The Magazine of Colorado School of Mines

MINES

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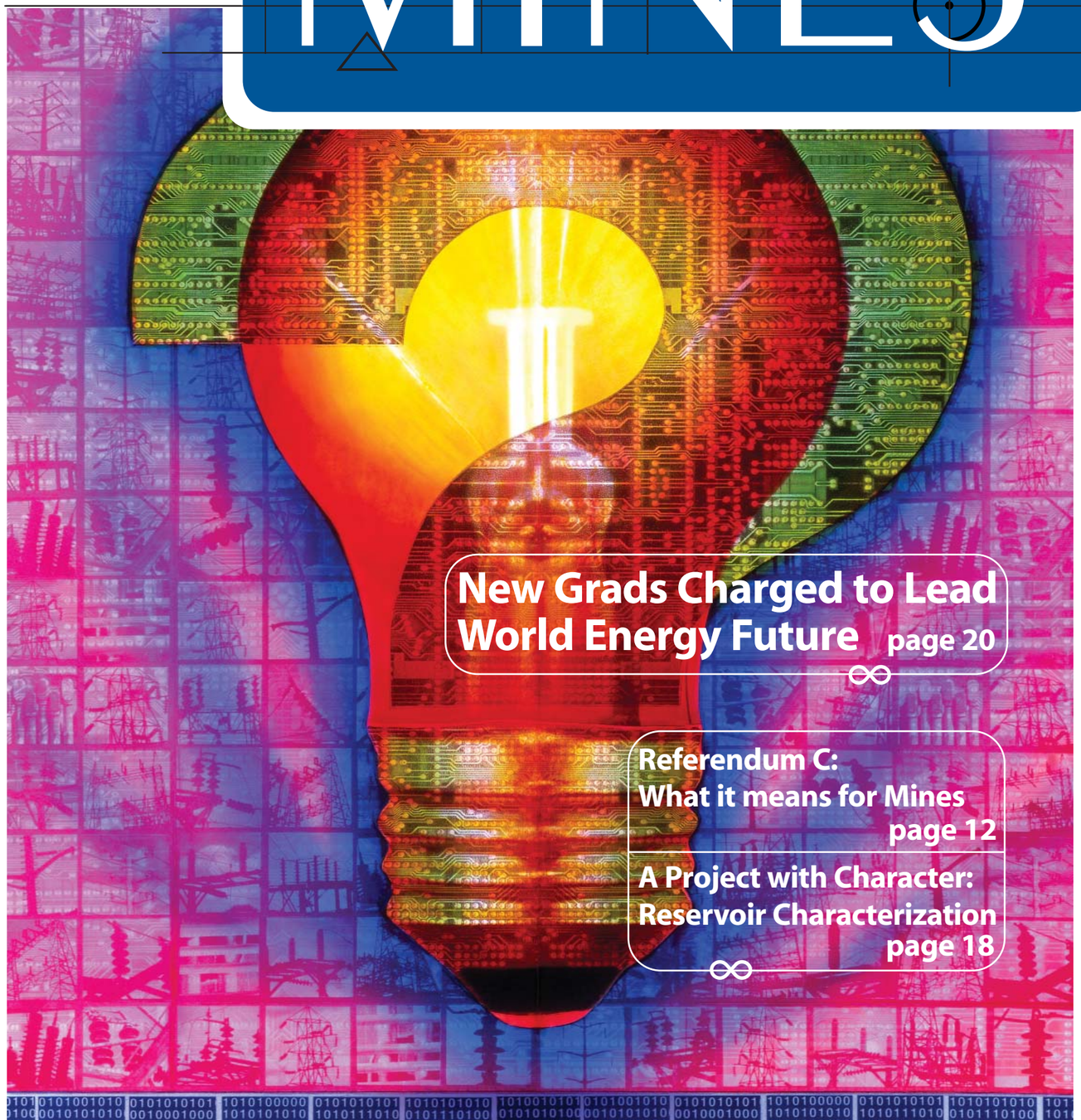

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MINES
WINTER 2006

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

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

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Letters to the Editor

Listen Up!

Was very interested in the article in the fall *Mines* magazine titled "Listen Up" concerning the Internet radio station at Mines. Back in 1948, spearheaded by John Morgan EM '49, we built a carrier current station using a war surplus aircraft transmitter. The station was located in the basement of the gym. Our call letters were, of course, KCSM. The RF was introduced into the power AC via a capacitor. We covered most of Golden, although there were some dead spots due to the vagaries of the power company distribution system. Our goal was to broadcast football games, although we also did some basketball. Away games were played later, having been recorded on a tape recorder. We also played some music – at first there were many eager disk jocks, but the demands of studies whittled away some of the initial enthusiasm.

I regret that I cannot dredge up the names of some of the pioneer sportscasters (some were very good, too) but, alas, time has stripped them from my memory. I do not know how long the station lived. I left after graduation in 1950.

Daniel Butner EM '50

Humanitarian Engineering

I read your article "Humanitarian Engineering" and I must correct Dr. Cecil on his perception of how the Peace Corps functions. He stated, "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."

I served in Peace Corps-Panama in 2002-2004. During my three-month training period, it was beat into my head that Peace Corps volunteers would become human resources where they served. In my village of 1,000 people, I became part of a group of women entrepreneurs who wanted to start an income-generating chicken project. I helped them access the value of their bamboo, mud and grass (which can be used in place of concrete), tools and labor. With this, we wrote a budget together that proved the community was investing more than half the value of the project. What was missing was the money to purchase chicks, their food and medicine. The women submitted this budget and proposal to USAID, which they wrote, and thus learned a valuable skill for future projects. The total they actually received from USAID was less than $300. USAID will only fund Peace Corps projects if the community shows that half of the amount needed is community-contributed.

The work of Peace Corps volunteers should never be depicted as unsustainable or culturally insensitive. My colleagues and I lived in these communities for two years, not two weeks. We truly understand the challenges our neighbors face in the developing world.

Whitney Trainor BSc Geop '01

Correction: The thickness of the gold leaf on Guggenheim Hall is not .025 inches as reported last issue. It is much thinner, closer to .000025 inches.

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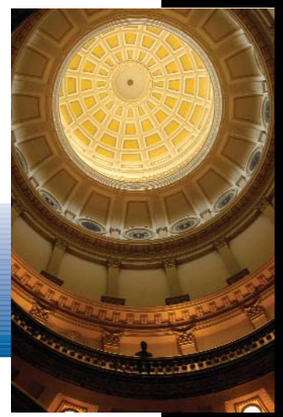
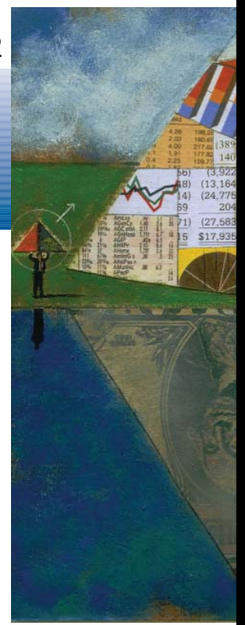
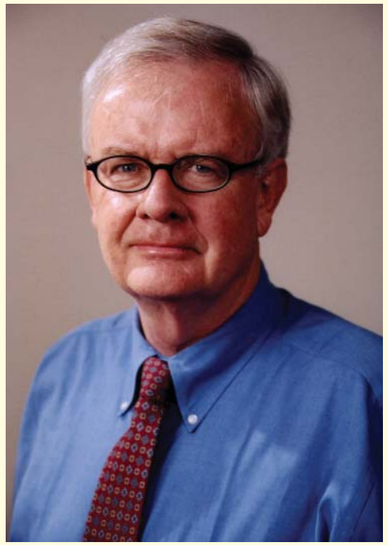




About Our Cover: Dr. Raymond L. Orbach, director of the Office of Science for the U.S. Department of Energy, was the commencement speaker at Mines in December. He urged the new graduates to apply their creativity to solving the world's energy problems and outlined future possible energy solutions. "These are the opportunities for you to use your talents, learning and commitment to literally save the world," he told them. The complete speech starts on page 20.

Research for Fun and Profit

An interview with Mines' new vice president of research



"Mines is at the right place at the right time," says John Poate, the School's new vice president for research and technology transfer. He's referring to Mines' potential to expand its reputation as a leader in energy, earth resources, environment and materials as outlined in the strategic plan.

"There are excellent people here: faculty, staff and students," he says. "The four key focus areas outlined in the strategic plan are critical issues facing the United States and the world. Developing solutions will require innovative research and Colorado has unique strengths and advantages." The area already is home to the National Renewable Energy Laboratories (NREL), the National Institute of Standards and Technology (NIST), the National Center for Atmospheric Research (NCAR) and the new Fitzsimons campus of the University of Colorado Health Sciences Center, among other key players. Plus, Colorado is an attractive location where innovators might want to set up business.

Poate said he sees his job as "enhancing where we are already, then growing the research area. The faculty, staff and graduate students will have to drive this." He continues, "My main role is to act as a catalyst for them. I want to build a research-friendly environment to facilitate the endeavors of the faculty. For example, I'll work with them on proposal writing. I'll help establish the right contacts within industry, labs and other schools."

Hiring and retaining outstanding faculty are essential to maintaining and enhancing the School's reputation. Poate says, "We will have to come up with competitive start-up packages and maintain competitive salaries to retain these stars. But once they're started, their research will primarily be covered by the grants they bring in. Research-intensive faculty create a sense of excitement about science and engineering for students. So many exciting things happen in the R&D arena that a technical institution would be a pretty dull place without vibrant research. There is nothing like the excitement of discovering or measuring something no one else has seen before. That's what it's all about."

Currently Mines has 26 research centers on campus. "That seems a lot for an institute of Mines' size," says Poate. "What I will do is work with faculty and administration to focus on critical areas in energy, Earth resources, environment and materials and build a critical mass of internationally recognized centers. I expect a natural merging of research will occur. Large centers are needed to generate the funds for state-of-the-art equipment and the personnel to maintain them.

"At the same time I'll be working with my U.S. and international friends in the industry and national labs and other universities to see how Mines fits in and develop joint programs. These are the sort of activities that will help me focus on the right ideas and help develop the tech transfer programs."

Before joining Mines in January, Poate was chief technology officer and vice president of Axcelis Technologies, a leader in the manufacture of ion implantation machines for the semiconductor industry. Prior to that, he was dean of the College of Science and Liberal Arts at the New Jersey Institute of Technology. The bulk of his research career was at Bell Labs where he was head of the silicon processing research department. Poate holds a doctorate in nuclear physics from the Australian National University. He was the John Bardeen Award winner of The Metallurgical Society in 2002.

"The 20th century was the century of physics. The 21st century will be the biology century."

Research for fun and profit is Poate's philosophy. He takes this outlook from the then-vice president of research at Bell Labs, Nobel Laureate Arno Penzias, whose motto was "physics for fun and profit." Poate's broader, more inclusive outlook is more suited to Mines.

Times have changed and so has research. "The 20th century was the century of physics. The 21st century will be the biology century," Poate says. And how will Mines play in this arena? "Mines already has some excellent programs in biology such as biogeochemistry, environmental microbiology and biomaterials. Another burgeoning area is nanoscience and nanotechnology, where Mines also has some excellent research efforts."

"At the research level, we've got some excellent stuff going on," says Poate. "Now we've got to pull all it together."

By Maureen Keller

Students Participate in World Petroleum Congress

Ten CSM graduate students from six countries in the International Petroleum Economics and Management program, offered jointly by the Economics and Business Division and the French Petroleum Institute, attended the 18th World Petroleum Congress in South Africa in September.

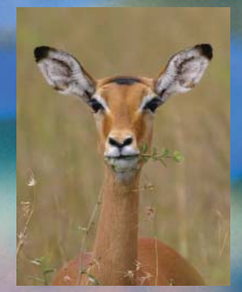
"This was the first time in its 72-year history that the congress has been held in an African country, a reflection of the growing importance of Africa to the petroleum industry," says Donald Walker, a student organizer of the trip. The congress is held every three years by the World Petroleum Council. More than 3,000 delegates from the petroleum industry, government, academia and non-governmental organizations attended. Walker led the fundraising effort that allowed the Mines students to make the trip. Most of the sponsors were from the petroleum industry including Total, which donated more than $16,000, Forest Oil International, Encana Oil and Gas, CGG Americas Inc., Williams Production RMT and the Organization of Petroleum Exporting Countries (OPEC).

According to Walker, "The goal of the trip was two-fold. First, we wanted to learn as much as possible about the energy industry. Second, we wanted to expand our cultural awareness by learning about Africa." The congress' focus was on how the energy industry can partner with government, academia and civil society to meet the world's rapidly growing demand for energy while protecting the environment and operating in a way that is socially responsible.

The congress featured big-name speakers including Lord John Browne of Madingley, BP chief executive; Rex Tillerson, president of ExxonMobil; Total's exploration and production president, Christophe de Margerie; and Eivald Roren, president of the World Petroleum Council.

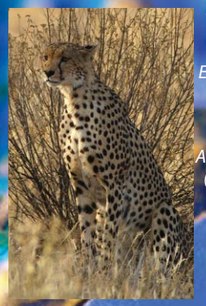
In addition to hearing speakers, congress participants also could choose from more than 100 special presentations or roundtables chaired by leading industry experts. "The idea of promoting transparency and fighting corruption was a significant focus of the congress," says Walker. Other issues addressed climate change, the role of technology and how to attract more young people to the industry.

While in South Africa, the 10 Miners also toured a coal-to-liquids plant, visited historic Johannesburg, Pretoria and Soweto (formerly home to Nobel Laureates Nelson Mandela and Desmond Tutu) and took a photo safari in a game preserve.



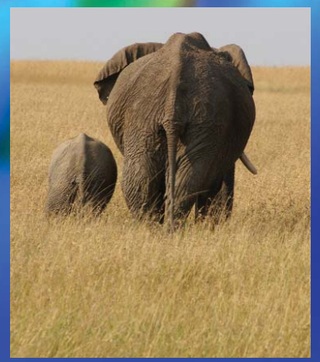
Donald Walker presented a special gift to Jean-Pierre Favennec, Director of the Center for Economics and Management at the French Petroleum Institute (IFP), to thank him for the support of the IFP in organizing the trip and in the fundraising effort.

From left: Nicolas Jonard (France), Vikram Balasubramanian (India), Omotayo Soyemi (Nigeria), Matthieu Delaby (France), Benjamin Pope (USA), Azuka Enenmo (Nigeria), Donald Walker (USA), Jennifer Rano (USA), Alejandro Nebreda (Venezuela), and Chih Wei Khor (Malaysia).



Matthieu Delaby and Nicolas Jonard listen intently during presentations .

Omotayo Soyemi poses with a traditional Zulu warrior during a visit to the Lesedi Cultural Village.



December Commencement

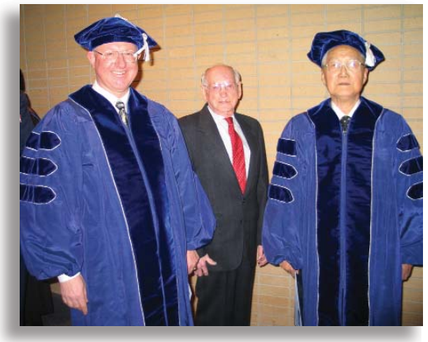
Raymond Orbach, director of the Office of Science at the Department of Energy, was the speaker at the midyear commencement ceremony in December.

Of the 273 degrees conferred, 142 were bachelor of science degrees, 109 were master's degrees and 22 were doctorate degrees.

During commencement ceremonies, honorary degrees were awarded to Orbach, as well as to Meng Ersheng, retired chief geophysicist of China's Bureau of Geophysical Prospecting, and to Thomas Petrie, co-founder of Petrie Parkman & Co. and former managing director and senior oil analyst of The First Boston Corporation.

A Mines Medal was presented to Bryan Cooney, who has served Mines for more than 20 years as a curator of the paleontology collection for the Department of Geology and Geological Engineering and for the Geology Museum.

Raymond Orbach



From left, Thomas Petrie, Bryan Cooney and Meng Ersheng

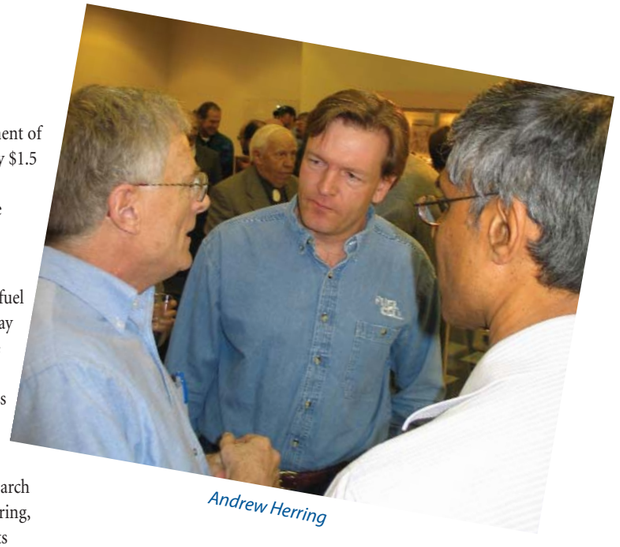
Mines football players celebrate graduation.

Fuel Cell Research

Mines has won a U.S. Department of Energy grant for approximately $1.5 million over five years to help develop commercially available hydrogen fuel cell vehicles.

Energy Secretary Samuel W. Bodman said, "Investments in fuel cell and hydrogen research today will enable America to lead the world in developing clean, hydrogen-powered automobiles that will reduce our dependence on imported oil."

Andrew Herring, associate research professor in Chemical Engineering, will lead the team that conducts research on the polymer membrane, an integral part of a hydrogen fuel cell system, to advance membrane durability and extend shelf-life, while simultaneously bringing down the cost.



Andrew Herring

The U.S. Environmental Protection Agency's Board of Scientific Counselors has appointed Robert Siegrist, director of Environmental Science and Engineering, to its new subcommittee on land preservation and restoration.

Kim Williams, an Engineering Leader

Kim Williams, associate professor in the Department of Chemistry and Geochemistry, was selected to participate in the Women in Engineering Leadership Institute in Anaheim, Calif., in November. Sponsored by the National Science Foundation, the institute is targeted at mid-career women engineering faculty who are prime candidates for assuming leadership positions in academia in the near future.

Amery Named IWRA Fellow

Hussein Amery, Liberal Arts and International Studies, has been appointed Fellow of the International Water Resources Association (IWRA). This is the highest rank of membership given to members, described by IWRA President Aly M. Shady as "among the best and brightest in the business of water science." Amery has written extensively about water politics in the Middle East.

Co-directors Erdal Ozkan and Hossein Kazemi of the Marathon Center of Excellence for Reservoir Studies in the Petroleum Engineering Department hosted a reception in November for the opening of the center's new research office.

SHORT STAKES

Mobile Science Show Accelerates

Mines has received a $50,000 Daniels Fund grant to support its Mobile Science Show (MSS) program, a K-12 educational outreach program that aims to improve teacher competency and student aptitude in science.

Sue Anne Berger MSc Min Ec '82, MSS program director, created the program in 1991 to enrich science education through hands-on teacher training and student instruction throughout Colorado. "The Mobile Science Show is pleased to have the Daniels Fund as a partner in educating elementary teachers and students in the dynamic and vital field of science," she said. "The funding will allow the program to bring valuable training and supplies to hundreds of area school children and teachers."

During the 2005-06 school year, the Mobile Science Show will visit 10 Jefferson County elementary schools. The program will then extend into the 2006-07 academic year, increasing student competency in science while giving teachers exciting new ways to combine science instruction with other subject matter.

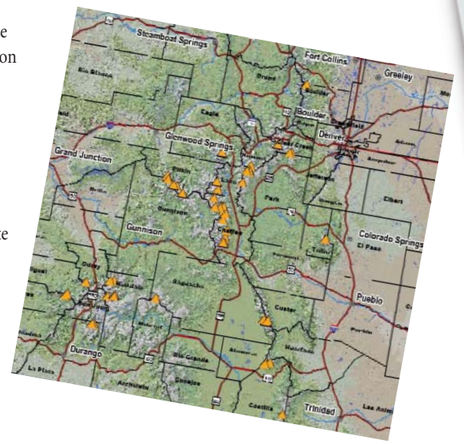
Sue Anne Berger '82 does an electric pickle demonstration for the Mobile Science Show.

VP Knows Finance and Fourteeners

Hille Dais has been appointed interim vice president for finance and operations. She served as an associate vice president at Mines from 1999 to 2003.

Prior to that, she was senior finance officer for the Colorado Commission on Higher Education, manager of administrative support for the Colorado Department of Revenue, analyst and associate staff director for the Colorado Joint Budget Committee, and an analyst in the Colorado Governor's Office of State Planning and Budgeting.

An avid climber, Dais has reached the summits of all 54 of Colorado's "fourteeners." Born and raised in Hamburg, Germany, Dais earned degrees from Metropolitan State College of Denver and the University of Minnesota.




Hille Dais

CANstruction Project

At the Castle of Cans Food Drive in November, students, faculty and staff raised awareness about hunger in Colorado, donated nonperishable food for the holidays, and applied their engineering skills to a CANstruction competition.

The drive resulted in 8,798 pounds of food, distributed in Thanksgiving Day boxes to members in need in the Mines community, and the rest donated to the Food Bank of the Rockies. Beta Theta Pi fraternity was the overall winner of the contest.

Representatives of the Northrop Grumman Corporation presented a large check last fall to the Florence Caldwell Scholarship fund. Accepting the donation were members of Mines' Society of Women Engineers (SWE) chapter. From left, Gary Repetto of Northrop Grumman, SWE President Katherine Muterspaugh, SWE adviser ***Candace Sulzbach BSc BE '81****, SWE Vice President* ***Agata Dean BSc Eng '04*** *and Stefanie Hill of Northrop Grumman.*

NSF Award

Jason Liu, assistant professor in the Mathematical and Computer Sciences Department, received a National Science Foundation CAREER award for his project "Immersive Large-Scale Network Simulations."

The prestigious award supports the "early career-development activities of those teacher-scholars who most effectively integrate research and education within the context of the mission of their organization."

SHORT STAKES

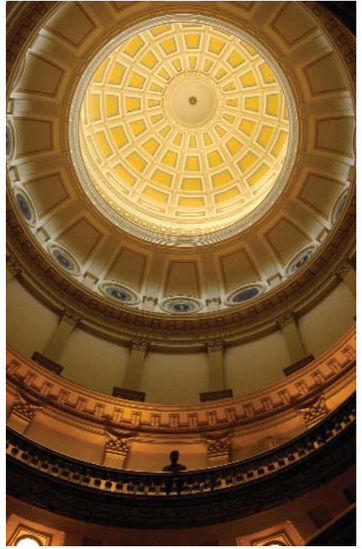
Hall of Fame

Arthur Lakes, a Mines geology professor from 1882 to 1891 after whom the library is posthumously named, was selected for the Jefferson County Hall of Fame in October. Lakes is best remembered for discovering the Jurassic dinosaur specimens at Morrison in 1877. In addition to his teaching role at Mines, he also founded the Geology Museum and established its mineral collection, and he wrote numerous technical papers on the geologic resources of the Front Range and Jefferson County. Lakes died in 1917.

Project of the Year Award

Environmental Science and Engineering Director Robert Siegrist has been presented with the Strategic Environmental Research and Development Program (SERDP) Environmental Restoration Project of the Year Award for his work on the Department of Defense project "Reaction and Transport Processes Controlling In Situ Chemical Oxidation of DNAPLs." Other researchers on the project, selected from more than 60 others, were **Michelle Crimi PhD Env Sc '01**, Tissa Illangasekare and Junko Munakata-Marr.

From left, Robert Siegrist, Tissa Illangasekare, Michelle Crimi and Junko Munakata-Marr



The Passage of Referendum C and Defeat of Referendum D: What it means for Mines

By Dan Montez

Voters from the State of Colorado, home of America's most restrictive limit on state spending, went to the polls Nov. 1, 2005 to decide the fate of Referendum C – a measure intended to allow a temporary time-out from the state's constitutionally imposed spending cap, known as the Taxpayers Bill of Rights or TABOR.

If passed, TABOR's spending limit (equal to inflation plus population growth) would be suspended for five years and would allow state lawmakers to spend an estimated $3.7 billion that would have otherwise been refunded to taxpayers. The extra revenue would be used for education, health care, and transportation needs, as well as for pension plans for police officers and firefighters.

While not the first state to pass a constitutional spending limit, most believe that TABOR as approved in a 1992 referendum is the nation's most restrictive. Under TABOR, if state revenues do not meet expectations, then spending is capped at a lower level and the base for determining the next year's spending limit is reduced. Proponents of Referendum C believe this provision exacerbates the effects of economic downturns, such as the one experienced by Colorado earlier this decade, because spending is limited by the previous year's cap, therefore preventing policymakers from restoring cuts made to services during hard times.

In November, the voters of the State of Colorado adopted Referendum C, but also rejected Referendum D.

Referendum C will provide a temporary time-out from the revenue limits imposed by TABOR and allow the state to keep excess tax revenues above the TABOR-imposed limits for the next five years. It will also permit the state to spend these revenues on health care, public education (K-12 and higher education) and transportation. Finally, Referendum C will set the new TABOR base using the highest annual state revenue collections over the next five years as the new base for future TABOR limitation calculations.

Referendum D would have permitted the state to borrow up to $2.1 billion to be used for state infrastructure needs in transportation, K-12 and higher education buildings, and local fire and police pensions. It would have taken effect only if Referendum C was also approved and it would have increased the revenue that Referendum C allows the state to keep by $100 million each year into the future, beginning in Fiscal Year 2011.

As of early December, the School still did not know the specific impact on higher education in general or to the Colorado School of Mines in particular. It is believed that with the passage of Referendum C, the state will not be forced to cut its budget in FY 2006-07 and the state will have additional financial resources and funding options available to it, which would not have been available without the passage of Referendum C.

Fiscal Year	Estimated Additional Funds Available
2005-06	$440 million
2006-07	$577 million
2007-08	$646 million
2008-09	$703 million
2009-10	$822 million
2010-11	$995 million

Source: Office of State Planning and Budgeting

Higher education could see increased state funding in FY 2006-07 for the first time since 2001. Such funding could be in the form of (1) increased student stipend levels (currently $80 per credit hour); (2) additional state student financial aid; and/or (3) additional state funding support for "fee-for-service" agreements, which help fund graduate education and specialized educational services (i.e., high-cost engineering programs at CSM).

The state could begin to restore prior cuts made over the last four years to several state departments and services. For higher education, it is hoped that the state might begin to at least partially fund prior unfunded enrollments experienced by public higher education institutions since FY 2001. During this time, higher education enrollment grew by more than 20,000 student full-time equivalents (SFTE) with no additional funding from the state.

CSM State Funding & Resident Enrollment FY01 to FY06

	FY 2000-01	FY 2005-06	% Change
Total State Funding	$19,495,658	$17,187,980	- 12%
Resident SFTE	2,251	2,886	+28%
State Funds per Resident SFTE	$8,661	$5,956	- 31% per

The ultimate decision on what levels of state funding might be available and how the state might allocate any new funding will be made during the upcoming legislative session, which began in January. At this point, the impact of these possible changes in state funding, the CSM Board of Trustee's final decisions on tuition levels for next year and the overall campus budget are still unclear. The CSM Board of Trustees have until Feb. 15 to submit its FY'07 tuition proposal to the state legislature and will likely not finalize the overall campus budget until May or June.

While much is unknown at this point, the 2006-07 state budget process has begun in earnest. In November, the governor presented his plan for spending the Referendum C revenue and outlined his FY 2006-07 budget request of $6.5 billion to the Legislative Joint Budget Committee.

For the current 2005-06 fiscal year, the governor would like to spend the majority of the funds available from Referendum C on state transportation needs ($296 million). The Colorado Commission on Higher Education plans to request a supplemental fund for the current fiscal year of $49.5 million to partially cover unfunded enrollment in public higher education.

For the upcoming 2006-07 fiscal year, over $500 million is projected to be available in excess TABOR revenues. Some of the highlights of the governor's FY 2006-07 budget proposal include distributing Referendum C dollars in equal parts to per-pupil funding in K-12 education, College Opportunity Fund vouchers for state college and university students and Medicaid premiums. He also wants to provide for a 3.64 percent performance-based increase in salaries for state classified employees, marking the first time the state has funded performance pay while excluding salary survey adjustments.

Also proposed is providing $8.4 million in additional general fund dollars for health, life and dental insurance benefits for state classified employees in order to bring the state to 75 percent of the average prevailing private sector employer contribution to benefits. Other items in this proposal include paying the Fire and Police Pension Fund obligations, restoring the Senior Homestead Exemption and providing $50.5 million for controlled maintenance and $46 million for state capital construction projects.

For higher education, the governor proposes to increase the College Opportunity Fund stipends from $2,400 to $2,580 (based on a 30-credit-hour load for a full year); increasing fee-for-service funding to colleges and universities by $29.1 million; increasing student financial aid by 6 percent ($4.7 million); and limiting resident tuition rate increases to 2.5 percent.

Overall, the governor's budget request would boost general-fund support for the Department of Higher Education by 10.2 percent in FY 2006-07 under his proposal.

With the failure of Referendum D, the state will not be able to issue bonds and will not be able to begin several state capital construction projects immediately, but will have to deal with these infrastructure needs through the normal state budget process on a pay-as-you-go basis.

With Referendum C passing, the School is hopeful that it can secure enough additional state capital funding to complete the current Center for Technology and Learning Media (CTLM) capital project as it was originally designed. The School will request funding of about $2 million to help offset the higher-than-expected costs of construction, which have escalated since the original funding request was made several years ago due to the impact of national and world events such as Hurricane Katrina and rising oil prices.

The School will continue to keep the campus and alumni updated on major developments regarding the School's state funding outlook for next year.

Dan Montez is CSM's associate vice president of finance and operations.

Mini-Grants at Mines: Endowing Excellence in Engineering Education

By Trisha Bentz Kendall

For Mines faculty, the return of the highly effective **Curriculum Development Mini-Grant Program** inspires creative new ways to think about engineering education. For Mines students, the reinvigorated program helps ensure that their education will equip them with significant advantages as practicing scientists and engineers. The program awards up to $5,000 to faculty for undergraduate curricular reform projects to enhance student learning and more fully incorporate elements from multiple disciplines into teaching and learning models at the School.

Mini-grant funding brings educators' most innovative curricular design ideas to fruition with wide-ranging benefits for the Mines community. Thanks to generous endowment gifts from **President** and **Mrs. John Trefny**, and **Gerald '68** and **Tina Grandey**, the seeds of innovation have once again been sewn. "These mini-grants give the faculty some support for developing new ideas about how to teach and how to learn," said President Trefny, "and we'd like to see that continue into perpetuity." By creating endowed funds to support this important initiative, donors help protect the program from budgetary fluctuations and ensure that it is sustained long into the future.

> "The mini-grant program helped anchor the **Writing Across the Curriculum** (WAC) program at Colorado School of Mines. Prior to 1998, few CSM faculty members had participated in WAC workshops. Between 1998 and 2001, 38 Mines faculty members received stipends for participating in the summer workshops. The workshops gave faculty participants additional tools with which to design, implement and develop technical, writing-intensive courses. The workshops earned consistently high evaluations from faculty, and at least one representative from all CSM departments and divisions participated, making WAC a more integral component of program curricula at Mines."— Dr. Jon A. Leydens, CSM Writing Program administrator and assistant professor, Liberal Arts and International Studies Division

Global energy demands and unprecedented advancements in engineering practices and technologies mean that Mines must work harder than ever to stay at the forefront of engineering education. Dedication to curriculum advancement is evident at Mines today, as it has been throughout School history. Visionary faculty members have worked diligently to keep Mines on the leading edge of engineering education.

Mini–Grants and the Movement for Reform

The mini-grant program stems from discussions held at Mines in the early 1990s. The movement was spearheaded by an energetic "think tank" whose ranks included President Trefny, head of the Department of Physics at the time. This multi-disciplinary group of faculty sought to implement progressive changes to keep the School's engineering curriculum fresh and accessible.

Trefny became vice president for Academic Affairs and dean of faculty in 1995, bringing with him a strong desire to renovate undergraduate education and great ideas about how to translate that desire into action. The National Science Foundation (NSF) issued a request for proposals that year for projects exploring engineering education reform. Trefny took the reins on behalf of Mines, authored a winning proposal in collaboration with then-Associate Vice President Nigel Middleton and others, and shepherded the institution through a comprehensive curriculum reform process.

Their success in securing NSF funding for curricular reform was cardinal for the School. Faculty mini-grants were funded both by the NSF grant and internal CSM funds from 1997 to 2001, when state budget cuts forced the program's termination. During its five-year tenure, 47 of 101 proposed projects were funded, with every department on campus receiving at least one grant of up to $5,000 and more than 6,700 students reaping the benefits.

At the height of the original mini-grant program the School gained national attention for its successes. The program proved that even small amounts of money can be leveraged to produce powerful and far-reaching effects on engineering education. In a 2004 paper, a team of faculty authors note, "As seed money for change, the program was a good institutional investment because the grants affected the faculty recipients, their colleagues and departments, and students at all levels."*

Mini-Grants Move Mines Forward

Mines' 10-year strategic plan sets forth ambitious goals for enhanced research, innovation and technology transfer – goals that the newly-revived mini-grant program will help the institution reach. Endowed support for the program ensures that curricular assessment and innovation remain central to the educational priorities of the School. Mines has become a major center for engineering education research, and mini-grants help sustain an undergraduate curriculum that serves as a distinctive model for similar institutions worldwide.

The creativity fostered by Mines' culture of continuous improvement is evinced not only by the mini-grant program but also by the Center for Engineering Education (CEE). Initially established in 2000 to serve growing faculty interest in engineering education research, the center has developed into one of the School's most valued assets in just over five years. Ruth Streveler, CEE director, notes, "I am pleased that curriculum mini-grants have returned to CSM. The mini-grants not only directly support curriculum reform but also help to foster faculty discussion and excitement about improving student learning."

*http://www.mines.edu/research/cee/minigrants.htm

President and Mrs. Trefny's endowment gift helps further the School's initative to continually advance engineering education, ensuring its versatility and relevance in contemporary society. Gerald and Tina Grandey chose to support curriculum improvements by designating their endowment gift for projects that help prepare the next generation of engineers for work in the increasingly global arena of natural resources. Such projects serve as powerful engines of change in engineering education at Mines.

Nigel Middleton, executive vice president for Academic Affairs and dean of faculty, has remained a strong proponent of Mines' mini-grant program. Reflecting on its past success, he notes, "I had the privilege of being on the administrative side of the mini-grant program in the 1990s and saw the cumulative and highly beneficial effect of all of the grants on the institution-wide revision of the Mines curriculum. With this reinvigoration of the mini-grant program, I am optimistic that we can restore our abilities to stimulate curricular innovation and maintain Mines' leading edge in science and engineering education. Contributions to this meritorious program bring immense benefits to the outstanding quality of a Mines education."

> "EPICS introduced me to the idea that engineering is an exercise in teamwork. This concept has been the underpinning of my educational experience at Mines. Last year, I had a reservoir engineering internship with BP Alaska and the technological and teamwork skills I learned at Mines integrated seamlessly into the business world. I was able to easily adapt to the technology used in the oil industry and my experience working on teams was useful in a variety of settings all summer long." — Heather Frenier, Class of 2007

Mini-Grants Motivate Change

All Mines undergraduates are familiar with the acronym **EPICS** (Engineering Practices Introductory Sequence), as every student takes the two-semester course. During the initial mini-grant program, this core course was redeveloped. Four years of funding allowed the faculty teaching the course to improve content delivery and instructional technology in the classroom. As a result of this crucial funding, every undergraduate benefits from an up-to-date, engaging EPICS curriculum that lays the groundwork for the rest of their educational experience at Mines.

EPICS students present their work.

Like EPICS, physics courses are required of all Mines students. When the mini-grant program began at the School, faculty were reorienting their approach from a lecture format to one that more fully engaged students. Mini-grant funding was critical to the development of this new approach, allowing Dr. Thomas Furtak to redesign **Physics I**, now a national model for "active-engagement teaching." Summer mini-grant funding also enabled Dr. James McNeil to conduct external research on physics curricula and improve the **Physics II** course at Mines. Advanced physics segments are now carefully integrated, providing students with a deeper understanding of the course content. These mini-grants impacted thousands of students, and Mines' physics program is widely recognized for its successes.

Interactive learning in the Physics Learning Studio

Dr. Frank V. Kowalski of the Department of Physics received funding from the new mini-grant endowment in 2005 for his proposal, **Differentiated Learning in a Laboratory Course.** He will design lab curriculum that allows instructors to teach writing skills to those who need them most, while nurturing advanced experimental skills in those who already excel at writing. This visionary program will explore how to better meet the unique needs of each student, while ensuring all Mines students develop excellent communication skills.

Thanks to the pioneering efforts of President Trefny and other faculty members over the years, as well as philanthropic support from Mines' community of donors, the renewal of the **Curriculum Development Mini-Grant Program** will help the School sustain continuous curricular improvement and maintain its leadership in engineering education now and into the future.

Facing the Future:

Learning to Compete in a Global Economy

By Maureen Keller

Successfully competing in a global economy is a major challenge of our time. Today's students are much more likely to work for a company with an international base than they were 50 years ago. They are more likely to work abroad. And they're more likely to have to compete on an international scale.

The petroleum industry provides a good example of how the world has changed. In the 1950s, oil companies usually made one-on-one agreements with rulers of oil-rich countries and were able to control prices. In the 1960s, a group of oil-producing countries formed the Organization of Petroleum-Exporting Countries (OPEC) in order to influence oil and gas production and price. But today, the market is wide open. Oil has become a worldwide commodity that everyone needs. No one entity controls the market so it has become more important than ever to train students to understand how supply and demand works.

Mines has taken a step toward accomplishing this with its new Master of International Political Economy of Resources (MIPER) degree, first written about in the summer 2005 issue of Mines. Since then, the Colorado Commission on Higher Education has given its approval and the first new master's degree could be awarded as early as May to **DeAnn Craig BSc Chem '73, BSc CPR '80, MSc Min Ec '02, PhD Interdisciplinary '05,** currently a member of CSM's Board of Trustees and a long-time proponent of the School's teaching international political economy.

The new degree is built around political and socio-economic studies of resource-producing and resource-consuming regions of the world, combined with quantitative studies in relevant statistical tools and in engineering technologies for resource development. As such, International Political Economy of Resources (IPER) is a multidisciplinary field that focuses on the analysis of the interaction and intersection of the state and the market on an interstate and global scale, with particular reference to the resource industries. Culture underpins and governs the political and economic universe, and IPER also stresses the importance of the actions of state and non-state actors across borders. It is ideally suited for educating global resources engineers and helping them acquire necessary political, economic, and cultural skills, sensitivity and appreciation to successfully compete in today's global environment. International political economy is a young discipline that has been around since the mid-1970s, but the degree from Mines will be the first in the world to explore the role of the state and the market on resources.

Philippe Dunoyer, a former Mines student, CEO of Total Petroleum North American and, for the past 10 years, adjunct professor in the School's McBride Honors Program, says teaching students about international political economy gives them a roadmap to how the world works. "It teaches them how to ask the right questions. It's not an advanced scientific discipline, but more based on observation and common sense," he says.

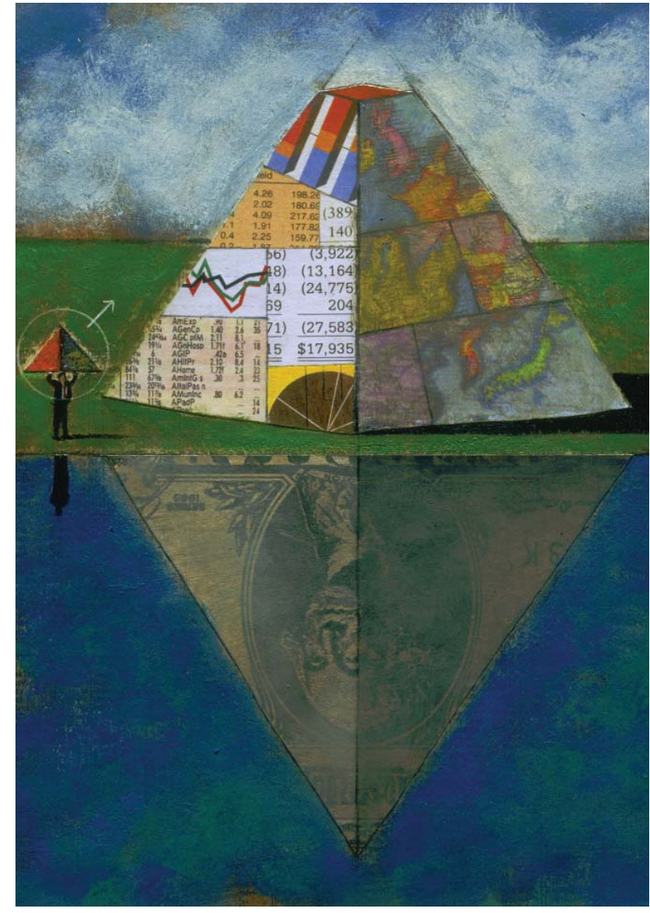
Dunoyer began his career as a geophysicist in the field but soon was promoted to corporate planning and management positions. "I would have had a much better learning curve if I'd known IPER first," he notes. "I knew nothing about economics. The relationship between the state, markets and culture is the totality of what makes economies function."

With the introduction of the MIPER degree, Mines is helping train future industry leaders. "We can no longer produce engineers who are just technical," says Eul-Soo Pang, Liberal Arts and International Studies professor and one of the forces behind the creation of the new degree. "If our graduates' knowledge is only technical, they will hit a ceiling [in their careers]. The attitude of oil and mining company executives is entirely different today than it was 10 years ago. Then, it was 'if you have the technical knowledge, we'll train you in our business.' Today, they realize this doesn't work. Businesses don't want just an engineer. They want someone who can look at the big picture. They want someone who knows where the action will be in 30 years."

Mines hopes to give its student an edge by giving them a global perspective. Pang and Dunoyer teach introductory courses in international political economy and say Mines students rapidly grasp its importance. "The whole world is one big marketplace today wherever you work." says Dunoyer. "What happens in one part of the world is felt on the other side of the globe."

Pang envisions expanding the program to include 20 to 30 students. "We want a third to be American and two-thirds to be international," he says. We want our students to start early in an international environment. It's important for Americans to know their competitors."

"And 21st century engineers need to understand how the world is put together," adds Dunoyer.



A Project with Character

In 20 years, the Reservoir Characterization Project has gone from an unconventional new approach to an established and vibrant consortium.

By Rhonda Duey

In the mid-1980s when **Tom Davis PhD Geop '74** decided to form a consortium to study reservoir characterization, the oil and gas industry was experiencing exploration successes. They didn't care much about older, more difficult fields. Much of the "characterization" that did take place prior to drilling was done on large maps flung across tables or tacked to walls. However, Mines liked the idea of interacting with industry and the industry liked the idea of supporting students at the School. The actual characterizing of reservoirs was a little less clear in terms of importance.

Bob Benson, left, and Bob Weimer during a RCP-hosted core workshop. Photo courtesy of Jim Emme.

Now 20 years later, the oil and gas industry is interested in resources from harder-to-extract locations and CSM's Reservoir Characterization Project (RCP) has become a model of community-based research. Mines graduate students study and provide answers for companies that are striving to enhance productivity in existing fields. As oil and gas supplies become more difficult to extract and consumption increases, it's vitally important to figure out how to get the most from each reservoir. So far, the project has produced an enormous body of work unlocking secrets about fracture orientation, fluid flow, lithology characterization and enhanced oil recovery. The project has graduated hundreds of students who have gone on to attain significant professional status. Perhaps the greatest testament to RCP's success is the number of oil companies that line up every two years, begging the project board to consider their problem sites as worthy of study.

"I think a lot of people in the early days thought that if you did a 3-D survey and tied in some of the wells, you were doing reservoir characterization," Davis said. "Everybody looked at it as a static thing – you did it once and were done."

A seismic observer that recorded our surveys from Solid State Geophysical of Calgary.

But Davis and some of his colleagues sensed a change on the horizon. Even before the inception of the RCP, he joined CSM geology Professor Bob Weimer to team-teach a class called Integrated Exploration and Development. **Robert D. Benson BSc Geop '76, MSc Geop '84, PhD Geop '97** joined the RCP as co-director in 1988. Davis credits Weimer with helping him focus on the framework of reservoir characterization through their work together on reservoir studies.

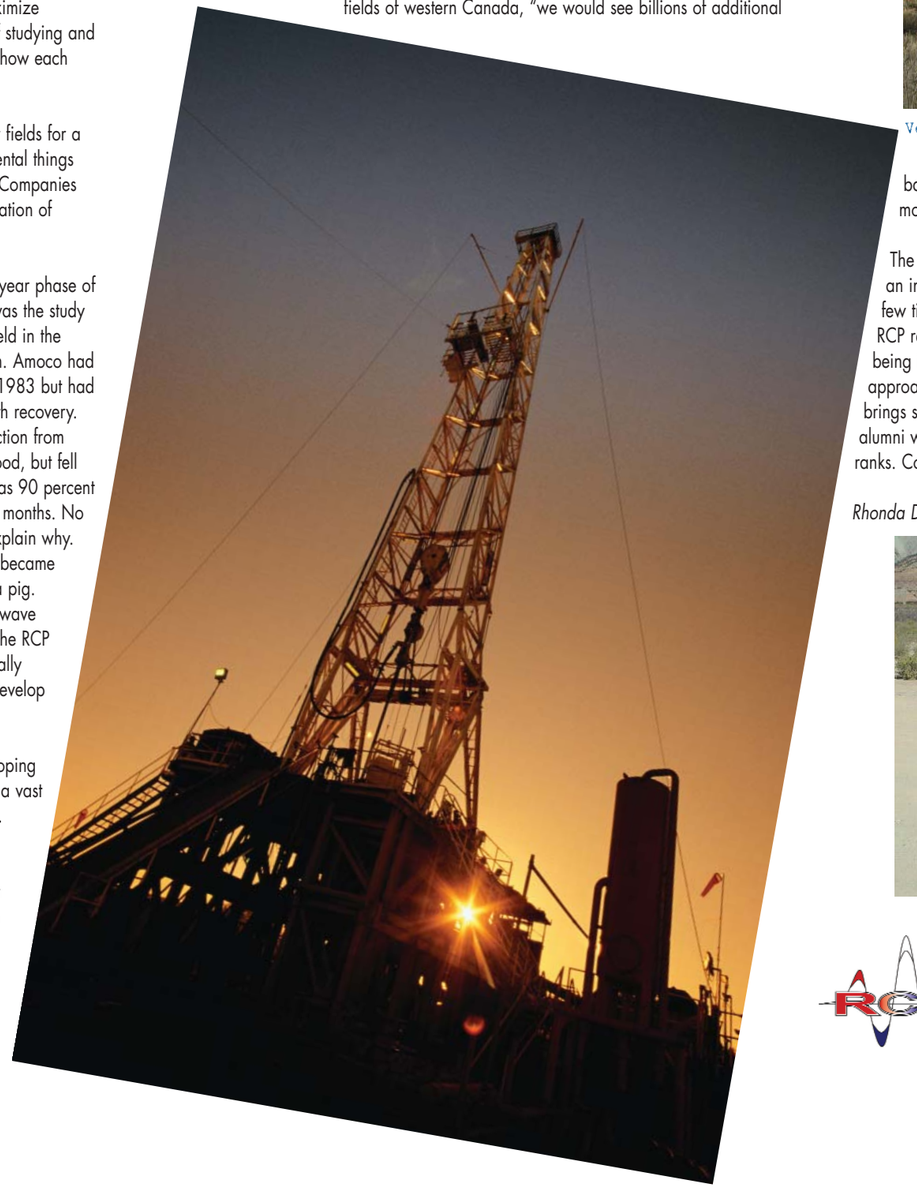
As exploration began to dwindle, oil companies realized they needed to focus more on production. It was time to develop ways to maximize production in existing fields. The RCP took up the challenge of studying and characterizing reservoirs in an attempt to explain and predict how each individual reserve will behave under production.

The concept of the RCP was for oil companies to offer up their fields for a two-year phase of study during which time numerous experimental things would be tried to better explain the behavior of the reservoir. Companies were encouraged to support the RCP with money and the donation of equipment, services and personnel.

Tom Davis, left and Pete Maxwell from Input/Output. Input/Output provided seismic recording equipment for the latest surveys at Rulison Field, Colo.

The first two-year phase of the project was the study of the Silo field in the Denver Basin. Amoco had found oil in 1983 but had problems with recovery. Initial production from wells was good, but fell off as much as 90 percent within a few months. No one could explain why. The Silo site became RCP's guinea pig. Using shear wave technology, the RCP gained an understanding of the complex reservoir and eventually determined that horizontal drilling would be the best way to develop Silo, which became the first horizontal field in the Rockies.

Since then, the RCP has progressed to Phases X and XI, developing a couple of patented technologies along the way and adding a vast amount of knowledge to the field of reservoir characterization. Recently, the national press reported that CO_2 had been successfully injected into reservoirs as a way to enhance oil recovery and reduce greenhouse gases at the same time. That test took place as the RCP's Phases VIII and IX in the Weyburn field in southeastern Saskatchewan, Canada.

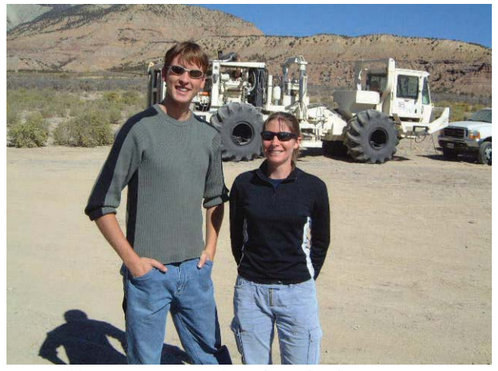


"The success of the Weyburn project could have incredible implications on reducing CO_2 emissions and increasing America's oil production," U.S. Energy Secretary Samuel Bodman said recently in a speech he gave in the Middle East. Bodman added that if the process were used in all the oil fields of western Canada, "we would see billions of additional barrels of oil and a reduction of CO_2 emissions equivalent to pulling more than 200 million cars off the road for a year."

Vecta - Exploration of Houston provided this photo of the seismic source used at Rulison Field.

The Reservoir Characterization Project has helped establish CSM as an involved participant in industry problems, not an "ivory tower" with few ties to the real world. President John Trefny says, "Feedback about RCP reflects that about the School as a whole. We are recognized as being in tune with and responsible to societal needs. The consortium approach to support for RCP is replicated throughout the campus...and brings several hundred industry leaders into advisory roles for the School; alumni working in the various industries add thousands more to these ranks. Collectively, these individuals help us remain relevant and effective."

Rhonda Duey is exploration technology editor for Hart's E&P *in Houston.*



Mines students Kjetil "KJ" Jansen and Lauri Burke help out.

New Grads Charged to Lead World Energy Future

This was the address given at the Mines December commencement.
By Dr. Raymond L. Orbach





I am delighted to be here with you this morning to honor the 273 degree recipients of this distinguished institution. For more than 130 years, Mines has pioneered in the application of the most sophisticated science to outstanding energy and environmental problems facing this nation and the world. You are blessed with a proud heritage and international renown. It is your opportunity to continue the proud traditions of this very special institution.

I am here to honor you, the graduates, and to suggest ways you can fulfill your mission in the discovery and recovery of the Earth's resources, their conversion to materials and energy, their utilization in advanced processes and products, and the economic and social systems necessary to ensure their prudent and provident use in a sustainable global society. The Colorado School of Mines is committed to serving the people of Colorado, the nation, and the global community by promoting stewardship of the Earth upon which all life and development depend.

What a wonderful mission, one which could not be timelier. And crucial.

Of course, I am speaking about energy, once thought to be cheap, unlimited, and freely available to our nation. Today, all three aspects are in trouble. And so is our globe. Availability of sufficient environmentally friendly energy sources to meet the needs of a rapidly growing and developing world population is the most pressing problem our civilization has ever faced.

The world's energy appetite will at least double by the end of this century (some claim it will triple). The environmental consequences could be catastrophic. Greenhouse gases are accumulating in our atmosphere at an alarming rate. For CO_2 alone, the atmospheric concentration is approaching 400 ppm, 40 percent higher than when fossil fuels began to be burned, and may exceed 1,000 ppm by the end of this century if no limiting measures are taken. To give you an idea of how difficult a problem this is, pick a value for an acceptable CO_2 concentration: 550 ppm, 650 ppm, 750 ppm… It really doesn't matter. To stabilize at even these very high (and alarming) concentrations, and not go higher, the amount of carbon neutral energy required at the end of this century will more or less equal the Earth's total energy consumption at the beginning of this century.

The world therefore has a two-fold problem: Where will this new energy come from and how can it be carbon-free? The *most* optimistic estimates of carbon-free renewable energy capability are a maximum of 17 percent of today's energy consumption. Even with this very optimistic estimate, where will the remaining 83 percent come from?

A global search for massive amounts of carbon-free energy will require transformational changes and disruptive technologies in order to provide clean reliable economic solutions. We cannot fulfill the world's energy appetite with current prospects or incremental improvement to existing technologies. Electricity was not discovered by perfecting the candle.

There are three points of departure: increase conservation, largely through increased efficiency; greatly diversify energy sources and create infrastructures for them; create and implement long-term (decades to century) energy visions and strategies.

More simply, increase conservation/efficiency and increase production. We must use less energy and produce more of it. Let me expand on these points.

Increase conservation, largely through increased efficiency.

In the United States, electricity production uses about 40 percent of primary energy, and of this amount, about 70 percent is waste or rejected energy. Overall, about 60 percent of United States' primary energy is lost in waste or rejected heat. With less than 5 percent of the world's population, the United States consumes about 25 percent of the world's energy (but produces only about 18 percent). Even if the United States were to be 100 percent efficient in the use of energy, this would amount to but 15 percent of the world energy consumption, not negligible, but far less than the doubling to tripling of the world's energy generation required by the end of this century. Nevertheless, when amplified globally, more efficient use of energy can play a major role.

Greatly diversify energy sources and create infrastructures for them.

At least four transformational technologies possess the potential for significant amounts of clean reliable economic energy: solar energy utilization, advanced proliferation-resistant nuclear energy systems, fusion power and biologically derived fuels.

Solar energy utilization can be solar-to-electric, solar-to-fuels, or solar-to-thermal conversions. Sunlight provides by far the largest of all carbon-neutral energy sources. More energy from sunlight strikes the Earth in one hour than all the energy consumed on our planet in a year. Yet solar electricity provides less than 0.1 percent of the total electricity supply, and renewable biomass (sustainably grown) provides less than 0.1 percent of all total energy consumed.

For solar-to-electric conversion, novel approaches to exploiting new technologies (thin films, organic semiconductors, dye sensitization and quantum dots) offer fascinating opportunities for cheaper, more efficient, longer lasting systems.

With respect to solar-to-fuels, application of revolutionary advances in biotechnology to the design of plants and organisms can lead to more efficient energy-conversion "machines." Designs of highly efficient, artificial, molecular-level energy-conversion machines, exploiting the principles of natural photosynthesis, promise substantial energy production opportunities.

In the area of solar-to-thermal conversion, solar radiation as a source of heat, using high-efficiency thermoelectric and thermal photovoltaic converters coupled to solar concentrators, have the potential to generate electricity at converter efficiencies of 25 percent to 35 percent. Chemical conversion sequences can convert focused solar thermal energy into chemical fuel.

In regard to the development of advanced proliferation-resistant nuclear energy systems. Current "once through" nuclear reactor policy leaves spent fuel rods with long-term heat loads and radioactive decay. Disposal of light water reactor waste must be included as a cost of energy generation from nuclear fission sources. Once-through spent fuel, subjected to chemical separation, offers many potential options for managing its constituent parts including transmutation of radionuclide in fast-spectrum reactors; recycling plutonium in existing light-water reactors or advanced thermal reactors; stabilizing of fission products in robust waste forms; and transmutation of long-lived fission products.

These reductions sharply reduce repository requirements allowing expansion of nuclear energy generation sufficient to meet a significant percentage of world energy requirements.

In the development of fusion power, as we speak, the seven parties to the International Thermonuclear Experimental Reactor (ITER) have nearly completed an international agreement that will guide fusion energy research for the next two decades. Fusion energy uses deuterium from water and lithium to create tritium, fusing deuterium and tritium into helium and a fast (14 MeV) neutron. Deuterium and lithium are abundant and cheap, the helium will escape from the Earth's gravity, and the energy of the neutron will generate electricity or produce hydrogen.

The fusion process is the same as that which powers our sun and promises unlimited safe clean energy for the world. In a conservative estimate, about a third of today's global energy usage can be generated with fusion power reactors by the end of this century.

Two examples of biologically derived fuels are biofuels derived from plant cell walls, otherwise known as cellulose ethanol, and hydrogen produced from water using energy from the sun, known as biophotolytic hydrogen.

The long-term goal of cellulose ethanol would integrate bioprocessing, now three steps (breakdown of raw biomass using heat and chemicals, use of enzymes to break down plant cell wall materials into simple sugars, and fermentations of the sugars into ethanol-using microbes) into one. This requires the development of genetically modified, multidimensional microbes or a stable mixed culture of microbes capable of carrying out all biologically mediated transformation needed for complete conversion of biomass to ethanol.

Under certain conditions, green algae and cyanobacteria can use energy from the sun to split water and generate hydrogen. Research to understand and develop predictive models of hydrogenase (the enzyme that cleaves water to produce hydrogen) structure and function, genetic regulatory and biochemical networks, and eventually entire microbes, can lead to an "ideal" microbe to use in hydrogen bioreactors, or the "ideal" enzyme-catalyst to use in bio-inspired nanostructures for hydrogen production.

These four examples of transformational change and disruptive technologies, if successful, will reduce the gap between energy demand and production, while at the same time stabilizing atmospheric CO_2 at levels the Earth can live with. The combination of conservation and clean reliable energy production can lead to a sustainable, abundant energy future for our world.

These are the opportunities for you to use your talents, learning and commitment to literally save the world. Never before has the need been greater. You have been blessed with inquisitive and intelligent minds. Combined with the blessings bestowed upon you by this remarkable institution, you have been empowered to change the future of our world, for the better. The Department of Energy, your government, urges you to take the challenge. No better group of young scholars exists.

Dr. Orbach is director of the Office of Science at the U.S. Department of Energy.



Winter Sports Off to Good Starts

Men's Basketball: The Oredigger men's basketball team stands at 2-2 early in the 2005-06 season. CSM opened its season by defeating nationally ranked Nebraska-Omaha and Pittsburg State in Volk Gymnasium. Junior center Ian Elseth leads the team in scoring (12.5 ppg) and rebounding (6.3 rpg).

Women's Basketball: CSM got off to a great start by defeating Johnson and Wales in the season opener, but then dropped two tough games to Wayne State (Neb.) and Northern State. Junior Iva Tomova leads the team in scoring at 13.3 points per game, while senior Ashley Gronewoller is averaging 11.7 points and 5.7 rebounds per game. Junior forward Angela Pearson is close to averaging a double-double at 9.0 points and 9.0 rebounds.

Wrestling: The youthful squad has started out the season with two open events and by hosting the four-team Jack Hancock Dual Invitational on Nov. 18. Senior 125-pounder Jesse Blattner and freshman 141-pounder Corey Swanson are tied for the team lead with six wins and three falls apiece.

Swimming and Diving: The men stand at 6-4 overall, while the women are 5-6 this season. Both teams are gearing up for the North Central Conference Championships from Feb. 15-18 in Grand Forks, N.D. Senior Scott Harrison is leading the men's team, while sophomore Renee Rainguet leads the women's.

Volleyball Team Qualifies for NCAA Tournament

First time in program history

The Mines volleyball team enjoyed the best season in School history as it posted a single season School record 20 wins against 11 losses.

In addition, the Orediggers qualified for the RMAC tournament for the first time since 1997 and earned a berth in the NCAA Division II National Championships for the first time in the history of the program.

CSM opened the season by winning three matches in California and then posting a 3-1 record at its own tournament in Volk Gymnasium. The only loss was a 3-2 setback to nationally ranked Washburn.

Following a 3-2 win over University of Colorado-Colorado Springs on Oct. 2, CSM stood at 13-3 overall and had winning streaks of six straight and four straight matches. The Orediggers wound up going 19-9 to finish the regular season and went to the RMAC tournament as the No. 7 seed with an 11-8 mark in the conference.

In the opening round, CSM handed second-seeded Mesa State a 3-2 loss before falling to third-seeded Metro State, 3-2, in the semifinals.

Despite that loss, the Orediggers secured a berth in the national tournament, but fell in the opening round, 3-0, at Nebraska-Kearney, the top-ranked team in Division II for much of the season.

Junior middle blocker Amanda Rebol was a unanimous First Team All-RMAC selection, while sophomore setter Ashley Pagel was named to the Second Team and senior libero Sarah Alsbrooks to the Honorable Mention squad. Alsbrooks was also named to the Southwest All-Region Second Team.

The squad broke 15 School records this season.

Amanda Rebol

Men's Soccer Enjoys Dream Season

The men's soccer team enjoyed the best season in School history as it earned a berth in the NCAA Division II National Tournament for the first time.

CSM finished the 2005 season at 13-7-4 overall with three of the losses going to RMAC rival Fort Lewis, who advanced to the NCAA Final Four.

CSM started the season with five straight wins. Following two straight losses, the Orediggers won four of their next five matches and also tallied a 0-0 draw with Fort Lewis College (FLC), who did not lose or tie another match all season.

Mines entered the RMAC tournament as the No. 3 seed and advanced to the finals on penalty kicks over Metro State before falling to FLC in the finals.

In the national tournament, CSM advanced to the second round on penalty kicks over Incarnate Word, but lost to Fort Lewis in the second round, 1-0.

Seniors Mike Dixon and Rafael Riberio earned First Team All-RMAC honors, while juniors Daniel Lockley and Kevin Galloway and sophomore Craig Thompson were Second Team picks. Masaki Hemmi was honored as the RMAC Freshman of the Year.

Dixon tied the single season school-record with 16 goals this season and led the team with 35 points.

Women's Soccer Has Outstanding Inaugural Season

The women's soccer team enjoyed an outstanding first season as Head Coach Frank Kohlenstein guided the squad to a 7-8 overall record.

On Aug. 25, the squad opened the season with a 1-0 overtime win against Midland Lutheran at Brooks Field as freshman Caitlyn Ruegger netted a penalty kick with 28 second to play in the first overtime.

CSM then went on to win four of its next six matches and had a 5-2 record on Sept. 17 following an 8-0 blanking of Johnson and Wales.

Despite losing six of its final eight matches, the Orediggers showed that they will be competitive in the RMAC next season as three of the losses were by one goal.

In 2006, the Orediggers will begin full-time play in the RMAC with a full conference schedule.

Senior Liz Major led the team with 15 points on a team-best seven goals and one assist. Ruegger added nine points on four goals and one assist, while freshman Ann Newman tallied five points on one goal and a team-high three assists.

Sophomore Marissa Burson was strong in the goal as she posted 72 saves and four shutouts.

Joel Hamilton

By Greg Murphy
Sports Information Officer

Heather Beresford

CSM Cross-Country Runs Into Record Books

The Mines men's and women's cross-country teams competed at the 2005 NCAA Division II National Championships Nov. 19 at Prado Regional Park in Pomona, Calif., and each squad turned in its best performance in program history.

The Oredigger women, who placed 14th in the country two years ago, finished fifth among the 24 competing teams with 194 points on the 6-K course, while the men's squad, making its first appearance at the national championships in School history, finished sixth with 234 points on the 10-K course.

On the men's side, junior Joel Hamilton led the way as he placed eighth overall in 31:51.30 to earn All-American honors and six team points. Junior Larry McDaris, who competed at nationals as an individual last year, finished 36th overall in 32:56.90 to earn 27 points and also earned All-American accolades.

Rounding out the top five for the Orediggers were senior Ryan Miles who was 55th, junior Michael Rooney who finished 82nd and junior Clifton Oertli who was 102nd overall.

Seniors Hannah Davey and Heather Beresford once again led the women's team as they placed 36th and 37th, respectively, to earn 27 and 28 team points. Davey finished in 22:35.30, while Beresford was right behind in 22:35.70. Each also earned All-American accolades.

Freshman Megan McKee was 53rd, senior Serena Gardiner was 54th and junior Melanie Peddle was 74th to round out CSM's female finishers.

Mines Football Enjoys 5th Straight Winning Season

The Mines football team enjoyed its fifth straight winning season under Head Coach Bob Stitt as it finished the 2005 season at 6-5 overall and in second place in the RMAC at 6-2.

It is the first time in program history that CSM football has had five consecutive winning seasons.

CSM stood at just 1-3 four games into the season, but finished the season by winning five of its final seven games, including a 42-27 win over Adams State in the season finale to clinch a winning season.

A total of 13 players earned All-RMAC honors at the conclusion of the season, including senior Justin Gallas who was the RMAC Special Teams Player of the Year and Wide Receiver of the Year. Gallas was a First Team pick at wide receiver and kick returner and was a Southwest Regional Finalist for the Harlon Hill Trophy.

Senior Travis Yenne was a First Team selection and the RMAC Linebacker of the Year, while senior Jared Heath also garnered First Team honors and was named the RMAC Linebacker of the Year.

Running Back Bryan Florendo was the other player to earn First Team All-RMAC honors.

Study-Abroad Students Focus on Their Host Countries

Over the Tranquil Waters
Chengdu, China
Andrea Struble

Mangao Grottos
Dunhuang, China
Emily Dunham

Prayer Flags
Erawin National Forest, Thailand
Jeremy Paulus

Image of the Invisible
Tokyo, Japan
Jordan Self

Old Man Reading
Asturias, Spain
Guillermo Saiz

Verona, Italy
Tyler Micheli

GRAND PRIZE WINNER
Vibrant Color
China
Mike Iwata

Nature at its Best
Aspen, Colo.
Gaurev K. Gupta

Dachau, Germany
Jenn Phillips

"Arte"
Valencia, Spain
Matt Diaz

Sixty-three photos were submitted for this year's fall 2005 Education Abroad Photo Contest. About 12 to 15 percent of graduating CSM seniors have studied abroad for a semester. The photo contest is open to those students who studied abroad during the 2004-2005 academic year, as well as to international students who studied at CSM. These are some of the entries, which include Colorado and foreign locations.

Retirement Doesn't Keep Larner Away From Office

By Carolyn Hendrex

Ken Larner Geop E '60, PhD Geop '70, who had been CSM's Charles Henry Green Professor of Exploration Geophysics, retired last fall. That's the official word, but CSM campus has hardly seen less of him. In spring, he agreed to teach but planned on a small work load with four-day weekends. This, however, would not be the case. "I became drawn (by myself) into everything going on in the department just as I always had done," Larner says, recalling only two four-day weekends for the entire semester. He admits that he had less time to vacation at his Grand Lake cabin than before he retired. "So I decided to take a sabbatical in the summer. I decided that retirement was a soft constraint; sabbatical is a hard constraint. But I knew that was cheating. What happens when the semester starts?"

Dave Hale has assumed the C.H. Green professorship, but Larner took the comfortable path by moving his books and materials into the office just next door. Larner is adamant, however, that this semester he will not be at the School enough to justify having an office, so he is slowly vacating that office.

Since retiring, he has volunteered with several organizations. Evergreen Scholarship and Bootstraps, or ESBI, is an organization in his Evergreen/Conifer, Colo. community that collects and distributes scholarship money for college-bound high school kids in the area. Larner serves on the committee that selects eligible recipients. Larner has also commuted to Lowry Air Force base to help the Salvation Army with Hurricane Katrina relief.

Throughout his career Larner earned numerous awards including the Maurice Ewing Award, the highest award of the Society of Exploration Geophysicists, in 1996. Also, he says,"It was very special that in the semester after I retired I was selected to be a CSM University Emeritus Professor." Larner says this award was truly special because his association with Mines goes back 50 years when, as a junior in high school in Florida, the idea of getting to study geophysics at Mines became an obsession for him. Larner says he has never cared to display his awards. "You can't sell them or give them away," he smiles, so he boxes them up. "It's nice if I receive an award but I forget about it almost immediately."

Awards may not impress this hard-working geophysicist but a well-turned phrase certainly catches his attention. "I am in awe when I read a well-written novel," he says. Currently reading the political novel *Snow* by Turkish author Orhan Pamuk, Larner says he particularly appreciates Ivan Doig because of his lyrical mastery of the English language. Another favorite writer is his wife, Nancy, who is currently looking for a publisher for her children's book, *The Mouse in the Rabbi's Study*, which was inspired by a dream she had about the mouse infestation in their Evergreen house last winter.

"I feel the CSM geophysics department is outstanding, with great talent and warmth among both faculty and students," Larner says. This statement seems profoundly true based on how much of his retirement is spent working. So, if in the next couple of years you have occasion to be in contact with this dedicated professor, you might very well find him at CSM.

Undergraduates Assist with Iraqi Development Plan

By Graham Davis

Last spring, Professor Graham Davis was about to move into the final section in his undergraduate class, Economic Development, when a special call for help came in. Lt. Col. **Robert Gilchrist PhD Min Ec '99**, a professor of economics at the U.S. Air Force Academy who is temporarily stationed in Baghdad to assist with the Iraqi reconstruction effort, asked Davis for help with prioritizing Iraqi's development needs as outlined in the National Development Strategy. "Ultimately, the goal is to assist the Iraqi government by suggesting emphasis using a prioritized, time-phased plan for implementing the strategy," Gilchrist wrote.

Davis challenged his class to take up this task. Each class member had already been working on a development strategy for a developing country of their choosing, but here was a chance to put theory to work in a live case. The class was divided into 10 groups, each taking a look at a specific

development challenge within Iraq. After several class meetings, the group came up with a coherent set of priorities emphasizing Iraqi-led housing construction and construction-related job training as a core proponent of short-term development. This would simultaneously reduce the severe unemployment in Iraq, rebuild communities and provide a basic need, while providing a means by which small businesses in Iraq could be revitalized, either in the construction process itself or via supply to the construction effort. The class also determined that the Iraqis should have self-determination over the planning and design of their communities, to create a sense of ownership of the reconstruction process. Once trained in construction, this same Iraqi labor force could then be used in the massive reconstruction effort that will be needed to restore and rebuild Iraq's infrastructure.

Last May, the class connected to Central Command at Camp Victory in Baghdad via a live two-way videoconference and presented their results. Gilchrist was delighted with the advice the students provided, noting that some of the ideas presented were priorities that might have otherwise been overlooked. The exercise brought home to these students the immense task that lies ahead in Iraq.

Davis is an associate professor in the Division of Economics and Business.

MAY 10 - 13
REUNION 2006

Things to do:

- Check website to see who's coming and what's being planned (www.alumnifriends.mines.edu, then click on "May reunion" at bottom left)
- Find Stetson
- Book hotel room
  - Golden Hotel, 800 11th St., Golden. 800-233-7214. Ask for Mines Reunion block of rooms.
  - Sheraton West, 360 Union Blvd., Lakewood. 303-987-2000. Ask for CSE12A.
  - Table Mountain Inn, 1310 Washington Ave., Golden. 303-277-9898. Ask for Alumni Reunion block of rooms.
- Mail in registration form, or register on-line (www.alumnifriends.mines.edu, click on "online Event RSVP")
- Participate in reunion class gift (www.oia.mines.edu/give)

For Classes
'41, '46, '51, '56, '61, '66, '71, '76 '81, '86, '91, '96, and '01

www.alumnifriends.mines.edu/news_events
Listed under "Hot Topics"

Young Alumni of Mines!
(Including those Young at Heart)

Coming to a city near you!
Thursday, April 13, 2006 (Save the Date!)
More information to come.
Contact CSMAA@mines.edu to volunteer.

Abu Dhabi • Albuquerque • Anchorage • Ankara • Austin • Bakersfield • Boise • Boston • Boulder • Calgary • Caracas • Casper • Charlotte • Chicago • Cincinnati • Colorado Springs • Columbus • Dallas • Denver • Fort Collins • Golden • Grand Junction • Houston • Jakarta • Kansas Ciy • Kuala Lumpur • Las Vegas • London • Los Alamos • Los Angeles • Miami • Minneapolis/St. Paul • New York • Norfolk • Oklahoma City • Peoria • Phoenix • Portland • Raleigh-Durham • Reno • Salt Lake City • San Diego • San Francisco • Santiago • Seattle • Singapore • Tucson • Tulsa • Vancouver • Washington, D.C. • Wichita • Your City?

On one day Miners all over the world gather together for fun and networking.

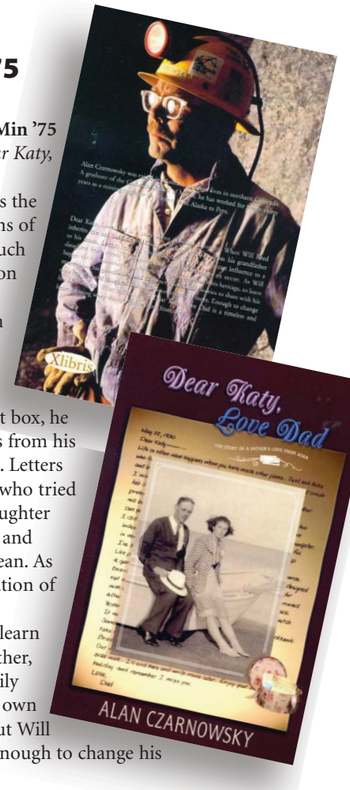
Alumni notes & quotes

Sig Ep Reunion Planned

Richard LaPrairie BSc Min '74, P.E., is planning a reunion for friends and family of the Colorado Delta Chapter of Sigma Phi Epsilon in Reno, Nev. in June. If you'd like to attend but haven't been in contact with LaPrairie, visit *www.lmiengineering.com/06party.html* for more information. The 2002 and 2004 reunions drew about 50 alumni each from as far away as Australia.

Czarnowsky '75 Pens Novel

Alan Czarnowsky BSc Min '75 has written a novel, *Dear Katy, Love Dad,* published by Xlibris Corporation. It is the story of three generations of Mines graduates and much of the story takes place on campus and around Golden. As described on the book jacket, it "is a story about personal discovery. When Will Reed inherits the old hat box, he finds a lifetime of letters from his grandfather to his mom. Letters from an estranged dad, who tried to cast influence to a daughter from across a continent and often from across an ocean. As Will begins the examination of the letters, he figures to unearth his heritage, to learn more about his grandfather, and to garner a few family stories to share with his own 10-year old daughter. But Will discovers much more. Enough to change his life forever."



Alumni Raise Money for Food Bank

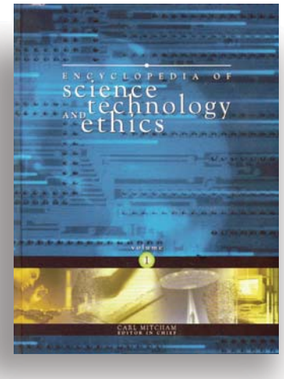
Brian BSc '98 and **Mindy BSc Econ '01 Arbuckle** raised $2,114 for the Food Bank of the Rockies in November with their first annual Sun Salutation-A-Thon at the Green Mountain yoga studio they own. The studio's students and teachers gathered sponsors to donate money for each sun salutation they could perform at one time over the weekend of November 11-13. Each sun salutation has at least 12 postures that move with the breath. The students performed at least 40 sun salutations each with the top performers completing 80 and 108 sun salutes. One hundred percent of the donations were given to the food bank to help feed the needy for the holidays. The Arbuckles founded their yoga studio last spring in Arvada, Colo.


Christoph Goss

Goss Elected State ASCE President

Christoph Goss, BSc Eng '97, PhD Min '00, P.E., has been chosen president of the Colorado Section of the American Society of Civil Engineers. The Colorado branch is the eighth largest branch of ASCE in the country. Goss works for Deere & Ault Consultants Inc. in Longmont, Colo.

Science, Technology and Ethics



The *Encyclopedia of Science, Technology, and Ethics,* published last August by Macmillan Reference, includes articles by 13 Mines professors. Carl Mitcham, professor in the Division of Liberal Arts and International Studies, was editor-in-chief. The four-volume set includes about 700 articles by 400 authors from more than 30 countries. The encyclopedia covers moral issues raised for humans since the earliest technologies through the scientific advances of today. Authors from Mines include Hussein Amery, Juan Bautista Bengoetxea, **Maeve A. Boland PhD Geol '05**, John Franchi, Tina Gianquitto, James Jesudason, Jon Leydens, Juan Lucena, Carl Mitcham, Suzanne Moon, Barbara Olds and Eul-Soo Pang.

Harry Campbell Donates Over $2 Million to Mines

Petroleum Engineering Department Head Craig Van Kirk and Harry Campbell

As a member of Mines' 1939 undefeated football team and a petroleum engineering major, Harry Campbell PE '42 understands the many important dimensions of a Mines education. With his recent gift of $2.2 million, Campbell's generosity provides endowment support to help continue the School's legacy of excellence in both academics and athletics.

Part of Campbell's donation will endow a chaired professorship in the School's world-renowned petroleum engineering department. A portion of his gift will also be allocated to Mines' football team, adding to the Excellence in Football Endowment that Campbell established in 2001.

"Harry Campbell's generous gift demonstrates his tremendous dedication to Mines. We are honored that he has chosen to make such a significant contribution to the School's academic and athletic programs, and will apply these gifts to ensure that our students continue to benefit from a well-rounded and challenging college experience," said Mines President John U. Trefny.

Campbell translated his own success in the classroom and on the football field to success in the oil fields, building a distinguished career with several oil companies before founding his own business in 1972. As he puts it, "My own experience at Colorado

From left, senior quarterback Danny Medina, Harry Campbell, Coach Bob Stitt and senior linebacker Jared Heath.

School of Mines as a student-athlete taught me the skills that helped me to achieve professional and personal success. With this gift, I want to sustain Mines' tradition of rich academic and athletic programs that help students develop leadership qualities and strong characters."

Century Society New Inductees

The Mines Century Society honors those individuals who have distinguished themselves through a lifetime of extraordinary philanthropic support for the School. Alumni and friends whose cumulative gifts to the School total $100,000 or more are recognized through society membership and their names permanently displayed in the Ben H. Parker Student Center. This year, eleven additional nameplates were added to the Donor Wall and six previous members of the Century Society raised their lifetime giving to a new level.

Platinum Level
$3,000,000 to $4,999,999
John P. '52 and Erika H. Lockridge▲
J. Robert Maytag▲

Gold Level
$1,000,000 to $2,999,999
Hugh W. and Ann Evans●
F. Steven and Gayle Mooney■
James L. '59 and Arlene H. Payne●

Silver Level
$500,000 to $999,999
Charles and Eileen Bruce★
Charles R. Fitch■
Irene V. McKinney★

Copper Level
$100,000 to $499,999
Bernard M. and Marie J. Bench★
Phil A. Bowman★
Richard J. and Donna Gardner★
Gerald W. and Bettina B. Grandey★
Edwin J., Jr. and Nien Hodder★
Vernon A., Jr. and Kaye Isaacs★
Allan G. Provost★
John U. and Sharon L. Trefny★
Harry A. Trueblood, Jr.★

★New Member
■ Moved from Copper Level
● Moved from Silver Level
▲ Moved from Gold Level

Mines Acknowledges Individual, Corporate and Foundation Donations

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

Dr. Lonnie L. Abernethy established a charitable gift annuity with a donation of $100,000. The principal from the annuity will be added to the Lonnie & Gertrude Abernethy Fellowship in Ceramics and the Lonnie Lee Abernethy III Fellowship in Ceramics in honor of his parents and his son.

Harry D. Campbell '42 donated real estate with a value of $2,227,896 to establish an endowed chair in petroleum engineering, support curriculum enhancement and add to the Campbell Endowment for Excellence in Football.

Steve '64 and **Dollie Chesebro'** made a gift of $25,000 to support CSM Athletics.

Marshall '67 and **Jane Crouch** made a $34,000 payment toward their $100,000 *Transforming Resources* campaign pledge. This gift will support The Mines Fund and the Geology Department, as well as provide discretionary funding for four professors in geology and geophysics.

In honor of his 50th reunion, **Joseph R. Dunbar '56** made a generous gift of $100,000 in continued support of the Wyoming Scholarship Fund.

Gerald '68 and **Tina Grandey** made gifts totaling $50,000 to support the Grandey Endowment for the McBride Honors Program Fund, the Grandey Curriculum Mini-Grant Endowment Fund and The Mines Fund.

S. Bruce '60 and **Eleanor Heister** made a $25,000 gift through the Ayco Charitable Foundation to support the McBride Honors Program in Public Affairs Fund.

Ralph L. Hennebach '41 continued his support of the Hennebach Visiting Professorship program with a gift of $107,750.

Alfred T. Ireson '48 contributed $5,000 to The Mines Fund and $40,000 to the Alfred T. Ireson & Family Scholarship Fund. He also directed a matching gift of $5,500 to the Ireson Scholarship. The gift makes Al a member of the Simon Guggenheim Society for the seventh straight year.

Vernon "Bud" Isaacs '64 made a gift of $75,727 to pay off his pledge to the Mines Recreation Center early.

With a generous gift of $160,550, **Harold M. '68** and **Patricia Korell** established an endowed scholarship fund that will help two undergraduate students from Wyoming pursue engineering degrees at Mines. An additional $250,000 will name the Outdoor Recreation offices within the new CSM Student Recreation Center.

Francis '52 and **Mary Labriola** continued their support of Mines with an unrestricted gift of $25,000 to The Mines Fund.

Carolyn V. Mann, loyal friend of the School, continued her support of the John and Carolyn Mann Graduate Fellowship in Geology Fund with a gift of $50,000.

Timothy M. '80 and **Bernadette Marquez** made initial pledge payments totaling $750,000. Their total $10 million pledge, the largest in Mines' history, is directed to the construction of a new, state-of-the-art Petroleum Engineering Building.

Robert E. III '68 and **Ann McKee** made a generous gift of $150,000.

Terry '67 and **Carol McNulty** made a significant current gift of $25,000 to the Arthur Lakes Library to purchase text books for the Department of Metallurgical and Materials Engineering.

Lawrence A. '62 and **Kay McPeek** donated securities totaling $249,051 to establish the Robert Weimer and John Haun Graduate Fellowship in Geology.

A distribution of $140,232 was received from the Raab Charitable Remainder Trust, established in 1988 by **Hilary '37** and **Margaret Raab**.

Charles E. '61 and **Louanne Shultz** continued their support of the Shultz Athletic Scholarship Fund with gifts totaling $89,190.

A distribution of $131,850 was received from the estate of **Fil Van Voris '39**. The gift will establish the Van Voris Endowed Scholarship Fund.

A gift of $65,000 from **James R. Weber '71** established the Jack R. and Mary D. Weber Endowed Fellowship Fund in honor of his parents.

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

The **ARCS (Achievement Rewards for College Scientists) Foundation** contributed $49,000 toward scholarships for nine students.

BP contributed $26,600 to support the departments of Chemical Engineering, Engineering (Mechanical Specialty), and Petroleum Engineering; the Minority Engineering Program (MEP); and the Society of Women Engineers (SWE).

The **Burlington Resources Foundation** contributed $25,000 to support the Petroleum Engineering Department.

The **Adolph Coors Foundation** contributed gifts totaling $268,800 in support of the William K. Coors Distinguished Chair in Chemical Engineering and the Herman F. Coors Professorial Chair.

The **Viola Vestal Coulter Foundation** contributed $35,000 to support the Coulter Chair for Mineral Economics.

The **Daniels Fund** contributed $50,000 to support the Mobile Science Show, benefiting K-12 schools in the Jefferson County area.

The **Halliburton Foundation** contributed gifts totaling $45,000 to support 3-D prototypes in engineering education and an adjunct professorship in the Department of Petroleum Engineering.

Landmark Graphics contributed $60,000 to support a graduate student studying under Dr. David Hale.

The **Li Foundation** contributed $42,000 to support the Li Foundation Fellowship program.

The **Marathon Oil Company Foundation** contributed $100,000, completing their $300,000 pledge establishing the Marathon Center of Excellence for Reservoir Studies.

Newmont Mining Corporation contributed $30,000 to support improvements in the experimental Edgar Mine.

Schlumberger contributed $25,000 in support of the Department of Geophysics' Center for Petrophysics.

CSM Alumni Association

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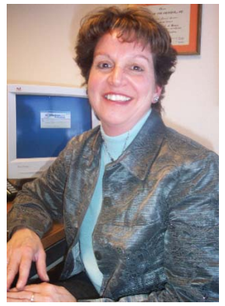
The Importance of Establishing Developmental Relationships



In November, the Alumni Association invited students and alumni to a campus event on the importance of mentoring. **Joe Mahoney '86**, founder of Just in Case Business Lighthouse, a consulting firm that helps companies explore and solve problems through the case-study method, led the group in an interactive exercise. Students in attendance outnumbered alumni three to one, and many of the young alumni present expressed interest in being mentored themselves. Our alumni population, with a deep breadth of knowledge from industries located worldwide, are in possession of a precious commodity: their own experience. Who better to share it with than a fellow alumnus/na or future graduate? This is a meaningful way to get involved with the Mines community, with bountiful rewards for both mentors and protégés alike.

Participants in this mentoring event were asked to fill out a questionnaire so that the Office of Alumni Relations can build a database of potential mentors and protégés and provide a conduit for budding networking or mentoring relationships.

Later in December, the Office of Alumni Relations staff, together with other key stakeholders in the campus' Career Center, Office of Institutional Advancement, Athletics Department, Special Programs and Continuing Education office, as well as CSMAA board members and career specialist vendors, were invited to participate in a mentoring case study and brainstorming session. The diverse group generated many worthwhile ideas, and all agreed that the key ingredient in a well-executed mentor program is the human touch. This is where I call upon Mines' greatest resource, its human resource, the Mines community, and you are an integral part of it.

Please consider offering your advice to a budding mind of either a student or another alumnus/na. Your location need not matter; with the proliferation of e-mail and accessible cell phones, relationships can bud and grow from a distance. If you would like to learn more, please send me an e-mail at aparisea@mines.edu or feel free to give me a call (303-273-3296). If you would like to share your ideas and feedback on how best to make this program work, I welcome them. My goal for this year is to find a successful mentor match for each of the students or young alumni who attended our mentoring session—that magic number is 40. May I count on your help?

With all the best for the happiest new year.

For the greater good of Mines,

Executive Director

Rocky Mountain

Grand Junction, Colo.
About 40 alumni and friends held a tailgate party before the Mines-Mesa State game in late October.

West

Anaheim, Calif.
Candy Sulzbach BSc BE '81, Sally Rautio BSc Pet '00 and **Lori Stucky BSc Eng '97** were among those who attended the Society of Women Engineers convention in Anaheim in November.

Chino, Calif.
Miners in Southern California traveled to Chino to watch the Mines track team compete. The event was followed by a picnic.

Spokane, Wash.
Quite a few Miners showed up at the Northwest Mining Association breakfast in December.

International

Tim Marsh BSc Pet '76 (left) and **Richard LaPrairie BSc Min '74**, former fraternity brothers, met up in Beijing in August. They hadn't seen each other in at least 30 years. LaPrairie owns LMI Engineering in Reno, Nev.

New Life Members

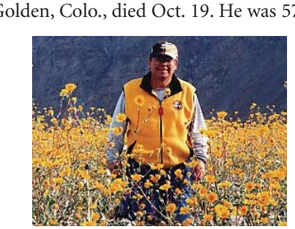
John H. Barney '57
Lance R. Barron '74
Marshall B. Belden Jr. '69
Harry J. Briscoe '70
Darek T. Bruzgo '95
Samuel Chang '88
William F. Clark '77
Joseph E. Furtado '98, '02
Rebecca A. Furtado '01
William Mark Hart '97
L. Roger Hutson '82
Robert E. Irelan '68
Ronald R. Jones '67
John T. McDonough Jr. '69
Joann M. Menebroker '91
Bryant M. Mook '01
Anita Pariseau
Elizabeth J. Reagan '00
Katherine A. Stachowiak '97
John S. Stachowiak '97
Guenael O. Wagner '05
Loic F. A. Wagner '04

For the most up-to-date information on what alumni events are scheduled around the country and the world, go to www.alumnifriends.edu and click on "News and Events" at the top. Then scroll down to the calendar listings.

In memoriam

Carl David Baer EM '52 died March 10 at age 75. His career spanned 45 years. He worked on base and precious metal and coal projects on all continents except for Antarctica. He was a life-long member of the Alumni Association and a strong booster of the mining industry. Baer is survived by his children, Diane, Dana BSc Min '76 and Debb.

Richard J. "Rick" Carlson Met E '69, MSc Min Ec '81, PhD Min Ec '04 of Golden, Colo., died Oct. 19. He was 57.



Carlson was born in Oregon and moved to Colorado at age 9. After graduation from Mines, he served as a second lieutenant and combat engineer in Germany from 1969 to 1972. In 1983, Carlson moved to South Africa, where he worked underground as a certified explosives specialist. He once escorted a caravan of cars through war-torn Mozambique. He also worked in corporate gold mining offices in Johannesburg. In 1993, Carlson returned to Colorado to take care of his parents. He taught at Metropolitan State College of Denver, Red Rocks and Colorado Technical University Online. Carlson was a longtime member of the Denver Barbarians rugby team and coached the first women's rugby team at Mines. In 2000, he was inducted into the Colorado Rugby Hall of Fame. Carlson is survived by his longtime companion, Marcia Simmons.

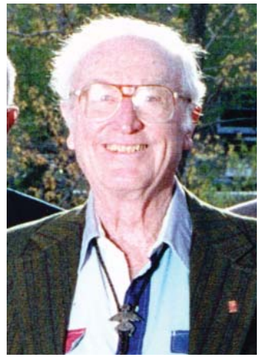
John Charles "Jack" Dingman Jr. PRE '52 of Houston died July 30 of cancer at age 77. After graduation from Mines, Dingman went to work for Jefferson Chemical. He retired from Texaco Chemical Company. Afterward, he began consulting as Dingman Enterprise and co-founded Optimized Gas Treating. Dingman was an active member of Memorial Drive United Methodist Church, a veteran of the U.S. Navy, and was one of the founders of SPEBSQSA, a group that promotes barbershop quartets, in Austin, Texas. He is survived by his widow, Mary, a daughter, a son, three grandchildren and a sister.

Frank D. Hotter Geol E '59 died of cancer June 18 in Belleville, Ill. He was 68. Hotter was born in Greeley, Colo., and after graduation from Mines, joined the U.S. Air Force. He retired as a lieutenant colonel in 1982. During his time in the military, Hotter earned a master's degree from Ohio State University. He also pursued advanced studies in geodetic science. After retirement, he became a design engineer for advanced systems for McDonnel Douglas (now Boeing). He retired in 1992. Hotter was a member of the Masonic Lodge, Scottish Rite and Shriners Hospital for Children. He is survived by his wife of 48 years, Bonnie, two daughters and seven grandchildren.

Benjamin F. Rummerfield Sr. Geol E '40 died of natural causes at home in Tulsa, Okla., Aug. 31. He was 87. In addition to his Mines degree, he earned an Advanced Management Program certificate from Harvard Business School. Through the 1950s, Rummerfield was instrumental in the design and manufacture of newly miniaturized and portable seismic and well logging recording equipment for use in the field. This instrumentation was used in Rome for the detection and discovery of St. Peter's tomb within the Vatican. In 1960, Rummerfield founded GeoData Corporation and worked domestically and internationally in recording, mapping, brokering and storing hydrocarbon and minerals exploration data. In 1963 he participated in the early success of indirect geophysical detection by the U.S. government of secret underground nuclear bomb tests in the former Soviet Union. Rummerfield earned numerous awards and accolades including Honorary Life Membership from the Society of Exploration Geophysicists, Outstanding Service Award from the Metropolitan Tulsa YMCA and the Distinguished Achievement Medal from CSM. Rummerfield was a leader in many civic and professional organizations. He was a past-president of CSMAA. Rummerfield also was a painter and one of his paintings was reproduced for the cover of *Mines* magazine in 1980. Rummerfield is survived by two daughters, two sons, a brother, three grandchildren, one great-grandchild and two stepchildren.

Frank M. Stephens Jr. Met E '42 died July 1 at age 84. A native of Colorado, Stephens was happiest in sight of a mountain stream – most often with fly rod in hand. He was a research engineer and senior technical adviser at Battelle Memorial Institute, vice president and technical director at Parsons-Jurden Engineering, vice president of technology at Hazen Research, developer of the ICH process for production of iron carbide and founder of the Iron Carbide Development Corp. In addition to his Mines degree, he received an honorary doctorate and the Distinguished Achievement Medal from CSM. Stephens is survived by Sally, his wife of 63 years, two daughters, a son, 10 grandchildren and four great-grandchildren. A third daughter predeceased him.

Richard Van Horn Geol E '47 of Golden, Colo., died June 30 at age 85. He was a retired geological engineer. Van Horn was both a surficial mapper and a landslide expert. He produced numerous reports on the geology, sedimentary deposits and landslides of the Denver-Golden area. He also conducted similar studies in Utah along the Wasatch front, and participated in the U.S. Geological Survey effort to map the geology of the State of Kentucky. Before attending Mines, Van Horn served in the U.S. Army Corps of Engineers. He was a member of The American Association of Petroleum Geologists, Association of Engineering Geologists, Utah Geological Association and the Mines Alumni Association. His hobbies included skiing, golfing, swimming, canoeing, dancing and hiking. He was a Boy Scout cub master and scout master and an Explorer adviser. He wrote or co-wrote more than 100 geologic reports and gave many geologic talks to school children, adult groups and professional societies. He and his wife, Alice, who predeceased him, had five children.



Donald J. VanOrden Geol E '56 of Midland, Mich., died Sept. 19 at age 74. VanOrden served as a first lieutenant in the Army Corps of Engineers during the Korean Conflict. In 1956, he joined Sun Oil Company and worked in various production engineering assignments until 1973. Later assignments were as district engineer in California and chief operations engineer in Dallas. VanOrden retired in 1987. He was a Registered Professional Engineer and a member of the Society of Petroleum Engineers. He also was a member of the American Petroleum Institute, Industry Advisory Committee at CSM and on the board of directors of the Michigan Oil and Gas Association. VanOrden is survived by his wife of 38 years, Charli, two sons, four grandchildren, a great-grandchild and a sister.

alumni on the move

1949

George H. Fentress Geol E is retired in Loveland, Colo.

1950

John R. Weyler PE is vice president of Turan Petroleum Inc. in Santa Ana, Calif.

1951

E. Geoffrey Jeffreys Geol E is retired in Daphne, Ala.

David C. Jonson Geol E, MSc Geol '55 is vice president of exploration and director of Aurelio Resources Inc. in Aurora, Colo.

Joseph H. Sullivan Geol E is executive director for Sacramento County Taxpayers League in Sacramento, Calif.

1952

Joseph H. Kurz Geol E is retired in San Antonio, Texas.

1954

A. Joseph Rozada PE is retired in Dallas.

1955

Patrick J. Early PE is retired in Naperville, Ill.

Charles O. Spielman Geol E is an independent geological consultant in Monte Vista, Colo.

1956

Robert W. Howard PE is retired in Woodbury, Minn.

1957

Ralph T. Simermeyer Geop E has retired (again)!

Robert B. Steck Met E is senior vice president of Garden State Securities in Wall Township, N.J.

1958

Benson L. Joseph Met E is vice president of California Saw & Knife Works in San Francisco.

1960

L. Douglas Patton Geol E is chief operating officer for Consortium of Plant Biotech Research on St. Simons Island, Ga.

John R. Smith PE is a manager on contract with Alaska Venture for Shell Exploration & Production Company in Houston.

1964

John H. Gray PRE is retired in Kingwood, Texas.

Thomas L. Hughes EM is retired in Golden, Colo.

Ronald B. Mellor PE is a field superintendent for Niko Resources in Dhaka, Bangladesh.

Lloyd J. Nordhausen PRE is vice president and refinery manager for Frontier Refining Inc. in Cheyenne, Wyo.

Edwin J. White EM has retired and is a consultant for the Denver Machine Shop.

1965

Larry J. Hoppe Met E and wife Cheryl operate Trumpeter Inn Bed and Breakfast in Friday Harbor on San Juan Island, Wash. They would love to have Mines alumni visit the inn.

Stanley M. Lukezic Met E is retired in Livermore, Calif.

Keith S. Olson EM is retired in Buhl, Idaho.

William R. Wilson Met E is president and chief executive officer for New Horizon Uranium Corporation in Arvada, Colo.

1966

Stuart E. Bennett PRE is a dentist at Foothills Dental Spa in Arvada, Colo.

Paul Brennecke Met E is production manager for Steel Works Inc. in Denver.

Arthur F. Helbig EM was married in Indonesia in March 2005. His wife is named Yatini. Helbig is production manager of Bogatyr Access Komyr in Kazakhstan.

Thomas F. Kellett PRE is outsourcing business development manager for Intertek Caleb Brett in Houston.

David B. Pearcy Geol E is a senior geologist for Cimarex Energy Company in Midland, Texas.

Richards C. Thomas EM is president of Tec Industries Company in Bonita Springs, Fla.

1967

Joseph D. Stewart PRE, MSc Min Ec '89 is senior petroleum engineer at Berry Petroleum Company in Denver.

Ronald E. Versaw EM is project manager for Tetra Tech EC Inc. in Lakewood, Colo.

1968

Charles E. Brooks III Met E, MSc Met '70 is retired in Chandler, Ariz.

Edwin Darling Phy E is director of maintenance and production support for Aramark Uniform Services in Irving, Texas.

Jack R. McClellan PE owns McClellan Consulting LLC in Gilcrest, Colo.

Robert B. Merrill Met E is retired in Madison, Ohio.

Danny L. Taylor Math E, MSc Math '73, PhD Min Ec '80 is an associate professor of mining engineering at Mackay School of Earth Sciences & Engineering at University of Nevada in Reno.

Gary R. Williams EM is a mine safety and health inspector for the U.S. Department of Labor in Albuquerque, N.M.

1969

Joseph A. Gill Geop E is retired in Richardson, Texas.

James A. Heist PRE is vice president of CDS Technologies in Cary, N.C.

Andrew Hoover EM is retired in Littleton, Colo.

Michael Kowalski MSc Geop is retired in Raton, N.M.

John D. Low Met E is vice president of operations for Asarco LLC in Tucson, Ariz.

William F. Martin Jr. BSc Min, MSc Min '73 is president of Mine Development and Engineering Corporation in San Clemente, Calif.

John T. McDonough Jr. Geol E is vice president of Chile-Argentina for Barrick Gold Corporation in Salt Lake City.

Raymond F. Stewart Geop E owns Quaker State Oil Company in Bakersfield, Calif.

1970

Larry A. Cramer BSc Met is a consultant for Cramer Consulting in Limpopo, South Africa.

Robert J. Dearinger BSc Met is president of Robert Dearinger & Associates Inc. in Huntington Beach, Calif.

Ronald L. Gist BSc CPR, MSc CPR '72 is senior principal for Purvin & Gertz Inc. in Houston.

David J. Spottiswood PhD Met is an emeritus professor for Curtin University of Technology at Western Australian School of Mines.

Bruce T. Stanley EM owns Grand Mesa Alpacas in Cedaredge, Colo.

1971

Robert E. Brady Jr. BSc Chem is retired in Lakewood, Colo.

Nicholas J. Cavaleri PE is an independent consultant in Longmont, Colo.

Wesley P. Nason BSc Min is vice president of pipelines for VECO Alaska Inc. in Anchorage.

Daniel J. Townsend BSc CPR is director of operations services for Zachry Construction Corp. in San Antonio, Texas.

1972

Alvin L. Crandell BSc Phy is chief metallurgist for Glamis Marigold Mine in Winnemucca, Nev.

Richard J. Laman BSc Math is president of SMH Engineering in Lakewood, Colo.

Pamela R. Tittes BSc Met, MSc Min Ec '77 is principal of Tittes Construction Consulting LLC in Denver.

1973

Thomas W. Haycraft BSc CPR is strategic planning engineer for CITGO Petroleum Corporation in Corpus Christi, Texas.

Kent F. Perry BSc Pet is director of E&P research for the Gas Technology Institute in Des Plaines, Ill.

George F. Sanders Jr. BSc Geol, MSc Geol '75 is vice president for Consolidated Pacific Bay Minerals Ltd. in Vancouver, British Columbia, Canada.

1974

Lance R. Barron BSc Min is retired in Weston, Colo.

J. Michael Boyles BSc Geol is a senior research scientist at the Institute for Energy Research for the University of Wyoming in Laramie.

Timothy J. O'Connor BSc Min is a civil engineer for Engineering Surveys and Services in Columbia, Mo.

1975

Bruce R. Bergeson BSc Met is division process improvement manager for Aleris International in Novi, Mich.

Charles K. Chambers BSc CPR is a senior chemical engineer with CWI in Colorado.

Cathy D. Cutrell BSc Geol is knowledge engineer for BEA Systems Inc. in Denver.

Robert J. Green BSc Min is ventilation engineering supervisor for BHP-San Juan Coal Company in Waterflow, N.M.

Glenn L. Krum BSc Min, MSc Min '77 is a geological adviser for ExxonMobil in Houston.

Robert E. Larson BSc Math, BSc Phy, MSc Phy '80 is principal physicist for ITT Industries in Colorado Springs, Colo.

John R. McConnell BSc CPR, MSc CPR '77 is senior operations engineer for XTO Energy Inc. in Fort Worth, Texas.

Kirk A. Nobis BSc Min is senior project manager for Norwest Corp. in Salt Lake City.

Gary R. Resh BSc CPR is production manager with ICL Performance Products in St. Louis.

Raj Sharma BSc CPR, MSc CPR '77, PhD CPR '81 is an adviser for National Technology Enterprises Company in Safat, Kuwait.

1976

Ronald L. Brinkman BSc Met is an electrical distribution engineer for Flint Hills Resources in Corpus Christi, Tex.

Paul M. Brunner BSc Min is president and chief executive officer of the Boart Longyear Company in Salt Lake City.

James P. Daniel BSc Min is vice president of business development for Vulcan Materials Company in Birmingham, Ala.

Steven R. Gasser BSc Met is hot metals manager for Asarco Inc. in Hayden, Ariz.

Howard E. Janzen BSc Met, MSc Met '77 is president and chief executive officer for Janzen Ventures Inc. in Leawood, Kan.

Gregory T. Kelleher BSc Geol is exploration manager for Devon Energy in Houston.

Richard P. Wilson Jr. BSc Met is senior metallurgical engineer for Anderson & Associates in Houston.

1977

Randal S. Barnes BSc Met is external affairs manager for Newmont Ghana Gold Limited in Ghana.

Stephen M. Hamburg BSc Pet is vice president of Miller and Lents Ltd. in Houston.

Robert L. Koch BSc Min is chief engineer for Oxbow Mining LLC in Somerset, Colo.

Dean G. Liley BSc Pet is new ventures manager for Newfield Exploration Company in Denver.

Eric E. Morti BSc Geol is retired in Carbondale, Ill.

W. John Robinson Jr. BSc Geol, MSc Min Ec '91 is senior reservoir engineer for Chesapeake Energy Corp. in Oklahoma City.

Jeffrey A. Russell BSc CPR is president of J. Russell & Associates in Conroe, Texas.

R. Gordon Schupmann BSc Met, MSc Met '78 is turbo wheel program manager for Hitchner Manufacturing Company Inc. in Milford, N.H.

1978

John A. Bettridge BSc Pet is operating manager for the Southwestern Production Corp. in Denver

Leonard H. Lamb Jr. BSc Met is technical director for Motor Castings Co. in Milwaukee.

W. Scott McDaniel BSc Met is director of technology for Kaiser Aluminum in Spokane Valley, Wash.

Frederick N. Williams BSc Phy is operations manager for Yankee Atomic Electric Company in Rowe, Mass.

1979

Richard J. Gaugler BSc Met is a project manager for ConocoPhillips in Wilmington, Calif.

Richard L. Hesseltine BSc CPR is vice president of Ceritas Energy LLC in Houston.

Veronica P. Rovero BSc BE is a math and science tutor at Aims Community College in Windsor, Colo.

Lawrence T. Shade BSc CPR is production supervisor for General Chemical in Augusta, Ga.

1980

Kathleen A. Altman BSc Met is an associate professor in the Mackay School of Earth Sciences and Engineering at University of Nevada in Reno.

Michael J. Bogenreif BSc Min is president of Ajax Investments LLC in Tallahassee, Fla.

Robert W. Hanna BSc Geop is an executive for ExxonMobil in Houston.

Philip O. Johnson BSc Pet is a partner for Triumph Energy Inc. LLC in Westminster, Colo.

Michael G. Maslowski BSc Geol is exploration manager for Coeur d'Alene Mines in Idaho.

Kenneth W. Snodgrass BSc CPR manages the Atlantic Basin LNG supply for Shell Gas & Power in the Netherlands.

Thomas E. Stevenson BSc CPR is a partner for Web Fueled Technologies LLC in Katy, Texas.

David A. Thompson BSc Pet is investment appraisal manager for ConocoPhillips in Houston.

1981

Kenneth E. Beeney BSc Geop is chief geophysicist with Devon Energy in Houston.

Philip E. Brinkmann BSc Min is planning and controls adviser for ExxonMobil Development Company in Houston.

Timothy A. Deines BSc Pet is engineering manager for Marathon Oil Company in Houston.

James J. Emme MSc Geol is an independent consultant in Denver.

Bryan J. Evans BSc Min is project manager for Washington Group International in Denver.

Stephen C. Freeman BSc Pet is principal consultant for corporate strategic planning for Chevron in San Ramon, Calif.

Frank J. Marrone BSc Geop, MSc Min Ec '87 is a financial adviser for Ameriprise Financial in Houston.

Gary W. McFaddin BSc CPR, MSc CPR '85 is president of Compliance Partners Inc. in Fort Collins, Colo.

Thomas L. Young BSc Geol is advanced services manager for Smith Technologies in Oberursal, Germany.

1982

Daniel W. Andrews BSc CPR is financial consultant for RBC Dain Rauscher in Denver.

Dwight A. Burford BSc Met, MSc Met '84, PhD Met '87 is director of the Advanced Joining Technology Lab at Wichita State University in Kansas.

James F. Evans BSc Met is a research engineer for AK Steel Corporation in Middletown, Ohio.

Roger M. Flahive BSc Pet, M Eng Pet '84 is president of Erdolmann Energy LLC in Denver.

Donald E. Hulse BSc Min is general manager for Minera San Xavier S.A. de C.V. in Cerro de San Perro, Mexico.

Timothy J. Inks BSc Pet is senior reservoir engineer for Noble Energy Inc. in Denver.

Kamal A. Sandarusi BSc Geop is senior staff geophysicist for Chevron in Houston.

1983

Rex A. Bigler BSc Pet is manager of opportunity assessment for Chevron in Houston.

Daniel G. Collins BSc Geol is a software engineer for Northrop Grumman in Boulder, Colo.

Jennifer A. Maiolo BSc Geol is a project engineer for Frontier-Kemper

Constructors Inc. in Steamboat Springs, **Colo.**

Neal P. Mares Jr. BSc Pet is a production engineer for BP America in Houston.

1984

Michael E. Baldus BSc CPR is a contractor in Phoenix.

Dyanne Bush BSc Met is a network analyst for HNTB Corp. in Austin, Texas.

Jeffrey S. Childs BSc Pet is the commercial director-GOM exploration with BP North America in Houston.

Munehiro Fukuda MSc Geochem is a senior consultant for Sowa Consultant Inc. in Matsudo, Japan.

Frank E. Gibbs BSc Met, PhD Met '98 is program director for CH2M Hill Inc. in Englewood, Colo.

Thomas S. Glanville MSc Min Ec is managing partner for Eschelon Energy Partners in Houston.

John Andrew Kurtz BSc Geol is a hydrologist for the Arizona Department of Water Resources in Phoenix.

Bruce L. Niemeyer BSc Pet is area manager for Chevron in Lafayette, La.

Robin F. Randall BSc Pet is an engineering manager for Baker Hughes Inc. in Houston.

David C. Raymes BSc Geop is New England regional manager for Kleinfelder Inc. in Windsor, Conn.

Andrew F. Rosenfeld BSc CPR is an analyst for Impala Asset Management in San Francisco.

Brett Smith MSc Geop is president of Environmental Compliance Associates LLC in Richland, Wash.

Thomas R. Strong BSc CPR is a battalion chaplain for the U.S. Army in Olympia, Wash.

David R. Treadwell BSc Chem, BSc CPR is president of Quintillion Materials Research LLC, working in nanocrystalline ceramics, in Ann Arbor, Mich.

1985

Robert E. Moore BSc CPR is engineering director for Valero Energy in Houston.

Sandra L. Perry MSc Geol owns Perry Remote Sensing Ltd. in Englewood, Colo.

Mark O. Reid BSc Pet is director of engineering and operations for Denali Oil and Gas in Houston.

Patrick S. Troyer BSc CPR is senior manager of planning for Valero in San Antonio, Texas.

1986

William S. Davis III BSc Geop is senior scientific application analyst for Pioneer Natural Resources in Denver.

Jeffrey Dyck BSc Met, MSc Met '88 is president of Cascade Steel Rolling Mills Inc in McMinnville, Ore.

John G. Kunkle BSc Min is lieutenant colonel and deputy district commander of the U.S. Army Corps of Engineers in St. Paul, Minn.

James F. Mattern BSc Geop is president of VB Equities LLC in Vero Beach, Fla.

Susan E. McFaddin MSc CPR, PhD Min Ec '92 is treasurer for Compliance Partners Inc. in Fort Collins, Colo.

J. Fred Mueller Jr. BSc Geol is president of Northern Oil Inc. in Pasadena, Calif.

Jan M. Nietzer BSc Geol is a senior exploration geologist, North Africa and Near East, for Petro-Canada in London.

Gary S. Nordlander BSc Pet is operations engineer for Whiting Oil and Gas in Denver.

Gregory F. Piper BSc Pet is senior vice president for Prisma Energy International in Houston.

Suzanne (Lewis) Vaupel BSc CPR and husband, Ron, welcomed twins Luke and Eleen on Aug. 3.

David M. Wheeler MSc Geol is exploration manager for El Paso Production Company in Golden, Colo.

Karen L. Wiemelt BSc CPR is a partner of Pallavicini LLC in Arvada, Colo.

Daniel S. Wilkinson BSc Geop is president of Wilkinson Research Inc. in Lakewood, Colo.

1987

Clay L. Hoes MSc Min Ec is vice president of Ameriprise Financial in Minneapolis.

Laga Ak Jenggi BSc CPR is head of plant operations for Petronas Fertilizer in Malaysia.

Mark K. Levorsen MSc Geol is senior hydrogeologist for the URS Corporation in Denver.

Denise M. Lytle BSc Pet is senior evaluation manager for CDX Gas in Denver.

Dominic J. Ricotta BSc CPR is senior counsel and assistant secretary for the Apache Corporation in Houston.

Thomas E. Street BSc Chem is principal of Satago Consulting LLC in Denver.

David H. Thornton BSc CPR is operations manager for Equatorial Guinea Global LNG Services in Spring, Texas.

1988

Patricia Glora Chambers BSc CPR is executive director of Blue Sky Bridge in Boulder, Colo.

Anthony W. Fabrizio BSc Phy, MSc Mat Sc '91 is vice president of manufacturing and quality for Robinson Brick Company in Denver.

Dean J. Gipson BSc Eng is senior project manager for PBS&J in San Diego.

Monte L. Madsen BSc Pet is the west continent operations manager for FMC Technologies in Denver.

Yassir Sindi BSc CPR is managing director for Al Fariz Food Industries in Jeddah, Saudi Arabia.

1989

Kennedy Technology Group, the company of **Jon Jambor BSc Eng**, celebrates its 10th anniversary fabricating and selling audio interface products for airplanes and motorcycles. Jambor will relocate to Aurora, Colo., later this year.

David A. Pritchard BSc Eng is vice president of Pritchard Concrete in Golden, Colo.

Anthonius W. Vervloet BSc Eng is a senior drilling engineer with Unocal in Bangkok, Thailand.

Abdul Wahid MSc Met, PhD Met '92 is director of electronic industry for the Department of Industry for the Republic of Indonesia in South Jakarta.

1990

Spencer G. Bird BSc Eng is vice president of operations for California Saw & Knife Works in San Francisco.

Julia B. Hoagland BSc Eng is a partner in the modern luxury living team at the Corcoran Group in New York City.

Michael R. May BSc Eng is project manager for URS in Denver.

Penny Hill Ouellette BSc Met is national project director for the Orion Registrar in Longmont, Colo.

Steven M. Ouellette BSc Met is president of The ROI Alliance LLC in Longmont, Colo.

Robert A. Todd Jr. BSc Eng is a resident at Great Plains Family Practice in Oklahoma City.

1991

David J. Hagerman BSc Min is production manager for Martin Marietta Materials in San Antonio, Texas.

Thomas J. Harris Jr. BSc Eng is assistant production manager and head of programming for California Saw & Knife Works in San Francisco.

Wayne R. Harris MSc Geol is senior staff explorationist with Norsk Hydro Exploration and Production in Texas.

Margery J. Lemieux MSc Min Ec is regional finance officer for Mercy Corps in Portland, Ore.

Michael J. Orobona BSc Geol is a senior geologist for Hibbing Taconite Company in Hibbing, Minn.

John J. Tanigawa BSc Pet is vice president of Merrill Lynch Energy and Power in Houston.

Peter H. Townsend M Eng Geol is an associate for NewFields in Denver.

John H. "Trey" White III BSc Min is chief engineer for Kinross Gold Corporation in Republic, Wash.

1992

John J. Dugas BSc Eng is director of network implementation for Earthlink in Pasadena, Calif.

Lisa R. L. Fisher MSc Geol is vice president of Tomassuk Minerals & Energy in Golden, Colo.

Andrew P. Villamagna Jr. BSc CPR will graduate from the Medical College of Virginia in May.

1993

Heather Coursey BSc Eng married Mike Puterbaugh last June. The couple resides in Oak Park, Ill., where Heather works for UPS.

C. Wes Dickhut BSc Geol is a geotechnical engineer for John P. Stopen Engineering Partnership in Syracuse, N.Y.

Denise M. Dihle BSc Eng is president of Three Sixty Engineering Inc. in Arvada, Colo.

Wendy BSc Eng and **Rich BSc Eng '94 Duncan** vacationed with their children in Canada last summer.

Curtiss P. Dwyer BSc Eng, below, became a Roman Catholic priest in December. At left is **Andrés S. Escalante BSc Eng.** At right is **Christopher J. Castelli BSc Eng '94**. The three were roommates at Mines.

Gerald S. Grishaber BSc Eng is operations manager of West Africa and the Mediterranean for Global Industries Ltd. in Houston.

Carl A. Lakner BSc Pet is a sustaining engineer for Schlumberger Oilfield Services in Rosharon, Texas.

Joseph M. Molloy BSc Eng, MSc Env Sc '04 is a safety engineer with the Colorado Public Utilities Commission, pipeline safety section, in Denver.

James D. Parry BSc Pet is regional operations manager for Indago Petroleum in Dubai, United Arab Emirates.

Heather L. Sebastian BSc Eng is master scheduler for the Las Vegas Sands Corp. in Las Vegas, Calif.

1994

Debra M. DeCrausaz BSc Eng is a land development manager for Intrawest in Snowmass Village, Colo.

Keith D. Engler BSc Pet is vice president of business development for Savant Resources in Denver.

Glen D. Frank BSc Eng, M Eng Engr Sys '98 is senior construction manager for H.R. Gray in Columbus, Ohio.

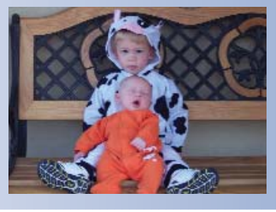
Paul J. Hughes BSc Eng is a network engineer for Community Banks of Colorado.

Dirk A. Kolnsberg BSc Eng is a manager for Accenture LLP in Houston.

Gregory E. Kushnir BSc Math married Galina Medvodovskaya Aug. 7. The couple resides in Connecticut where Kushnir is assistant vice president of Alea Alternative Risk.

Laird D. Little MSc Geol is geological adviser for ConocoPhillips in Anchorage, Alaska.

Tim Piwowar BSc Geol and his wife, Leslie, announce the birth of son, Gabriel Grayson, born Sept. 22. Gabe joins older brother Timothy "Trey"



Joseph III. Tim is a geologist with Shell E&P in New Orleans.

John W. Robinson PhD Geol owns North Ranch Resources LLC in Denver.

Samuel S. Roushar BSc Eng is assistant lead structural engineer for Shaw Stone & Webster in Centennial, Colo.

1995

Roxann BSc Eng, P.E., and **Matthew Hayes BSc CPR,** P.E., announce the birth of daughter Bonnie Belle, born May 4. Bonnie joins big sister Breanna Grace. Matt is a project engineer for the Town of Castle Rock. Roxann is an adjunct faculty member for the Engineering Division at CSM.

Whitney A. High BSc CPR, M Eng CPR '96 is a medical doctor in Aurora, Colo.

Mark J. Jachimiak BSc CPR is an attorney for Wood Ris & Hames in Denver.

Richard J. Murtland BSc Eng is an applications engineer for UGS in Scottsdale, Ariz.

1996

Matthew D. Holecek BSc Eng and his wife, Katherine, announce the birth of their second daughter, Claire Elizabeth, born Aug. 15. She joins Madeline Marie who was born in 2002. Matt is a business development analyst for Sunoco Logistics Partnerships in Nederland, Texas.

Darvin H. Jones MSc Min Ec is project manager with Noble Drilling in Sugar Land, Texas.

Susana Lopez BSc CPR is pursuing a master's degree in petroleum engineering at Heriot Watt University in Scotland.

Nicholas J. Newell BSc Eng is senior automation engineer for Macromedia in San Francisco.

Jess A. Peonio BSc Pet is senior operations engineer for Orion Energy in Denver.

C. Jason Pinto BSc Pet was married last summer in Indonesia. His wife is named Wuri. The couple resides in Beijing, where Pinto is a senior drilling and completion engineer for Apache Corporation.

1997

Kimberly A. Lacher BSc CPR is a reservoir engineer for Hunt Petroleum Group in Dallas. She earned an MBA in finance from Southern Methodist University.

Robert J. Spang MSc Geol is a staff geologist for Amerada Hess in Houston.

1998

Darrin J. Filer BSc Math & Comp Sci is IT manager for Cook Vascular Inc. in Vandergrift, Pa.

Joseph E. Furtado Jr. BSc Eng, MSc Min Ec '02 is a process/programmer analyst for RMO Inc. in Denver.

Randall B. Ollmann BSc Eng is a project manager for Peter McCoy Construction in Beverly Hills, Calif.

1999

Ronald E. Avila BSc Math & Comp Sci is an Arvada, Colo., police officer.

Matthew W. Caldwell BSc CPR is with Strata Engineering Inc. in Boise, Idaho.

Jesse Chuhta BSc Phy married Laura McGee in Pacific Palisades, Calif. last year. Jesse is an engineer at Boeing.

Paul A. DeBricker BSc Eng '99 is an associate at Goelzer Investment

Management in Indianapolis. He earned an MBA in finance and strategy from Purdue University.

Michael P. Diederich BSc Econ, BSc CPR is market research manager for Microsoft in Redmond, Wash.

Carl Randel Jr. BSc Pet married Samantha Gaines in Evergreen, Colo., June 17.

Kelly (Nikel) Reiber BSc Pet and her husband, Derek, announce the birth of son Isaac Thompson born June 9.

The Rev. **Richard A. Williams BSc CPR** married Marnie Broadhurst Aug. 24. Williams is pastor of the Fourth Presbyterian Church in Chicago.

2000

Gayle C. DiRienzo BSc CPR is an operations engineer for Mayne Pharma Inc. in Loveland, Colo.

Mischa N. Gibson BSc CPR is a pipeline safety engineer for Williams in Houston.

Sally J. Rautio BSc Pet is an operations engineer for Kerr-McGee Oil & Gas in Evans, Colo.

Elizabeth J. Reagan BSc CPR is a patent attorney with Merchant & Gould in Denver.

Isaac M. Rutenberg BSc Chem, BSc Math & Comp Sci is a patent agent for Reed IP Law Group in Palo Alto, Calif.

2001

Viki Renae Binstock BSc Chem Eng, a captain in the U.S. Army Corps of Engineers, has been deployed to Afghanistan.

Hans J. Eggers BSc Eng is an engineer for the U.S. Air Force at Vandenberg Air Force Base, Calif.

D. Benjamin Esplin BSc Phy is a patent agent for Pillsbury Winthrop Shaw Pittman in McLean, Va.

Rebecca A. Furtado BSc Eng is a supervisor for Utility Engineering in Denver.

Amy L. Osborn MSc Geol is an Earth scientist for Chevron in Sugar Land, Texas.

Nilton Pinheiro BSc Pet is a reservoir engineer for Sonangol Pesquisa e Produção in Luanda, Angola.

Joshua D. Wagner BSc Min is an industry representative for Caterpillar Inc. in Decatur, Ill.

Katrina E. Yancey BSc Chem Eng is a reservoir engineer for BP Exploration Alaska in Anchorage.

2002

Robert A. Cambron II BSc Eng is a design engineer for Triverus LLC in Palmer, Alaska.

Lewis P. Christensen BSc Eng is a B-52 navigator for the U.S. Air Force in Bossier City, La.

Joshua D. Crumb BSc Eng, MSc Min Ec '03 is a project analyst for the EuroZinc Mining Corporation in Canada.

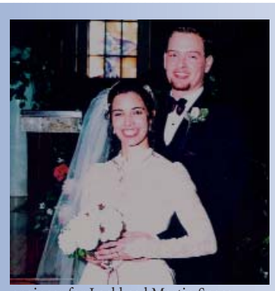
Nichole S. Detering BSc Eng is an engineer with Parsons in London.

Matthew Griego BSc Chem Eng married Pamela Lilley Dec. 4. He is an engineer with Public Service Company of New Mexico

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

Craig H. Neuman Jr. BSc Eng is an environmental engineer for Lyondell Chemical Co. in League City, Texas.

Timothy A. Norick BSc Phy, MSc Engr Sys '04 married Kara M. Perrotte Jan. 15, 2005. They are expecting their first child in February. He is an electrical



engineer for Lockheed Martin Space Systems in Littleton, Colo.

Christopher J. Richings BSc Min is a mine engineer for Phelps Dodge in Empire, Colo.

Erin L. Roethlisberger BSc Phy is a systems engineer for Lockheed Martin.

Dawn A. Schippe BSc Geol is a geologist for Indian Affairs in the Division of Energy and Mineral Resouces Management in Lakewood, Colo.

Christopher R. Sutton BSc Geol is a geologist for Rosetta Resources in Denver.

Jeremy J. Yarrow BSc Math & Comp Sci, MSc Eng & Tech Mgmt '03 is a math teacher for Eaton High School in Eaton, Colo.

2003

Jason A. Burke BSc Eng is a field engineer for Schlumberger in Lafayette, La.

Sara J. Depperschmidt BSc Chem Eng is a chemist for Leprino Foods Company in Denver.

Matthew R. Ellsworth BSc Eng, MSc Eng & Tech Mgmt '05 is a patent agent/technical specialist for Sheridan Ross in Brighton, Colo.

Tammy L. Foppe BSc Chem Eng is a reservoir engineer for Shell Rocky Mountain Production LLC in Denver.

Jeffrey J. Jantos BSc Eng and Jessica Zwier were married April 30 in Evergreen, Colo. **Matt Frary BSc Eng, Tim Lynch BSc Eng, Rafer Chambers BSc Eng** and **Jordan Dimick BSc GP '04** were groomsman.

Jesse L. Kuchinski BSc Chem Eng is a process engineer for ZAP Engineering in Lakewood, Colo.

Que Nguyen BSc Phy is a solutions developer consultant for Avanade Inc. in Seattle.

Jeffrey M. Pargas BSc Eng is an engineer for Atkinson Construction in Oakland, Calif.

Jessica V. Sigala BSc Geop is a seismic analyst for the U.S. Geological Survey in Golden, Colo.

Keith P. Swedhin BSc Eng is a consulting engineer for Huitt-Zollars Inc. in Denver.

Craig W. Wieland BSc Eng is a completions engineer for EnCana Oil & Gas (USA) in Denver.

2004

Emily L. M. Bostwick-White BSc Chem Eng is a design engineer for Pioneer Astronautics in Lakewood, Colo.

Emily Anne Brooking BSc Chem Eng and **David Sievers BSc Chem Eng** were married May 22 in Morrison, Colo. Emily is an engineer with Bearpaw Energy and David is an engineer with JM Hyde Consulting.

Scott S. Brown BSc Eng is a manufacturing engineer for Guidant Corporation in Temecula, Calif.

Erin Cathcart BSc Eng is an LCR analyst for Level 3 Communications in Superior, Colo.

J. Weston Davis BSc Eng is an engineer with Behrent Engineering Company in Wheat Ridge, Colo.

Payman Farrokhyar BSc Math & Comp Sci is territorial manager for the Ingersoll-Rand Company in Arlington, Texas.

Becky Ferega BSc Geol and **Ryan Kowalski BSc Geol '02, MSc Geol '04**

were married Sept. 17 in Golden, Colo. Becky is a geology technician at Yates Petroleum and Ryan is a staff engineer/geologist at Kleinfelder. The couple resides in Lakewood.

Richardo Labo Fossa MSc Min Ec is co-founder and senior consultant for DRM: Mining and Environment Professionals Association in Dundee, Scotland.

Paul Hopkins BSc Eng married Lotta Vikund July 16, 2004 in Skelleftea, Sweden.

Chad M. Isaacs MSc Min Ec is financial analyst of corporate development for Berry Petroleum Company in Bakersfield, Calif.

Dustin L. Johnson BSc Math & Comp Sci is a financial adviser for Ameriprise Financial in Denver.

Christopher J. Krier BSc Eng is a structural design engineer for Nolte Associates in San Diego.

Jamie Jackson BSc Eng is a project manager in Shanghai, China for IMI Norgren.

Jennifer L. Nesbitt BSc Eng is an environmental engineer for Environeering Inc. in Houston.

Michelle L. Powis BSc Eng, MSc Eng & Tech Mgmt '05 is an engineer for Boeing in Seattle.

James W. Sannan BSc Eng is a field engineer for CH2M Hill in Everett, Wash.

Franco F. Sivila BSc Pet is an engineer at San Francisco Xavier University in Sucre, Bolivia.

Sharon K. Yacob MSc Geochem is a geologist for Greyfox Energy in Argyle, Texas.

2005

Maytham I. Al-Ismail BSc Pet works for Saudi Aramco in Al-Jish.

Khalid A. Al-Majnouni MSc Chem Eng is a lab scientist for the Saudi Aramco Company in Jeddah.

Amar J. Al-Shehri BSc Pet works for Saudi Aramco in Jeddah.

Rezki Anindhito MSc Min Ec is a contractor for PT Perusahaan Gas Negaia (Persero) in Jakarta, Indonesia.

Rees G. Arnim BSc Pet is a production engineer for Southwestern Energy in Conway, Ark.

Derek E. Bass BSc Eng is a design engineer for Aeroflex Colorado Springs, Colo.

Keil A. Beaver BSc Math & Comp Sci, MSc Math & Comp Sci is a software engineer for Northrop Grumman in Aurora, Colo.

Stephanie M. Fox BSc Chem is a professional research assistant at University of Colorado Health Services Center in Denver.

Andrew T. Gates BSc Eng is an applications engineer for Advanced Coordinate Technology in Denver.

Blaise H. Hara BSc Eng is a pharmacy systems analyst for Kaiser Permanente in Aurora, Colo.

Kristopher S. Hill BSc Chem Eng is a process engineer for AES Inc. in Hiawatha, Iowa.

John C. Hottenroth BSc Eng is an applications engineer for National Instruments in Austin, Texas.

Carolyn S. Houser BSc Min is an engineering planner for Phelps Dodge in Delta, Colo.

Jolene R. Hurt BSc Eng is a design engineer for J.R. Engineering in Colorado Springs, Colo.

Julie A. Ruckman BSc Econ is a credit specialist for the Bank of Oklahoma in Denver.

Suzette C. Shivers BSc Math & Comp Sci is a research analyst for Corona Research in Golden, Colo.

Genevieve A. Shope BSc Pet is a field engineer for Schlumberger in Loma, Colo.

Jeffry H. Simanjuntak MSc Eng & Tech Mgmt is a pipeline engineer for PT Perusahaan Gas Negara in Jakarta, Indonesia.

Rajinder Pal Singh PhD Chem Eng is lead engineer for Pall Corporation in Cortland, N.Y.

Michael G. Skowron BSc Math & Comp Sci works for Fast Enterprises in Franktown, Colo.

Andrew D. Slaby BSc Math & Comp Sci, MSc Eng & Tech Mgmt is a software engineer for Northrop Grumman Mission Systems in Lakewood, Colo.

Gregory D. Slagel BSc Math & Comp Sci is in software implementation for Fast Enterprises in Golden, Colo.

Cassandra E. Smith BSc Chem Eng works for Air Liquide in Parker, Colo.

Brett A. Sollee BSc Eng is a civil design engineer for S.A. Miro in Highlands Ranch, Colo.

Timothy G. Spriet BSc Pet is a reservoir engineer for Venoco Inc. in Lower Lake, Calif.

Laura L. Stadterman BSc Chem Eng is a nuclear engineer for the Puget Sound Naval Shipyard.

Russell S. Stimatze BSc Chem Eng is an associate technical professional for Halliburton in Golden, Colo.

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Surassawadee Tanprasat MSc Geol is a geologist for PTT Exploration and Production in Bangkok, Thailand.

John W. Thompson BSc Eng is an associate mining engineer for Kennecott Energy in Gillette, Wyo.

Joseph M. Torres BSc Eng is an engineer for Lockheed Martin in Golden, Colo.

Michael A. Torres Jr. BSc Math & Comp Sci works in import/export compliance for StorageTek in Louisville, Colo.

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Sean W. Tyler BSc Math & Comp Sci is a software engineer for Northrop Grumman in Englewood, Colo.

Andrew A. Van Der Volgen BSc Eng is a U.S. Air Force second lieutenant in Arvada, Colo.

Brynn M. Vasboe BSc Geol is an engineer-in-training for Kumar and Associates in Arvada, Colo.

Robert T. Wagner BSc Min is a mining engineer for Arch Coal in Wyoming.

Terri D. Wagner BSc Math & Comp Sci, BSc Econ is a software configurations analyst associate for Lockheed Martin in Littleton, Colo.

Jeffrey C. Ward BSc Eng is a design engineer for Xilinx in Lakewood, Colo.

Scott M. Washington BSc Eng is an environmental engineer for Lehigh Southwest Cement Company in Redding, Calif.

Eric S. Williams BSc Eng is an engineer for TriState Generation and Transmission in Golden, Colo.

Shawn S. Winter BSc Chem Eng is a process engineer for Chevron in San Francisco.

Daniel K. Winterholter BSc Chem Eng is a facilities engineer for Kinder Morgan in Snyder, Texas.

Jeffrey P. Wojtkiewicz PhD Appl Phy is a laser scientist for Quantronix in Bellport, N.Y.

Brian J. Zadler PhD Appl Phy is doing post-doctorate work at the Physical Acoustics Lab in Superior, Colo.

Molly M. Zeller BSc Eng is a project manager for Water Remediation Technology in Arvada, Colo.

Andrew T. Zimmerman BSc Eng is a graduate student at University of Michigan in Ann Arbor.

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The Demise of College Yearbooks– a Growing Trend

By Robert Sorgenfrei

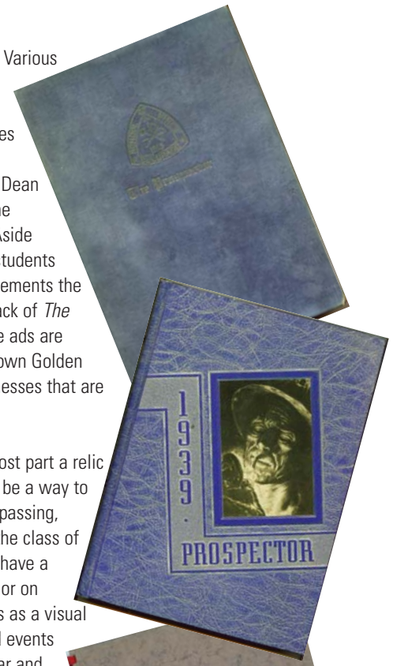
The last time Mines published a yearbook was for the 2000-01 school year. The lack of a yearbook to document the school year and serve as memorabilia for graduating seniors is not something unique to Mines. All over the country at both large universities and small colleges, the demise of the college yearbook is a national trend. For example, at the University of Arizona, the yearbook was discontinued in the late 1990s. Two years ago, the students there tried to revive it, and for all their efforts, could only sell 450 copies. This was on a campus with an enrollment of more than 34,000. In the Computer Age, the medium of print is less appealing to today's students, and the average price of a yearbook at around $85 no doubt puts off many students. The yearbook seems a dated and expensive purchase in an era of instant messaging.

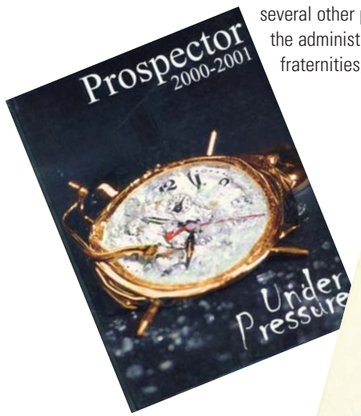
The Mines yearbook, *The Prospector,* was first published in 1913. It soon became a campus institution with an editorial staff in charge of producing one at the end of each school year. In 1924, *The Prospector* was not published because of alleged mismanagement and mishandling of funds. This caused a big uproar and shows how important to the student body the yearbook had become. Yearbooks were published during the first years of World War II, but as enrollment shrunk, so did the yearbook. The 1944 *Prospector* was a thin plastic spiral bound book of only 50 pages. In 1945, there was no yearbook at all. In 1946, *The Prospector* resumed publication and grew in size each year as enrollment skyrocketed with veterans on the GI Bill entering Mines.

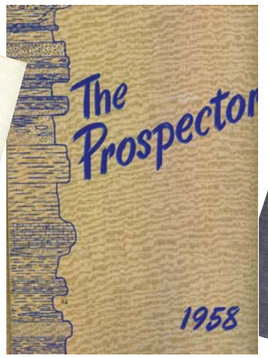
The yearbook of 50 years ago is typical of the ones produced by Mines, year in and year out. In 1955, the uranium boom was in full swing and the yearbook reflected this with artwork on the cover showing an old-time prospector with pan, pick and shovel along with a Mines student climbing a rock outcropping holding a Geiger counter. This theme of linking the mining past with the present was depicted in drawings on several other pages in the book. Photographs of the administration, the undergraduate classes, fraternities, social clubs and athletics feature prominently in the book. Various campus events such as Homecoming, E-Days, Faculty Follies, and an event called Mines on Television, dealing with the uranium boom are documented. Dean Martin and Jerry Lewis chose the Prospector Queen for the year. Aside from photographs of buildings, students and athletic events, the advertisements the local merchants placed in the back of *The Prospector* are interesting. In the ads are photographs of places in downtown Golden long vanished and thriving businesses that are just memories now.

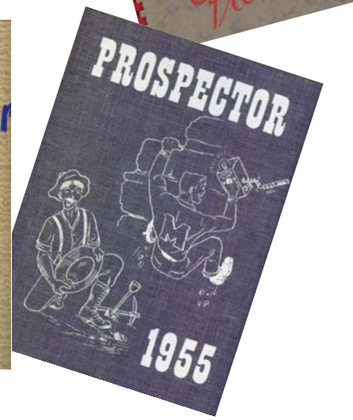
College yearbooks are for the most part a relic of the past. There will not likely be a way to bring them back, and with their passing, something is being lost. Unlike the class of 1955, the class of 2005 will not have a document preserved in archives or on their home bookshelf that serves as a visual and printed record of places and events that marked their last school-year and their passing from Mines into the professional world. The old-fashioned print yearbook, for all its anachronisms, does preserve a moment in time in a way that new technology does not.

Robert Sorgenfrei is librarian/archivist of the Russell E. & Lynn Wood Mining History Archive, Arthur Lakes Library.









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