this article, and especially recognizes the leadership of Dr. Eul Pang and Dr. Laura Pang.

Helping Sri Lankan Tsunami Victims

The effects of the Dec. 26, 2004 great tsunami were wide ranging and long lasting. In addition to burying their dead and rebuilding their homes and communities, survivors also face the serious problem of groundwater contamination. The tsunami contaminated more than 20,000 wells along the coast of Sri Lanka and many now contain water with levels of salinity too high to drink. In addition, cropland along the coastal zones remains polluted with seawater that has been slow to dissipate because of seepage, poor drainage due to blocked channels and a hard pan below the plough depth.

In an effort to address these water problems, the U.S. National Science Foundation sponsored a fact-finding mission to Sri Lanka that was headed by CSM's AMAX Distinguished Professor of Civil and Environmental Engineering, Tissa Illangasekare, a Sri Lanka native. During the trip in February to the tsunami-affected regions, Illangasekare, Charles Harvey from MIT and Jayantha Obesysekera from the South Florida Water Management District surveyed some of the affected water supply wells and assessed the damage to the infrastructures.

The residents in the coastal communities in tsunami-affected areas depend on either pipe-borne municipal utilities or dug wells for water supply for domestic use. Although Sri Lanka's National Water Supply and Drainage Board recently increased coverage of pipe-borne water supply in many areas of the coast, the primary source of domestic water is still the private wells in their own backyards. Even if residents receive water from municipal utilities, they still maintain and use dug wells for washing, bathing and other uses. The most common source for municipal water supply on the island is the surface water from rivers and streams. However, in areas where surface water is not available or scarce, deep tube wells are the primary source for municipal water utility systems.

The tsunami caused physical destruction of some infrastructure associated with a few of the municipal water supply schemes in the coastal belt. However, a bigger concern is the destruction of dug wells near the coast and the contamination of the private wells of residents who depend on them for their domestic water supply.

Most of the private wells still appear to be contaminated with salt water. Many governmental and non-governmental organizations have attempted to clean thousands of private wells by pumping salty water from the wells, often multiple times. In many cases, the complete dewatering of the well has resulted in wall collapse making the well unusable. Also, it appears that the water pumped out of the well into the adjacent lands may have simply re-percolated through the sandy soils resulting in reintroduction of salty water into the wells.

Illangasekare and his colleagues observed several wells with concrete casings that were tilted, destroying the well. This was presumably caused by the shear force of tsunami waves traveling onshore and collapsing the soil foundation. Based on their observations, it appears that salinity in private wells has been reduced significantly but is still above 1-2 ppt (parts per trillion) and is not suitable for drinking, although residents use the water for washing and bathing. It is unknown how long it will take for the wells to be cleaned by natural recharge of fresh water during the rainy season.

The density of population in the coastal belt of Sri Lanka is high with little land in between houses. Typically, each house has a dug well and a septic tank located not very far from each other. This caused concerns of cross contamination even before the tsunami. A carefully planned monitoring effort is needed to investigate this cross contamination issue, particularly in view of proposed plans for relocating coastal residents. The government has proposed a ban on building along a 100-meter buffer zone on the coast, but residents are quickly rebuilding in those areas before a new law is passed.

If the dug wells in the coastal regions continue to be unusable for some time, it may impose significant pressure on pipe-borne water supplied by surface water resources in the region. There is very little technical information about groundwater resources in the coastal area affected by the tsunami. Although a general map of the geology of these regions exists, little useful information regarding the local geology and the aquifer characteristics exist. The water level data is scarce and there is no national network for monitoring groundwater levels and quality.

Although much of the road-side debris has been cleared, much remains in areas away from the highways. This debris may contain harmful substances, which can further contaminate groundwater supplies.

Another groundwater problem caused by the tsunami was the destruction of croplands. Many of the paddy fields located in eastern and southern Sri Lanka were severely impacted by the tsunami waves. Paddy fields near the coast and vegetable groves in the adjacent highlands were destroyed by the waves moving inland. The waves also created soil erosion and deposited debris in the croplands. Prolonged inundation of crop lands with salt water has increased the soil salinity. A recent study of electrical conductivity of the affected paddy lands found 20 to 200 times higher percentages than normal, even after heavy rains. The soil salinities may remain for a prolonged period of time due to poor drainage and high evaporation.

The natural coastal vegetation also was affected. Except for the salt tolerant coconut palms, many other trees appear to be dying. However, there are indications that heavy rains that followed the tsunami appear to have helped recover some of the dying trees. In other areas, it is not clear if the trees continue to be affected by the contaminated groundwater.

The NSF-funded team was not in Sri Lanka long enough to be able to do more than a preliminary assessment. They suggested that more study is necessary to obtain an in-depth understanding of all the issues and to identify all science and engineering needs of groundwater related problems associated with the tsunami. However, the group's preliminary findings suggest that the general problems of adequate water supply in Sri Lanka are not limited to science and technology issues but are also related to other inefficiencies in planning and management and lack of research infrastructure, both in the local universities and in water agencies. Long-term solutions to Sri Lanka's water problems need to be sought.

Illangasekare and the NSF team suggest collaboration between the United States and Sri Lankan scientists is needed. Their proposed options include: sharing data and information through workshops and conferences that focus on tsunami effects on agricultural land, vegetation and water; a team of U.S. water scientists and engineers with relevant background to travel to Sri Lanka for first-hand assessment of the situation; joint preparation of research proposals to address both basic and applied scientific problems; local training courses and workshops on specific topics (e.g., modeling, integrated water management, field monitoring, groundwater exploration and well drilling, etc.); training and workshops on special science and technology topics to be held at U.S. universities and water agencies for participants from Sri Lanka and other tsunami-affected countries; faculty exchange programs jointly sponsored by the United States and local universities; student exchange programs through summer internships and undergraduate research opportunities programs; and graduate student exchange programs coordinated through funded research projects.

Illangasekare is currently collaborating with Obesysekaera and Sri Lankan NSF coordinator Ananada Gunatillaka to organize two information exchange workshops and conferences to be held this fall. In addition, 14 other groups including three universities, the International Water Management Institute and all leading water agencies in Sri Lanka will participate. Illangasekare will chair the U.S. expert panel.

Dog Day Afternoons

By Maureen Keller

Lisa Ferrerio BSc Eng '97 worked for several software companies before deciding to open her own business. As so many Mines alumni do, she knew she could make it on her own. What's different about her business, though, is that it has little to do with engineering. Ferrerio runs a dog hotel and day care, The Dog and I, in Westminster, Colo.

"I love working with dogs," says Ferrerio, who attended Mines with her service dog, Kosmo. Ferrerio was born with brittle bone disease and gets around by wheelchair. "Kosmo lived in the dorm with me. He was not only my arms and legs but he was my constant companion and best friend. I hold a very deep love for animals and I truly understand the profound effect they can have on people, not only for physical reasons, but emotionally as well."

In addition to hanging out with dogs all day, Ferrerio gets to spend more time with her family than she did when she was an engineer. Her mother, stepfather and father are all involved in the business, as well as her best friend, **Stacey Hunvald BSc Eng '98**, who is an engineer by day and a dog lover by night.

Ferrerio averages 30 to 35 dogs a day at her 5,500-square-foot facility, which caters to the pampered pooches of mostly young professionals. She offers a 10 percent discount to Mines alumni and one of the kennel rooms for overnight stays is decorated with CSM memorabilia.

Visiting dogs are grouped in large pens by size and temperament. A typical day includes playtime, naptime and lots of interaction with other dogs. "Dogs are social animals," notes Ferrerio. "They like to interact with each other." As we speak, an old golden retriever watches impassively as two young boxers wrestle with each other in a neighboring pen. Ferrerio knows the dogs enjoy their days with her because she can look through her front windows and watch them dragging their owners in from the parking lot.

It's a happy life surrounded by adoring animals and family members.

Hayes '95 Wins ASCE Award

Roxann Mackenzie Hayes BSc Eng '95, P.E., was selected by the American Society of Civil Engineers (ASCE) Committee on Younger Members as one of four recipients of the 2005 National Edmund Friedman Young Engineer Award for Professional Achievement. This year's winners will receive their awards at the ASCE Annual Conference in Los Angeles scheduled for October 27-29. Hayes is a senior civil engineer with Larimer County, Colo.

Alumni Dominate Tunnel Construction Project

The $31 million Claremont Tunnel Project in northern California will upgrade the existing water pipeline so that it will survive in the event of a large earthquake. The tunnel crosses the Hayward Fault and is a bypass tunnel for the East Bay Municipal Utility District. Shelley Burg, granddaughter of **Howard Keller EM '24**

(far left) sent in this photo of herself and Mines alumni who are working on the project including **Dennis Jones BSc Min '83**, Gabe McClain, **Ted DePooter BS Min '80**, **Joe Cooper BSc Min '82, MS Eng Min '85**, **Jeff Pargas BSc Eng '03**, **Joe Keating PE '61**, **Bob Reseigh EM '68**, and **Ken Walker EM '68**.

Lockridge Honored by AAPG

John Lockridge Geol E '52 received the Outstanding Explorer Award from the American Association of Petroleum Geologists in June at the group's annual meeting in Calgary, Alberta, Canada. The award is given in recognition of distinguished and outstanding achievement in exploration for petroleum or mineral resources, by members who have shown a consistent pattern of exploratory success, and with an intended emphasis on recent discovery.

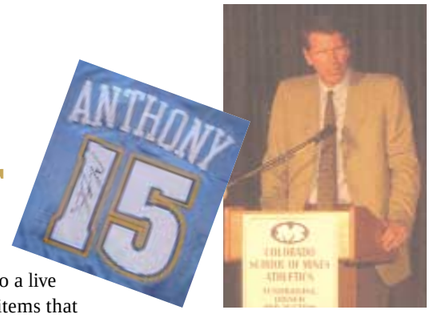
CCHE Reaches Compromise Over 120-Credit Rule

The Colorado Commission on Higher Education has agreed to exempt CSM from the 120-hour baccalaureate degree restrictions because of its unique educational mission. CSM has decreased the number of hours required for some degrees – by 12 credits in the case of geological engineering – but still requires a minimum of 135.5 credits for graduation. The CCHE had asked for a six-credit across-the-board reduction, but has reached a compromise with the School.

Sunflower Photograph Wins Honorable Mention

Jamie Davenport BSc Chem Eng '04 was one of 50 finalists chosen from 27,000 entries for a photography contest sponsored by *Smithsonian Magazine*. Davenport took the photo last summer when she and husband **Jay BSc Geol '95, MSc Geol '98** were vacationing in Spain. Her photograph of sunflowers was an honorable mention in the natural world category. (photocontest.smithsonianmag.com/natural.html)

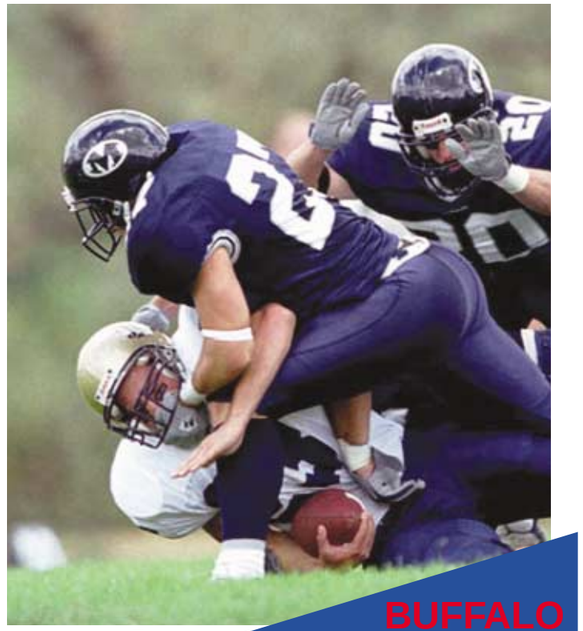
Athletics Enjoys Third Annual Spring Fundraiser



By Greg Murphy, Sports Information Officer

CSM's Department of Athletics hosted close to 300 people for the Third Annual Spring Fundraiser Dinner and Auction May 20 in the Ben Parker Student Center. The evening kicked off at 5 p.m. with a silent auction in the new Slate Cafe. Items up for bid included a signed John Elway football, signed balls from the CSM football team and men's and women's basketball teams, weekend getaways and gift baskets. Following dinner and a talk from Denver Nuggets General Manager Kiki Vandeweghe, the guests were treated to a live auction with items that included golf trips, fishing trips, a signed Carmelo Anthony jersey, Denver Bronco sideline passes, a day at Bronco Training Camp, a night with the Nuggets and the "Kiki Special," which included a trip with the Nuggets on their charter plane to any road game, meals with the team and a room in the team hotel.

Chad Friehauf and Daniel Leger



DENVER BRONCOS

BUFFALO BILLS

Ink NFL Deals

Senior football players Chad Friehauf and Daniel Leger each signed free agent deals with National Football League teams following the 2005 NFL draft.

Friehauf, the record-setting quarterback, inked a deal with the hometown Denver Broncos, while Leger, the School record holder with 446 career tackles from his strong safety position, signed with the Buffalo Bills.

Each player earned First Team All-American honors in 2004, while Friehauf was named the Rocky Mountain Athletic Conference Offensive Player of the Year and won the Harlon Hill Trophy as the top player in Division II.

2005 Athletic Hall of Famers Named

The 10th Athletics Hall of Fame Class has been announced and includes four individuals and two teams. Entering as individuals will be diver **Judy Abrahams BSc Eng '98**, football player **Tim Baer BSc Eng '91**, wrestler **Roy Dillow BSc Met '98** and soccer player **Reine Huber BSc Eng '97**. Huber's older brother, **Danny BSc Eng '96, MSc Eng & Tech Mgmt '03**, was enshrined into the CSM Athletics Hall of Fame in 2004.

Reine Huber (left) and brother Danny

In addition, the 1961 and 1964 CSM wrestling teams will be inducted into the Hall of Fame. Both squads finished as national runners-up. The 2005 Hall of Fame banquet, dinner and induction ceremony will take place Friday, Sept. 10 in the Ben Parker Student Center. The inductees will also be honored at halftime of CSM's football game against Western State at Brooks Field Sept. 11.

Abrahams, a four-year letter winner, is arguably the best female diver to compete at Mines. She won the conference championship in the 3-meter her first three years and captured the conference championship in the 1-meter as a junior. Abrahams broke her own Intermountain Swimming and Diving League record on the 1-meter (351.60 – 10 dives) and her own ISL record on the 3-meter (386.55 – 11 dives) at the conference championships her junior year. She holds the School records in the 1- and 3-meter boards.

Baer was the football team's punter from 1986-89 and earned four letters. The Outstanding CSM Freshman in 1986, Baer garnered First Team All-RMAC as a freshman and sophomore, NAIA First Team All-District honors in 1986 and 1987, KODAK First Team All-American accolades in 1986 and NAIA First Team All-American honors in 1986-87. He led all of NCAA II and NAIA Division I with 44.9-yard punting average in 1986, served as a team captain and won team MVP honors during his senior season. Baer's 89-yard punt is a School record.

Dillow wrestled at 177 pounds as sophomore and junior, 167 pounds as a senior. During that time, he posted a 52-20 mark and captured the National Championship at 167 pounds his senior season to help Mines finish seventh in the nation as a team. Dillow defeated four seeded wrestlers to earn the national title in what was his first trip to nationals. He ended senior year at 18-5 overall after going 14-7 as a sophomore and 20-8 as a junior. Dillow is one of eight CSM wrestlers to win a national title.

Huber, the Outstanding CSM athlete as a senior, played on three conference championship teams in three years. He led the RMAC in scoring (34 points) as a senior as he finished second in RMAC in both goals (13) and assists (8). Huber was named the RMAC Player of the Year in 1996 and was a First Team All Far West Region selection. He was named to the RMAC All-Academic Team in 1995 and 1996 and won the All-American Scholar Collegiate Award in 1996. He finished seventh in the Colorado Athletic Conference in scoring (23 points) as a junior and led the league with nine assists en route to Second Team All-CAC in 1995. Huber garnered First Team All-RMISL in 1994 when he tallied 27 points on nine goals and nine assists.

The 1961 and 1964 wrestling teams are being inducted after each placed second at the NAIA National Championships. The 1961 championships were contested on the campus at CSM.

The 1961 squad had five place winners, including **Don Meyers Met E '63** who was national runner-up, **Tom Tisone Met E '62** and **Glen Hasse Met E '62** who each placed third, and **Dan Fix Met E '64** and **Bill Seery Met E '61** who were each fourth.

The 1964 had four place winners and two national champions. Dave Linder and **Rich Hickman PRE '65** each won national titles, while Fix and Dewayne Schroeder were both national runners-ups.

The Importance of Writing

By Joanne Greenberg

People are surprised when I tell them that I teach fiction writing at Mines. Some will remember that Michael Crichton and Peter Matheson were science majors in school, but they also tend to assume that the fiction the students produce is escapist or science fiction with lots of technological bells and whistles.

Sometimes that's true. Much, but by no means all, of what my students read is escapist fiction, lots of kiss-kiss-bang-bang plot, but not much character development or emotional substance beyond excitement or horror. What a pleasant surprise to find that their writing is very different from their leisure reading. It is often profound, emotional and character driven.

Many of the students love the outdoors and their fiction isn't shy when talking about the beauty they see when they hike or go camping. As for their subjects, the scope is as wide as euthanasia, the deaths of grandparents, love, marriage, arson, hunting, environmentalism, hard honeymoons and the occasional vampire, monster and space alien.

Yet, even there, in outer space, I'm gratified that their productions concentrate on character over technology.

The class begins with a selection of stories that I read to the students – my pick is as wide and deep as I can make it, showing what the form is capable of producing – funny, sad, tragic, bizarre. I read because I believe that the verbal story long preceded the written. The students read their own stories and exercises and, hearing them, are able to discern bad dialogue and overblown style.

The exercises are open-ended: "Mary Ann did what?" "The facts are this but the truth is…?" There are also dialogue exercises acted out by the class. The open-ended quality elicits a great range of variations in tone, content and style. I never ask what the theme is in a piece of writing. The question has a "find the peanut and we can all go home" quality I hate. I do give a list of ways by which a piece may be judged and there are also hilarious examples of bad writing. It's easier to see what's to be avoided in bad than good writing, which is often highly individualistic.

The question remains: apart from the entertainment value, why have a fiction class at an engineering school?

First: Fiction writing frees the imagination, a venture salutary in its essence.

Second: Fiction writing frees the style of the writer. A good fiction writer will eschew bafflegab, legalese, engineerese and other clumsiness of expression.

Third: The world is waiting for the explication of technology in a readable way. Fiction writing is expressive and tries for conciseness and clarity. A look at the contributions of good writers to the scientific discourse will prove the point.

Fourth: Fiction writing, always a fine hobby for anyone even into old age when the knees won't ski and the hips won't climb, might, done well, provide a second career. I recommend this with reservations because the money has never been good in writing. but as a lagniappe, that little extra, the delight of having a story published is not to be sniffed at and it doesn't even take a teen-age wind or limb. It might also buy a good bottle of champagne.

A deepened writing will eventually deepen reading. That's good for all of us.

Joanne Greenburg has been an adjunct professor at Mines for 21 years. Her most recent novel is Where the Road Goes. *She has another novel due out in 2006.*

In fall semester 2004, Mines student Pam Diaz wrote the following opening to "The worst story" in Joanne Greenberg's Writing Fiction class.

First Paragraph to Worst Story
Pam Diaz

It was the beginning of February and it was really cold, but not freezing, since the lake was not completely frozen, though there was an eggshell-thin sheet of ice covering the surface and putting any pressure on the ice would break it, so it really wasn't that cold; however the wind was blowing, which made it seem colder, but you would have been fine with a jacket or thick sweater, unless the wind picked up, in which case you would have needed a parka and some thick insulating boots which you could have purchased at Sears on sale, but the conditions were just too cold to be scamperin' into town when you could have stayed inside next to the fire, which is hot enough to melt marshmallows but not hot enough to melt your hand, although it is a little dangerous, so it was probably safer to be outside on a cold day like this, when it wasn't so cold that you'd catch a cold so long as you had a jacket or sweater on. Joe stepped outside and said, "Damn it's cold. Where's my parka?"

Thank you to all who participated in the 21st annual CSMAA golf tournament.

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2005 committee:
Roy Banks
Jim Cowing '71
Doug Miller '64
Janet Blair
Kathy Breit
Anita Pariseau

First place winners, from left: Mike DeBerard '82, John Kleckner '86, Mark Allen '83, Dean Warne '84.

Second place winners, from left: Kent Wells, Steve Chonka, Jim Wieger, Jim Chonka '79.

Third place winners, from left: Lee Nelson, Phillip Scott, Andy Tritely, Joe Kostka '92.

Fourth place winners, from left: Pete Leahy, Jack Ekstrom, Bill Tish, Roy Banks.

Humanitarian Engineering: Helping a Mexican Village

by Ed and Meridee Cecil

How does spending spring break in Mexico in a fishing village on the Pacific Ocean sound? Pretty good. Get academic credit for it to boot? Sounds even better. Any strings attached? Yup. Mix concrete by hand, dig holes, carry 50-pound bags of mortar, get to know the locals. These are just a few of the tasks our team of 18 (11 of whom were Mines students) did as part of a spring break Habitat For Humanity (HFH) Global Village build in Las Varas, Nayarit, Mexico.

The project is an example of service learning in which students get off campus, get involved in a community project, learn a lot about the people and their community and the value of service to others, and receive academic credit for it. While not in the traditional definition of a university academic course, service learning has been around awhile and is widespread throughout the United States. If you Google "service learning," you'll come up with some 2,940,000 Internet Web sites containing the phrase. One university promotes its service learning program with a quote from the 19th century British playwright and essayist, George Bernard Shaw:

> *"This is the true joy of life, the being used for a purpose recognized by yourself as a mighty one; the being thoroughly worn out before you are thrown on the scrap heap; the being a force of Nature instead of a feverish selfish little clod of ailments and grievances complaining that the world will not devote itself to making you happy."*

Closer to home, President Trefny has emphasized that Mines is a "connected learning community." Service learning philosophy would argue that this connectedness extends well beyond the core university family of students, staff, faculty and alumni. Indeed, our project is not the only Mines service-learning effort. A minor in humanitarian engineering is evolving as a collaboration, headed by Professors Joan Gosink and Dave Muñoz in the Division of Engineering and Juan Lucena in the Liberal Arts and International Studies Division. Muñoz and Professor Cathy Skokan BSc Geop '70 take senior design students all over the world, as well as close to home, in community-development projects.

Our project grew out of a prior HFH build in the same two Mexican towns. In February 2004, we and Rich and Cynthia Bauman went to Mexico as members of teams sponsored by a consortium of Denver-area churches. The experience was so amazing that the four of us decided to create an additional team in 2005 that included Mines students.

Las Varas and Chacala are about an hour's drive north of the upscale Pacific Ocean resort Puerto Vallarta but light years away economically. A typical annual wage is less than $1,000. Las Varas has a population of about 16,000, close to the size of Golden. The main highway through town is about the only paved road. Travel is by

Lacking a mechanical mixer, Eirik, Amy, Steve, Mike and John are mixing concrete with hand tools.

foot, bicycle, motor scooter and truck. HFH has targeted Las Varas for 90 new simple but comfortable houses. The cost of materials and local labor – about $6,000 per home – is supplied by Habitat, which in turn accepts donations from the U.S. teams and their sponsors. The homeowners repay Habitat through a 30-year *0 percent interest* mortgage, about $17 per month. Habitat invests the incoming mortgage payments into new homes. In addition, the homeowners contribute 500 hours of sweat equity into their home and other Habitat homes in their neighborhood. Unlike the Peace Corps or the U.S. Agency for International Development (USAID), Habitat's global village projects do not import U.S. home-building materials and technology, but rather help the local homeowners and laborers with their designs and construction techniques based on locally supplied materials.

This year, our team was fourth of four teams, the first starting with bare ground. Our team included 11 students from Mines: Steve Biles, Roger Brown, Patrick Doyle, Beau Winters, Alisson Waltmann, Lisa Mauger, Eirik Pyhtila, April Worley, Josh Gallon, John Smith and Mike Iwata; two students from University of Colorado Boulder: Amy Kirk (daughter of Mel Kirk in the Mines financial aid office) and our son, Matt Cecil; and one student from University of Northern Colorado, Adrienne Waltmann (Alisson's sister).

To earn one credit of service learning engineering, in addition to the trip to Mexico, the students attended presentations on the health and safety dimensions of the project, researched the demographics and economics of the area, took a one-evening crash course in conversational Spanish and submitted a paper on their reactions to the experience. Some of the thoughts expressed in these final

Beau, Amy, Meridee, Mike, Lisa, Steve and John screen sand for mortar.

papers confirmed our hopes that the experience would have a deep impact on the students:

Eirik Pyhtila: This trip served as a reminder that it's still possible (even as an engineering student) to enjoy an entire week without a calculator, computer, cell phone, television, or even a calculus book.

You might consider a warm morning shower to be refreshing. Well, you might be surprised to learn that spending time with people who have not had warm, pressurized showers (and sometimes no shower at all) is also refreshing. There is a certain spiritual cleansing that goes on when you catch people beyond the superficial masks of their daily lives. During that week, I met 17 people directly at their core, when they were human in every way. And those 17 people only include the group I traveled with. I also met numerous Mexican families who worked for every penny they earned and took every shower as it came. When my first shower in Mexico stopped 20 seconds after I put on shampoo, it signified I was on vacation. But for the families I met, that wouldn't have been anything special or out of the ordinary. It's always the small things we take for granted.

Even something as simple as a spoken language is taken for granted. When I was staring at Mexican twins while they tried to explain kickball to me, I realized how much work it is to convey thoughts and ideas with body language and crude attempts at sign language. But all the work made it that much sweeter when I figured out what they were explaining.

Roger Brown: This was the first trip from which I returned with an optimistic attitude. I felt a camaraderie and partnership with the locals. Whatever service I donated to the families in Las Varas was more than compensated for by the opportunity to experience the day-to-day life in Mexico. I will always remember to experience things for myself and not let textbooks govern my perception of the world.

John Smith: The most distressing aspect of the area in which we stayed was the stark level of wealth disparity. Million-dollar boats from California moored within swimming distance of shore while skeletal dogs rummaged through garbage and locals burned trash at their doorsteps. Yet despite such conditions, the people were friendly and welcoming. My visit to Mexico opened my eyes to the problems of poverty in the world.

Playtime with children of the Habitat families and extended families was part of the daily regimen; here John is learning proper jump rope techniques from the children while Beau operates the rope and Matt waits his turn.

By the end of the week, Amy, Ed, and Mike needed a post-lunch siesta

In summer 2004, I vowed to put a greater effort toward community service and volunteering. Helping with Habitat for Humanity in Mexico was a unique experience in that the efforts I put forward had a direct influence on the well being of the less fortunate. The team's efforts helped in the formation of something tangible, something significant, and our progress was easily visible from day to day.

It was eye-opening to step outside the research lab and into an area where priorities lay not so much in scientific discovery, but simply survival. I often found myself contemplating the root causes of poverty in these parts of Mexico. Immigration to the U.S. has been described as Mexico's most severe problem and this became clear after hearing numerous accounts of family members and others seeking refuge across the border.

As part of a team, I've never felt more like family with another group of people. On our first day, the project supervisor referred to us as brothers and sisters. We worked side by side and shared the great experience of Mexico together; I think "brothers and sisters" is a fitting description. It seemed as though each of us had something to offer Mexico and Mexico treated us well for it.

Alisson Waltmann: When I left for Mexico I had an idea of what I wanted to do with my life. You know, the usual: finish school, get a job, start a family and then maybe go back to school. Since the trip to Mexico, all that has changed. Now I feel that there is so much more I could do to help people less fortunate. Now I'm considering the Peace Corps or something else that really makes a difference. I want to help people.

Going to Mexico, I knew that we were going to help those who are less fortunate, but I still had no idea. Working on the houses and seeing how the families responded to us made me feel overwhelmingly good. I felt that I made a difference, not only in their lives, but in mine, too. There were times that I wished that I could have done more, but because of the type of work and the unavailability of tools and supplies, it wasn't possible. After I began talking to people, I realized that volunteering our time to help meant more to them than they could express.

Following the trip, many things in my life have changed. I am more appreciative of what I have and things that used to seem important now no longer mean much. There is a lot of pressure for Americans to get more, work more, and have more, more of everything. After working in Mexico, it just seems ridiculous. Family to me has always been important, but this trip re-enforced the importance. I saw how much the people of Las Varas have, which isn't a lot, yet they are still happy. I think it's because they surround themselves with families and friends.

Lisa Mauger: One of my greatest accomplishments that week came in the form of an adjusted world view. Getting to know Chacala was important for me. It was an amazingly beautiful little fishing village, but also a thriving vacation spot. It was easy to understand why this place would be a wonderful vacation spot, but it was also apparent that the influx of visitors took a toll on the little town. By the end of the week, the beach was decorated with trash and tourists were moving around at all hours of the day and night. While the city was a great vacation for all of its campers, ourselves included, that week of celebration [Holy Week] probably put significant strain on many of the town's regular residents.

Getting used to the lack of city infrastructure was a big part of understanding how life was different in Mexico. Chacala's sewer system and water supply had obvious limitations. The roads that our four-wheel-drive taxis used gave me an appreciation for how much the government is needed to contribute to the improvement of the area. Improving the cities for its residents seemed to be low on the government's priority list, or perhaps beyond its means. The same was evident when we drove by the local dump every afternoon on the way back from work and witnessed the towering smokestack from burning garbage.

Our adventure in Mexico also helped me appreciate events in life that aren't school or work. The hard labor and stress-free afternoons were refreshing compared to my normal schedule. There was a totally different feeling just spending time in a country that doesn't have the same 24-hour-a-day, always-on-the-move mentality as the United States.

This trip has shown me the value of service in learning about other areas. I don't think I could have had the same experience without stacking bricks and moving dirt. It was fascinating to watch the way these beautiful houses went up without the use of many of the technologies that we usually associate with construction of that sort. This trip has made me want to pursue other build projects in the future. I hope to keep volunteering projects like this as a regular fixture in my life."

April Worley: I was presented with one of the most rewarding opportunities and experiences of my life during this last spring break. As the last team, we helped construct roofs and lay floors and patios. We worked closely with masons in laying brick for the ceilings and placing the mortar, which we mixed, between the bricks. When we left, there was only minimal masonry work left to complete the houses. We also worked closely with the families that will occupy the houses. We helped entertain the children and worked with the adults and really got to know them. By the end of the week, their families felt like our families. This was one of the most eye-opening experiences I could imagine. We got to see and experience Mexico's standard of living, which put things in a new perspective and made me appreciate what we have here. In some respects, I think Mexicans are luckier than we are. Most have a lot of family nearby and also have a lot of friends who are like family. They are all about helping each other. I noticed that everyone was nice and caring, even to us, complete strangers. If everyone here followed the examples of the people with whom we spent an incredible week, this country would be a much better place in which to live.

The Mexican families were incredibly appreciative. It didn't seem that we did that much, but to them it meant the world. These were the first homes these families will own. The people were so welcoming; they took us in and treated us like family. I was touched by their generosity and appreciation. I wished I could have done much more.

The trip was hard work, fun times and we bonded with the others on our team. By day, we worked side by side building the houses and every night we did something new including clubbing at discos, playing soccer and rugby on the beach, creating a bonfire, walking the beach and enjoying the ocean. This trip was only a week of my life, but it changed me for a lifetime.

It was gratifying to us as team leaders to see the responsiveness and appreciation the students showed to the people in Las Varas and Chacala. Given the poverty and economic disparities that were evident all around us, we think the students came away with a sense of real contribution and accomplishment. We are reminded of the quote by Eleanor Roosevelt: "It is better to light a single candle than to curse the darkness."

Ed and Meridee Cecil teach at Mines; Ed as an emeritus professor in the Physics Department and Meridee as an adjunct instructor in the Guy T. McBride Jr. Honors Program in Public Affairs. They live in Golden and recently celebrated their 25th wedding anniversary.

The proud new home owners Rosie (in front with baby Alondra and balloon) and Carlos (second from right in the back row between Matt and Ed), our team, and some HFH neighbors pose in front of the nearly completed home at week's end.

Events calendar

August

18 Houston: 11:30 a.m. Alumni lunch at Farrago, 302 Gray Street. RSVP to Chuck Russell '54, 281-587-2533. Pay your own way.

24 11:30 a.m. First Silver & Blue luncheon of the school year will feature Meet the Coaches. Student Center. $15 per person. RSVP by Aug. 18 to Charles O'Dell, 303-384-2254.

September

01 Roving Metro Mixer: first Thursdays. My Brother's Bar, 2376 15th St., Denver 303-455-9991

03 Bus trip to Greeley, Colo., for Mines vs. UNC football games. Details TBA. Call 303-273-3295.

08 Golden, Colo., Lunch Bunch: second Thursdays at Buffalo Rose 1119 Washington, 11:30 a.m.

Grand Junction, Colo., section luncheon: second Thursdays. Bookcliff Country Club, 2730 G Road, noon. For information call John Howe at 970-242-4903.

24 Experience the Royal Gorge. 12:30 p.m. departure. $28.75-Adults; $18.50-Child (3-12). RSVP to Janet by Aug. 24. 303-273-3295.

October

02 Houston: Astros vs.Cubs at Minute Maid Park. 1:05 p.m. $15 (seats are in section 252). Bring your family and friends! For reservations: Suzanne_piphi@yahoo.com.

06 Roving Metro Mixer: first Thursdays. See Web site for details.

13 Golden, Colo., Lunch Bunch. See Sept. 8 for details.

Grand Junction, Colo., section luncheon. See Sept. 8 for details.

14-15 Homecoming activities and Reunions for Classes '80, '85, '90, '95, '00.

15 Mines vs. Fort Lewis.

29 Possible bus charter from Golden, Colo., to Grand Junction for Mines-Mesa State football game. Details TBA.

November

03 Roving Metro Mixer: first Thursdays. See Web site for details.

05 Houston: Saint Arnold Brewing Company tour. 1 p.m., 2522 Fairway Park Drive.

10 Golden, Colo., Lunch Bunch. See Sept. 8 for details.

Grand Junction, Colo., section luncheon. See Sept. 8 fordetails.

17 Order of the Engineer. 5:15 p.m., Student Center Ballroom A. $20. RSVP to Janet, 303-273-3294.

19 Arizona Alumni Olympics. Details TBA.

For the most up-to-date information on what's happening in your area, check the website at *www.alumnifriends.mines.edu* and click on "News and Events" (top of page). Scroll down to the calendar.

Mines Acknowledges Individual, Corporate and Foundation Donations

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

Friend of the School **William J. Barrett** joined the Guggenheim Society with a contribution of $25,000 to support the Mines Recreation Center.

A trust distribution of $437,456 was received from **Charles "Scottie" Bruce '57** and the late **Eileen Bruce** to establish the Eileen Bruce Memorial Scholarship for needy students.

Harry Campbell '42 contributed gifts totaling $35,000 to support the Harry D. Campbell Endowment for Excellence in Football and the Marv Kay Athletics Department Operations Endowment.

Stanley and Judy Dempsey renewed their membership in the Mines Guggenheim Society with a gift of $5,000 to the Arthur Lakes Library and $20,000 to the Dempsey Scholarship Fund.

Ben '62 and **Judy Fryrear** donated securities totaling $25,758 to the Dean Burger Memorial Endowment Fund.

Richard '70 and **Donna Gardner** made a *Transforming Resources* campaign pledge payment of $20,000. Their $100,000 campaign pledge supports the Richard J. Gardner Endowed Scholarship Fund in Athletics. Mr. and Mrs. Gardner also contributed $5,000 to the Mines Fund.

Nor '47 and **Helen Hannon** made a $60,000 *Transforming Resources* campaign pledge payment. Their total $200,000 pledge was directed to the Mines Recreation Center.

Mines Century Society member **Vernon "Bud" Isaacs '64** gave $54,490 as part of his commitment to the Mines Recreation Center. He will soon be selecting the appropriate naming opportunity.

J. Robert Maytag, a member of the Mines Century Society, has generously supported the Mines Recreation Center with his most recent gift of $250,000. Maytag will be naming the Climbing Wall in honor of the "Maytag-Anibarro Family." Maytag also contributed $93,335 in continuing support of the Andes Scholarship program.

Robert E. McKee III '68 continued his support of the Robert E. and Margaret A. McKee Endowed Scholarship Fund with a gift of $25,362.

F. H. Merelli '59, a member of the Guggenheim Society, made a gift of $25,000 directed to the Petroleum Engineering Department. He made an additional gift of $5,000 to the Mines Fund.

A distribution of $50,000 was received from the estate of **Lester Roberts**, who attended Mines in the 1920s. The gift was directed to the general scholarship endowment.

Frank Seeton '47 donated $72,969 in appreciated securities to the Mines Recreation Center. He will soon be selecting the appropriate naming opportunity.

Frank and **Dot Stermole** made a gift of $153,252 to the Mines Recreation Center. They will be choosing a name for the reception/seating area shortly.

John U. and **Sharon Trefny** made a payment of $25,000 to complete their *Transforming Resources* campaign pledge. President and Mrs. Trefny's gift supports the John U. and Sharon L. Trefny Endowment for Curriculum Advancement.

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

Anadarko Petroleum Corporation contributed gifts totaling $25,000 to support the department of Petroleum Engineering and the Society of Petroleum Engineers (SPE).

Baker Hughes Incorporated contributed $25,000 to support research conducted by Max Peeters, who is the Baker Hughes Distinguished Chair in Borehole Geophysics and Petrophysics.

BHP Billiton contributed $300,000 to establish the BHP Billiton Indigenous Students Scholarship Fund.

BP contributed gifts totaling $25,500 to support the departments of Chemical Engineering, Engineering (Mechanical Specialty), and Petroleum Engineering; the Minority Engineering Program (MEP); minority scholarships; and the Society of Women Engineers (SWE).

ConocoPhillips contributed $250,000 toward the ConocoPhillips SPIRIT Scholars Program; the departments of Chemical Engineering, Geology and Geological Engineering, Geophysics, and Petroleum Engineering; graduate fellowships; MEP; SWE; SPE; and the Career Center.

The **Adolph Coors Foundation** continued its support of minority scholarships with a gift of $75,000.

The **Mikkelson Foundation** contributed $29,440 to support the New Engineering and Applied Technology Program.

Shell Exploration & Production Company supported the Petroleum Engineering Department with a gift of $30,000.

The **Edna Bailey Sussman Fund** contributed $39,007 to support environmental internships.

Seniors Put Engineering Ingenuity to Work

By Erica Siemers

The Senior Design Trade Fair held in April highlighted innovative and ambitious projects completed by senior students enrolled in the Division of Engineering's capstone design course. The projects featured a variety of engineering solutions, including alternative energy systems, biomechanical devices and structural designs, among others. Working with a wide range of clients, the students demonstrated the far-reaching impact of their education at Mines. In addition to solving an authentic engineering problem, the teams demonstrated their versatility as they dealt with real-world issues such as budgeting, fundraising, project management and client communications.

Jewel Cave Design Team

Earning final scores within two points of each other, the top four teams in the competition faced a tight race. So tight, in fact, that the top two teams – the Centennial Elementary School and Jewel Cave Geohazard projects – tied for first place with each team earning a 90 percent rating. **Cathy Skokan BSc Geop '70, MSc Geop '72, PhD Geop '75**, faculty adviser for both of these winning teams, noted that successful design teams share important characteristics. They conduct thorough research, evaluate multiple alternatives, and arrive at optimal choices by considering both cost and functionality.

Centennial Elementary Design Team

The senior design judges indicated that another quality, clear and consistent communication, was also a key factor in the top teams' success.

One first-place Senior Design team partnered with fourth-grade teacher Ingrid Daniel at Centennial Elementary School in Colorado Springs to engage her students in science. The team was challenged not only with creating hands-on science projects that were educational, but also with managing a large group of excitable 9-year-olds. By sharing their enthusiasm for science with children from predominantly low-income families, the Mines team, whom the fourth-graders refer to as their "science friends," inspired the students to enjoy the study of science and perhaps consider it as a future career. Daniel notes that since the Mines team became involved in her classroom, her students now often ask her, "How can you prove that?"— a question that proves they are learning to think like scientists.

Mines alumnus **Phil Cloues EM '66, MSc Min Ec '71**, of the National Park Service, presented the other first-place team with a unique engineering problem. South Dakota's Jewel Cave, the second longest cave in the world, requires a new structure to prevent pieces of the cave ceiling from falling onto visitors as they exit the elevator shaft in the depths of the cave. The existing wooden structure feeds invasive bacteria within the cave and is not ideally suited for an environment with 100 percent humidity. The Jewel Cave Geohazard Project team tested numerous materials for the unusual conditions and devised a free-standing stainless steel structure topped with a geo-net. Their design minimizes impact on the natural structure of the cave and has the potential to last at least 50 years and perhaps indefinitely. Pending budget approval, the National Park Service plans to implement key components of the team's design.

CSM's Mini Baja team placed second in the competition, just one point behind the Jewel Cave and Centennial Elementary teams. The team designed an all-terrain vehicle for entry into the Society of Automotive Engineers (SAE) Mini Baja 100 competition, which consists of static events – presentations on cost and design – along with events that test the vehicle's acceleration, maneuverability, endurance and ability to handle extreme terrain. At the competition, held in June in Arizona, the team placed 14th out of 131 in the static events, and finished the four-day engineering design challenge in a respectable 53rd place.

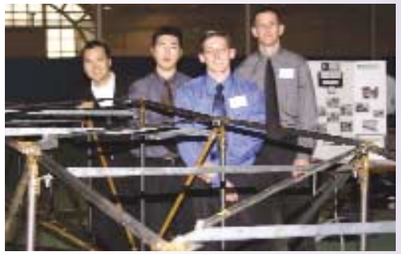
Erin Haggerty in Belize

Over the past three years, under the guidance of Engineering Professor Julie VanLaanen, Senior Design teams have developed and implemented solar-powered lighting and water-pumping systems for remote villages in Belize. This year's team finished third for its work in designing enhancements to the systems and installing a charging station for the villagers to power-up their cell phones – their only means of real-time communication with distant cities. Additionally, the team taught villagers the basics of working with electricity. With this knowledge, the villagers will be able to troubleshoot and make repairs to their solar electrical system.

Professor VanLaaner in Belize

Holcim Inc. Teams with CSM Senior Design

Team member Kelly Rhoades noted the villagers' excitement about learning new techniques for improving their quality of life. Since the water pump was introduced,



Steel Bridge Design Team

young girls can go to school instead of having to haul water for their families' households, and the solar-powered lighting

Kinetics Design Team

allows children to complete their homework after dark. Teammate Paula Schmitz remarked that the experience of implementing engineering solutions in the developing world has shown her that "even what we consider the smallest and simplest devices can make a great difference" in people's lives.

Colorado School of Mines extends a world of thanks to **Bob Vickery PE '62** who contributed $10,000 to the Belize Humanitarian Engineering Project. Bob's gift funded the team's travel to Belize to make repairs, install a charging station and educate villagers about electricity and irrigation technologies.

Major funding for the Senior Design program is provided by the J. Don Thorson Endowment for Engineering Senior Design Fund, the Slater Family Research Endowment and the Hewlett Foundation.

When Holcim Inc., one of the world's leading suppliers of cement, aggregates and concrete, wanted to develop an alternative fuel system design for the coal-fired rotary cement kiln at their plant in Florence, Colo., the company looked to Mines to get the job done. Mines might not have been such an obvious choice if it weren't for Dave Muñoz, Division of Engineering interim director. Muñoz approached Holcim representatives at a career fair in the fall of 2003. In keeping with Mines' commitment to maintaining a meaningful connection between engineering education, industry practice and research needs, he asked outright, "What can Mines do for you?"

Seeing the strategic advantage of having the research power and innovative energy of a university at its service, Holcim took Muñoz up on the offer. Ralf Osswald, vice president for manufacturing, and Rob Davies, manager of Holcim's Portland plant in Florence, conceived a project that would process and convey packaging waste from large operations like Denver International Airport to partially replace coal in the Portland plant's rotary kiln. Osswald saw the partnership as a way to further Holcim's commitment to sustainable development, benefit from the fresh ideas generated by forward-thinking engineers, and provide students with an opportunity to work within the organizational and budgetary parameters they would face in the business world.

The alternative fuels project has been more than an academic exercise. In early 2004, Holcim entered into a fee-for-service contract with Mines, just as if it had hired an independent engineering firm. Twenty-two students worked on the project in multidisciplinary teams comprising civil, electrical and mechanical specialists assigned to specific engineering tasks. An integration team composed of leaders of each functional team met weekly during the process development phase to review each subteam's progress and to ensure that their designs meshed. The entire alternative fuels team met directly with Holcim executives to present project updates and final recommendations.

Mines' design team surpassed the expectations of Holcim's executive panel. According to the team's faculty adviser, Dick Burczyk, Holcim anticipated that the students would present a general, conceptual plan, and was pleasantly surprised when it found that the students actually went much further, providing specifications suitable for presenting to subcontractors as they went on to solicit design-build bids for the project. The alternative fuels project is a high priority for Holcim, which plans to construct the system according to the students' design.

CSM students on-site

The alternative fuels project that began in 2004 was the first of its kind between Holcim and Mines, and the partnership continues with three new projects in the works. Students will design a magnesium chloride spill containment system, a fossil fuel blending system and a metering and conveying system for feeding chipped tires to the kiln preheater tower. Each of these projects involves expense reimbursement to the School, plus an incentive based on the cost savings that result from the students' designs.

Since 1998, 14 Mines graduates have gone on to careers with Holcim. As Teresa Low, Holcim's university relations manager, puts it, "Our involvement with key engineering schools on projects like the rotary kiln conversion helps us to build our 'bench strength' – to build the future of our organization." Osswald adds, "These partnerships create value for both Colorado School of Mines and Holcim. We provide meaningful work experiences for students and Mines provides us with new paradigms for solving our engineering problems. We are confident in hiring Mines graduates because we know they are unmatched in their honesty and integrity and, of course, the tremendous technical competencies they bring to our company."

CSM Alumni Association

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No ordinary day at the office

Dear Alumni and Friends,

Five months into my tenure as the new director of alumni relations and I have discovered that no two days in the office are alike. Each day brings new opportunities and new faces; some opportunities are more serendipitous than others.

The day was February 22. **Ed Crabtree EM ’60**, president of the CSM Alumni Association from 2000-01, called with a request for help. I had first met Ed the week before when I had invited the Past-Presidents Advisory Committee to share experiences with me over lunch. Previously, Ed had called to weigh in on what he considers my most difficult hurdle: growth of the Alumni Association membership base (more on that later).

With the Alumni Association and the School more closely tied for the benefit of both organizations, it seemed a natural request for Ed to ask if I could arrange for a group of Iraqi delegates to visit Mines in late April. Through Joe Rice, former mayor of Glendale, Colo., who had completed a tour of duty in Iraq, Ed learned of the Baghdad-Denver Region Partnership. It began in June 2004 when First Lady Laura Bush announced at the G8 Summit that through Sister Cities International, six cities in Iraq and the United States would be paired as international partners. Sister Cities International, according to its press release, “promotes peace through mutual respect, understanding and cooperation – one individual, one community at a time.” The Denver Regional Council of Governments (DRCOG) was linked with the provincial and city councils of Baghdad, Iraq, for humanitarian assistance projects. According to DRCOG, “The purpose of the Baghdad-Denver partnership is to promote the exchange of ideas and understanding between government officials, citizens, college faculty and students, businesses and nonprofit organizations. The primary benefit to Baghdad is exposure to the systems of government, education, business and nonprofits in a democratic society. This assistance is much needed after more than 35 years of repression and isolation by the dictatorship of Saddam Hussein and the Ba’ath Party. The primary benefit to the Denver area is increased understanding of the culture and history of Iraq and the Middle East.”

After attending a DRCOG meeting with **Bill Engel Met E ’60**, I learned that a group of 20 delegates would be in the Denver area for two weeks in April to visit with several organizations and government officials. Some of those delegates also expressed interest in visiting Mines to discuss education and to learn about GIS (geographic information systems). President Trefny spent the better part of a morning talking with the delegates and Craig Van Kirk graciously gave a presentation on the Petroleum Engineering Department that he heads. Keith Turner, professor emeritus of the Geology and Geological Engineering Department, gave a presentation on GIS and **Jim Whitfield BSc Math ’85** of Hi Country Wire and Telephone was on hand to field questions relevant to telecommunications. CSM Registrar Lara Medley put us in touch with our one Iraqi student, who enthusiastically agreed to join us for lunch. Through a collaborative effort, Mines extended the hand of generosity and showed its willingness to help make a difference. The Iraqis have a tough road ahead. Their personal stories of struggle, even imprisonment for political beliefs, evoke compassion and humility. As I listened to President Trefny talk about Mines’ noble purpose, it was evident to me that Mines lives up to that noble purpose of helping to better the world. And on this day in April, as it does every other day, Mines continues to prove that it has a big heart, and I am thrilled to now be a part of it.

As I write this, commencement and reunion have just taken place. It was a thrill to have so many of you here on campus and it is my sincere hope that more of you will return in the future. We tried to offer something for everyone: various department open houses and tours; a fabulous presentation by **Bob Hedlund ’75** on trans-formational development in Central Asia, which focused on his NGO’s humanitarian engineering efforts; Professor Emeritus Bob Weimer led a tour along the campus’s Geology Trail, now designated an Earthcache site (an adventure game for GPS users); **Eric May ’99** discussed investing in today’s markets; a meet-the-students panel discussion; a joint faculty symposium by Dr. David Wald, Understanding the Dec. 26, 2004 Great Sumatra Earthquake and Tsunami, and Dr. Tissa Illangasekare, Tsunami Impact and Scientific and Engineering Challenges for Recovery – Case of Sri Lanka; an “Inside the Boardroom" panel discussion with members of the Board of Trustees and Foundation board, David Wagner, **John Coors ’77**, Terrance Tschatschula, and **Marshall Crouch ’67**; capping off with a reception with members of the CSMAA board.

In my travels I have visited with CSMAA sections in Grand Junction, Colo., Midland, Texas, Salt Lake City, Bone Valley, Fla., and Houston. I hope to visit San Franciso, Calgary, Tulsa, Houston, Phoenix, Southern California, Dallas and other areas over the next few months. I hope to meet you at one of our events, either in your region, at a conference, or here on campus.

While I am working on several endeavors to strengthen the Alumni Association, I also want to incorporate your thoughts and ideas into the planning efforts. Stay tuned for a survey or series of surveys, the results of which will help me to chart our collective course. In the meantime, if you haven’t renewed your membership or have never joined the Alumni Association, now is an ideal time to lend me your support so that we have adequate resources to fulfill and strengthen our service to you.

Please join me in support of the Alumni Association, of which you are such an important part. Together we *can* make a difference.

Sincerely,

Anita M. Pariseau
Executive Director

International

Istanbul, Turkey

Madhukar Mehta ’66 (on right) reunited with **Ahmet Coskun ’66** in Istanbul in May after not having seen each other for 38 years.

Gulf Coast

Houston, Texas

In April, the Houston section hosted a successful golf tournament to raise money for student scholarships. The event was organized by **Kim Harden ’74**, **Dean Stoughton ’75, ’78** and **George Puls ’75.**

The Houston section also hosted a program for incoming freshmen and prospective students that same month. Alumni included **Laura Westler ’00**, **Chuck Russell ’54**, **Debbie Dalby ’92**, **Judy Toel ’01**, **Jackie Haney ’01**, **Andy Haney ’01**, **Andrea Alleyne ’97**, **Meghan Quiat ’04**, **Jeremy Zimmerman ’86** and **Glenn Vangolen ’81**.

New Life Members

Robert B. Affleck ’85
Scott M. Denton ’94
Eloise A. Montoya ’79
Kendall K. Harwell ’04
Timothy L. Hoops ’79
Linda Sue Hoops ’81
Nathan G. Palmatier ’02
Deborah A. Peacock ’78
L. Eric Stellmon ’00
Michael L. Stewart ’84
Scott Unger ’04
Nathan A. Wanstrath ’99
Jeffrey M. Wilson ’86

Dallas, Texas

Tim Saenger '95, Will Culp '99, Kevin Smith '82, John Wise '68, James Messer '92, Cambrey Salazar '02 and **Jesus Salazar '01** ➡ hosted incoming freshmen and prospective students in Dallas. ⬇

Tulsa, OK

And in Tulsa, participating alumni included **Ray Priestley '79, Don Ott '54, Liz Labarre '04,** and **Alisha Tremaine '04** who ➡ helped out the Admissions Office helping to recruit students. ⬇

Derek Morgan, director of student activities

East

Collegeville, Pa.

In June, Linda and **Greg Kazel '87** hosted a picnic for alumni and their families. In addition to providing good food, the Kazels have a pool and a working train, which delighted the kids.

Metro Denver

May reunions brought about 170 alumni and their families back to campus from 26 states and three foreign countries – Canada, Germany and South Africa.

Class of 1940 & 1945

Seated from left: Kay Mueller (Bill Mueller '40), D. J. Low '45, Rosie Heinrichs. Standing from left: Gene Current '40, John Warren, Walt Heinrichs '40, "Dub" Warren '40.

Class of 1950

Seated from left: Jack Wyatt, Danny Cooper, Wendell Scott, Art Dickinson, Casey Endacott, John McIver. Standing from left: Don L. Johnson, Dennis Gregg, Chuck Melbye, Martin French, Richard Siegfried, Larry Barrett, Ed Warren, Andrew Keleher.

Class of 1955

Seated from left: F. Dean B. Laudeman, David U. Hoover, John G. Fidel, James P. Dennis, J. Don Thorson, Chester F. Norstrom Jr., Charles H. Stewart, Chester U. Love, D. Parks Bunn. Jr. Row 2 from left: Richard J. Kehrwald, Roland G. Hessel, Charles 0. Spielman Jr., Eugene R. Risch, John F. Austin, James D. Sell, Leonard A. Zaseybida, Richard H. Dreith, Robert L. Kovach, Howard Wittenberg Jr., John P. McKenzie. Row 3 from left: William U. Harvey, Harold F. Kellogg, Robert J. Hohne, Wallace H. MacLean, Willard T. Danker. Patrick P. Thomas. Back Row from left: Robert F. Smith, Robert A. Metz, John M. Negomir, John J. Gallagher, Richard L. Stallings.

Class of 1960

Front row from left: John Smith, Rich Daniels, Jim Montgomery, Al Caster, Anton Pegis, Walt Knudson, Jack Evers, Bill Engels, Al Wirder, Dennis O'Neil, Bill Samuel. Middle row from left: Don Bennett, Bob Cederstrom, Ken Larner, Glenn Vawter, Gary Warner, Dave Watson, Marv Kay, Jack Frost, Kent Pothast. Back row from left: Ed Wing, Joe Goldhammer, Les Meltzner, Al Miller, Joe Reese, Dick Egan, Roger Osborne, George Downs, George Lindroth.

Staying connected

Class of 1965
Seated from left: Bill Wilson, Robert Woodbury, Frank Erisman, George Wood, Orlie Gallegos, Richard Hickman, Jim White '64. Middle row standing from left: Herb Price, Jerry Schulz, Bob Barday, John Zak, Ernie Bradley, Ed Reish, Jack McCartney, Mike DeSilva, John Weber, Bert Evans. Back row standing from left: Jim Huddleston, Ted Cassidy, Larry Hoppe, Avery Reed, Barry Quackenbush, Dick Hecox, John Turley, Mike Cruson, R. William Wright, Mike Oldenburg, Marvin Errickson. Kneeling: Bob Pearson '66.

Class of 1970
Seated from left: Bob Scharp. D. Erik Spiller, Steve Schwochow. Standing from left: George Off, David Scriven, Larry Cramer, Tim Haddon, Bob Dearinger, Craig Garrett, Bruce Craig.

Class of 1975
Front row from left: Diane Brownlee, Jamie Reineke, Wan Foxwell, Joe Garbee, Roger Gaide, Jim Perry, Cathy Cutrell, Cynthia Dekker, Steve Anderson. Standing from left: Jake Coats, Mark Foxwell, Dan Reineke, Jim Waugaman, Harvey Klingensmith, Henry Kolego, Mike McCarter, George Puls, Dean Stoughton, Keith Brownlee, Philip Morrow, Steve Lambert, Kirk Nobis.

In memoriam

William K. Bowie EM '55 died March 31, 2004 at age 77. He served in the U.S. Army during World War II. He married Carol Hailey in 1946. Bowie was employed as a mining engineer working at the Allen Mine until his retirement in 1993. He enjoyed gardening and was an avid reader. He is survived by his widow, children Kit, Bruce and William, seven grandchildren and two great-grandchildren.

Charles O. Clark PE '49 of Littleton, Colo., died Feb. 25 at age 84. Born in Ness County, Kan., Clark graduated from high school there in 1938. When World War II broke out he went to work at Douglas Aircraft in California. In 1942 he enlisted in the Army Air Corps, where he flew 35 missions in the European theater as co-pilot on a B-17. He was awarded the Air Medal and several Oak Leaf Clusters for his service with the 95th bomb group stationed in Horham, England. After the war, Clark attended Mines. After graduation, he was employed by Standard Oil of California and worked in various locations and positions in the West, retiring in 1977 after 27 years. He then was an engineering consultant with Helton Engineering for two years. Clark was married to Betty Marhofer and in July 2004 they celebrated 60 years of marriage. His widow, two daughters, two grandchildren and five great-grandchildren survive him.

Henry A. "Hank" Emery Jr. PE '56 died earlier this year after a massive heart attack. He was 79. Emery earned his degree from Mines after graduating from University of Maine. He was a pioneer in the field of geographic information systems (GIS), analysis and computer modeling of infrastructure and related financial systems, especially for the utilities industry. He coined the now-popular term AM/FM (automated mapping/ facilities management) that is a cornerstone of current GIS technology and applications. Emery was also a well-known author and consultant.

Dale David Kerstetter Geol E '39 died of congestive heart failure Aug. 29 at his daughter's home in Germantown, Md. He was 86. While at Mines, he was a member of Tau Beta Pi, Sigma Gamma Epsilon, Alpha Tau Omega and the "M" club. A retired geophysical engineer, Kerstetter worked for the Standard Oil Company of Venezuela exploring for oil from 1939 to 1943. He returned to the United States in 1943 to work for the U.S. Navy. After World War II, he remained in the Washington, D.C., area working for the Naval Ordnance Laboratory in various capacities, retiring in 1976. During that time, he received two Meritorious Civilian Service awards and the Navy Superior Civilian Service award. Kerstetter also is listed in the *Who's Who in Engineering and American Men of Science.* After retiring, Kerstetter worked part-time as an engineering consultant with Systems Research Corp. He was president of the Woodmoor Citizens Association and president of the Manor Village Homes Association. He was a long-time member of St. Bernadette's Catholic Church and St. Patrick's Catholic Church. He was a dedicated traveler and golfer and was a member of Manor Country Club. Kerstetter is survived by three daughters, seven grandchildren and one great-grandchild.

Dale D. Koepke PE '45 died Dec. 11, 2002, in Victorville, Calif. He was 81. After graduation, Koepke worked in Colorado, married, and had two children. He then moved to California to work for Union Oil Company designing refinery equipment and supervising instrument installations, operation and maintenance. In 1957, he moved to Beckman Instruments Inc. to do sales, training and engineering. He divorced that same year and to keep busy, spent the next three years learning Hebrew and the Greek New Testament. In 1962, Koepke married Yvonne Dean, who had two girls, and was a wonderful father to them. In 1966 he joined Kingmann White Inc. and did marketing, product forecasting, evaluations and market research. He was also an instrument-rated pilot. In 1972, Koepke, with the help of his accountant wife, started his own business, D-System Controls. In 1973, he joined U.S. Borax and remained with them until retirement in 1986. He loved that job in which he trained men who wanted to get ahead and out of the labor pool. His instruction combined classroom math and job field experience, resulting in first-class electrician ratings for those who finished. Koepke is survived by his widow, a son, a daughter, six grandchildren and one great-grandchild.

In memoriam

J.D. "Dave" Lee BSc Geop '75, M Eng Geop '80 died Feb. 9 in Houston after a long, courageous battle with cancer. At Mines, Lee was a member of Blue Key and Sigma Phi Epsilon. He also was business manager of the *Oredigger* and in 1975 was E-Day chairman. After graduation, Lee served in the U.S. Army Corps of Engineers until 1980, when he was discharged as a first lieutenant. Lee then began a 24-year career as an exploration geophysicist with Chevron (later ChevronTexaco). He worked in Colorado, California, Scotland, Australia, New Guinea, Venezuela and Texas. He was active in the American Association of Petroleum Geologists, the Society of Exploration Geophysicists, the Rocky Mountain Association of Geologists and the Houston Geophysical Society. He also was a licensed Professional Geologist in Wyoming. Lee was an avid model railroader and railroad historian. He belonged to railroad clubs in Colorado, California, Australia and was a sustaining member of the Union Pacific Historical Association and a lifetime member of the Colorado Railroad Museum. Lee is survived by his wife of 28 years, Kay BSc Phy '75, a son and a sister.

Kenneth R. Petersen BSc CPR '83 died Dec. 23 of injuries received in an auto accident. He was 44. Petersen was the owner and operator of Thai Kitchen in Temecula, Calif., and in his spare time enjoyed gardening. He is survived by his wife of four years, Jariya, his parents and a sister.

James E. Schmuck Met E '42 died March 11 at home in Windsor, Colo. He was 85. When he was a small child, Schmuck's family moved from Illinois to Denver where he grew up. In 1941 he married Elizabeth Loos, a grade school companion and neighbor. After graduation from Mines, Schmuck served in the U.S. Army Corps of Engineers in the Philippines during World War II. Afterwards, he worked for Rotary Steel Foundry in Denver until 1955, when he moved his family to Longmont, Colo., to establish a new foundry. In 1967, Schmuck and his wife relocated to Chicago to work for Griffin Wheel, then to Hibbing, Minn. Having had enough of the cold weather, the Schmucks then moved to Arizona where Jim worked for Capitol Castings for the next 15 years. He retired in 1985. In 1995, Schmuck returned to Colorado to be near his children and grandchildren. He loved to travel, was a silversmith and woodcarver, cheered the Broncos and Avs, followed politics and loved model trains. He had a loving family and devoted friends. Schmuck is survived by his widow, a son, a daughter, four grandsons and seven great-grandchildren.

David B. Schulz PE '49, of Wichita Falls, Texas, died June 10, 2004 at age 83. He was a retired petroleum engineer. Schulz served in the U.S. Army Air Corps during World War II and was a former POW. His wife, Betty, and a daughter preceded him death. He is survived by three sons, three daughters, a brother and numerous grandchildren and great-grandchildren.

David R. Wilson PRE '53 died Aug. 13, 2004 at age 74. He was killed instantly in an automobile accident in which he was struck by a drunk driver. Wilson was born and raised in Denver and attended North High School where he lettered in wrestling. When Dave and his twin brother Bob PRE '52 were very young, their mother knew they would attend Mines and that decision was never questioned. While at Mines, Wilson was a member of Kappa Sigma and Theta Tau. He also wrestled and lettered in baseball. He enjoyed his years at Mines and always attended his reunions.

After graduation, Wilson worked for Humble Oil and Refining Company in Texas, but soon left to join the Navy. He attained the rank of lieutenant junior grade and was stationed in Nevada and Japan. After retiring in 1957, Wilson went to work for Union Carbide in Texas. In 1969 he joined the Upjohn Company and Dow Chemical. After retiring in 1993, he continued to consult in energy conservation. Wilson enjoyed playing golf and played some famous courses in Scotland. He also sang with community choirs, an interest he shared with his daughter. Wilson is survived by his widow, Sandra, two sons, a daughter, a stepson, a stepdaughter, six grandchildren and six step-grandchildren.

Charles Vernon Woodard Met E '44 died April 11 at his home in Grand Junction, Colo., at age 82. After graduation from Mines, Woodward, a native Coloradan, became a milling superintendent for Bunker Hill and Sullivan in Metaline Falls, Wash. He later joined forces with his brother, Frank Met E '42, in a gold mining venture in Telluride. He was an independent uranium mine operator on Beaver Mesa from 1948-1985. In 1951, Woodard married Shirley Hammond in Denver. They lived in a log cabin in Beaver Mesa during the early years, raised two sons and were happily married for 53 years. Woodard enjoyed hunting, fishing, golf, tennis, television and world travel. He was a 62-year member of the American Institute of Mining and Metallurgical Engineers and was active in the Grand Junction chapter. He was a major benefactor of the School, a member of the Sun City Country Club and a charter member of the Bookcliff Country Club. Woodard is survived by his widow, two sons and a grandson.

George E. Hulpiau PRE '49 died May 3 in Sun City West, Ariz. He was 85. Hulpiau was born in Buffalo, N.Y., and spent his childhood there. He was a bombardier in the Air Force during World War II and was stationed in England and North Africa. He also was stationed in Bengasi and participated in the low-level bombing of the Ploesti refineries. After he was discharged, Hulpiau married Marion Norman, whom he'd met while stationed in Casper, Wyo. He entered CSM in January 1946. Hulpiau, his wife and daughter were one of the first families to occupy a trailer in the field house. Later, they lived in Prospect Park and George was voted the first mayor. After graduation, Hulpiau's first job was with Sinclair Oil Company in Wyoming. In 1968 they transferred him to Venezuela to manager the El Chaure Refinery in Puerto la Cruz. Later, he was transferred to Houston where he worked in the Pasadena, Texas, refinery. Hulpiau retired in 1980 and worked for a short time for the Strategic Oil Reserve in Texas and Louisiana. He enjoyed all sports, especially golf, and he loved to travel. He is survived by his wife of 60 years, Marion, four daughters, six grandchildren and three great-grandchildren.

Also in Memoriam

Gordon D. Bath Geol E '41	March 2005
Hans J. Boving MSc Met '67, PhD Met '69	Nov. 7, 2004
William K. Bowie EM '55	March 30, 2004
Steven W. Bradford EM '39	March 2003
Gary F. Burgoyne MSc Min Ec '02	2004
Roger C. Gore Geop E '56	February 2005
James L. Heisel PRE '63	July 10, 2004
Stanfurd L. Jackson EM '36	June 23, 2004
Vernon N. Jackson PE '51	Oct. 12, 2004
Robert H. Karlsson Met E '60	Sept. 19, 2004
Howard C. Kaylor PE '53	June 23, 2004
Robert F. McMahon Geop E	Dec. 14, 2004
John E. Motica EM '48	Oct. 9, 2004
M.S. Patton Jr. Pet E '40	Oct. 29, 2004
Vernon L. Redding Geol E '40	2001
Louis C. Rove Jr. Geol E '51	July 13, 2004
Eugene Rumph Geol E '53	Feb. 2, 2005
Albert E. Ward EM '50	Jan. 29, 2004

BHP Billiton Creates Indigenous Students Scholarship Fund

BHP Billiton Limited, the world's largest diversified natural resource company, has given $300,000 to CSM to establish an Indigenous Students Scholarship Fund. The company wishes to encourage scholars of indigenous heritage from the communities in which it operates to pursue careers in the mining industry. In addition to scholarship funds, recipients will also have the opportunity to intern at one of BHP Billiton's operations in the Americas.

"BHP Billiton's generous gift will put a university education within reach for many talented indigenous students," says President John U. Trefny. "The creation of this scholarship demonstrates our shared commitment to increasing the participation of under-represented minorities in engineering and the applied sciences."

Over the past 15 years, the minority student population at Mines has nearly doubled, growing from 7.5 percent of the undergraduate population in 1990 to 14 percent for the current academic year. The BHP Billiton Indigenous Students Scholarship Fund will enhance the School's ability to attract scholars from indigenous communities and help ensure their academic success.

"We hope that this scholarship program will encourage many indigenous students, over time, to pursue rewarding and challenging careers within the mining industry," says **Marcus Randolph BSc Min '77**, president of diamonds and specialty products for BHP Billiton, who is a distinguished graduate of the School. "By also providing scholarship recipients with a corporate internship, we will help strengthen the company's ties with the local communities that support our operations."

on the move

1949

Lawrence J. Chockie Met E, MSc Met '50 is retired in Green Valley, Ariz.

1950

Daniel M. Cooper EM is retired in Boron, Calif.

James R. Patch Geop E is retired in Houston.

John R. Weyler PE is president of W&H International Group in Lakeway, Texas.

1951

Joseph H. Sullivan Geol E is director of the Sacramento County Taxpayers League in California.

1953

Kelsey L. Boltz Geol E is chairman of the board for EXMIN Inc. in Chihuahua, Mexico.

1954

Thomas G. Fails Jr. Geol E is senior vice president for Pannonian International in Denver.

Walter W. Weid Geol E owns Walt's Vending in Spokane, Wash.

1955

Joseph L. Harbison PRE is retired in Edmond, Okla.

F. Thomas Ise Geol E, Geop E is sole proprietor of Terrier Resources in Winthrop, Wash.

1957

Barry L. Burke Geol E is retired in Alamogordo, N.M.

1961

Don K. Henderson Geol E, MSc Geol '63 retired as rector for St.

Aiden's Episcopal church in Boulder, Colo.

John B. Hite Jr. Geol E is president and chief executive officer for Marifil Mines Ltd. in Spokane, Wash.

1964

Charles L. Yarbrough Jr. PE is retired in Ojai, Calif.

1965

Jerry D. Schulz Met E, MSc Met '68 is senior development engineer for Nucleomet Systems Consulting Services in Burnsville, Minn.

William R. Wilson Met E is a mineral industry consultant in Arvada, Colo.

1966

Royce H. Elliott PE, MSc Pet '70 is retired from Chevron Texaco and lives with his wife Karen in Grand Junction, Colo.

1967

John R. Hoyer EM is operations manager for Titian America LLC in Medley, Fla.

Alan L. Liby Met E, MSc Met '72, PhD Met '74 is program manager for Oak Ridge National Laboratory in Tennessee.

1968

Thomas C. Pool EM is chairman of International Nuclear in Golden, Colo.

Guy G. Ray PE is the global resource manager for Halliburton in Houston.

Charles N. Wentz Chem E is retired in George West, Texas.

1970

Gary J. Colaizzi EM is president of Goodson & Associates in Wheat Ridge, Colo.

Richard A. Kesler BSc Met, MSc Met '74 is a sales manager for Abel Pump in Golden, Colo.

Carl W. Winters EM is operations support manager at Skyline Mine in Helper, Utah.

1971

Dan R. Harrison BSc Min is an independent consultant in Silt, Colo.

1972

Christopher H. Babbitt BSc Math is retired in Castle Rock, Colo.

1973

Glen R. Oswald BSc Met is a plant processing engineer for Mosaic Phosphates in Valrico, Fla.

1974

Marc D. Ernest BSc Pet is production manager for Plains Exploration & Production in Houston.

1975

Mark S. Fitzgerald BSc Math, MSc Min Ec '80 is credit manager for Wells Fargo Bank in Houston.

Joseph J. Garbee Jr. BSc Geop, MSc Min Ec '86 is a project geophysicist for Western Gas Resources Inc. in Denver.

Daniel A. Krygowski MSc Geop, PhD Geop '78 is a petrophysicist for ChevronTexaco in Houston.

Antonio Viteri MSc Met is principal professor for Esceula Superior Politecnica del Litoral in Guayaquil, Ecuador.

1976

Robert W. Handford BSc Min is plant manager for Dyno Nobel in St. Helens, Ore.

Stephen E. James BSc Met, MSc Met '77 is operations manager for Zinifex Clarksville in Clarksville, Tenn.

Rene R. St. Pierre BSc Pet is a drilling manager for Chaparral Energy in Oklahoma City.

1977

Steven Gimbel BSc Met is president of Gimbel Mexicana in Mexico City.

Kevin Wayne Patterson BSc CPR is project manager for ChevronTexaco in Atyrau, Kazakhstan.

William A. Sargent BSc Pet is commercial vice president of China for ConocoPhillips in Beijing.

Michael E. Ward BSc Pet is senior production engineer for ConocoPhillips in Houston.

1978

Stanley L. Atnipp BSc Pet is president of SLA Inc. in Midland, Texas.

James B. Logan BSc Pet is network support specialist for Burlington Edison School District in Washington.

Richard A. Ruggiero BSc CPR is senior manager of the Americas for Gaffney, Cline & Associates in Houston.

1979

Nancy J. House MSc Geop is a geophysicist with EnCana Oil & Gas in Denver.

1980

Collin R. Fay BSc Min is vice president of Parkwest Air Tours in Grand Junction, Colo.

William L. Giesler BSc BE is principal engineer for Honeywell in Tempe, Ariz.

Philip O. Johnson BSc Pet is a senior petroleum engineer for Apex Petroleum Engineers in Centennial, Colo.

Alice A. Probst BSc CPR is principal engineer for Simulation Sciences Inc. in Lake Forest, Calif.

1981

Alberto P. Giussani MSc CPR is an engineering adviser for Occidental Permian in Levelland, Texas.

Paul Groven BSc Min '81 is a flight instructor in simulators for Boeing in Olympia, Wash.

Ann E. Hanson BSc Geop is principal of Brannds in Ionia, Mich.

Jon M. Mock BSc CPR is a staff process engineer for ConocoPhillips in Houston.

James M. Wylie BSc Pet is vice president of operations for Hunt Petroleum in Dallas.

Thomas L. Young BSc Geol is regional technical services manager for Smith Bits in Neu-Isenburg, Germany.

1982

Joerg Rossow MSc Geop, PhD Geop '87 is director of UBS AG in Zurich, Switzerland.

Shawn M. Yasutake BSc Geol is a high school science teacher in Evergreen, Colo.

Keith G. Zmerzlikar BSc Geop is a geophysicist for Hunt Petroleum in Houston.

1983

Carey L. Brady BSc Pet, MSc Pet '90 is a petroleum engineer for HRF Exploration & Production in Denver.

Darrell J. Miller BSc CPR is director of packaging at Molson Coors Brewing Company in Golden, Colo.

Kent J. Simmons BSc BE is an account executive for Toner Plus in Austin, Texas.

1984

James J. Schauer BSc CPR is an associate professor at University of Wisconsin - Madison.

Matthew A. Telles BSc Math is senior software engineer for Captaris Inc. in Englewood, Colo.

Robert L. Zahner M Eng Pet is a senior reservoir engineer for Venoco in Carpinteria, Calif.

1985

Kimberly E. Beck BSc Geop is a physician in Gunnison, Utah.

Randall J. Fortin MSc Met is vice president of Cytec Industries Inc. in West Paterson, N.J.

Michael N. Mears BSc CPR is vice president of Magellan Midstream Partner in Tulsa, Okla.

Karen A. Phillips BSc Met, MSc Mat Sc '90 is a materials quality engineer for Lexmark International in Lexington, Ky.

Andrew L. Prestridge BSc Pet, MSc Pet '91, PhD Pet '96 is vice president of Castle Peak Resources in Bakersfield, Calif.

1986

J. Glen Honstein BSc Pet is principal of Driltek Inc. in Bakersfield, Calif.

Warren T. Maierhofer BSc CPR is western regional manager for Vertex Engineering Services in Seattle.

Kyle A. Moreau BSc Geop is a manager for Sony Ericsson Mobile Communications in Kista, Sweden.

Andrew J. Spear BSc Eng is a project manager for Dibble & Associates in Phoenix.

Dawnna L. Telles BSc Math is a bookkeeper for Misner Building Contractors in Lakewood, Colo.

1987

Steven C. Wood BSc Geop is director of acquisitions and corporate finance for the Century Mining Corporation in Blaine, Wash.

1988

Anita R. Gebbie-Deisch BSc Geol is a design team leader for the Federal Highway Administration in Lakewood, Colo.

Gregory L. Griffitt BSc Eng is a naval aviator for the U.S. Navy in Stuttgart, Germany.

Timothy J. P. Lewis BSc Eng, MSc Mat Sc '91 is senior principal engineer for Babcock Eagleton Inc. in Houston.

Bruce G. Sachetti Jr. BSc Math is director of enterprise architecture for ADT Security Services in Aurora, Colo.

1989

John A. England BSc Eng is program manager for Innovative Technical Solutions in Centennial, Colo.

Michael D. Irvin BSc Eng is program manager for General Electric in Oakbrook Terrace, Ill. .

Gerald B. Konst BSc Eng is marketing manager for Dow Chemical Company in Buffalo Grove, Ill.

Charles A. Norman MSc Min Ec, BSc Pet '98 is vice president of TIORCO Inc. in Englewood, Colo.

L. Andrew Torres BSc Eng is a technical services engineer for ConocoPhillips in Ponca City, Okla.

Anthony E. Vigil BSc Eng, BSc CPR '98 is assistant department manager for Shell Chemicals in Geismar, La.

1990

Katherine T. Clemence Burger M Eng Geol is a geologist for the state of California in Sacramento.

John H. Fronczak BSc Pet is an engineering manager for Baker Hughes Centrilift in Midland, Texas.

Dale R. Loveland Jr. BSc Eng is a staff mechanical engineer for Valero Refining in Corpus Christi, Texas.

Ronald D. Nelson BSc Pet is deepwater completion consultant for Nelson Services in British Columbia, Canada.

James R. Warner BSc Eng is a senior project manager for Stanley Consultants in Englewood, Colo.

1991

Flavio M. Calligaro BSc Eng is an engineering manager for Masisa in Puerto Ordaz, Venezuela.

Karen (Manski) Maestas BSc Geol and her husband, Don, are the

proud parents of Sophia Jessica, born Nov. 18.

Jeffrey A. Phillips MSc Mat Sc, PhD Mat Sc '00 is a senior process engineer for Ceradyne, Inc. in Lexington, Ky.

Jeffrey S. Suiter BSc Geop is subsurface project leader for Total E&P UK PLC in Aberdeen, Scotland.

Suryan Wirya BSc CPR is an asset development manager for BP in London.

1992

Debra K. Brunk BSc CPR is a technical sales service representative for MeadWestvaco in Evadale, Texas.

Shane A. Fross BSc Pet is an engineering supervisor for Anadarko in Houston.

Carlton Hamrick Jr. BSc Math is senior advance technology engineer for Calphalon Corp. in Perrysburg, Ohio.

Jefferson A. Potts BSc Eng is engineering development review manager for Parker, Colo.

Edward L. Wetherell BSc Eng is an electronics engineer for W.M. Keck Observatory in Kamuela, Hawaii.

1993

Joseph T. Cordts BSc Eng is an engineer in the Denver Department of Public Works.

Andres S. Escalante BSc Eng is chief financial officer and a computer technician for XOCOMP in Metairie, La.

Troy L. Holsing BSc Eng is director of product development for Veran Medical Technologies in Nashville, Tenn.

Robert A. Morris BSc Eng is IT/telecommunications program manager for MERCO in Golden, Colo.

Sandra M. Phillips BSc CPR is superintendent of Unimin in Spruce Pine, N.C.

T. Brooks Tucker BSc Eng is president and owner of Dimensions Inc. in Littleton, Colo.

Derek Ulehla BSc Geol., P.E. rejoined Kleinfelder Inc. after

concluding two years of active duty in the U.S. Army Corps of Engineers. He was awarded the Global War on Terror Expeditionary Medal for his work in Iraq.

Bruce H. West BSc Pet is senior reservoir engineer for Petroglyph Energy in Boise, Idaho.

1994

Craig L. Andersen BSc Pet is a reservoir engineer for EnCana Oil & Gas Inc. in Denver.

Derek P. Jones BSc Eng is a major in the U.S. Army in Fort Bragg, N.C.

Yohan Kusumanegara MSc Geol is a senior geologist in exploration and production for Total S.A. in Paris.

1995

Stephen D. Austin BSc Eng is North American sales manager for Ionics Instruments in Boulder, Colo.

David J. Barthel BSc Eng is sales manager for Ingersoll-Rand Company in Atlanta.

Michael J. Clark BSc CPR is president of Infinitec Solutions in Wilmington, N.C.

Tracy W. Crowther BSc CPR is assistant plant manager for Texas Industries in New Braunfels, Texas.

Jasper Fai BSc Eng and his wife, Tuula, announce the birth of son,

Trevor Willem, born Oct 1. Fai is a senior HCM consultant with SAP America Inc.

Rhonda BSc Pet and **Mike Gathers BSc CPR '94, MSc Eng & Tech Mgmt '02** announce the birth of son Kyle Michael, born May 4, 2004.

Glen M. Jameson MSc Env Sc is senior reservoir engineer for the Bill Barrett Corporation in Denver.

Jennifer M. Jesseph BSc Eng owns Jen Jesseph Photography in McKinney, Texas.

Beth M. Mueller BSc CPR is a staff engineer for SC Johnson in Bay City, Mich.

Hatem Rakrouki BSc Geop is a senior engineer for Halliburton in Broussard, La.

Norio Yuki MSc Met is principal engineer for Nippon Mining Company in Hitachi, Japan.

1996

Jami L. Alley BSc Eng is a patient care associate for Centura Health at St. Anthony North Hospital in Westminster, Colo.

Christopher S. Callaway BSc Eng is project manager for Western Industrial Contractors in Denver.

Jennifer J. Holt BSc Geop received a PhD from the University of Ohio in 2004. She is a geodesic earth scientist for the National Geospatial-Intelligence Agency in St. Louis.

Darvin H. Jones MSc Min Ec is a lieutenant colonel and a manager-operations research analyst for the U.S. Army in Dumfries, Va.

Raul BSc Eng and **Kendra (Sublette) Lema BSc Eng** announce

the birth of daughter Soraya Inti, born July 3, 2004, in The Woodlands, Texas. Raul is product evaluation manager for Hughes Christensen and Kendra is senior project engineer with ConocoPhillips.

Luca Rainaldi MSc Engr Sys is head of sales and marketing for Swisscom IT Services Ltd. in Vevey, Switzerland.

Paul V. Salaz Jr. BSc Pet is district field engineer for Calfrac Well Services in Denver.

Connie E. Shaner BSc CPR and husband, William, announce the

birth of Kyra Elizabeth and Reagan, born Dec. 13.

1997

Hassan A. Alkandari MSc Pet, PhD Pet E '02 is guidance and counseling office manager and assistant professor at Kuwait University.

Juan Martin Bulgheroni BSc Pet is an engineer for Bridas Energy USA in The Woodlands, Texas.

Kristy M. Carlson BSc CPR is a selection research instrument specialist for The Gallup Organization in Atlanta.

Randy G. Edelen BSc Eng is an operations engineer for Petrogulf Corporation in Denver.

Cetin Kantar MSc Met, PhD Env Sc '01 is an assistant professor at Mersin University in Turkey.

Diana B. Loehrke BSc Eng is an electrical engineer for The Benham Companies in St. Paul, Minn.

Kelly L. McAughan BSc Pet is a reservoir engineer for BP in Houston.

Mike Melzer BSc Eng married Debbie Parks April 17, 2004 in Texas and had an "M" mountain wedding

cake. Mike's grandfather is **Larry Melzer PE '39**.

Thomas A. Meine BSc Geop is director of customer care for Fastaff in Greenwood Village, Colo.

Jennifer L. Meredith BSc Eng is an electrical engineer for Micron Technology in Boise, Idaho.

Clay E. Ost BSc Eng is a project engineer for Fuscoe Engineering in San Diego.

Sheila M. Van Cuyk MSc Env Sc, PhD Env Sc '03 is a post-doctoral fellow at CSM.

Derek T. Webb BSc Geol is a junior engineer for Nolte & Associates in Centennial, Colo.

1998

Samuel E. Aichlmayr BSc Eng is an account metallurgist for Schlosser Forge Company in Rancho Cucamonga, Calif.

Doreen L. Au BSc CPR is a chemical engineer for the U.S. Environmental Protection Agency in Denver.

Krysta L. Coffey BSc Met is a metallurgical engineer for ExxonMobil in Beaumont, Texas.

Michael P. Dolan MSc Geochem is senior staff geologist for Ellora Energy in Boulder, Colo.

Elizabeth M. Gilbert BSc Eng is a senior technical professional for Kellogg Brown & Root in Houston.

Raul E. Lema BSc Eng is product evaluation manager for Hughes Christensen.

Jeffrey M. Nelson BSc Eng is a design engineer for Wright Water Engineers in Denver.

Preston K. Reichert BSc Eng is manager of engineering and construction for SeaWest Wind Power in San Diego.

Russell B. Thomas BSc CPR is a petroleum engineer for Chevron Texaco in Bakersfield, Calif. He is engaged to Elena A. Demina.

on the move

1999

Damon J. Becker BSc Eng is on the technical staff for Avaya in Westminster, Colo.

Brian Birnbaum BSc CPR married Carol Shaffer Dec. 18. Brian is currently in medical school at

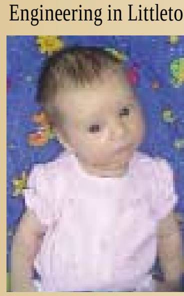
University of Colorado and Carol is a teacher in Cherry Creek.

Martin Castillo BSc Met & Mat Eng, PhD Mat Sc '04 is an adjunct professor at CSM.

Scott N. Crowder BSc Eng is vice president and co-owner of Bozeman Granite Works in Montana.

Jennifer L. Littleton BSc Met & Mat Eng is health, safety, environmental and quality manager for Luzenac America in Centennial, Colo.

Ryan W. Littleton BSc Eng is a project engineer for Calibre Engineering in Littleton, Colo.



Chad Rolstad BSc Eng and his wife, Erin, welcomed their first child, Audrey Virginia, April 9.

David C. Schwabel BSc Met & Mat Eng is a software engineer for Wells Fargo in Minneapolis, Minn.

Alfred Tischler M Eng Pet is a process analyst for Aera Energy in Ventura, Calif.

Andrea R. Tischler BSc Geol is deputy district attorney for Ventura County, California.

Armando A. Troconis L. MSc CPR is senior environmental engineer for Petrolera Ameriven, S.A. in Venezuela.

Graham A. Walsh BSc Met & Mat Eng is a materials engineer at the Naval Surface Warfare Center in Crane, Ind.

2000

Naser Fadghosh Al-Hajri BSc Pet is a teacher assistant in Kuwait.

Nikki M. Bautista BSc CPR is a validation engineer for Commissioning Agents Inc. in Lafayette, Colo.

James M. Beideman BSc Geol is a geotechnical engineer for Haley & Aldrich in Boston.

Matthew J. Bone BSc Eng is a component design engineer for Intel in Hillsboro, Ore.

Luciano J. Ferreira Sa MSc Min Ec is a superintendent for Centro Tecnologico do Marmore e Granito in Brazil.

Josephine R. Hernandez BSc Eng is a financial service professional for New York Life Insurance in Denver.

Grant W. Kaster BSc Eng is project manager for Aslan Construction in Loveland, Colo.

Matthew Lengerich BSc Min and his wife, Heather, announce the

birth of their second child, Jacob Matthew, born Feb. 20. Matthew is maintenance supervisor for Colowyo Coal in Mercer, Colo.

Heidi M. Meyer BSc CPR is a quality control engineer for Intel in Hillsboro, Ore.

Dax C. Routh BSc Pet is a drilling engineer for Triton Engineering Services in Sugar Land, Texas.

L. Eric Stellmon BSc Eng is a process engineer for Intel in Rio Rancho, N.M.

Matthew J. Willeford BSc Min is vice president for Atlas Copco CMT USA in Commerce City, Colo.

Sara A. Williams BSc Eng is a quality engineer for Alcon in Houston.

Brian J. Wolf BSc Met & Mat Eng is a manufacturing engineer for General Dynamics in Garland, Texas.

Halee D. Wood BSc CPR is a process engineer for Sunoco.

2001

Tanya K. Barb BSc Pet, MSc Eng & Tech Mgmt '02 is an analyst for American National Bank in Colorado.

James C. Bricker BSc Eng in a network engineer for Microsoft in Redmond, Wash.

Eric Cepull BSc Eng and his wife, Janeen, announce the birth of

son, Jarod Charles, born August 19 in Lake Mary, Fla., where Eric designs and engineers mechanical systems for healthcare facilities at TLC Engineering.

Jennifer A. Farrand BSc Eng is a mechanical engineer for UTD in Springfield, Va.

Peter A. Hicks MSc Env Sc is an environmental scientist for URS in Houston.

Suzanne K. Janzen BSc Eng is a water resource specialist for Lafarge in Westminster, Colo.

Taehong Kim MSc Min, DSc Min '04 is senior tunnel engineer for Parsons Brinckerhoff in New York City.

Erin Kock BSc Geop married Steven Lake Oct. 2. She is a staff

geophysicist for Occidental Oil and Gas in Houston.

Erin L. Anderson McEvers BSc Pet is a reservoir engineer for EnCana Oil & Gas in Denver.

Zachary R. Snyder BSc Eng is a student at Palmer College of Chiropractic in Davenport, Iowa.

Stacey C. Warrick BSc Eng is a design engineer for Muller Engineering in Lakewood, Colo.

Matthew C. White BSc Met & Mat Eng, MSc Eng & Tech Mgmt '02 is a materials engineer for ChevronTexaco in El Segundo, Calif.

Lafe C. Wood BSc Eng is a volunteer for Mercy Ships and is currently in Liberia.

2002

Jesse J. Adams BSc Met & Mat Eng is hydrogen project manager for the U.S. Department of Energy in Golden, Colo.

Jennifer L. Becker BSc Eng is an engineer for HCL Engineering & Surveying in Englewood, Colo.

Adam F. Griffith BSc Eng is a test engineer for Freightliner in Portland, Ore.

Tyler D. Hall BSc Phy, MSc Engr Sys '04 is a physics engineer for Raytheon in Tucson, Ariz.

Wesley B. Harbert BSc Eng is a project engineer for Vanasse Hangen Brustlin in Orlando, Fla.

Jeffrey D. Jaco BSc Math & Comp Sci is a software developer for Pixxures Inc. in Arvada, Colo.

Anders BSc Math & Comp Sci and **Rebecca BSc Math & Comp Sci**

'03 Rasmussen announce the birth of son Hayden Yorick born March 17.

Wesley E. Reynolds BSc Eng is an engineer for Wiss, Janney, Elstner Associates in Denver.

Shaun T. Ryan BSc Eng is CAD manager for KRM Consultants in Vail, Colo.

Robert C. Sawaya BSc Chem Eng, MSc Eng & Tech Mgmt '03 is a project engineer for VECO USA in Centennial, Colo.

Michael J. Schmitz BSc Eng, M Eng Eng Sys '04 is a nuclear test engineer at Puget Sound Naval Shipyard in Bremerton, Wash.

Coree J. Snyder BSc Chem Eng is a student at Palmer College of Chiropractic in Davenport, Iowa.

Rebekah A. Wilmarth BSc Math & Comp Sci is land development manager for Zeck Homes in Fruita, Colo.

2003

Jason A. Alter BSc Eng is an associate electrical engineer for Lockheed Martin at Buckley AFB in Colo.

Eric E. Baca BSc Chem Eng is an automation engineer for Honeywell in Denver.

Derek R. Bratton BSc Eng is a mechanical engineer associate for Lockheed Martin in Littleton, Colo.

Gregory W. Brink BSc Econ, MSc Eng & Tech Mgmt '04 is a technology analyst for Accenture in Denver.

Rafer J. Chambers BSc Eng is a nuclear engineer at Puget Sound Naval Shipyard in Bremerton, Wash.

Graham P. Cooper BSc Chem Eng is an engineer for Phelps Dodge in Safford, Ariz.

Keith C. Dalke BSc Eng, BSc Econ is a systems engineer for Lockheed Martin in San Jose, Calif.

Larry E. Hartman Jr. BSc Pet, BSc Econ is a production engineer for Unocal in Sugar Land, Texas.

Lianne S. Hill BSc Eng is an engineer for Northrop Grumman in El Segundo, Calif.

Victoria U. Imeh BSc Chem Eng is a production engineer with BP Exploration (Alaska).

Robert Charles Jones BSc Chem Eng, MSc Eng & Tech Mgmt '04 is an engineer for CoorsTek in Golden, Colo.

John M. Kelly BSc Eng is a nuclear engineer at Puget Sound Naval Shipyard, Wash.

James M. Kestner PhD Mat Sc is a senior engineer for Temeku Technologies in Arvada, Colo.

Alyssa A. Kohlman M Eng Geol is a staff engineer for Vector Colorado in Golden, Colo.

Nicholas A. Koster BSc Eng is a district engineer for Maverick Stimulation Company in Bartlesville, Okla.

Gautam Kumar MSc Geop is a geophysicist for the BG Group in the United Kingdom.

Nathan T. Lanci BSc Eng is a nuclear engineer at Puget Sound Naval Shipyard in Bremerton, Wash.

Sheresa D. Derks Lehocky BSc Eng is a civil engineer for Goodbee and Associates in Arvada, Colo.

Frances L. Martin BSc Math & Comp Sci is a software developer for Accenture in Lakewood, Colo.

Cory R. Maurer BSc Eng is an electrical engineer for the Bureau of Reclamation in Lakewood, Colo.

Thomas H. McGee BSc Eng is a sales engineer for J.R. Nichols in Smyrna, Ga.

Chelsey L. Mead BSc Chem Eng is a junior engineer for Micron Technology in Boise, Idaho.

Ramon Mendoza MSc Min is manager of mining services for ORICA in Mexico.

Jared G. Noe BSc Eng recently completed U.S. Navy basic training in Great Lakes, Ill.

Amber L. Noll BSc Geol is a geotechnical engineer for TCB in Greenwood Village, Colo.

James Robert Oltmans BSc Math & Comp Sci is lead web developer for American Select Insurance Management in Lakewood, Colo.

Nicholas Alexander Podolak BSc Eng is a nuclear engineer at Puget Sound Naval Shipyard in Bremerton, Wash.

on the move

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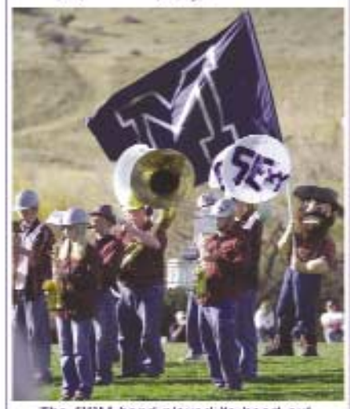

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Yuliana E. Porras BSc Chem Eng is a chemical engineer for the U.S. Bureau of Reclamation in Denver.

Shelley A. Roth BSc Eng is a design engineer for CLV Consultants in Englewood, Colo.

Brittany R. Rothe BSc Chem Eng is a production engineer for Patina Oil & Gas in Golden, Colo.

Adam D. Sallee BSc Eng is a field engineer for Schlumberger in Ciudad del Carmen, Mexico.

Alicia M. Sanchez BSc Met & Mat Eng is a nursery teacher at the TesseracT School in Chandler, Ariz.

Scott M. Sandoval BSc Eng is an electrical engineer for the RMH Group in Lakewood, Colo.

Stacey L. Spera BSc Geol is a construction inspector in the Department of Public Works for Adams County, Colo.

Ryan M. Swanson BSc Eng is a mechanical designer for BCER Engineering in Arvada, Colo.

Nathan M. Torres BSc Chem Eng is a CAD drafter for TKP Architects in Golden, Colo.

Perapol Umpaivit MSc Min is a trader for SCT Co. in Bangkok, Thailand.

Matthew R. Walsh BSc Chem Eng is a field engineer for Schlumberger in Glenville, W.V.

Timothy P. Webber BSc Min, MSc Eng & Tech Mgmt '04 is a mining engineer for Newmont Mining in Elko, Nev.

Stephanie L. Wolfe BSc Met & Mat Eng is an engineer for Bass-Trigon in Littleton, Colo.

Valerie A. Zagnoli BSc Eng is an engineer for Brown & Caldwell in Irvine, Calif.

2004

Christian H. Baxter MSc Geol is an engineer and construction manager for Schnabel in Denver.

Karl N. Brekke BSc Eng is a design engineer for Jehn Engineering in Arvada, Colo.

Joshua L. Burgher MSc Eng & Tech Mgmt is senior sales engineer for Motive Communications in New York City.

Adrien K. Butler BSc Eng is a staff engineer for Vector Colorado in Golden, Colo.

Gregory M. Chirieleison MSc Met & Mat Eng is senior metallurgist for Haynes International.

Matthew C. Collins BSc Min is general manager for Mount Royale Ventures in Boulder, Colo.

Ian Condie BSc Math & Comp Sci and **Korinne McCoy BSc Math**

& Comp Sci were married June 12, 2004 in New Orleans, La.

Tony Hahn MSc Eng & Tech Mgmt is lieutenant commander and resource division chief in the U.S. Coast Guard in Washington, D.C.

Syamsul Hadi Harnianto MSc Geol is an earth scientist for PT. Caltex Pacific Indonesia.

William D. Hillen III BSc Eng is a salesman for Hillen Corp. in Commerce City, Colo.

Eric I. Juan MSc Min Ec is a project analyst for CITGO Petroleum in Sulfur, La.

Michelle Kucharyson BSc Eng married Tommy Probasco June 4 at Hudson Gardens in Littleton, Colo.

Lynn J. Maupin BSc Eng is an associate engineer for TXU Power in Longview, Texas.

Brandon L. McLaughlin BSc Min is a mine engineer for Newmont Mining in Winnemucca, Nev.

Catherine J. McMindes BSc Pet is project engineer for Flatrock Energy Advisors in San Antonio, Texas.

Jo Ann Murray BSc Eng is an engineering intern for Keymark Engineering in Lakewood, Colo.

Julie A. O'Neal BSc Eng is a structural engineer for Fritz Consulting Engineers in Englewood, Colo.

John D. O'Rourke BSc Eng is a civil engineer for Harris Kocher Smith in Denver.

Matthew R. Paulsen BSc Math & Comp Sci, BSc Econ is systems administrator for Lockheed Martin in Denver.

Brian T. Philippi BSc Eng is an associate design engineer for Merrick & Company in Aurora, Colo.

James W. Sannan BSc Eng is a field engineer for CH2M Hill Inc. in Englewood, Colo.

Gretta E. Simpson BSc Eng is a project engineer for Rhino Engineering in Grand Junction, Colo.

Teresa M. Steuart BSc Met is a management associate for U.S. Steel in Gary, Ind.

Daniel J. Trapp BSc Eng is general manager for Fairfield Motors in Broomfield, Colo.

Alisha R. Tremaine BSc Met is a manufacturing engineer for Boeing in Tulsa, Okla.

Alan D. Turner MSc Env Sc is on the staff of URS Corporation in Denver.

Graham P. Vlcek BSc Eng is an application engineer for N-Position Technology in Lakewood, Colo.

David V. Williams MSc Geol is a quantitative hydrogeologist for URS Corporation in Denver.

Yuki Yoshida PhD Appl Phy is a senior processing engineer for Intel in Santa Clara, Calif.

Shortly before he passed away in 1996, Gordon Lacy decided to include Mines in his will.

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Gordon R. Lacy, Jr. '63

Gordon's education at Colorado School of Mines led to a rewarding career in the construction industry. To offer others similar opportunities, he made a bequest from his estate to establish the Lacy Family Endowed Scholarship.

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Christopher G. Wenger
Director, Planned Giving
Office of Institutional Advancement
(303) 273-3140
cwenger@mines.edu

Susan Delahunt
Planned Giving Officer
Office of Institutional Advancement
(303) 273-3709
susan.delahunt@is.mines.edu

For more information, please visit Mines' planned giving web site at: www.oia.mines.edu/planned_giving/

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