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 M 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!

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 CO2 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 CO2 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 CO2 concentration. There has been some short-term apparent correlation of CO2 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 CO2 concentration. For instance, in considering the glacial-interglacial transitions of the last half million years, we see that increases or decreases of CO2 did not precede temperature changes, but followed them. Also there were long periods of time when CO2 remained stable but temperatures dropped, as well as times when CO2 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 CO2 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 CO2 production has contributed significantly to our current warming trend, or is it complete anachronism?

Doug Brandon BSc Geol’79

Much of what this article purports to inform the reader about is pure conjecture. There is no proof whatever 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.
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.
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 distinction, 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 “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 public service activities, such as surrounding Mines withмотрим основные из них.

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 award-winning faculty
- 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 for this year
- The underwriting of the School’s largest ever fundraising campaign, expected to be successfully completed this year.

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

John F. Austin PRE '55

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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 M-Istid 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.

Letters to the Editor

I am surprised by the narrow view of the oil and global warming literature that appears in the recent issue of Colorado School of Mines magazine. I object to the statement “...direct linkage between increases in global temperature and industrial production of CO2 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 CO2 in our atmosphere. I do not know if more CO2 is good or bad, we do 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 CO2 injection into certain reservoirs to enhance recovery of liquids, it works great in some types of oil. We use CO2 from local areas of “cooked” carbonates as our source. I cannot imagine the energy costs involved in CO2 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 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 Claissen Geol E ’57

I found the article on peak oil and global warming interesting. I reminded me of another use of CO2 from industrial operations: the recovery and sale of food-grade CO2 from refinery flue gas streams. This CO2 ends up in carbonated beverages. Unfortunately it is a temporary storage of CO2 with most of it eventually returning to the biosphere. Same result may be true for using CO2 in EOR or IOR since mixing liquid CO2 with oil and water results in a gas phase of CO2 over the water.

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 and the government in Washington would significantly lower the release of CO2. 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

The IPCC report also documents how variations in solar luminosity and volcanic aerosols explain the high-frequency (decadal time scale) changes in global temperatures. These variations cause such transient cooling episodes as the one we experienced from about 1970 to 1997.

The longest time scale of interest is 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 glacial periods (including the last ice age). During the past 100 years, the concentration of atmospheric CO2 averaged about 380 ppm and began a rapid rise to the present level of about 390 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. The data do not do this task and possible overall warming with certainty.

The National Academies of Science published a report in 1996 that many people, including me, thought was a fair and balanced assessment of the science. Unfortunately, it is not a popular view now to doubt 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, the National Academy of Engineering and the National Academy of Medicine published an updated report. In this report, the academy leaders represented a joint note in preparation for the upcoming G8 summit in Britain, in which they declared that the science behind global warming is unsalable.
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.

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 Mondialogo Engineering Award presentation in Berlin, Germany, May 30. Competing against 110 international teams, the students designed a 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.

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, and 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 drifting and tracking. Competing in the men's division, the Mines team included two women.

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 hydroelectic dam, robots and a “Pin-the-Organ-on-Bob” display.

Professors of Eminence

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

• Paul Santi ‘85, 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 Russell, Physics Department, received Alumni Teaching Awards for superior teaching at the undergraduate level.

30 Years of Blood Drives

Bonfils Blood Center has presented Mines with a “30 Years of Saving Lives” award for helping 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.
Short takes

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, 135 master’s degrees and 29 doctorate degrees.

Honorary degrees were awarded to Vest and to George T. Schiavon, professor emeritus of the University of California, Davis.

Distinguished Achievement Medals were presented to Joe W. Gray PhE ’68, Marcus Randolph BS Min ’77 and Sandra Stash BS Pet ’81.

A Mines Medal went to Mohamed Zainal.

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.
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 conditions in environmental protection and sustainable development, as well as areas of conflict stemming from ethnic, cultural and religious conflicts. 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 economies, development and the geography of nations is necessarily aligned to the world’s distribution of natural resources.

Mines, with its unique mission in energy, mineral and materials 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 designed 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 an international political economy 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 anywhere 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 professional 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 degree’s 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 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 and industry constituents. The survey was developed to resolve this matter.

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. However, there is support for the degree; it is significantly different from other programs. 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. The Recent nationwide surveys indicate that many high school students now enter college intending to obtain a master’s degree. And among the professional engineering graduates, 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 contextual in technology and the resources arena germane to obtaining 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.

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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 Jayanthi Kusumastuti from the 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.

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. The sea and salt water were driven inland. The waves also eroded and washed in saline water from the sea. The soil salinity is high because of seepage, poor drainage due to blocked channels and a hard pan below the plough depth.

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 Tsunami Response team is working with other U.S. and Sri Lankan scientists to develop a research proposal to study the tsunami effects on groundwater and soil quality. Illangasekare will chair the U.S. expert panel, and all leading water agencies in Sri Lanka will participate. Illangasekare is currently collaborating with Obeysekera 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.

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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 30 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 BS Min ’82, MS Eng Min ’85, Jeff Pargas BSc Eng ’03, Joe Keating PE ’61, Bob Resigh 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 Geo ’95, MSc Geo ’96 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.

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 Abrahamson BSc Eng ’98, football player Tim Baer BSc Eng ’93, 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.

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 5-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 14-1 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 on route to Second Team All-CAC in 1995. Huber garnered First Team All-RMAC 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 1964 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 ’63 who each placed 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 Schroeter were both national runners-up.

2005 Athletic Hall of Famers Named

T

20 C0LORADO SCHOOL OF MINES

DENVER BRONCOS

INK NFL DEALS

BUFFALO BILLS

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 for tackles, 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.

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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, by no means all, of what my students read is escapism, lots of sci-fi 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 dry 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 engineering school?

The class begins with a selection of stories that I judge 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 exercises are open-ended: “Mary Ann did [something],” 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.

The student reading is often profound, emotional and character driven.

Many of the students love the outdoors and their fiction isn’t dry 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

A good fiction writer will eschew bafflegab, legalese, engineerese and other clumsiness of expression. A deepened writing will eventually deepen reading. That’s good for all of us.

Joanne Greenberg 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 scampering 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 your breath would freeze and you would have needed a parka and some thick insulating boots which you could have purchased at Sears, but the conditions were just too cold to be scampering 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 your breath would freeze and you would have needed a parka and some thick insulating boots which you could have purchased at Sears.

Fourth: Fiction writing, always a fine hobby for entertainment value, why have a fiction class at an engineering school?

First: Fiction writing frees the imagination, a 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.

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

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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 is 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.

In Memory of M.S. Patton ’40

Geoscape

In Memory of M.S. Patton ’40 – Graybill-Patterson Company

Hughes Christensen

Kelman Technologies

Miller Consulting Services

Robert E. Miller Consulting

Orphan River Consulting

Royal Gold

Swiftage EMAIL

Trade Energy Services

Banks Insurance

Birdieball

Boards

Jerry Bryant ’53

CSM Alumni Association

CSM Bookstore

CSM Student Life

Denver Art Museum

Denver Museum of Nature & Science

Dimension Z Golf

Foss GolfSmith

Liberty Mutual

Meyer Home Center

Tony Rigatoni’s

Woody’s Pizza

2005 committee: Roy Banks

Jim Cowing ’71

Doug Miller ’64

Janet Blair

Kathy Brett

Anita Pariseau
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 acclimated to the heat? Sure. Live off the grid? 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 faced by a team of 38 Mines students who went to Mexico 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 some 2,940,000 Internet Web sites containing the phrase.

Close to home, President Trefny has emphasized this 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 Munoz in the Division of Engineering and Juan Lucena in the Liberal Arts and Engineering and International Studies Division. Munoz and Professor Cathy Skukan BSc Geop ’70 are mining students all over the world, as well as close to home, in community development projects.

Our partner 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. This report is an outgrowth of the family of students and instructors who 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 foot, bicycle, motor scooter and truck. HFH has targeted Las Varas for a new simple but comfortable housing project.

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 four of four teams, the first starting with bare ground. Our team included 11 students from Mines: Steve Bilot, Roger Brown, Patrick Doyle, Beau Winters, Alisson Walmann, Lisa Hauger, Erik Pyhtila, April Worley, Josh Galion, John Smith and Mike Iwata; two students from University of Colorado Boulder: Amy Kirk (daughter of Mid Kirk in the Mines financial aid office) and our son, Matt Cecil; and one student from University of Northern Colorado, Adrienne Walmann (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. Researchers 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 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 a given. At our house, I take a hot shower as a matter of course; here I had no hot water for 17 days. Days like that are 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.

For Humanity (HFH) Global Village build in Las Varas, Nayarit, Mexico.

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.

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My thanks to all of the HFH families and extended families who were 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.
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 effort 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 United States has been described 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 puts 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 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 wish I could have done much more."

The trip was hard work, but fun 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 for us as team leaders to see the response, 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’s better to light a single candle than to curse the darkness."" — Ed and Melissa Cecil, who at Mines Ed as an emeritus professor in the Physics Department and Melissa as an adjunct instructor in the Guy T. McBride Jr. Honors Program in Public Affairs. They live in Golden and recently celebrated their 50th wedding anniversary.

**The proud new home owners Rosie (in front with baby Alondra and balloon) and Carlos (second from right in the back row pose in front of the nearly completed home at week’s end.**
Mines Acknowledges Individual, Corporate and Foundation Donations

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

**Personal Gifts**

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 “M aytag-Animbari 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. Merritt ’50, a member of the Guggenheim Society, renewed his membership in the Mines Bookcliff Country Club, 2730 G Road, noon. For information details.

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 $200,000 campaign pledge supports the Richard J. Gardner Endowed Scholarship Fund in Athletics. Mr. and Mrs. Gardner also contributed $5,000 to the Mines Endowment 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.

**Corporate Gifts**

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, which is the Baker Hughes Distinguished Chair in Borehole Geophysics and Petrophysics.

BHP Billiton contributed $300,000 to support 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 Mines 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; and the Career Center.

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

Edna Bailey Sussman Fund contributed $250,000 to support the Mines Recreation Center. He will soon be selecting the appropriate naming opportunity.

Frank and Dot Starmole 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:

Edna Bailey Sussman Fund contributed $30,000 to support environmental internships.
Seniors Put Engineering Ingenuity to Work

By Erica Siemers

The Senior Design Trade Fair held in April showcased 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.

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 Geohazards project - tied for first place with each team earning a 90 percent, and the third and fourth place teams, the 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 third in the four-day engineering design challenge in a respectable 53rd place.

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 and provided them with knowledge, the villagers will be able to troubleshoot and make repairs to their solar electrical system.

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 ideal partner 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 Bob 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 broad knowledge of its engineering community, and provide students with an opportunity to work within the organization.

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 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 from each functional team met weekly during the process to provide specifications suitable 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 kiln conversion helped us build our 'bench strength' - to build the future of our organization." Osswald adds, "These partnerships create value for both the 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 have the skills, knowledge and integrity and, of course, the tremendous technical competencies they bring to our company."
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 2000-02, 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 major of Glandale, 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 Engd 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 Treyfiy 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 Whitleft Bsc Math ’85 of Hl 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 Treyfiy 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 transnational development in Central Asia, which focused on his NGO’s humanitarian engineering efforts; Professor Emeritus Bob Webster 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 Ilangasekera, 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 CSM AA board.

In my travels I have visited with CSM AA sections in Grand Junction, Colo., Midland, Texas, Salt Lake City, Bone Valley, Fla., and Houston. I hope to visit San Francisco, 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 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,

[Signature]

Anita M. Pariseau
Executive Director

New Life Members

Robert B. Affleck ‘85
Scott M. Denton ’94
Elise A. Montoya ’79
Kendall K. Harrari ’04
Timothy L. Hoops ’79
Linda Sue Hoops ’81
Nathan G. Palmarter ’02

International

Istanbul, Turkey

MadhuKrish Motta ‘96 (on right) reunited with Ahmad Cokunin ’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 ’77, 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 Tod ’01, Jackie Haney ’03, Andy Haney ’03, Andrea Alleyne ’97, Meghan Quiat ’04, Jeremy Zimmerman ’86 and Glenn Vangelen ’81.
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.

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.

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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 Littleraton, 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 9th 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 their 60th anniversary. They had two daughters, two grandchildren and five great-grandchildren.

Henry A. “Hank” Emery Jr. PE ’66 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 ’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 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 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. 12, 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 Kingman 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 electrical ratings for those who finished. Koepke is survived by his widow, a son, a daughter, six grandchildren and one great-grandchild.

In memoriam

Class of 1965

Class of 1970
Standing from left: George Off, David Scriven, Larry Cramer, Tim Haddon, Bob Dearinger, Craig Garrett, Bruce Craig.

Class of 1975
Standing from left: Diane Brownlee, Jamie Reineke, Wan Foxwell, 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 Kilgournsmith, Henry Kolego, Mike McCarter, George Puls, Dean Stoughton, Keith Brownlee, Philip Morrow, Steve Lambert, Kirk Nobis.
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 Capitoli 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 grandchildren and seven great-grandchildren.

David B. Schulze PE ’49, of Wichita Falls, Texas, died June 10, 2004, at age 83. He was a retired petroleum engineer. Schulze 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 in death. He is survived by three sons, three daughters, a brother and numerous grandchildren and great-grandchildren.

David W. Wilson PRE ’52 died Aug. 13, 2004, at age 94. He was a retired engineer. Wilson’s wife, Mildred, died in 1985. He is survived by his children and grandchildren. Wilson was a member of Kappa Sigma and Theta Tau. He also wrestled and lettered in baseball. He enjoyed his summers at Mines and always attended his reunions. After graduation, Wilson worked for Huntble 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 wife. Wilson is survived by his widow, Sandra, two sons, a daughter, a stepson, a stepdaughter, six grandchildren and six step-grandchildren.

Charles Vernon Woodward Met E ’44 died April 11 at his home in Grand Junction, Colo., at age 92. After graduation from Mines, Woodward, a native Coloradan, became a milling superintendent for Bunker Hill and Sullivan in Metalline 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 1949-1985. In 1951, Woodward 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. Woodward 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. Woodward is survived by his widow, two sons and a grandson.

Also in Memoriam

BHP Billiton Creates Indigenous Students Scholarship Fund

BHP Billiton Limited, the world’s largest diversified natural resource company, has given $300,000 to CSU 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. Tiffany. “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.”
Charles A. Norman MSc Min Ec BSc '96 is a vice president of TORGCO Inc. in Englewood, Colo. L. Andrew Torres BSc Eng is a technical services engineer for ConstiPhilips in Puerto City, Ohio. Anthony E. Vigil BSc Eng, BSc CPR '98 is assistant department manager for Shield Chemical in Geerma, Ga.

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. Lowland Jr. BSc Eng is a staff mechanical engineer for Valero Refining in Corpus Christi, Texas. Ronald D. Nelson BSc Pet is a deepwater completion consultant for TIORCO Inc. in Englewood, Colo.

1991 Fiana M. Callegaro BSc Eng is an engineering manager for Hilman 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 '03 is a senior process engineer for Century Inc. in Lexington, Ky. Jeffrey S. Sauer BSc Geop is a surface project leader for Total E&P UK PLC in Aberdeen, Scotland.

1992 Debra K. Bruni BSc CPR is a technical sales representative for Weldbend Inc. in Earlville, Ill. Karl R. Hertz BSc Eng is a project manager for Ingersoll-Rand in Lexington, Ky. Bath M. Mudler BSc CPR is a staff engineer for SC Johnson in Bay City, Mich. Hatem Rokabi BSc Eng is a staff engineer for Petroglyph Energy in Boise, Idaho.

1993 Joseph T. Corbett BSc Eng is an engineer in the Denver Department of Public Works. Edward L. Wehrendt BSc Eng is an electronic engineer for W.M. Keck Observatory in Kamuela, Hawaii. Robert A. Morris BSc Eng is IT telecommunication program manager for MÉRICO in Golden, Colo.

1994 Craig L. Anderson BSc Pet is a reservoir engineer for Exxon Oil & Gas Inc. in Denver. Derek P. Jones BSc Eng is a major in the U.S. Army in Fort Bragg, N.C. Yohan Kusumangara MSc Geol is a senior geologist in exploration and production for Total S.A. in Paris.


1996 Kevin L. Jones MSc Min Ec is a divisional manager for the University of Cincinnati. Jennifer J. Holt BSc Geop received a PhD from the University of Colorado in 2017. Kristy Lee BSc CPR is a staff scientist in the National Research Council in Calgary, Alberta.

1997 Scott B. Anderson MSc Min Ec is a petroleum engineer for ExxonMobil in Beaumont, Texas. Stacey A. Glenn BSc Geop is a reservoir engineer for Petroglyph Energy in Boise, Idaho. William G. Mullen BSc Geop and his wife, Jennifer, announce the birth of son, meas.

1998 Brian O. Morgan PhD Min Sc is an assistant professor at Kuwait University. John Martin B. Hunnu BSc Geop is an electrical engineer for Bridge Energy USA in The Woodlands, Texas. Christy M. Carlson BSc CPR is a selection research scientist instrumental for the Galapagos Organization in Atlanta. Randy C. Dulin BSc CPR is a partner for Petrogulf Corporation in Denver.


2000 Jennifer L. Birmingham MSc CPR is a project engineer for Forneoce Engineeering in Sarnia, Ont. Sheila M. Van Coyk MSc Eng, PhD Eng Sc '02 is a post-doctoral fellow at CMU.

2001 Charles H. Wetherell MSc Pet is an assistant professor at the University of Tennessee. Jeffrey A. Phillips MSc Mat Sc, PhD Mat Sc '03 is a senior process engineer for Century Inc. in Lexington, Ky. Jeffrey S. Sauer BSc Geop is a surface project leader for Total E&P UK PLC in Aberdeen, Scotland.

2002 Glenn M. Jameson MSc Sci is a district field engineer for Callow Wall Services in Dallas. Connie E. Shaver BSc CPR and her husband, William, announce the birth of Kyra Elizabeth and Reagan, born Dec. 13.

2003 Hassan A. Alkandari MSc Pet, PhD Pet '02 is a quantum and computational physicist at the United Arab Emirates University. James M. Allen BSc CPR is a staff engineer for ExxonMobil in Beaumont, Texas. Kevin T. McWhorter BSc Geop and his wife, Ginger, announce the birth of daughter, Emma Grace, born Dec. 19, 2003.

2004 Kristy M. Carlson BSc CPR is an account manager for Schlumberger in Rancho Cucamonga, Calif. Daren L. Au BSc CPR is a chemical engineer for the U.S. Environmental Protection Agency in Denver.

University of Colorado and Carol is at home in Cherry Creek.

Martin Castillo BSc Met & Mat Eng PhD Mat Sc ’04 is an adjunct professor at CPR.

Scott M. Crowder BSc Eng is vice president and co-owner of Boardman Granite Inc in Montgomery.

Jennifer L. Littlen BSc Met & Mat Eng is a health, safety, environmental and quality manager for Lucon American Centennial, Colo.

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

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

Alfred Tischler M Eng is a test engineer for UTD in Lake Mary, Fla., where Eric recently completed U.S. Navy basic training and is now working as a software developer.

Heidi M. Meyer BSc CPR is an engineer for CoorsTek in Denver.

Alyssa A. Kohlman M Eng Geol is a nuclear test engineer for Idaho National Laboratory.

Bartlesville, Okla. Senior Geophysicist for the BG Group in the United Kingdom.

Gautam Kumar MSc Geop is a geophysicist for the BG Group in Great Britain.

Chester Wolf MSc Geop is an associate geophysicist for Paradigm Geophysical.

Erin L. Anderson McEvers BSc is a staff engineer for Vector Colorado in Golden, Colo.

Richard A. Birns BSc Eng is an engineer for Puget Sound Naval Shipyard, Wash.

James E. Cotter BSc Met & Mat Eng is a nuclear engineer for Westinghouse.

Kerri A. Wood BSc CPR is a nuclear engineer at Puget Sound Naval Shipyard in Bremerton, Wash.

Robert Charles Jones BSc is a mechanical engineer for Argonne National Laboratory.

Gautam Kumar is a geophysicist for the BG Group in Great Britain.

Chester Wolf MSc Geop is an associate geophysicist for Paradigm Geophysical.

Eric E. Baca BSc Chem is a nuclear test engineer at Puget Sound Naval Shipyard.

Hamid N. Kazemi M Sc is a senior engineer for Temoek Technologies in Canada.

Richard A. Birns BSc Eng is a nuclear engineer at Puget Sound Naval Shipyard, Wash.
Shortly before he passed away in 1996, Gordon Lacy decided to include Mines in his will.

In 2005, his generosity lives on.

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

Although Gordon is gone, his scholarship has helped prepare more than twenty students to provide the technical expertise our world needs. And its work has only begun.

If you'd like to invest in the future of Mines and its students through a charitable bequest or other deferred gift, please contact:

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

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

Bequests to Mines should be directed to:

“The Colorado School of Mines Foundation, Incorporated, of Golden, Colorado”
Mines Little Theater performed Guys and Dolls this spring.