

Fathers of modern
oil and gas exploration

Academic advising overhauled

A president's grandson reflects

Mines

Spring 2014 Volume 104 Number 1

Colorado School of Mines Magazine

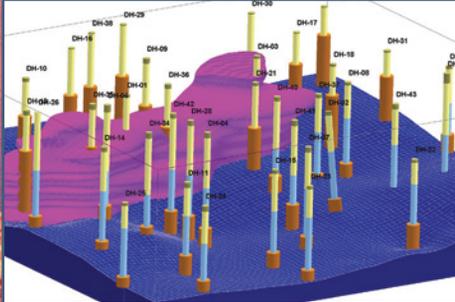
Getting Underground

After decades of struggle,
women are beginning to find
a place in the mining industry



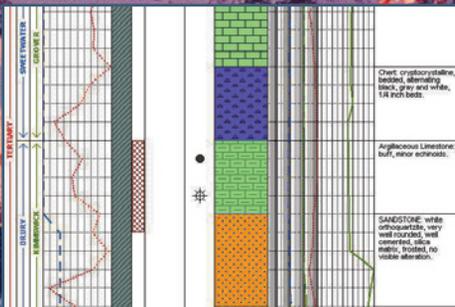
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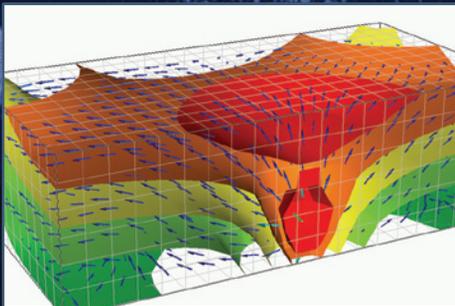
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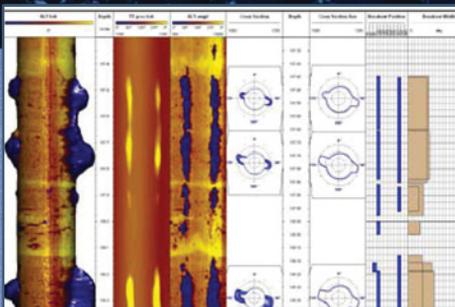
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FEATURES

12 Are Women the Mining Industry's Most Underdeveloped Resource?

Once legally barred from working in mines, women have spent decades battling for a place in the industry. Today, mining companies are finding that in addition to bringing valuable skills, women leaders are good for the bottom line.

18 Fathers of the New Science: Paving the Way for the Modern Age of Oil and Gas Exploration

Of the five individuals credited with establishing the petroleum systems approach to hydrocarbon exploration, which set the stage for the development of unconventional oil and gas, two are Miners.



DEPARTMENTS

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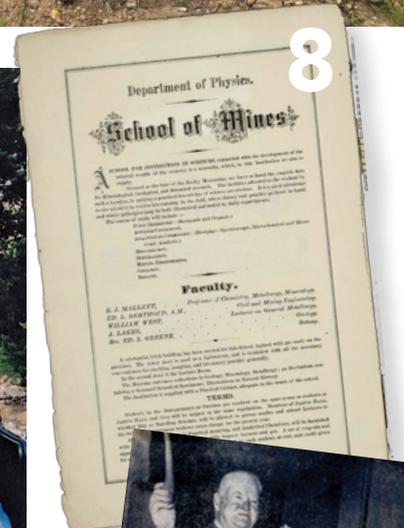
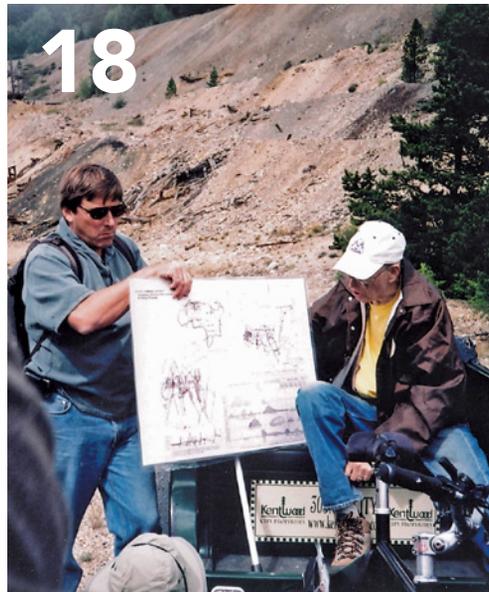
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WEB EXTRAS | MULTIMEDIA minesmagazine.com

Blogging in Austria Two Mines students, Alex Truby and Alyse White, share stories from their spring semester abroad

Interlude in Nepal Graduate student and former Harvey Scholar Scott Harper '13 takes a semester to volunteer with a computer literacy organization in Sisautiya before beginning graduate school

Mines in 1873 Yes, Mines was officially founded in 1874, but you could enroll in the School of Mines in Golden in 1873; download a copy of the school's first prospectus and read more on p. 8

In Brief Grad student is finalist for Mars One project | Mines team places second in Code Wars | Professor Jeff Squier receives 2014 SPIE Harold E. Edgerton Award | Mines partners in new lightweight, advanced metals institute | Associate Professor Moises Carreon receives PECASE

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Cover photo: Kelly Puzak '09, MS '12 photographed in Edgar Mine in 2011 by David Tauchen

TECHNOLOGY MANAGEMENT

As an alumnus of the Engineering and Technology Management program and a Coast Guard officer, I enjoyed reading the article “Coast Guard Officers Find Unlikely Fit” by Doug McPherson [fall/winter 2013]. Similar to the sentiments offered by Tony Hahn MS '04 and Ed Aponte MS '13, I was drawn to the program over Stanford, Purdue and Johns Hopkins due to the applied focus of the curriculum and experiences articulated by Hahn and Tim Barelli MS '09.

However, I was surprised and disappointed to find that my name was left off the list of Coast Guard ETM Program alumni. The correct number of graduates is eight. I graduated with an MS in 2011.

I continue to expound on the caliber of the ETM experience. During my stint, I helped invigorate the Economics and Business Graduate Student Association, which provided opportunities for growing the social activities of the cohort while serving as a forum to expand professional exposure.

Eugene McGuinness MS '11
Lieutenant Commander, USCG

M-CLIMB PHOTOS

[For our M-Climb] in 1953, we didn't have all the nice femininity to accompany us! My big regret is that I didn't get to make the Senior M Climb before graduation in 1957 because I was hopping around on crutches after knee surgery, but I sure did participate in the Senior M Climb Beer Bust in the commons across from Guggenheim Hall! I still wear my Mines ring and jacket, and get lots of comments.

Charlie Threewit '57
via minesmagazine.com

In 1965, the female population at CSM had exploded to seven. Most of them graduated, most of them higher up than me. But by gosh, I graduated, too, and did get to participate in the Senior M Climb event. I even kept my Stetson fairly clean. My Mines degree was the most difficult thing I ever did, and I am still very proud to be a graduate. And yeah, I still wear my ring. You see a lot of them in the oil patch.

Robert K. Nichols '70
via minesmagazine.com



ENGINEERING AND MORE PRAISE FOR RAMONA GRAVES

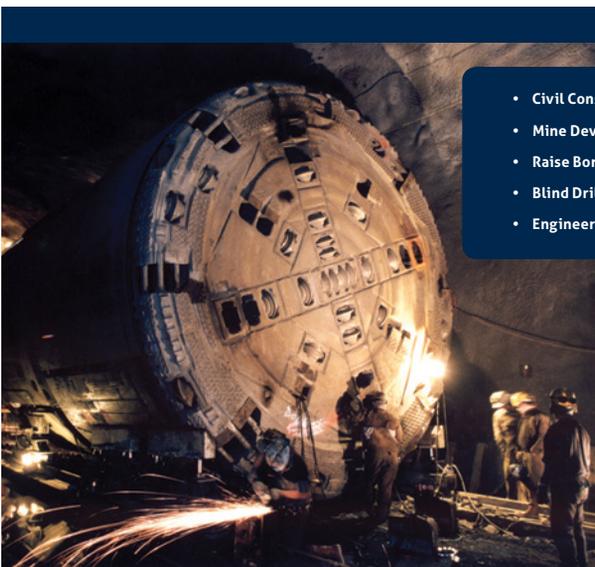
My dad, who works in the oil industry, asked me to read up on Ramona's story [summer 2013]. I am currently in high school, but the story inspired me. I hope her story inspires young talents to enter the field of science and engineering, especially female, as their participation rate in the field is so low. Thanks.

Shreya Vikas
via minesmagazine.com

CORRECTIONS

The graphic “Mines’ 2013 Incoming Class” on p. 9 of the fall/winter 2013 issue showed an average SAT score of 1326. Since there are three portions of the test available to take for a possible total score of 2400, we should have made clear that this average is based on a total of 1600 points, encompassing the Critical Reading and Mathematics portions of the exam—not Writing. According to the admissions office, this SAT score, combined with the ACT average score of 30, places the average Mines student in the 95th percentile of all test takers.

In that same graphic, we were also alerted to one numerical error and a potentially misleading label. The 2013 admission rate in the line graph should actually be 36%, not 31.6% (4,692 acceptances out of 13,036 applications). Also, while the term “admissions rate” is widely used by university admissions offices, “acceptance rate” would be clearer since the number of students who choose to enroll at Mines is much lower than those accepted.



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Comments and suggestions are welcome.
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Making Connections



Earlier this month, as we were wrapping up this issue of *Mines*, an alumnus walked into Coolbaugh House looking for some help. Having gone straight from Mines to the military, he was now transitioning back to civilian life, and the process was proving more complicated than he'd expected. Employers, he said, aren't looking for the kind of experience he'd gained in the military.

For me personally, his situation is a familiar one. My father left the British Army in the late 1970s, and he's often spoken about how hard it was to make the switch; he's also said how grateful he was for the professional

connection that led to his next job.

Knowing how many professional connections we can provide this alumnus, I came away from the conversation with a list of actions to take, and a renewed appreciation for the value of our career services and the network of alumni who make it such a meaningful resource. My colleague, Nancy Webb, who manages the Alumni Job Center, often refers to the demand for these services, but this firsthand experience sharpened my awareness.

My interaction with this job-seeking alumnus reminded me of something George Saunders '81 said upon accepting the Folio Prize for his book "Tenth of December," hailed as the best work of English fiction published in 2013. (On p. 28 you'll find details of this remarkable honor, which we'd cover in more detail if we hadn't recently run a feature story about him in the fall 2012 issue.) After expressing gratitude for the award, he waxed philosophical (without losing his sense of humor): "As I'm nearing my 180th year, life is starting to seem simpler. It seems to me that the real goal here, all the distractions notwithstanding, is to develop our ability to be more sympathetic to others." He described how, to better understand his characters, the act of writing fiction has involved "softening the borders between myself and other people." And he concluded by saying that at a time "when so much of the public discourse tells us that we are antagonistic, that we are separate, fiction and literature is a wonderful way to remind us that, actually, that's a lie. We are not separate. We are connected, and we can actually do things within our life to become more connected."

Expounded by poets and philosophers for centuries, these sentiments are not original. But at a time when the Colorado School of Mines Alumni Association is short-staffed and working long hours to serve our constituents, it was validating to hear an eminent alumnus articulate them in such a public forum. Within our sphere, this organization exists to build connections and community, to help weave and reinforce a sense of association, and to promote the idea that we are not separate. We are connected.

As *your* alumni association, we'll continue working toward this goal, connecting alumni as they navigate job markets, sharing news, arranging networking and social events, ensuring alumni have a voice in campus affairs, and creating new opportunities for involvement.

Nick Sutcliffe

Editor and Director of Communications
Colorado School of Mines Alumni Association

STUDENT SERVICES

Overhaul to Academic Advising Aims to Improve Student Retention

In her first year at Mines, Taylor Helbig was struggling. A guard on the women's basketball team, she played in all 29 games of the season and was ranked fourth in points scored, but academically she was falling behind. Determined to turn this around, she made an appointment with the Center for Academic Services & Advising at the beginning of the following semester. Over the next few months, the staff at CASA worked with Helbig to organize her study practices in a way that complemented her demanding athletic schedule.

"I honestly would not have passed that semester [spring 2013] without their help," she says.

Helbig's story is one of dozens that Colin Terry, CASA's director, recalls to illustrate the impact this office has had since it opened in May 2012.

Creating CASA was part of a campus-wide initiative to provide more support to students, particularly during the challenging freshman and sophomore years.

Before the change, until a student declared a major, her academic advisor was the faculty member who moderated her section of CSM101—a required, 1/2-credit first-year orientation seminar. The new model shifts responsibility for advising Mines' approximately 1,900 first- and second-year students to CASA's four professional academic advisors. "One of the biggest advantages is that with four full-time advisors working out of the same office, we can deliver comprehensive information about the full range of opportunities open to students," Terry says. "Many students arrive on campus with a major in mind, but more than 60 percent end up studying something different. Our goal is to help students make decisions they'll be happy with 10 or 20 years from now."

Terry points out that there's nothing experimental about the new model. "It's been adopted by universities around the country, and studies show it helps students get through the first two tenuous years of college."

CSM101 is still a required class taught by Mines staff and faculty, but the curriculum has been modified. In addition to helping students adjust to the campus climate and culture, the course



OUTREACH Recent changes to student support services, including academic advising, appear to be related to improved freshman retention rates, which were 92 percent in fall 2013—the highest ever at Mines. Shown are Brad Lindeberg (left), an academic advising coordinator at CASA, with freshman Anna Delerey.

addresses broad life skills, study skills, teamwork, goal setting and methods for choosing a major. If students want further support, they can speak with specially trained departmental faculty, who hold office hours at CASA, as well as with the full-time academic advisors. Students can go to CASA for help with readmissions, academic coaching, supplemental instruction, tutoring, and Academic Excellence Workshops, which provide help with some of the more challenging core curriculum classes.

SUPPORT SYSTEM

As in the past, when a student declares his major, he is assigned an advisor in his new department; nevertheless, the doors at CASA remain open. The office recently launched a new initiative that flags a student when his GPA for a single semester drops below a certain point; previously, only cumulative GPAs were tracked. "We've seen students who have literally not passed a class in several semesters, but because their original



GPA was so good, it took that long for it to drop low enough to get on anyone's radar," Terry says. The new system should identify students in need of support sooner.

Academic advising is the central component of CASA's mission, but the department supports students in other ways as well. Terry points out that students with GPAs of between 3.5 and 4.0 leave Mines at the same rate as students averaging between 2.0 and 2.5. Presumably, academic challenges account for the latter group, but why students in the high-achieving group leave is more puzzling. So far, Terry says that the common thread appears to be the number of campus connections students make. To identify students who may be at risk, the school is taking steps to improve how it tracks community involvement.

"We need to identify isolated students and try to get them plugged into a community," Terry says. "Clubs, research opportunities, sports or professional organizations—anything that helps develop a meaningful connection to campus and their schoolwork."

The recommendation to create CASA came from the Residential Campus Committee, which was convened in 2009 to address a variety of objectives, including student retention. The committee's recommendations launched several initiatives that address different aspects of student life. "Student support is a team effort," says Jessica Keefer, an academic advising coordinator at CASA. "We have a network of programs and professionals on campus that reaches far beyond CASA."

Their collective efforts are apparently paying off: Average retention rates for the period 2000-2010 were 85 percent, but in August 2013, 92 percent of the previous year's freshman class returned to campus—the highest retention rate on record.

—Amie Chitwood and Nick Sutcliffe

To learn more about CASA, visit casa.mines.edu.

STEM OUTREACH

Engineers Week Draws Middle and High Schoolers to Mines

More than 100 area middle and high school students visited Mines on February 20 to learn about STEM careers during DiscoverE Engineers Week, a national initiative aimed at promoting understanding of, and interest in, engineering and technology careers. Formerly known as National Engineers Week, the event is cosponsored by Mines and Lockheed Martin. This year, it began with a chemistry show by Renee Falconer, teaching associate professor in the Chemistry and Geochemistry Department, involving balloon pyrotechnics and other demonstrations. Students then toured research centers and the Geology Museum, where fluorescing rocks and the moon rock were particularly popular.

At a lunch in Friedhoff Hall, professional scientists and engineers mingled with students to answer questions and share their experience, and Paul Anderson '85 addressed the group, describing his journey from Mines to Lockheed Martin in a talk titled "Dreaming Big."

Engineers Week, which was established by the National Society of Professional Engineers in 1951, has been celebrated on campus for the last three years, thanks to a collaboration initiated by Cynthia Howell, energy education specialist and research faculty at Mines' Colorado Energy Research Institute, and Jeanette Alberg, manager of community relations for Lockheed Martin.

"What started as a pilot project between Lockheed Martin and Mines is now an annual event, ever-growing in sophistication, collaboration and purpose," says Howell, who points out that it now involves more than 70 Mines faculty and staff, and 25 Lockheed Martin volunteers.

—Kathleen Morton



THIS CLASS IS ON FIRE Renee Falconer, a teaching associate professor in the Chemistry and Geochemistry Department, demonstrated the importance of surface area on combustion using dried Lycopodium plant spores as a flash powder during DiscoverE Engineers Week.



Thomas Cooper

PRESIDENT'S CORNER

Celebrating 140 Years of Innovation

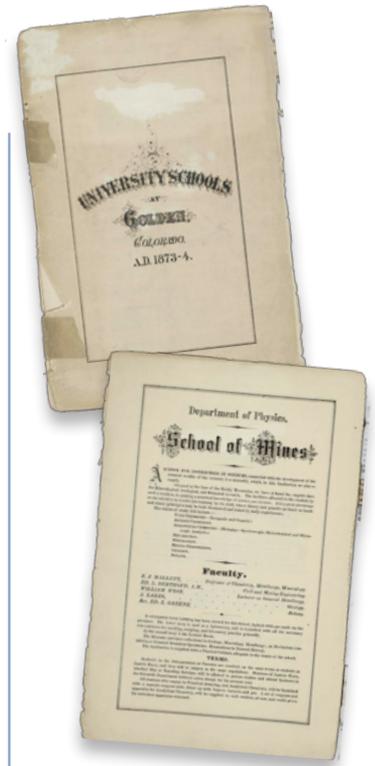
One hundred and forty years ago, on February 9, 1874, the Legislative Assembly of the Territory of Colorado passed the bill that would establish the School of Mines as a public institution. That was 15 years after gold had been discovered in Colorado, at a time when mining and highly skilled and educated engineers and scientists were vital to the West's economy. Nine years later we held our first commencement ceremony and conferred the first earned Engineer of Mines degrees—to exactly two graduates!

From those modest beginnings, Mines has grown into a research university known worldwide for the quality of our programs and graduates,

and our reach continues to grow. In May we anticipate conferring more than 950 bachelor's, master's and doctoral degrees representing 13 disciplines, ranging from engineering to applied science to economics. And we've all witnessed the re-emerging importance of skilled engineers and scientists to the Western economy, particularly in the energy industry.

Innovation and discovery are at the heart of what we do. Mines is a vibrant community of learners, educators, researchers and alumni. Our 140th anniversary offers a chance for us to reflect on Mines' rich history and the impact our community has had—and continues to have—around the globe. In early April, hundreds of alumni marked the occasion during 37 national and international E-Days events, and the celebrations continue over Alumni Weekend at the end of April. Looking ahead, in addition to various alumni events on and off campus, we invite you to join us for the special activities being planned for Homecoming at the end of September. Be sure to connect with us on LinkedIn and Facebook to keep informed about this and other university and alumni news. We're excited about what this year holds for Mines, and we look forward to celebrating our 140th anniversary with you.

—M.W. Scoggins



Denver Public Library, Western History Archives

THE 'SCHOOL OF MINES' BEFORE 1874

Since most of us peg 1874 as the year Mines was founded, this 1873 prospectus for the "School of Mines" may provoke some head-scratching. Like every institution, Mines wasn't created overnight. Formal efforts to establish a technical mining school in Colorado go back to 1866, when Bishop Randall arrived in the territory and recognized the need. His efforts led to the creation of the University Schools of Golden, which by 1873 encompassed Jarvis Hall, a college prep school; Matthews Hall, a divinity school; and the School of Mines, launched that same year to provide "instruction in sciences, connected with the development of the mineral wealth of the country." The territorial government officially acquired the School of Mines one year later, creating a stand-alone institution that was renamed Colorado Territorial School of Mines.

—Nick Sutcliffe

BOOKS

Just Published

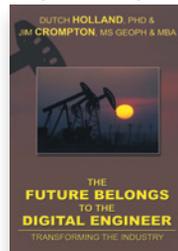
Winning While Losing: Civil Rights, the Conservative Movement and the Presidency from Nixon to Obama



Kenneth Osgood, associate professor in the Division of Liberal Arts and International Studies

and director of the McBride Honors Program in Public Affairs, coedited this collection of essays that explore the history of civil rights in the post-civil-rights era through the lens of presidential politics, tackling the misperception that the civil rights movement ended in triumph 50 years ago. Osgood's coeditor is Derrick E. White. (University Press of Florida, 2014)

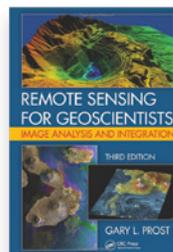
The Future Belongs to the Digital Engineer



After retiring from Chevron after 37 years, Jim Crompton '74, MS '76 coauthored this book with Dutch

Holland about the additional skills required both in engineering and digital technology in today's energy industry. Crompton addresses how the digital oil field has been affected by emerging digital technologies as well as the opportunities coming from the new generation of petroleum engineers and earth scientists; Holland writes about the obstacles to change in a large organization. (XLIBRIS, 2013)

Remote Sensing for Geoscientists: Image Analysis and Integration, Third Ed.



Gary L. Prost MS '75, PhD '86, a geologist for ConocoPhillips, has published an updated and expanded version of this

work on remote sensing and how to use it in the earth sciences. Full of illustrations from project case histories, the third edition contains new information about remote sensing, astrogeology, remote geochemistry, modern analogs, geobotanical remote sensing and environmental hazards. (CRC Press, 2013)

Download a PDF of the complete prospectus at minesmagazine.com/1873.pdf.

SPORTS

Major League Soccer's #6 Draft Pick



Colin Bonnicksen

GOING PRO Akindele's performance in the 2013 RMAC Men's Soccer Tournament Championship against Regis earned him MVP honors. He is now playing soccer professionally with FC Dallas.

Tesho Akindele, a senior from Thornton, Colo., who played soccer for Mines for four years, caught U.S. soccer fans' attention when he became the sixth pick overall in the 2014 Adidas Major League Soccer SuperDraft in January. Akindele, who went to FC Dallas, had a distinguished athletic career at Mines. The four-time Daktronics First Team All-American, four-time NSCAA All-American and two-time Daktronics South Central Region Player of the Year is now the highest-ever Division II pick in MLS SuperDraft history. The last Mines student-athlete to be drafted into professional sports was Marshall Schuler '10, picked by the Philadelphia Phillies in the 37th round of the 2010 Major League Baseball first-year player draft.

Until he was drafted, Akindele was studying electrical engineering at Mines. When asked by the media why he chose Mines, Akindele answered, "It's one of the best engineering schools in the country." And what about the four years he has already invested? He hints he'll be back. "I can be an engineer when I'm 55 years old, but my soccer career has an expiration date," said Akindele, who returns to Colorado with FC Dallas to play the Colorado Rapids on August 18, 2014.

—Colin Bonnicksen



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HUMANITIES EDUCATION

Classes Blending Science and Art Promote Divergent Thinking

Engineering is an inherently creative profession. But at most engineering schools the density of the technical curriculum leaves little room for classes designed to foster creativity. However, this year students enrolled in the McBride Honors Program in Public Affairs had the opportunity to choose from two different courses that fall distinctly outside the box.

Both were team taught by faculty from very different backgrounds. In the fall, Lincoln Carr, physics professor and Humboldt Fellow, teamed up with Toni Lefton, a teaching professor in the Division of Liberal Arts and International Studies and an award-winning poet, to teach “From the Lab to the Page: Revolutions in Science, Literature and Society.” The syllabus combined diverse readings in poetry, physics and philosophy with exercises that

forged connections between the arts and sciences. Students embraced the class wholeheartedly; after only a few meetings, they were making connections independently in ways Lefton and Carr hadn’t envisioned.

Activities ranged from poetry slams to a panel on the Arab Spring with first-person accounts from revolution survivors, to live drone demonstrations. For a class on time, space and causality, students read and discussed the original text of Albert Einstein’s theory of special relativity and Alan Lightman’s 2004 novel, “Einstein’s Dreams.” At one point during the class, Carr went to the blackboard and started describing quantum bits. Lefton relates what happened next:

“The three physics students in the class were on the edge of their seats, but the rest of us were struggling to follow it. I went to the other blackboard and started taking his equations and translating them into verse. Lincoln, seeing what I was doing, switched from equations to using analogies to describe the scientific concepts. And then the students were at the boards writing equations and verse. The classroom was sizzling with a spontaneous creativity we never could have planned.”

Another class currently underway also aims to challenge students’ creativity. “Water, Energy and the West” may sound like a fairly typical Mines class, but faculty members Sarah Hitt from LAIS and Kamini Singha from the Department of Geology and Geological Engineering are relying on literature to illuminate key issues. Along with analyzing technical and



PAIRING PHYSICS AND POETRY At a class co-taught last fall by Lincoln Carr and Toni Lefton, students were asked to forge creative connections between art and science.

public policy, students are asked to write poems and draw landscapes, and their work has sometimes left their professors speechless.

“Kamini and I both agreed that a recent class where students presented their projects was one of our favorite moments as teachers,” Hitt says. “One student, who was also taking a circuits class, made a beautiful circuit board map of Colorado’s water resources. Another student made a film and another wrote poetry to accompany a display of his photography. One student actually created a superhero whose special power was the ability to translate complex water issues so that a layperson can understand them.”

Ultimately, both these classes required students and faculty to connect the humanities and sciences in unusual ways, challenging traditional perspectives and encouraging participants to step beyond their comfort zones. “The class transcended my engineering mindset and opened an entire world of creative expression,” says Aya Angstadt, a junior majoring in chemical and biological engineering and one of two student directors of the McBride Honors Program. “From writing vignettes about the quality of time to reading hieroglyphics to explore an ancient complexity paradigm, I came to see the power and utility of a simultaneous scientific and artistic approach to exploring the human condition.”

—Carol Chapman

COMPUTATIONAL SCIENCE

Virtual Chemistry Unlocks Powerful Toolbox

As is the case with many Nobel Prizes, when news broke on the morning of October 9, 2013, that the chemistry award was going to three distinguished scientists for their respective contributions to the field of computational chemistry, most people didn't have a clue what this meant. Not so for Mines students, where computational chemistry is integrated into the curriculum to an unusual degree.

Students use many of the tools of computational chemistry as early as the second semester of their freshman year, says Mark Eberhart, professor of chemistry and geochemistry, adding that while most universities cover the subject in their core theory, it's unusual for undergraduates to have the chance to simulate chemical reactions with the kind of advanced software they can access at Mines.

Thanks in part to the theoretical work of the 2013 Nobel laureates, modern computational chemistry software enables scientists to model complex reactions in slow motion and intricate detail. Numerous advances in pharmaceuticals, medicine and materials have been enabled by simulating similar reactions, adjusting variables virtually so as to home in on a desired outcome. This information is then used to guide far more costly and time-consuming physical experiments. As Eberhart points out, computer modeling does not replace experimentation; the two approaches complement each other.

Eberhart has helped lead the integration of computational chemistry into the graduate and undergraduate curricula at Mines. Early exposure is important, he says, because it enables students to answer questions that arise as they learn, rewarding curiosity.

Last year, his students performed virtual experiments to determine why the chlorophyll in some sea plants is chemically different from that of land plants. Other students modeled the chemical reactions they studied in organic chemistry. And chemistry field session now includes an entire week of hands-on computer simulation of the reactions that students run in subsequent weeks. One student recently modeled the chemical bonding in explosives, trying to determine which bond is first to break and initiate an explosion—a phenomenon only dimly understood, but of great importance.

Another student, Tim Wilson, who will start a graduate program in chemistry next fall after wrapping up his bachelor's degree in chemical engineering this spring, began using computational chemistry in his freshman year. The field captured his curiosity so much that today he's developing new computational chemistry software.

"Computational chemistry allows us to cut out 90 percent of experimentation, so we can concentrate on the 10 percent where the most important results lie," Wilson says.

—Rob Neilley

ENHANCING

MINERALS

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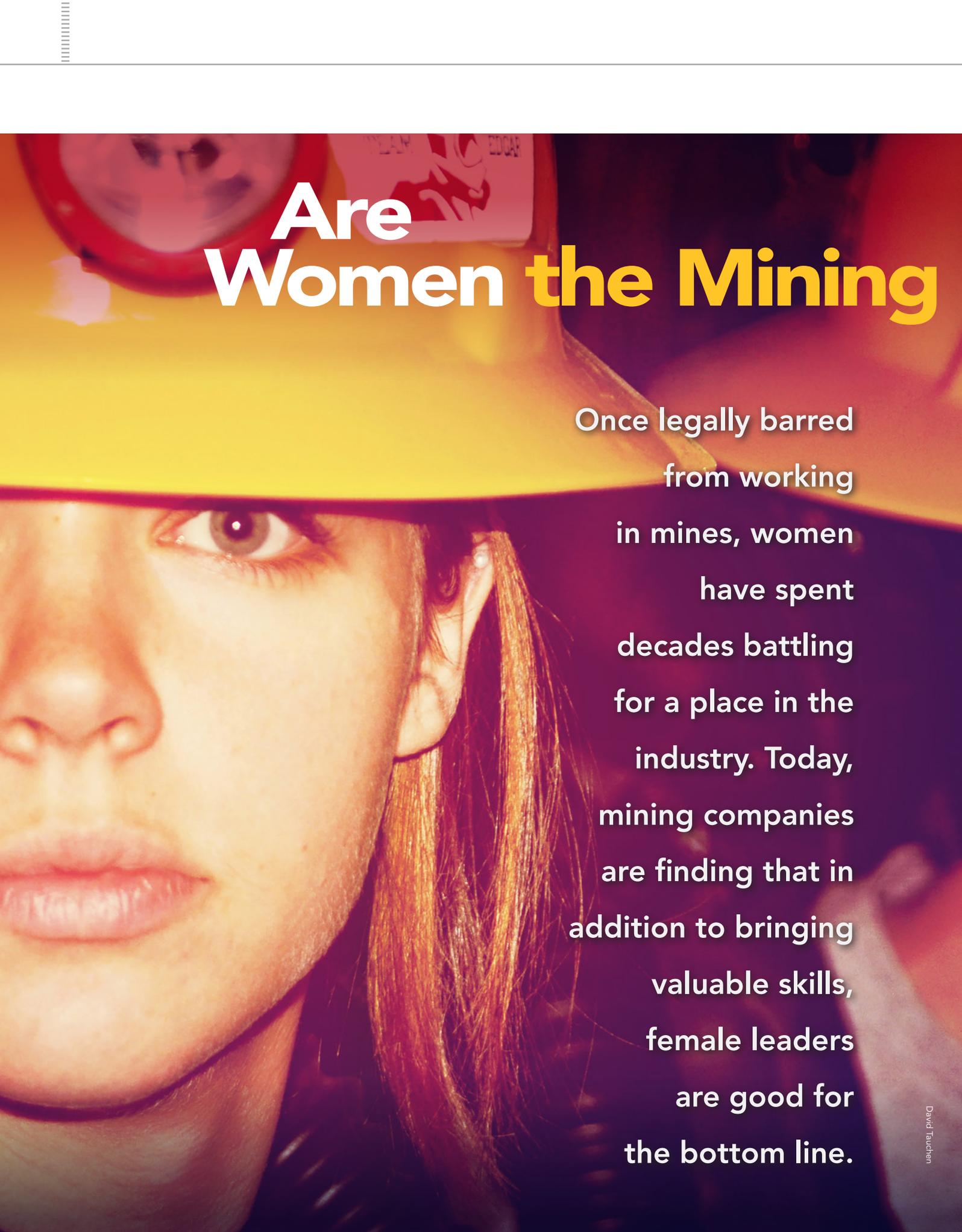
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Are Women **the Mining**

Once legally barred from working in mines, women have spent decades battling for a place in the industry. Today, mining companies are finding that in addition to bringing valuable skills, female leaders are good for the bottom line.



Industry's Most Underdeveloped Resource?

By Lisa Marshall

In 1969, Betty Gibbs '69, MS '72 graduated from Mines armed with the third mining engineering degree the school had ever granted a woman (the first since 1920). She'd toiled nine years for it, juggling her studies with a part-time job and raising her daughter, but as she began to show up for job interviews, she was greeted with superstition and hostility.

Colorado, Wyoming and many other states still had laws on the books expressly prohibiting women from working underground. Myths that they were too fragile or brought bad luck abounded. On two occasions, Gibbs was refused entrance to mines due to her gender. "I know for a fact that most miners would walk off the job if a woman entered their mine," a spokesman for the Colorado Bureau of Mines told the Rocky Mountain News in a story referencing Gibbs' graduation.

Nevertheless, she persevered, becoming the first woman to work underground at Colorado's Climax mine and quietly opening doors for generations of women to come. "I wasn't out to prove anything," says Gibbs, now executive director at the Mining and Metallurgical Society of America. "I just did my work, and eventually I was appreciated for it."

Fast-forward to today when the mining industry not only is more accepting of women, but—in the face of mounting research showing that companies with more gender diversity enjoy greater profitability, improved safety records and higher social and environmental responsibility ratings—is also actively courting them.

According to the Bureau of Labor Statistics, about 13 percent of the mining industry is now female compared with less than 6 percent at the time of Gibbs' graduation. At Mines, 17 percent of mining engineering degrees in 2013 were awarded to women compared with 6 percent in 1998. And, interestingly, the new head of the Department of Mining Engineering, Priscilla Nelson, who took over the reins in January, is the first woman ever to head the department.

These are all steps in the right direction, says Jessica Kogel, a senior manager at Imerys with close ties to Mines. But she and others say the industry should do more to take advantage of the attributes women leaders can bring to a company. A new report published by PricewaterhouseCoopers in collaboration with Women in Mining (UK), "Mining for Talent 2014," states that mining ranks dead last among global industries when it comes to women in leadership positions. Among the world's top 500 mining companies, only 7.2 percent of directorships are held by women. Among the top 100, women make up just 10.3 percent of boards of directors.

"Research has shown that there are huge benefits to having women in leadership roles, yet it is still very common for me to be the only woman in a conference room or board room," says Kogel, who is the outgoing president of the Society for Mining, Metallurgy and Exploration (SME). "We have a long way to go."

WHAT WOMEN OFFER MINING

According to a 2012 Credit Suisse Research Institute report, the stock market performance of companies with at least some female board members outdid those with all-male boards by 17 to 26 percent over a six-year period. And according to the PWC report, “There is a striking correlation between return on assets and the number of women on boards,” pointing out that over a six-year period, companies with all-male boards averaged a loss of 2.86 percent while boards with two or more women posted gains of 6.40 percent.

Meanwhile, research by McKinsey & Company suggests that women tend to have a knack for teambuilding: “They are particularly good at defining responsibilities clearly ... and mentoring and coaching employees.”

Studies also suggest that women help improve a company’s environmental and social stewardship. For instance, the PWC report found that when companies with similar operations and facilities were compared, the average annual water use by companies with all-male boards was 483,000 cubic meters, while companies with two or more female directors used 130,000 cubic meters. Companies with two or more women on the board spent 5.59 percent of their profits on community engagement—five times more than those with all-male boards.

“This is really about business results,” said international banker Mervyn Davies in a recent interview encouraging the

industry to better promote gender diversity. “The more diverse the thinking in a team, the better the results.”

WHAT MINING OFFERS WOMEN

Golden resident Barbara Filas, a semiretired former president of Geovic Mining who mentors Mines students, says she opted to go into the mining program at the University of Arizona on the advice of her older sister. “She got a degree in fashion merchandising,” Filas recalls. “When she got a 10-cent-an-hour raise, she told me, ‘Whatever you do, don’t go into a women’s field.’”

Filas graduated in 1978, as the last laws banning women from working underground were being repealed (thanks to several class action lawsuits) and the Equal Employment Opportunity Commission was pressuring companies to hire more women. She, too, faced hostile interviewers.

“When I applied for my second job [at a U.S. Steel mine], the first words to come out of the guy’s mouth were, ‘I don’t have any use for women working in the coal mines,’” she recalls. “I said, ‘I am not going to be intimidated.’” She got the job and proceeded to climb the ladder to executive positions in several companies, not by stressing gender differences, but by competing head to head. “I never played the female card. I always just tried to jump higher and run faster than anyone else.” Today, she advises Mines students to do the same.

Mining Coal, Undermining Gender

By Lisa Marshall



Nick Surcliffe

Jessica Rolston thought a career in anthropology would involve studying exotic cultures around the world. Instead, the case study that launched her career was in her hometown, where an unusual number of women work in coal mining.

As a miner’s daughter growing up near Wyoming’s coal-rich Powder River Basin, Jessica Rolston had no intention of following her father into mining. After high school, she fled to what she calls a “hippie, granola, liberal arts school”—Macalester College in Minnesota—to pursue a degree in anthropology.

She envisioned a career studying obscure cultures in far-flung corners of the earth, but after taking a series of entry-level summer jobs in the mines back home, the budding anthropologist began to realize that a uniquely interesting case study lay in her own backyard.

“I was high school valedictorian and went to this fancy college, yet I found it incredibly difficult to figure out how to do these jobs,” she recalls, speaking of her 12-hour shifts loading coal trains, hosing down equipment and driving 18-foot-tall haul trucks. “I gained a new appreciation for what these men and women did. I was humbled, and I was fascinated.”

Fast-forward to 2014 and 33-year-old Rolston, Hennebach Assistant Professor of Energy Policy in the Division of Liberal Arts and International Studies, is unveiling her first book, “Mining Coal and Undermining Gender: Rhythms of Work and Family in the American West” (Rutgers University Press).

Years in the making, the 230-page book offers an intimate look at the successful integration of women into her hometown coal mines, providing a valuable model for an industry striving to boost the role of females in the face of negative, often misguided stereotypes.

“When you do a Google search for women miners, you come up with images of women with black faces,” Rolston says. “It is an index of them being this exploited, blue collar occupation. That is not the case in Wyoming.”

The book grew out of Rolston’s dissertation at the University of Michigan. A National Endowment for the Humanities fellowship funded another year of postdoctoral research. In all, she spent 22 months riding alongside shift workers in the wee hours of the night and interviewing their families during the day, in addition to the nine months she spent working in the mines herself. What she found was a reality far different from the one put forth in movies like “North Country,” the 2005 drama about rampant sexual harassment in a Minnesota iron mine.

“In Wyoming, there was a sense that it was totally normal for women to be out there,” she says.



Betty Gibbs '69, MS '72, shown here in 1967 when still a student, was only the third woman to graduate from Mines with a degree in mining engineering.

Courtesy of Betty Gibbs



Chalsea Panos

The Mines women's team took first place at the Intercollegiate International Mining Games held on the Mines campus in spring 2013. The university also has a women's mine rescue team.

With a dozen surface mines churning out 462 million tons of coal annually, the Powder River Basin is the largest coal-producing region in the country. But it also holds another distinction: Nearly one in four of its production workers are women. (The national average hovers around 6 percent.) Single mothers (even those without college degrees) comfortably support their families with salaries of \$60,000 to \$100,000. They drive three-story, \$3 million haul trucks and \$50 million draglines—massively powerful equipment that was once strictly the domain of men. Harassment is rare.

"Many of the women miners had experienced harassment and hostility in previous jobs as bartenders, waitresses or construction workers, but very few have been harassed at the mines," she writes.

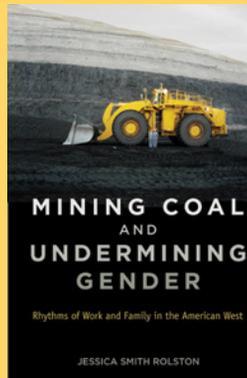
That is not to say women don't face unique challenges. While male truck drivers can simply pull off and relieve themselves, "women must locate a [portable toilet], park, enter a computerized code into the dispatch system to signal and categorize their delay, climb down off the truck, chock the wheels, pull down half their clothes, use the bathroom, unchock the wheels and climb back up"—a time-consuming endeavor that can cut into

their productivity and invite scrutiny. Some women even take care not to drink too much water.

Twelve-hour shifts at odd hours are hard on mothers, who struggle to find day care or carve out time with kids. One night-shift worker, Nicole, averaged three hours of sleep per 24 hours: one hour each way on the bus to and from the mine, and one hour with her children as they napped.

Pregnancy also poses challenges. One interviewee drove a truck until she was eight months pregnant, shifting her swollen belly to the side until she could no longer fit behind the wheel. Another was rumored to pump her breast milk while driving.

Rolston reports that some women took what she calls "the pink hard hat" approach, claiming their presence made the mine safer and more civilized. But most downplayed distinctions. "There are lots of other interesting things that people should care about," one mine worker told Rolston, "like human needs. How to be a human out here. Not how to be a woman out here."



When she took her first job at age 19, Rolston had her own notions of what she terms the "macho, ego-oriented" male miner. She was surprised to find a family-like atmosphere where people took care of each other. "They turned out to be some of the funniest, smartest people I have ever known."

She stresses that her hometown mines got off to a unique start. They were founded in the late '70s and '80s after women elsewhere

had already sued for the right to work. Plus, there was a labor shortage, so they didn't face accusations that they were taking men's jobs. "It would be difficult to replicate," she says.

But there are lessons to be learned. Women who were the happiest seemed to take neither the pink hard hat approach nor a hypermasculine approach. Most men neither coddled nor hassled. Instead, they all just strived to be good miners. "That meant being conscientious, caring for your coworkers and having a good sense of humor," Rolston says—all good qualities, no matter your gender.



In January, Priscilla Nelson became the first woman to head the university's Department of Mining Engineering.

Nick Sutcliffe



Courtesy of Kristin Guerin

Kristin Guerin '11 works in Australia's outback monitoring Caterpillar's massive new automated trucks; she is one of three women on the company's staff at the Solomon mine.

When they do, the rewards can be plentiful, says Kathy Steele '89, who holds a degree in mining engineering. "You can put your kids through college, take care of yourself and own your own home. It gives you freedom," says Steele, a single mom and chief engineer with Newmont Mining's Phoenix mine. She says that employees can make anywhere from \$65,000 to \$150,000. Yet she has trouble filling positions. "There is a need for engineers, male or female. I have to hire them from outside the country."

Kristin Guerin '11, a mining engineering graduate, was drawn to the industry for its unique challenges, travel and the opportunity to "do something more offbeat."

As a member of Caterpillar's autonomous haulage solutions team at the remote Solomon mine in the Australian outback, she works 12-hour shifts—one week on day shift, one week off, one week on night shift, one week off—staying in dormitory-style lodging on-site and flying back to Perth during her time off. As one of three women on the Caterpillar crew, she's charged with monitoring the company's massive new automated trucks. Aside from her uniform not fitting quite right, she says she sees few gender differences in her work.

"I love being outdoors, I like the attitudes of everyone I work with and I love the instant gratification," she says. "It's nice to be able to say, 'We moved that block of earth today.'"

THE ROAD AHEAD

Already, several companies—including Anglo American and BHP Billiton—have reportedly set targets for boosting the percentage of women on boards. And organizations like SME host programs such as the Women of SME Breakfast and the two-day Emerging Leaders Alliance to cultivate networking and mentoring opportunities. Roughly 10 percent of SME's membership is women, but among the 30-and-under set, that number is now closer to 20 percent—a sign that efforts to attract more women to the industry may be working.

Going forward, the key to boosting gender diversity rests in letting women of all ages know what mining has to offer and helping them achieve these rewards, Nelson says. "The pipeline issue is huge."

According to the U.S. Department of Education, women earned 57 percent of all bachelor's degrees in 2013, yet fewer than one in five engineering degrees went to women. And when it comes to technical master's degrees, Nelson says that women are less likely to pursue one to begin with and more likely than men to drop out before completing it.

In her new position, Nelson hopes to encourage more women in the industry to become mentors. She also aims to improve the graduate school experience for women and interest more U.S. students overall in pursuing degrees in mining engineering and related fields.

"It is an edgy, interesting and challenging industry with a lot of benefits," Nelson says. "The more we can relate that story, the more people will want to get into it—and that includes women." 

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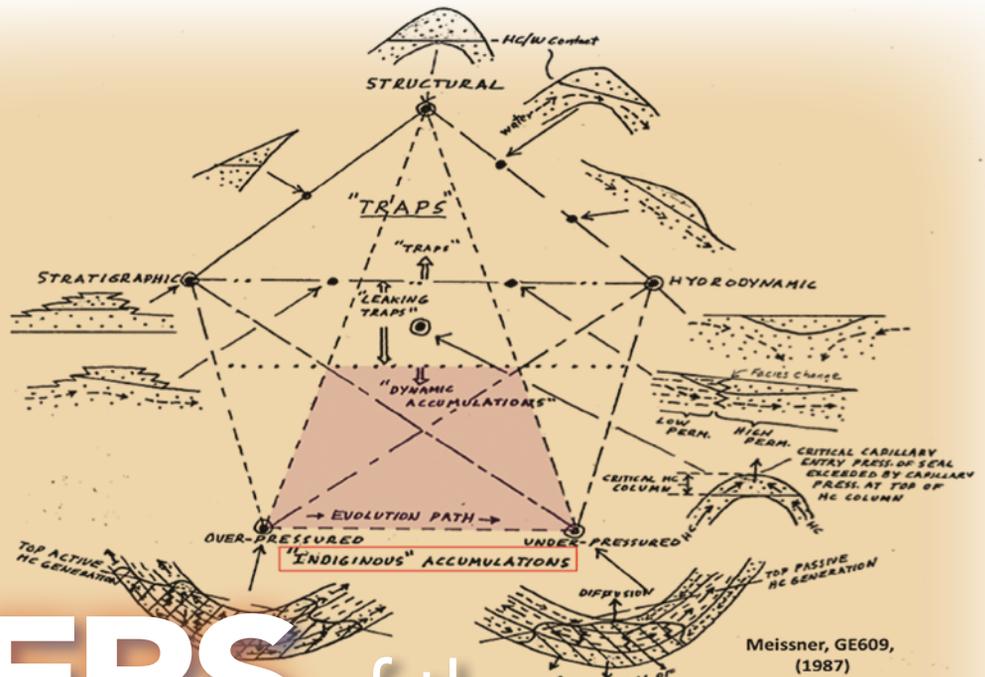
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Five individuals are credited with establishing the modern approach to hydrocarbon exploration.

Two are Miners.

By Lisa Marshall



FATHERS of the NEW SCIENCE:

Paving the Way for the Modern Age of Oil and Gas Exploration

They were born 5,000 miles apart, just missed each other at Colorado School of Mines and worked independently in distant parts of the world for most of their careers. But Gerard Demaison MS '55 and Fred Meissner '53, MS '54 belong to a small group of pioneers who fundamentally changed oil and gas exploration, vastly improving the odds of finding hydrocarbons.

"The petroleum system approach is the guiding principle for everything we do these days," says John Curtis,

professor emeritus of geology and geological engineering and director of Mines' Potential Gas Agency, which provides technical and administrative support to the influential Potential Gas Committee that is responsible for issuing estimates of future domestic natural gas supplies. Demaison and Meissner are two of the five people who formalized and championed the petroleum system approach, which factors in all components and processes required to create and preserve hydrocarbons. Curtis explains that depending on the region, these might include source rocks, reservoir rocks, seal rocks, overburden rocks, trap formation, and the timing of hydrocarbon generation, migration and accumulation.

In recent years, the PGC has nearly doubled its estimates for technically recoverable natural gas, largely due to the shale gas drilling underway in U.S. plays from the Appalachians to the Rockies and beyond. Development of the petroleum system approach three decades ago helped the energy industry understand where these hydrocarbons could be found, but only recently have technological developments been made to unlock them.

The impact on oil recovery is much the same. The United States is importing 1 million to 1.5 million fewer barrels of oil per day thanks to these developments, and companies prospecting overseas have roughly a 1 in 3 chance of finding something—compared with 1 in 20 in the mid-20th century.

"We went from looking for and drilling geological structures in hopes they would hold hydrocarbons to backing up and looking at everything from the source rocks that generated the hydrocarbons to the rocks in between the source rock and the trap, and understanding it all in four dimensions, time being the fourth," Curtis says. "Their work has made all the difference in the world."

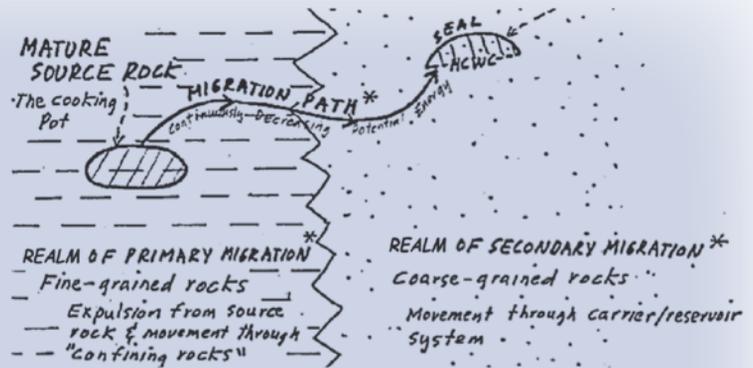


"Anarchy is the law of nature, and order is the dream of man." (Henry Adams)

A cover drawing from the syllabus of one of Meissner's legendary courses.



In his 1978 paper, "Petroleum Geology of the Bakken Formation," Fred Meissner pointed to "hydrocarbon kitchens" as potential sources of oil and gas.



From Paris to Golden

Demaison was born in France in 1927, the son of novelist André Demaison, who traveled widely and often returned from exotic locales with semiprecious stones and fossils. His father's collections sparked the younger Demaison's interests at an early age, inspiring him to pursue degrees in geology and paleontology at the University of Paris before heading to Mines in 1949 for a master's degree in geology and geological engineering. He had to interrupt his studies for a year of national service in the French military, and when he returned to Golden, he was dismayed to learn that Dean William Burger was requiring that he bolster his knowledge of chemistry before graduating. This added another year to his education.

"He said geology alone is not enough," recalls Demaison, now 86, retired and living in California. "I grumbled at the time, but it opened my mind." That additional training set him apart as one of the first to infuse organic chemistry into geology and prepared him to understand new technologies—like gas chromatography and mass spectrometry—that were poised to revolutionize the industry.

"For a long time, the industry found most of the world's oil without really knowing where it came from," says Demaison. "The origin of oil was a complete mystery. These new technologies permitted us to observe—in crude oil and source rocks, at the molecular level—what was going on in the subsurface."

As late as the 1970s and 1980s, much exploration hinged on finding large anticlinal structures (raised folds in the earth) and drilling them. But the more companies drilled, the more dry holes they found.

Demaison clearly remembers flying over the Atlas Mountains of Algeria in 1963, looking down on a landscape that was remarkably similar to the hydrocarbon-rich Middle East. The difference: When the giant anticlines below had been drilled, no oil or gas was found.

"How can we explain that?" Demaison asked his employer and mentor, British Petroleum Chief Geologist Norman Falcon, who was sitting in the seat next to him.

Falcon responded with another question: "Where are the oil seepages?" He pointed out that throughout the nearly identical but oil-producing folded belts of Persia, many spectacular surface seepages of oil and gas are found. "Those are just not present here."



The additional chemistry education Dean Burger required George Demaison to complete for his master's degree at Mines set Demaison apart as one of the first to infuse organic chemistry into geology.

Demaison points to this conversation as a turning point in his career. "It was the greatest and most durable lesson in petroleum geology I received in my formative years," he says. Instead of just looking for the right formations or "boxes" ripe for oil accumulation, he began to think about how oil migrated into those natural reservoirs, which led to questions about where it came from in the first place.

In subsequent years, while working at Chevron, Demaison would serve as a critical liaison between scientists developing geochemical techniques to better understand that origin and migration, and companies wanting to apply them. He would pen 21 papers, including a seminal work in 1980, "Anoxic Environments and Oil Source Bed Genesis," credited with elucidating how organic matter is deposited and preserved to form hydrocarbon source beds. His 1993 magnum opus, "Genetic Classification of Petroleum Systems Using Three Factors: Charge, Migration and Entrapment," brought it all together, earning him the American Association of Petroleum Geologists' prestigious Wallace Pratt Award that year. (AAPG honored him again with Honorary Membership in 1995.)

At first, he stresses, his work was not universally accepted. "We met resistance from the bottom, from people who did not understand organic chemistry, to the top, where they were worried they would buy something that would not work," he says. It was a battle he and Meissner were in together, and the two spoke frequently. "We were the knights of a new order who rattled the cages of people trying to hold on to the old methods."

Ultimately, his persistence paid off, guiding the discovery of numerous international oil reserves. (Executives with the Brazilian state oil company Petrobras, for whom Demaison consulted, credit his work with guiding their enormous discoveries in the Campos Basin.)

In the last public talk of his career, Demaison returned to Mines to lecture before a crowd of geologists, geophysicists and petroleum engineers who were all keenly aware of the impact his work has had on their fields. “It was like a saint walking into the room,” Curtis says.

Father of the Bakken

While Demaison beat the petroleum system drum on the international stage, Meissner—a Colorado native—focused his efforts closer to home.

He, too, found his inspiration in a rock collection, which he began at age 9 as a Cub Scout. After earning his master’s degree at Mines, Meissner also joined the military, spending two years in the U.S. Army Corps of Engineers during the Korean War. He went on to spend 17 years with Shell Oil before settling down in 1973 along the Front Range, where he worked for Trend, Filon, Webb Resources, Sohio Oil and Bird Oil.

In 1978 he wrote a groundbreaking paper, “Petroleum Geology of the Bakken Formation,” which would foreshadow the development in North Dakota of one of the largest oil plays in U.S. history and prompt the Rocky Mountain Association of Geologists to dub Meissner “the Father of the Bakken.” The paper’s central message hinged on the petroleum system philosophy of looking not only for the containers where oil and gas ended up, but also at the “hydrocarbon kitchens” where they originated. In some areas, he suggested, they were one and the same.

“Fred foresaw that some source rocks were fairly inefficient in releasing the hydrocarbons they make, so there is still a lot of oil and gas left in them,” Curtis explains. “He was the first one to put it down on paper: Instead of looking where the oil and gas migrate out of the source rock and accumulate, go to the source rock itself. Fred combined chemistry, physics and geology to identify the best source rocks—and in the case of the Bakken, reservoir intervals sandwiched between the source rocks—as exploration targets.”

It would be two decades before technology would catch up with this vision, enabling companies first to drill horizontally deep into source rock, and then to systematically fracture it, section by section, so as to release the hydrocarbons trapped within.

“The ability to get to the source rock and stay in the source rock and stimulate it has improved our natural gas picture so much that [the United States] is now looking at possibly exporting it,” Curtis says. As recently as 2005, the United States was preparing to build liquid natural gas terminals to meet domestic demand.

Meissner’s 1978 prediction that “considerable remaining exploration potential may exist” in the Bakken turned out to be an extreme understatement. Behind Texas, North Dakota is now the



Courtesy of Jackie Meissner

Two weeks before succumbing to esophageal cancer in 2007, Meissner (center) led a field trip along the Mineral Belt Trail in Leadville, Colo., for a group that included Mark Sonnenfeld MS '91, PhD '96 (left) and Lyn Canter PhD '10 (right).

second-largest oil producer in the country, pumping out more than 860,000 barrels per day.

While Meissner received AAPG’s highest honor, the Sidney Powers Memorial Award, to many in the industry he is remembered most for his teaching.

During his 18-year stint as an adjunct professor at Mines, Meissner’s course, Geology 609—also known as “Where oil and gas come from and how they get to where we find them”—became the stuff of legends, Curtis says. With students running dual slide projectors, he described the hydrocarbon kitchen in detail and questioned what he called the “conventional dogma” of using anticlinal theory alone to look for oil. He referred to geology as part art, part science, once telling a colleague that “just as in fly-fishing,” you have to start with the right equipment and know how to use it. (That’s the science.) But to be successful, you have to think like a fish (or in this case, the oil).

“He used every trick of the trade possible. He set the stage for a generation of geologists to be much more prepared than a lot of others at integrating various disciplines,” says Mark Sonnenfeld MS '91, PhD '96, vice president of geoscience for Whiting Petroleum. Like many other students, Sonnenfeld still has the thick binder of class notes he received in Meissner’s class. (On its cover is a cartoon showing a drop of oil named “Oily” and his mother, “Ma Earth.”)

When awarded AAPG’s Grover E. Murray Memorial Distinguished Educator Award in 2005, Meissner said it was the most meaningful award he had ever received. “My career as an educator has been more like a hobby than any kind of job,” he wrote.

Even after being diagnosed with esophageal cancer, Meissner continued teaching. In September 2007, he led an educational field trip along the Mineral Belt Trail in Leadville, Colo., for a geology study group, including Curtis, Sonnenfeld and Lyn Canter PhD '10, another geology graduate.

They transported him along the trail in a bicycle rickshaw, patiently waiting when he paused mid-lecture—his illness getting the best of him for a moment. “He was the embodiment of passion about his career, and it was infectious,” Sonnenfeld says. Meissner died two weeks later at the age of 75. [M](#)



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Houston-Area Alumni's Scholarship Golf Tournament a Solid Success

The Colorado School of Mines Houston Endowed Scholarship Golf Tournament that teed off on April 4, 2014, was the 14th edition of an event that by the end of the year will have created an endowment of nearly \$500,000 that has already generated 23 scholarships totaling \$76,000. In 2013, almost \$50,000 was added to the endowment.

“Not bad for a chance meeting at the baseball park,” says George Puls ’75, the tournament’s lead organizer since its inception.

Puls was attending an alumni association-sponsored gathering at a Houston Astros – Colorado Rockies game when he turned to find his classmate and fellow Mines football player Dean Stoughton ’75, MS ’78—they hadn’t met since leaving school.

After the baseball game, Stoughton suggested they catch up over a round of golf, where they talked about organizing a golf tournament that would raise funds for student scholarships. Puls, who steps down this year as lead organizer, says, “We just wanted a golf tournament that would give something back, and it has developed into so much more.” The tournament is now the largest annual Mines alumni gathering in the Houston area.

In 2013, they signed up 136 golfers, almost twice as many as were recruited for their first tournament in 2001. Numerous corporate and individual sponsors have helped support fundraising, encouraged by a strong team of volunteers. During the critical early years, Stoughton, Puls and Kim Harden ’74 had a great deal of help from their wives, Lindsay Stoughton, Barbara Puls and Pat Harden, as well as Vivek Chandra ’88, Bill McElduff ’82, Gene Roberts ’98, N. Kathleen Roldan ’88, Chuck Russell ’54 and Julie White ’93.



Barbara Puls

MAKING A DIFFERENCE At the 2011 golf tournament in Houston, (left to right) Mines football coach Bob Stitt, Dean Stoughton ’75, MS ’78, Jaime Bromley ’10 (a 2006 scholarship recipient), Rod McNeill (CSM Foundation) and George Puls ’75 enjoyed a day on the links while supporting Texas-based Mines students.

Since then, the event has steadily grown. Fundraising activities have expanded to include a silent auction and a collaboration with Diamonds in the Rough, which involves the sale of collector sports memorabilia. This year, committee member Duane Maue ’90 worked with a designer to create the tournament’s first logo, and they hope that 2015 will see more firsts.

What hasn’t changed is the original goal: providing athletic and academic scholarships for deserving students. Speaking by phone from a Devon Energy oil rig, former recipient and varsity football player R. Henry Kaetzer ’12 says, “It was truly an honor to receive the scholarship. Participating in varsity sports while attending a university like Mines can be stressful at times, but knowing there are people who want you to succeed gave me extra motivation to perform well in both academics and athletics. I could not be more appreciative.”

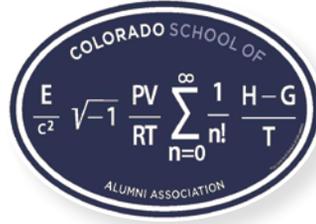
—Rob Neilley

PARTNERING WITH CSMAA

Student's Ingenuity Creates Clever Mines Message

Not that Miners are competitive, but when senior Jacob Chadwick spotted a Massachusetts Institute of Technology t-shirt that used a series of formulas to spell out "MIT," he knew he could do something better for Mines. He and his dad, Andy Chadwick, spent an afternoon in a diner during a family vacation last summer coming up with the series of incomplete equations in the adjacent illustration; line up the answers in the same order and they spell MINES. Until June 30, the alumni association is sending out these decals as a thank-you gift for membership.

CREATIVE AND PROUD The Chadwick family is in this endeavor together: (left to right) David, Andy, Susannah, Nathan and Jacob. Nathan and Jacob are currently students at Mines.



"The E and the S were the most difficult to create, but not insurmountable," Jacob explains. "We wanted to use a different equation for E than just rearranging the one we used for M. The S was a real challenge, too; but after some thought, we figured out how to represent each letter."

Jacob and Andy have set up a website selling shirts and mugs sporting the equations: jdcproducts.net.

 Can't figure out the whole set? Look up the cheat sheet at minesalumni.com/the-story.

STUDENT RECRUITING

Going the Distance for Mines



Nick Sutcliffe

TEXAS CONNECTION Andrew Zorn (left), now a junior studying petroleum engineering and a member of Mines' varsity football team, met Priestley at a recruiting presentation in Houston when he was a senior in high school.

thinking about applying or who have received offers to attend Mines. They involve open discussions that, along with Priestley's presentation, can include a Mines professor, who inevitably is asked a lot of questions from an audience as large as 250 people. "Parents have told us the combination of these events and hearing from alumni is the reason their student chose Mines," says Priestley. "It's factual, not sugar-coated."

Priestley, who lives in Denver and is a member of CSMAA's board of directors, averages about eight trips a year to events in Dallas, Houston, Oklahoma City, Tulsa, Phoenix, Chicago and, recently, Seattle—in air miles, equivalent to circling the globe eight times since 1988.

—Amie Chitwood

If you made the transition from high school to Mines in the last 25 years, you may have met Ray Priestley '79, who regularly travels around the U.S.—usually paying his own way—to speak with high school students about Mines.

"We talk about how college is a question of fit," says Priestley. "You can go to other top-tier universities and get a good education, but are you going to be the best you can be? That comes with the demands at Mines."

Before Priestley got involved with admissions in 1988, recruitment took place at college fairs, leaving little opportunity for substantive one-on-one conversation. But that's changed. "Discover Mines" events have been added specifically for students who are



OFFICERS

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minesalumni.com



LIFE MEMBERS

The Colorado School of Mines Alumni Association gratefully acknowledges its new Life Members, welcomed between September 1, 2012, and January 31, 2014.

Joseph Achierno '79
Daniel Adams '01
Larry Adamson '91
Simone Aiken '01 and
Michael Driscoll Jr. '00
Ahmed Al-Emadi '03
Hamad Al-Mostaneer
MS '08, PhD '11
Ahmed Khaleefa
Al-Neaimi '03
Maan Alasfoor MS '08
Catherine '79, MS '93 and
William '85 Armstead
Rees Arnim '05
Douglas Bailey '98
James Banaszak '83
Andriena-Marie Barendt '13
Janelle Bartscherer '03
Adrienne Bash '05
Kinzie Beavers '10
Mark Bedford '02
Juan Beltran '13
Brian Birnbaum '99
Kim Blair '00
Nathaniel Bock MS '08
Loren '10 and Megan '10
Bongirno
Eric '02 and Magdalena '00
Boogaard
J. Vince Bowles '03
Michael Bratton '11
Judith '75 and Mike '75,
MS '79 Brazie
Joel Brown '81
Jason K. Buster (former
student)
Joseph Butkovich Jr. '72
Charles Butterfield '99
Samantha Cardenas '12
Kevin Chaffer '12
Jeffrey Circle '80
Bruce Clements '77
Skylar Cobb '09
Charles Coffin PhD '97
J. Leif Colson '72, MS '05
Tracy Copp '99, MS '01
Joseph '93 and Yulee '94
Cordts
Claude Corkadel III '72

Russell Croley '90
M.S. Curtin MS '77
Nathan Davis '97
Michael Decker '77
Joseph Delmonico Jr. '09
Todd Dixon '90
Jeffrey Dyck '86, MS '88
Andrew Eilers '12
Joseph Eisinger '09
Adam Eng '08
Lee Fanyo '04, MS '05
Michael Ferraro '74
Kevin Fiorini '13
William Fleckenstein '86,
MS '88, PhD '00
Porter Fleming '82
Charles Flournoy '81
Susan Flynn '86, MS '88
Michael Foley '82
Edward Ford '79
Allison Fortman '00
Jason Foster MS '08
Jonathan Freeman '84
Margaret Game '11
William Gee MS '81
James Gilman MS '83
Carl Glass MS '85
John Glynn '91
Will Godbey '79, MS '82
Scott Goldberg '97
Amy Goodson '09
Jessica Grainger '10
Daniel Gralla '85
Bret Gunneson '81
R. K. Hancock III '85
Christopher Harper '11
Justin Hayes '08 and
Elizabeth Newton
Hayes '08
Niles Heier '02
Sara Heinle MS '13
Michael Hendricks MS '78,
PhD '83
Erik Hessler '13
Holly Hindle '01
J. Russell Hoffman '75
Matthew Hoffman '94
John Howe '83
Christina Hunt MS '92

Stephen Ice '78
George Jackson '79
Jeffrey Jantos '03, MS '10
R. Kris Jensen '00
Daniel Jones '94, MS '97
Ilya Kats '96
Joseph Katz PhD '91
Jason Kauffman '10, MS '11
Anthony Kenck '79
David Kennar '88, MS '90
Wendy King '90
Bradley Knepper '98
Jason Koch '97
Gerald Konst '89
Gene Krist '79
Richard Labo Fossa
MS '04
Wayne Lebsack '49
Audrey A. '85 and Rodney
L. '83, MS '85 Leonard
Paul Lewis '66
Scott Lewis '86
David List '84, MS '95
David Livesay '00
Ronald Jason Livesay
PhD '17
Pongkit Luksamepicheat
MS '07
C. Barclay Macaul II '84
Amelia '01 and Jeremiah
'01 MacSleyne
Patrick Madison (friend)
James Mahoney '80
Amy Martin '97
Fernando Martinez Diez
MS '04, PhD '04
Jeevak Mattamana '10
Elliot Matthews '12
Steven Maxson '03
John McConnell '75,
MS '77
Andrew McCord '82
Ronald McDowell PhD '87
Paul McElligott '89
Ross Melton '09
Robert Michel '84
Blakelee Midyett '10
Jennifer Miskimins MS '00,
PhD '02

Nancy Money '74, MS '77
Robert Morris '84
Teresa Nealon '87, MS '08
Kenneth Neumann '80
Steven Newman '89
Elizabeth Niemtschik '79
Krista Nixon '12
Christopher Nyikos '81
Frederick Obernolte Jr. '74
Alberto Orozco MS '75
James '03, MS '07 and
Jessica '07 Page
Trina Igelrud Pfeiffer '80,
MS '90
Amy Pflaum '95
Eric Phannenstiel '86
Gregory Piper '86
M. Ward Polzin '84
Frank Presley '83
Raymond Priestley '79
Charles Putman '73
Russell Quick '12
Kevin Raber '11, MS '12
Donald Ranta PhD '74
Danielle Reader '93
John Reeves Jr. '73, MS '75,
PhD '90
Elizabeth Reigles MS '97
Richard Rein '75, '77,
MS '86
Elizabeth Richards '10
Nancy Roberts '82
Joseph Rouleau '10
James Ruble III '91
Karl Rydjord '85
Tim Saenger '95
Derek Sanders '12
Sean Santos '08
Corey Scheele '01
Ian Schick '02, PhD '07
Henry Seal '73
Jamie Sears '04
Ayoub Semaan MS '07
Elizabeth Serra-Hsu '12
E. David Seymour '85
Michael Sheridan '80,
MS '87
Anthony Shouse MS '94
Matthew Showalter '99

Holly Jo '91 and John '86
Sprackling
Megan Starr '06
Michael '83 and Patricia '83
Starzer
Ryan Stauffer (student)
Susan Steblay '10
Michael Stoner '94, PhD '97
Marcus Strautman '06
Alexander '04 and Amanda
'04 Strouth
Gretchen '87, MS '92 and
Jeffrey '87, MS '89
Swanson
Steven Tedesco (graduate
student)
Barry Thomas '91
R. Kevin Thompson '99
Bryce Tillotson '07, MS '09
Richard Usery '76
Matthew Vahsholtz '06
Chuck VanAllen '81
Danielle Vinnola '09 and
Robbin Vinnola Jr. '10
Tracy Vowel '89
Jon Wallace MS '10
Kevin Weller '81
William Wendt '84
Mitchell Whatley '78
Bennett Williams MS '98
Janice Williams '78
Michael Wilson MS '90
Preston Wolfram '11,
MS '13
Travis Womack III '72
Michael Wotovitch '86
Laura Yanowich '11
Thomas Young '83, MS '93
Norio Yuki MS '95
F. David Zanetell Jr. '87
Sean Zeeck '10
Phillip Zelenak '06, MS '10
Abdel Zellou MS '10,
PhD '12
Nicholas Ziemkowski '01

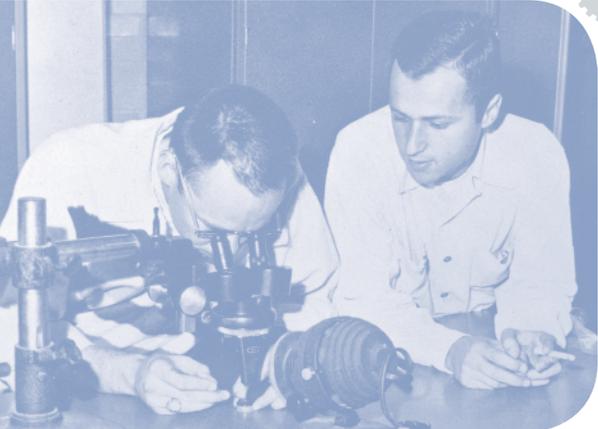
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ENGINEER A VIBRANT GLOBAL FUTURE**



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As global population soars and demand for resources, energy and technology climbs to unprecedented levels, the profound challenges facing our world require smart solutions. The world needs Mines, and with the most ambitious campaign in university history, we are ensuring our ability to heed the call.

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COLORADO SCHOOL OF MINES
FOUNDATION

CLASS NOTES

1950

Donald L. Johnson is a staff metallurgist for the National Parks Service and lives in Sun City West, AZ.

1951

David C. Jonson is a chief geologist for Langdale International and lives in Aurora, CO.

Spencer R. Titley is a professor emeritus of economic geology for the University of Arizona and lives in Tucson, AZ.

1952

Charles N. McCollough Jr. is the owner of Triassic Legacy Vineyard and lives in Tehachapi, CA.

1954

Donald D. Bendell is a consultant for Clementson Engineers and lives in San Antonio, TX.

1956

Prem S. Advani is a VP for Texaco and lives in Spring, TX.

Ralph H. Armstrong is a behavioral health psychiatrist for Ventura County Health and lives in Oxnard, CA.

John F. Sulzbach is a project manager/consultant for International Management Services and lives in Palomar Park, CA.

1958

William A. Preston is a grape grower for Preston Farms and lives in Palo Alto, CA.

1960

Jack C. Haptonstall is a mining consultant for Runge, Pincock and Minarco and lives in Golden, CO.

1961

David H. Fruhling is a geophysicist for Spring Consulting and lives in College Station, TX.

Robert Crandall Johnson is a VP for EDCON-PRJ and lives in Tucson, AZ.

Victor A. Perry is a business litigator of counsel for Perry and Westbrook PC.

Robert W. Wright is a financial consultant for Coconut Advisors and lives in Palm Beach, FL.

1964

Terry L. Campbell is a principal for Tecoma Gold and Silver and lives in Edmond, OK.

Lawrence L. Murrell is an independent investigator for Assymetrical Soil Amending Group and lives in South Plainfield, NJ.

1965

G. Robert Carlson is a professor for Victor Valley College and lives in Apple Valley, CA.

David B. McWhorter is a professor emeritus for Colorado State University and lives in Loveland, CO.

E. Avery Reed is a VP operations and member of the board of directors for Mohave Gold Mining and Exploration and lives in San Marcos, CA.

1966

William E. DeRose is a reservoir engineering advisor for Occidental Petroleum and lives in Bakersfield, CA.

Thomas E. Dimelow is a consultant/partner in oil and gas consulting for Dimelow Enterprises and lives in Denver, CO.

William W. Sutton II is a forest engineering officer for the U.S. Forest Service and lives in Delta, CO.

1967

Arthur F. Clark is a scientist for AET Environmental and lives in Golden, CO.

Wilmer J. Foster is a VP for Second Chance Bunnies and lives in Auburn, CA.

Alan L. Liby is deputy director of advanced manufacturing programs for Oak Ridge National Laboratory and lives in Oak Ridge, TN.

Stephen H. Maytag is a senior chemical engineer for RT Patterson and lives in Carnegie, PA.

Loren L. Pritzel is a senior process engineer for Ascent Engineering and lives in Cottonwood, AZ.

1968

Richard Addison is a principal process engineer for Runge Pincock Minarco and lives in Lakewood, CO.

Robert M. Burnham is the president of Burnhamco and lives in Arvada, CO.

Howard W. Holcombe is an associate for Booz Allen and Hamilton and lives in Leesburg, VA.

Roy W. Keyes is an engineer for Walsh Engineer and lives in Idaho Falls, ID.

Michael Z. Mikulicz is a senior staff consultant for KBC Advanced Tech and lives in Crystal Lake, IL.

John H. Reiss is a senior associate consulting mining engineer for Behre Dolbear Group and lives in Golden, CO.

David J. Starbuck is a mining consultant for D&D Enterprises Nevada and lives in Spring Creek, NV.

Randall D. Touslee is an enrolled agent and tax preparer for H&R Block and lives in Loveland, CO.



JUDO REUNION

Several alumni joined the Mines Judo Club at the Northglenn Judo Club's annual holiday party on December 19, 2013, including Rich Mignogna '74, MS '79, a sixth-degree black belt and head coach of the Mines Judo Club, and Warren Agena '81, MS '88, also a sixth-degree black belt and head instructor at the Northglenn Judo Club. Back row, left to right: Nathan Pauls '05, Andrew Lass '10 and Jesse Warman '02; front row, left to right: Mignogna, Agena and John Miller MS '79.

 denotes an individual who has recently posted photos at minesalumni.com



TRANSFORMING LIVES

The Campaign for Colorado School of Mines

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COLORADO SCHOOL OF MINES RECENTLY* RECEIVED 15 OUTSTANDING LEADERSHIP GIFTS AND COMMITMENTS:

The Adolph Coors Foundation contributed gifts totaling \$210,000 in support for the William K. Coors Distinguished Chair in Chemical Engineering and the Herman F. Coors Professorial Chair in Ceramics.

The American Bureau of Shipping made a new commitment of \$2 million to establish the American Bureau of Shipping Endowed Chair in Metallurgical and Materials Engineering.

Alacer Gold Corp. made a new commitment of \$1.5 million to establish the Timothy J. Haddon/Alacer Gold Endowed Chair in Mining Engineering.

Baker Hughes Incorporated and the **Baker Hughes Foundation** made a new commitment of \$550,000 to support the Petroleum Engineering Department and name a student lounge in Marquez Hall, as well as to support engineering design projects.

Chevron contributed \$1.75 million in support of the Chevron Center of Research Excellence (CoRE) and several departments and initiatives through its University Partnership Program.

ConocoPhillips made a leadership commitment of \$3 million to establish the ConocoPhillips Center for a Sustainable WE²ST (Water-Energy Education, Science and Technology) at Colorado School of Mines.

Marshall C. III '67 and **Jane Crouch** contributed \$250,000 for the Clear Creek Athletics Complex.

Harold M. '68 and **Patricia M. Korell** contributed gifts totaling nearly \$4.2 million to name the athletics center in the Clear Creek Athletics Complex and to support the Korell Men's Basketball Scholarship Fund and The Mines Fund.

Newmont Mining Corporation made gifts totaling \$165,000 in support of the university's three colleges, the Mining Graduate Fellowship Fund and E-Days.

Javan D. '80 and **Julie A. '80 Ottoson** made commitments and gifts totaling \$504,572 to establish the Javan and Julie Ottoson Endowed Scholarship Fund and to support The Mines Fund.

Sue Peiker established the Edwin W. Peiker Jr. Memorial Endowed Scholarship Fund in memory of her husband, **Edwin W. Peiker Jr. '54**, with a gift of \$259,047.

Chuck '61 and **Louanne Shultz** contributed gifts totaling \$287,125 to establish the Shultz Family Leadership in Humanitarian Engineering Fund and to support the Shultz Athletic Scholarship Endowment.

Michael R. '83 and **Patricia K. '83 Starzer** made a \$4 million commitment to name the new Starzer Welcome Center.

Lester G. '48 and **Kathleen G. Truby** established a charitable remainder annuity trust for the benefit of Mines with a \$120,000 gift.

Whiting Petroleum Corporation gave \$100,000 to support the Petroleum Engineering Department and the Department of Geology and Geological Engineering.

Other generous gifts and commitments of \$25,000 and more:

Anadarko Petroleum Corporation made gifts totaling \$43,500 to support the Departments of Geology and Geological Engineering, Geophysics and Petroleum Engineering, as well as the AAPG Student Chapter.

Bentley Badgett II '74 contributed \$25,000 through the J. Rogers Badgett Sr. Foundation in support for the Russell Badgett Jr. Endowed Scholarship Fund.

Tim Bartshe '71 contributed \$40,000 to the Bartshe Endowment, which supports graduate fellowships in geological engineering.

BHP Billiton Ltd. gave \$52,000 to support various programs and initiatives across the Mines campus.

BP made gifts and commitments of \$28,357 in support of various programs and initiatives across the Mines campus.

Jerome T. Broussard '64 contributed \$25,000 to the Broussard Family Engineering and Technology Management Scholarship Fund.

Denise and **Scotty Cook** contributed \$50,000 to the Fred Dueser Endowed Scholarship Fund.

Joe Coors Jr. '91 contributed \$25,000 to support the golf and athletics programs.

Bill Coumley contributed \$33,815 to establish the Coumley Fund for Undergraduate Instruction in Physics.

Cupric Canyon Capital pledged \$46,600 to establish a fellowship in the Department of Geology and Geological Engineering.

F. Scott and **Carla Dueser** contributed \$50,000 to the Fred Dueser Endowed Scholarship Fund.

William G. '82 and **Rhonda Duey** contributed \$77,070 to the Duey Family Endowed Fund in support of the McBride Honors Program.

Linda Dueser Duhon contributed \$50,000 to the Fred Dueser Endowed Scholarship Fund.

Jeffrey S. '87 and **Pam Epstein** contributed \$25,000 to the Jeffrey S. Epstein Entrepreneurial Spirit Scholarship Fund.

James H. Gary contributed \$25,000 to the James H. and Jane Z. Gary Endowed Scholarship Fund.

Gordon L. Gray '50 provided \$25,000 in support for the Gordon Lee Gray Endowed Scholarship Fund.

Cassie and **Mike Griffith** contributed \$50,000 to the Fred Dueser Endowed Scholarship Fund.

Tim '70 and **Mary D. Haddon** contributed \$27,500 to The Mines Fund and the Mining Team Fund.

Al Ireson '47 contributed gifts totaling \$40,000 to the Alfred T. Ireson and Family Endowed Scholarship Fund and The Mines Fund.

Patrick M. '68 and **Sharon L. James** contributed gifts totaling \$25,000 to the Leslie S. James Memorial Endowment and The Mines Fund.

Travis N. Johnson '03 committed \$25,000 to the Wallace James Lebsack and Rodey Kenneth Sadar Memorial Scholarship Fund.

Richard I. Kuehl '47 contributed \$40,000 to The Mines Fund.

Francis J. '52 and **Mary Labriola** contributed gifts totaling \$25,000 to The Mines Fund.

Joseph A. '90 and **Beth '89 Nahama** contributed \$25,000 to the Joe Nahama and Beth Mensing-Nahama Mines Rocks Endowed Scholarship Fund.

William F. '52 and **Marilyn W. Oline** made a gift of \$31,810 in support for the Harry C. and Sheila K. Kent Petroleum Geology Graduate Scholarship Fund.

Margaret Phannenstiel and her son, **Eric**, contributed \$35,000 to the Phannenstiel Family Endowed Scholarship Fund.

The Seay Foundation contributed gifts totaling \$75,000 to the Bechtel K-5 Education Excellence Initiative and A Total Concept in Mining Industry Fellowship Fund.

Shell Oil Company contributed gifts totaling \$90,000 in support of several academic departments and programs.

Alan W. Stracke '82 contributed \$25,000 to the Clear Creek Athletics Complex.

Dennis G. '69 and **Suzi L. Strauch** contributed gifts totaling \$55,500 to the Dennis G. and Suzi L. Strauch Endowed Fund, Friends of Mines Music Fund and The Mines Fund.

Bequest distributions of \$95,151 from the estate of **Marian K. Van Kirk** will provide unrestricted support for Mines.

The Viola Vestal Coulter Foundation contributed gifts totaling \$95,000 in support of scholarships, fellowships, the Coulter Instructorship in Mineral Economics and the Coulter Health Center.

James R. Weber '71 provided \$50,000 in continuing support for the Jack R. and Mary D. Weber Endowed Fellowship Fund.

Barth E. '79 '82 and **M. Maureen Whitham** made an annual gift of \$50,000.

Robert H. '64 and **Jacklyn Writz** contributed gifts totaling \$52,500 in support of the Clear Creek Athletics Complex and Mines Athletics.

*The CSM Foundation received the gifts and commitments listed here between 10/22/13 and 2/24/14.



1969

Sohrab R. Batmanglidj is the chairman of FSIM.

Patrick D. Coyle is a deputy for planning NIF, ICF and HED science for LLNL based in Livermore, CA.

Terry W. Pepper is a senior process engineer for CH2M HILL Foundation and lives in Highlands Ranch, CO.

Kenneth L. Rutt is working for Morning Star and lives in Three Forks, MT.

1970

Eugene V. Printz is working for Helms Oil and Gas and lives in Midland, TX.

1971

Za W. Johnson is the CFO of Johnson Construction and lives in Fort Morgan, CO.

John A. Otto is working for Materion Engineering Resources and lives in Fort Collins, CO.

1972

Alvin P. Japha is a manager of major projects section for Oil Refineries based in Haifa, Israel.

1973

Thomas A. Benjamin is an environmental impact analyst for Alaska Department of Transportation and lives in Fairbanks, AK.

Christopher P. Robie is working for URS and lives in Pueblo, CO.

1975

Robert J. Green is manager – production for BHP Billiton San Juan Mine and lives in Farmington, NM.

David R. Hanson is an engineering manager for Vermeer Underground Technology and lives in Pella, IA.

Michael L. Schuh is a software engineer for Isilon and lives in Seattle, WA.

1976

Randal L. Bruno is a project manager for Gilbane Federal and lives in Stockton, CA.

Michael P. Cleary is a VP operations for Gunnison Energy and lives in Denver, CO.

Alan J. Hurd is an office of science and technology adviser for the Department of State and lives in Los Alamos, NM.

Conrad H. Parrish is a regional manager for Barrick Gold of North America and lives in Layton, UT.

John E. Watson is the CEO of NV Gold and lives in Evergreen, CO.

1977

Randy D. Roberts is working for Sovereign Resource Development and lives in Cañon City, CO.

Joey V. Tucker is a planning LNG project senior advisor – SSHE for ExxonMobil Development and lives in Magnolia, TX.

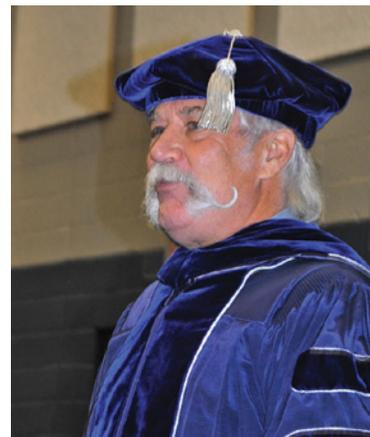
1978

Michael N. Norred is the president of Techbase International and lives in Reno, NV.

Randy T. Pitts is a manager of industrial minerals for Norwest and lives in Green River, WY.

Donald Schwemmer 📷

Frank J. Skocypec is a VP, Scottsdale office manager for Hydro Geo Chem based in Scottsdale, AZ.



DESIGN MASTER HONORED

Robert Knecht '70, MS '75, PhD '79 received professor emeritus status at Mines' 2013 midyear degree convocation held December 13. Knecht was director of design in EPICS 1996–2009 and continues to mentor students in that program.

Gary L. Weihs is the CEO of Proliant Dairy Ingredients and lives in Harlan, IA.

Mitchell R. Whatley is a VP drilling for TransAtlantic Petroleum and lives in Southlake, TX.

Janice Williams 📷

1979

Neal E. Fausset is the president of Fausset and Associates and lives in Boulder, CO.

Ramona Nicks Heikel is a math and science ESL assistant for Foundations for the Future Charter Academy High School based in Calgary, AB, Canada.



Robin Mayes

BEST IN ENGLISH FICTION

George Saunders '81 was selected for the inaugural Folio Prize, the first major literary award singling out “the best English-language fiction” in the world. Sponsored by the London-based Folio Society, the \$67,000 prize went to Saunders for his collection of short stories “Tenth of December” (Bloomsbury; 2013). Margaret Atwood, Salman Rushdie and Anne Tyler were among the 100 members of the Folio Prize Academy responsible for nominations. “George Saunders’s stories are both artful and profound. Darkly playful, they take us to the edge of some of the most difficult questions of our time,” said judge Lavinia Greenlaw. Earlier in March, the Chisholm Foundation awarded “Tenth of December” its highly coveted Story Prize. In 2013, the New York Times Magazine proclaimed it “the best book you’ll read this year,” and Time magazine included Saunders on its list of “the 100 most influential people” for 2013. Saunders received the \$500,000 MacArthur Fellowship—aka the genius grant—in 2006. Saunders teaches at Syracuse University in New York. (To learn more, read our story in the fall 2012 issue, “Exploring Human Landscapes.”)

Christine Z. Hislop is an independent jeweler for Shade Tree Designs and lives in Scottsdale, AZ.

David M. Jurich is a VP for Hatch Mott MacDonald and lives in Golden, CO.

John E. Kingman is a geoscientist manager for Newmont Mining and lives in Denver, CO.

Gustavy E. Niemtschik is a reservoir engineering instructor for Schlumberger Oilfield Services and lives in Katy, TX.

William B. Schafer III is an EVP of development for Concentric Power and lives in Boulder, CO.

Michael E. Shade is a VP business development for IPT and lives in Broomfield, CO.

Jerome A. Waegli is working for Freeport-McMoRan Copper and Gold and lives in Tucson, AZ.

David L. Willie is a drilling manager for Chevron and lives in Indian Wells, CA.

1980

Stephen K. Arnold is a senior engineer for Ascend Performance Materials and lives in Alvin, TX.

Debra J. Batory is a manager – geological technology for PXP and lives in Sugar Land, TX.

George F. Canjar is a director – global capture and appraisal for Hess and lives in Houston, TX.

Orin O. Carman is a facilities engineering manager for Nicholas Consulting and lives in Big Spring, TX.

Jeffrey R. Corwith is a director of reservoir and production engineering for C12 Energy and lives in Morrison, CO.

John A. Detamore is a director of infrastructure and campus development for Alliance for Sustainable Energy and lives in Arvada, CO.

David E. Drips is a general manager for shafter mine for Aurcana and lives in Salt Lake City, UT.

Javaid A. Durrani is a consultant for Durrani Geophysical and lives in Houston, TX.

Victoria Ferguson is a senior petroleum engineer for Alaska Oil and Gas Conservation Commission and lives in Anchorage, AK.

Martin K. Fleckenstein is a director – exploration new ventures for Wintershall Holding based in Kassel, Germany.

Russell Fontaine 

Steven F. Halvorson is a principal engineer for Ball and lives in Boulder, CO.

Beth A. Kendall is a senior geophysical advisor for Anadarko Petroleum and lives in Houston, TX.

Timothy F. Krusmark is a head of operations, NA for Babcock International and lives in Tucson, AZ.

ON OUR WALL



What's the most interesting thing you've done as an engineer?

Put together the economic justification for a \$300 M refinery modernization project. Got to work with a lot of really good people.

—Scott Gustafson '77, MS '79

While working for Shell Oil Company there was an OCAW strike and for four months I worked in the plant in operations and maintenance.

—Robert Dearing '70

Froze hydraulic fluid on a space shuttle so that we could change an actuator.

—Dennis Lobmeyer '83

Intentionally launched a fuel injector out of its bore on a running engine.—Paul German '00

Fixed two major well control problems with cement.—Lacy Boughdadly '10



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Am a Petroleum Engineer, but designed and built a bridge to hold trucks moving in a drilling rig in a wildlife refuge in Alaska.

—Tim Stouffer '78

Troubleshooting 5 nm of error on the most complex manufacturing equipment in the world!—Todd Welch '00

Noise control on PDQ platforms in the Caspian Sea.—Joshua Leasure '02

Fixed a cracked head on a rental car while trying not to get eaten by lions in Kruger National Park.—Will Hunt '12

Built a plant that removes oxygen from natural gas.—Paul McElligott '89

Charles J. L'Heureux is a construction manager for URS and lives in San Diego, CA.

Patrick D. Lavergne is a technical manager for Marathon Oil and lives in Houston, TX.

Michael S. Lynch is a specifications supervisor for OCCL Oil and Gas and lives in Durango, CO.

Douglas R. MacAfee is a driller for Fieldwood Energy and lives in Houston, TX.

Michael K. McKenty is a deep water drilling engineer for Hess and lives in Kingwood, TX.

Robert M. Morgan is a consultant for RM Morgan and lives in Castle Pines, CO.

Jean-Jacques Newey is a reservoir engineer manager for Anschutz and lives in Louisville, CO.

Stephen M. Pease is a certified financial planner for Oxford Asset Management and lives in Durango, CO.

Brian W. Rothkopf is a technical advisor for Pioneer Natural Resources and lives in Centennial, CO.

Wilfred R. Roux is a principal for Roux Resources and lives in Golden, CO.

Daniel J. Schell is a senior engineer – manager for the National Renewable Energy Laboratory and lives in Broomfield, CO.

Richard A. Simonson is an advisor and investor for AT&T Broadband and Internet Services and lives in Dallas, TX.

Andrew W. Slagle is a manager of aggregate resources – S. Florida for Cemex and lives in Plantation, FL.

William C. Stringer Jr. is a district manager for the Bureau of Land Management based in Vernal, UT.

Bret M. Willuhn is a GM – operations for OHL USA and lives in Round Rock, TX.

Catherine V. Woldow is a safety and industrial hygiene program manager for University of California at Santa Cruz and lives in Boulder Creek, CA.

Editor's Note: Alumni from the classes of 1981 to 2013 who have recently updated their information online or have uploaded photos to minesalumni.com are listed below. In addition, all class notes published in *Mines* magazine since 2008 are available on the site. When you visit, if you take a few moments to enter your latest information and upload some photos, we'll list your name here in the next issue. For online viewing instructions, click on Class Notes at minesmagazine.com.

1981

Philip E. Brinkmann
 John J. Chapman Jr.
 Keirnan L. Conner
 Helen E. Dawson
 Timothy A. Deines
 Douglas A. Genty
 Patrick W. Gorman
 Jean E. Green
 Eric J. Greenwood
 Harold O. Harper Jr.
 Claude H. Joseph
 Victor A. Kelson
 James J. Kleckner
 Walter R. Kordziel
 Marty L. Martinez
 Michael D. McGehee
 Bruce G. Mitchell
 Wendy Myers 
 Douglas T. Rosenoff
 Russell D. Roundtree
 Michael L. Ruggiero
 Scott Q. Schultz
 Sandra M. Stash
 Dana G. Vandersarl

Charles R. Wagner
 Kevin S. Weller
 David White 

1982

Lynn Boone Henry
 Scott K. Burkholder
 James R. Cohee
 Anne M. Cornellisson
 Cully R. Farhar
 Roger W. Fish
 Eddie E. Gerze
 John T. Hadley
 Pablo Hadzeriga
 Clifford Harris
 Donald E. Hulse
 Mark A. Linroth
 Thomas J. Majewski
 Thomas W. Makris 
 Richard F. McClure
 Janet E.F. Monahan
 George W. Moseley
 Mark J. Muzal
 Michael P. Nemeth
 Jeffrey S. Ovia

Eric F. Peterson
 William H. Rodriguez
 Michael T. Schwein
 C. Michael Schweser
 Martin E. Sponberg
 Douglas W. Swartz
 Holly P. Thomas
 Bruce A. Tunget
 Stephen Vinciguerra
 John Zellitti

1983

Mitchell D. Ackerman
 Jeffery H. Altman
 Donald F. Archibald
 Michelle A. Avis
 Bradley J. Balint
 Blake B. Bogrett
 Scott M. Brown
 Susan M. Buller
 Michael E. Burnett
 John N. Cevaal
 Michael B. Curto
 Gary A. DePinto
 Thomas J. Dooley

Garret W. Graaskamp
 Richard D. Griffis
 Timothy P. Joyce
 J. Samuel Lemons
 Glen J. Lesnick
 Brian W. Martin
 David M. Miner
 Lewis A. Mologne
 Michael D. Orosz
 Cermit M. Rickey
 Peter G. Rigsby
 Russell L. Roselius
 Jeffrey S. Samuels
 Paul A. Sease
 Robert D. Shank
 Christopher E. Shephard
 Susan G. Simoncic
 Tracey A. Skopinski
 Janine F. Weber
 Michael F. Winter
 Stewart L. Witter

1984

David A. Baska

John F. Bauer III
 Kelly E. Cook
 Lewis Dimovski
 Todd R. Frauenhoff
 Kevin L. Goosman
 Kim R. Green
 Deborah L. Griebing-Foster
 Rachel S. Grynberg
 John R. Guffey
 Farrokh Jalinoos
 Andy P. Johnson
 Jeanne M. Koskella
 George L. Lagorio
 David F. List
 Brian R. Love
 Stephen A. Main
 Joseph A. Medeski
 Thomas K. Moffitt
 Robert S. Morris
 Paul R. Onsager
 Gregory A. Prawl
 Kirk A. Primavera
 Scott J. Reasoner
 Arnold E. Sanchez
 Kenneth N. Shonk
 John C. Skinner
 John A. Tanski
 William T. Taylor III
 R. Scott Tracy
 Paul M. Trousil
 Jay J. Vickers
 Cheryl Weitzel
 Steven G. Wood

1985

Kevin A. Andersen
 Jeffrey R. Anderson
 Paul M. Anderson
 Michael D. Baldwin
 Lysle R. Brinker
 Brian R. Bristol
 John T. Campbell
 William M. Cline
 Robert J. Colligan
 Robert P. Daniels
 Martin E. Emery
 Dee W. Erickson
 Kleber J. Hadsell
 Christian E. Hansen
 John D. Harkrider
 Scott B. Hartley
 Michael G. Hill
 Dorthea L. Hoyt
 James T. Hruby
 James V. Ierubino
 Eric D. Jacobsen
 Daniel C. Johnson
 Mark A. Kadnuck
 Michael E. Kalinski
 Kirk L. Ketcherside
 Carl E. Lakey
 Yoongab Lee 
 Sophie-Adelaide Magnier
 Holly J. Matthews
 Scott M. Meyers
 Jeffrey C. Myers
 David-John Roth
 James L. Russ



RACHEL HALLNAN Class of 2015, Geological Engineering

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RISKS REWARDED Bob Daniels MS '85 (far left) and Brian Frost '78 (far right) accepted the Platts 2013 Global Energy Award for Industry Leadership in Exploration and Production on behalf of Anadarko Petroleum. The award recognizes Anadarko's exploration success and development progress to date in Mozambique, where its discovery of liquid natural gas offers the potential to produce 50 million tons of LNG per year, which corresponds to 20 percent of current global consumption. Mozambique, which previously had no LNG production, could rise to become the world's third-largest LNG exporter. According to Anadarko, developing this massive LNG park will require the largest foreign investment in Mozambique's history; the estimated gross investment for the first phase of the project is \$15 billion—more than the country's total GDP.

MAGIC AT THE MILL Phil Lawlor '07 and Erica Pribble '08 met while working at the Henderson Mill in Colorado. After a surprise dance party proposal, they married on July 27, 2013, at the Sanctuary Golf Course in Sedalia, Colo. Mines alumni who attended include Liz Duncan '08, Brian Hansford '07, MS '09, Nathan Kitners '07, Kyle Davis '07, Marc Guerra '08, MS '09, Danny Morris '09, MS '10, Bryan '07 and Caryn '08 Carruthers, Kacey Moulton '08, Bridget Ware '08, and the 2004 pledge class of Pi Beta Phi.



TOP DISSERTATION Michael Wall PhD '12 was awarded the American Physical Society's 2014 Nicholas Metropolis Award for Outstanding Doctoral Thesis Work in Computational Physics for his work on the quantum dynamics of many-body systems. He talks about his research, his graduate experience at Mines, and how he balances work and parenting two small children in a Q&A at minesnewsroom.com/news/q-michael-wall.



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E. David Seymour
Jeffrey C. Simmons
Thomas R. Stahr
Theodore D. Stroud
Jeffrey P. Styers
Kathleen S. Theisen
Stephen D. Whitham
John E. Wood

1986

Randon J. Berry
Regina M. Bochicchio
Michael O. Bower
Stephen Collins
Patrick F. Daniels
Gail Fallon
John W. Felten
Michael F. Foutz
Curtis G. Glenn
Michael S. Harrison
Michael J. Hawkins
Greg M. Jimenez
Faith E. Kay
Jacques D. Kern Jr.
Lanny D. Kness
Michele Kogl
Eric J. Martins
Todd W. McGovern
Scott E. McKinster
Guy D. Montfort
James F. Newman
Gary S. Nordlander
Oscar E. Orihuela
John D. Parker

Janet L. Patev
Mark L. Peak
Joel A. Seaf
Andrew R. Stegon
Robert R. Stein
Kevin R. Swaving
Douglas M. Symons
Steven J. Van Howe
Clark Vera
Richard L. Walsh III
Todd A. Wang
Daniel S. Wilkinson
Pamela J. Woods

1987

Matthew R. Bender
Henry H. Benjes III
Annette Bills
Glen L. Black
Craig D. Cowdery
Scott B. Daves
James D. Doyle
Stephen J. Fenton
Wesley A. Hayes
M. Khaldoun Hejazi
Henry E. Heyser III
Clay L. Hoes
Matthew J. Horton
Roger A. Jaramillo
Bernard Jene
James E. Leberknight
Jerry B. Ledingham Jr.
Dave E. Leopold
Don M. Lira
Daniel G. Mar
Kathryn F. Miks

Laura M. Miles
Chris J. Myers
Todd M. Pottorff
David A. Radtke
Matthew P. Reilly
Richard J. Reuter
W. Alan Sawyer Jr.
David R. Schricker
Todd D. Staebell
Jeffrey R. Swanson
Douglas K. Umland
Mark J. Vanarelli
Nikolas W. Winjum
Kirk A. Zabel

1988

John S. Cillessen
James R. Coldwell
Darryl J. Colvin
Jess A. Elshere
Curtis H. Farmer
Ty P.A. Ferre
Andrea J. Gallagher
Kevin L. Gobbo
Bernard E. Kuta
Richard C. Lansdowne
John E. Larson
David J. Lillo
Monte D. McVay
Scott A. McWhorter
E. Erich Michelfelder
Scott M. Miller
Silver Miller
Gary T. Molinero
Nancy Kathleen Roldan
Katherine A. Schilly

Dennis M. Vidmar
Xiangwen Wang

1989

S. Scott Bailey
Andrew L. Baker
Ralph A. Brandt
Robert F. Cairncross
Tony W. Church
Galen L. Coupe
Allen L. Dutt
Colin M. Engle
Robert T. Engleby
J. Alec Gimurtu
Jinyemon Hayashi
Timothy A. Hylton
Peter L. Jorgenson
Gerald B. Konst
Laura A. Laffoon
Blase A. Leven
Michael S. Lichtwardt
Victoria J. Marizcurrena
Paul McElligott
Wesley A. Smith
Terrence N. Thom
Gysbert J. Wessels
Paul R. Williams
Betty J. Wilt

1990

Eric P. Andren
Daniel J. Bangert
Michael P. Castelli
Nizar Chemingui
Russell L. Croley

Annamarie Duda
Jeffrey S. Fodor
John N. Haldiman
David A. Hart
Vance H. Hazzard
Ronald J. Hill
Tim Howard
Jeannette A. Jones
Bernhard C. Koch
William W. Leslie
Anne E. Lewis-Russ
Duane J. Maue
Michael P. Nims
Michael F. Pfenning
Lezah Fellin Saunders
Moncef Sellami
Lowell E. Solien
Timothy L. Sullivan
David N. Usry
Rangarajan Venkataraman
R. Keith Whitt
Michael B. Wilson

1991

Herman P. Alendy
Russell W. Bailey
Todd C. Braaton
Mark P. Brada
Robert R. Buell
Donald A. Cameron
Deborah E. Dalby
Jeffrey A. Edelen
Meftun Erdogan
Michael A. Fleming
John C. Fodor

Wesley B. Fortik
Gerardo Garcia
Rodney L. Graf
John G. Green Jr.
Thomas J. Harris Jr.
Michael O. Jaynes
John D. Jensen
Maureen Y. Jordan
Karen M. Maestas
Patrick Michael Moore
Brandon K. Patterson
David G. Ray
Kaushik Roy
Christopher D. Springfield
Jose A. Valdes
Jay A. Watson
Earle M. Williams
Gary L. Womack
David J. Yoast

1992

Kurt R.M. Blair
Winnie Chang
Gokhan Erdem
Gustavo A. Fernandez
R. Todd Freeman
Mark R. Gibson
Geoffrey A. Houlton
Arlie C. Huffman III
Kregg L. Hyer
Julia S. Keating
Kimberly M. Lewis
Gregg B. Nyberg
Paulo R. Pereira
Jo'elu Roth



GREEK CONNECTION

Emily Rose Trudell '11 and Jordan Henry Schmick '10 were married in Morrison, Colo., on October 6, 2013. In addition to several alumni attendees, the wedding party was composed entirely of Mines graduates, including Ian Campbell '08, Martin Malinski '09, Catherine Cox '11 and Anya Reitz '11. Although the couple met in passing at mixers with her sorority, Pi Beta Phi, and his fraternity, Fiji, Emily says, "we never remembered each other until we were in Dan Miller's British literature class together."



HONORING EDUCATION RESEARCH

Ronald Miller PhD '82, professor of chemical and biological engineering at Mines, won the 2013 American Institute of Chemical Engineers Award for Excellence in Engineering Education Research. The award focus on innovative chemical engineering pedagogy, encompassing methods, applications and assessment.

BRONCO BUNCH

Andrew '02, MS '04 and Sara '03 Depperschmidt welcomed a baby girl to their family. Osie arrived on August 27, 2013, joining big sisters Exia (5) and Iris (2) and big brother AJ (4).





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Shelley A. Spayde
Kenneth E. Telleen
Steven J. Tua
Mary D. Williams

1993

Phil D. Anno
Kidane Araya
Thomas J. Butts
Michael A. Byrne
Gary F. Desrochers
Harvey S. Eastman
Steven B. Fellows
Shannon E. Gefroh
Jacob R. Hadix III
Christopher M. Hougland
Shrihari K. Kelkar
Kevin F. Kelly
Carl A. Lakner
Jagdish C. Lau
Mark R. Leu
Robert Maruyama
William M. McCall Jr.
Patrick M. McCarthy
Justin D. McCright
Jeffrey A. Morganfield
Hao Ren
Matthew R. Richter
Bryan L. Roberts
Theresa Santangelo-Dreiling
David R. Schlichte
Joe E. Schoenbeck
Heather L. Sebastian

Robin L. Simmons
Blaine M. Stribling
Maria T. Tchonkova-Parashkevova
Todd J. Van Deusen
Natalia Vaninger
Michael L. Willett

1994

Junaidi Ali 
Gary M. Anderson
Justin L. Cunningham
Carla Gustafson
Tim Kramer
Chad C. Nickell
Michael D. Osmus
Michael W. Patton
Scott K. Pozder
Robert F. Robinett Jr.
Wayne D. Simons

1995

Mark A. Erickson
Roxann Mackenzie Hayes 
Christopher G. Huffer
Dong-Hoon Min
Pedro J. Ortega
Teresa J. Storch

1996

Christian S. Bahn
Eileen M. Dimelov
Jeffrey F. Fetkenhour
Shrinivas Govindarajan
Victoria E. Londono

Jason L. Odau
Kas R. Osterbuhr
Brett A. Peterson
Kelly S. Sexsmith
Thomas D. Toole
Scott G. Van Sickle
Thorsten Viertel
Mark A. Willett
Yurii A. Wong

1997

Tonya L. Allen
Nancy C. Ballout
Scott S. Birkmire
Tantarpal Singh Gill
Brett D. Jackson
Bryan E. Kazin
Brian N. Patterson
Dickie P. Smith

1998

Nathan W. Corbin
Shane C. Dittrich
William V. Fehringer
Stacey J. Hunvald
Raul E. Lema
Dylan J. Morris
Mason T. Pillow
Patrick D. Sandoval
Adi A. Sjoekri
Stephen I. Suharya
Gokhan Urun
Marci L. Wait
Bennett G. Williams

1999

Tracy L. Copp
Charles B. Dickson
Kristopher W. Kendall
Jennifer L. Littleton
Dominic M. Magaisa
George L. Tumur
Russell S. Wurth
Owen D. Young III

2000

Arthur D. Abercrombie
Scott C. Bennett
Magdalena Boogaard
Matthew J. Crill
Allison L. Fortman
Grant W. Kaster
David Londono
Shinsuke Murakami
David M. Pence
Cameron M. Pietrafeso
Katie Rockman 
Randall R. Thomas
Chontel Trujillo

2001

Robert S. Capps
Eric-Paul Couture
Clinton R. DeHerrera
Clinton M. Johnson
Khristopher A. Kircher
Joseph R. Lara
Amelia C. MacSleyne
Joseph T. Massey
Craig R. McClung

Botosan O. Omatsola
Ricky A. Wibowo

2002

Mohammad F. Al-Matrook
Jeremiah J. Camp
Jiny V. Carrera
Benjamin Cebrian Romo
Sean M. Clark
Casey D. Felmlee
Andrea L. Hughes
Shaun C. Jensen
Anders D.C. Rasmussen
Justin R. Scholz
Nga T. Truong

2003

Brandyn J. Bair
Matthew C. Balzer
Heather L. Benoit
Matthew H. Budin
Matthew A. Grinewich
Larry E. Hartman Jr.
Alyssa M. Kohlman
Jonathan R. Riegel
Angele Sjong
Hans H. Wychgram

2004

Brandon R. Baker
Dongjie Cheng
Travis J. Davis
Ramesh Dorairajan
Douglas L. Klepacki

Christopher E. Lindeman
Peter Dominic Montano
An Sao Ngo
Laura E. Pate
Meghan R. Quiat
James W. Sannan
Brian G. Scroggs
Vasili G. Tasoulis
Meghan P. Trujillo
Marc C. Wennogle

2005

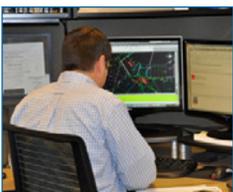
Joshua Gallon 
John A. Harvey
Hunter A. Knox
James M. Knox
Daniel J. Krick
Jennifer N. Malik
Jeffrey E. Miller
Ryan D. Miller
Lindsay A. Oyola
Pri A. Rakhmanto
Alireza Roostapour
J. Chad TeBeest
Jason R. Wagner

2006

Brian R. Alleman
Marc W. Bird
Nathan J. Call
Brandon C. DeHamer
Anthony S. Franzone
Nicholas W. Geanetta
Abraham J. Hachmann



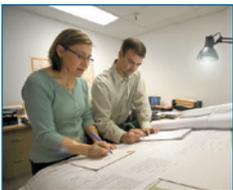
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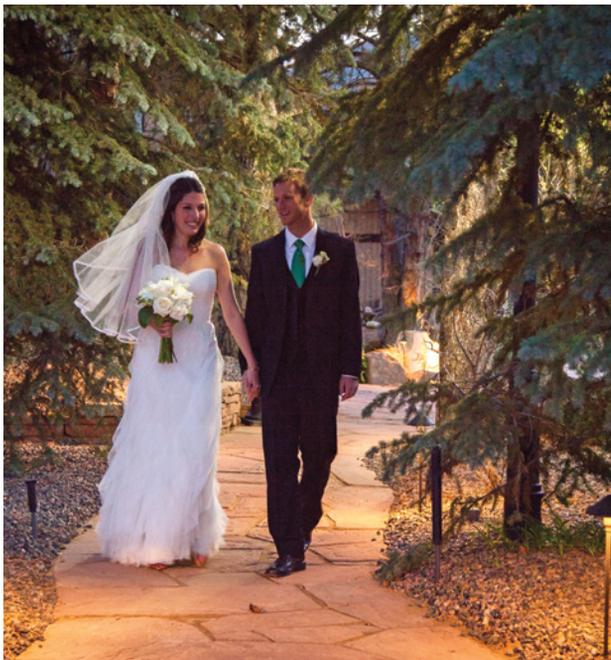
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FASTEST-GROWING PRIVATE COMPANY Miner-owned Global Resource Engineering has only been around since 2009, but its growth has been so explosive—622 percent over the past three years—that the mining engineering consulting firm has had to temper its expansion. In a story last fall published in the Denver Business Journal (bizjournals.com/denver, October 18, 2013), where GRE is listed as the fastest-growing private company in its class (\$2.2 million – \$6.2 million), principal Larry Breckenridge MS '97 reports, “Our growth required restraint so we could keep our work high-quality.” Of its 15 employees, five are Mines alumni, including the three founding partners, Breckenridge, Chris Chapman '00 and Kevin Gunesch '00. Of the five alumni, three have degrees in environmental engineering, one in mining engineering and one in geological engineering. The Centennial, Colo.-based firm focuses on supporting projects for junior mining companies. Pictured left to right are Breckenridge, Amy Livingston '10, Chapman, Kelsey Stark (Mines degree pending completion of Senior Design project) and Gunesch. Not pictured: David Ludwick MS '11.

SUPPORTING MINERS

Casey Morse '08 and Lanny Smalling were married on October 5, 2013, at the Briarwood Inn in Golden. Mines alumni and students in attendance included Tony Actis '11, Samuel Cooper '09, MS '10, Alex Davidson '08, MS '08, MS '09, Stevie Davidson (current student), Nathaniel Holmes '12, Michael Hurowitz '07, Christopher Schneider '05, Shanzi Sun '07 and James Tyree '07.



CAREER AWARD Meg Sobkowicz-Kline PhD '10, an assistant professor in the Plastics Engineering Department at UMass Lowell, received a CAREER Award from the National Science Foundation in January for her proposal, “High Speed Reactive Extrusion for Stabilized and Toughened Renewable Polymer Blends and Copolymers.”



LIKE SON, LIKE MOTHER Travis Pitcher '12, who is currently a graduate student at Mines in the Department of Geophysics, attended midyear degree convocation on December 13, 2013, where his mother, Kim Reggish '13, was awarded a bachelor's degree in geological engineering.



READY FOR LIFE Conor Alan was born on August 2, 2013, to Emily LeJeune '04 and Alan LeJeune II '02. He joins big brother Aidan James.

ALUMNUS PROFILE

Presidential Advice Sends Hoover to Mines

Andy Hoover '69 fought to save his home from the Lower North Fork fire until the very last second. By the time he was forced to flee, the heat had grown so intense that he couldn't even raise his garage door, so Hoover drove his truck straight through it as flames engulfed the building.

"That fire was moving so fast," recalls Hoover. "All of a sudden it got black outside, and sparks started flying by. Then I heard the propane go, and I lost water pressure. That's when I knew it was time to leave."

For Hoover, the March 2012 wildfire claimed more than his 12-year-old retirement home, which stood in the foothills about 30 miles southwest of Denver. It also destroyed a veritable museum of irreplaceable national treasures belonging to his grandfather, President Herbert Hoover.

But in his haste to leave, Andy Hoover was able to salvage two items: a Ming vase his grandfather purchased in China in the late 1800s, and a priceless 16th century copy of the classic "De Re Metallica"—the same copy Herbert Hoover and his wife, Lou Henry Hoover, used in 1912 while working on the first translation of the work into English.

It shouldn't be surprising that Andy made a point of rescuing mining's oldest text from the flames. Of the 31st president's six grandchildren, he's the only one to go into mining, the industry that brought the Hoover family to national prominence.

Born in 1940, long after his grandfather's retirement to private life, Andy grew up in and around the industry. "Mining families do the same thing from generation to generation," Andy says. "You know how they work."

It was Herbert Hoover himself who advised his grandson to attend Mines, which is ironic, insofar as Herbert's brother, Theodore, was the founding dean of Stanford University's engineering school and later the head of its metallurgy department.

"Granddad advised me to go to Mines for two reasons," says Andy. "First, he knew the reputation of the school. Second, he'd visited the campus and was acquainted with some of the faculty." Perhaps he also was grateful for the honorary degree Mines had awarded him in 1935.

The president's visit to Mines for the May 1935 graduation ceremony was a major event, swelling the crowd to overflow



Andy Hoover '69 (right) with his grandfather, President Herbert Hoover, in the late '50s. Andy attended Mines partly on the advice of his grandfather.

John Duprey via the Herbert Hoover Presidential Library and Museum

proportions. In accepting his honorary degree, Herbert Hoover bestowed high praise on the many Mines graduates he'd worked with over the years.

President Hoover died in 1964, just before Andy arrived at Mines after spending two years in the army. Andy studied under now-legendary faculty members such as Wendell Fertig and George Bator while pursuing his degree in mining engineering. He never regretted taking his grandfather's advice.

"The main thing about Mines was that you got your hands dirty," says Andy. "We got out there and did real work. The experimental mine was terribly valuable. The idea was you would be productive from the first day on the job. I also remember a metallurgy professor who allowed us to come in on the weekends, fire up the furnace and cast things. We learned by doing."

That spirit continued after graduation, as Andy set out to gain on-the-job training in far-off places. His mining odyssey took him from Colorado to California and, eventually, to the remote mountains of Pakistan.

"I was trying to work in enough places to get a body of knowledge I could build on," he says. Eventually he launched his own exploration firm before winding up as a mine engineering consultant with John T. Boyd Co., where he specialized in coal.

When he retired from the industry, he took over management of the family's farm in California. Along the way, he began to gather and curate bits and pieces of his historic family's legacy.

By the mid-1990s, he'd amassed a large number of artifacts from his parents, some of which were earmarked to go to the Herbert Hoover Presidential Library and Museum in West Branch, Iowa. The collection, almost all of which perished in the fire, included President Hoover's smoking pipe, his White House china, antique firearms, a well-stocked wine cellar that included two bottles of 1808 Napoleon brandy, antique furnishings and hundreds of books from the president's library.

While it's clearly a painful memory, Andy bears the loss stoically, maintaining that his grandfather's legacy is better preserved by ideas than by things. Perhaps that's why, out of all the items he might have grabbed on his way out the door, he made certain to take "De Re Metallica."

—Larry Borowsky



A REASON FOR THANKS Danielle Saulsbery '09 and Robbin Vinnola Jr. '10 were married on October 5, 2013, at Pinehurst Country Club in Denver, Colo., in front of nearly 30 other alumni and students. The wedding party alone was a Mines reunion, and included Kristin Evanyo '08, Hilary Logue '03, Samantha '06 and Brandon '07 Richardson, Alicia Thompson '09, Tom Kastens '10 and Josh Ross '10. Danielle and Robbin met at Mines in 2008 and went on their first date over Thanksgiving weekend that year. On the fourth anniversary of this date, Robbin proposed to Danielle in Cabo San Lucas, just a couple of hours after arriving at the resort. "He was so nervous, he wanted to ask the first day so he could relax and enjoy the rest of the vacation," says Danielle. Robbin's father, Robbin Vinnola '79, died in 1987.



MOUNTAIN BEAUTY Emilyyanne Dalton '10 married Cole Hardy at Piney River Ranch in Vail, Colo., on June 27, 2013. Several alumni celebrated with them, including maid of honor Sara (Eickelman) Eklund '09, bridesmaids Stevie (Hagemeister) Ferreira '10, Kaitlin Soehner '11 and Taylor (Cayou) Fisher '09, plus Savannah Afoa '11, Brecca Gaffney '11, and Bartolomeo Panella '12. The Hardys live in Aurora, Colo.



FOUR AND DONE Grant Hudish '07, MS '09, PhD '13 earned his fourth degree from Mines in December 2013—a doctorate in metallurgical and materials engineering—following two bachelor's degrees (mechanical and metallurgical engineering) and a master's degree (metallurgical engineering). Celebrating the accomplishment with him were (left to right) his brother, Myles; his parents, Gary and Joann; and his girlfriend, Emily Allen '05.



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 303.273.3275
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SWEET ADDITION TO THE SOUTHWEST

Hunter '05 and James '05 Knox announced the birth of their daughter, Alix, on April 26, 2013, in Albuquerque, N.M.



GREAT DAY FOR A WEDDING

Matt Lehr '07 married Kim Nguyen in San Jose, Calif., on August 10, 2013, accompanied by alumni Henry Scott '07 and Dan '07 and Kat '07 Steele. The couple lives in Missouri City, Texas.



FINDING LOVE, AND WORK, OVERSEAS

Douglas Buckland '84 married Angie See Soo Hong in Kuala Lumpur, Malaysia, on April 22, 2013. Buckland has been working internationally as a drilling consultant since 1995 and is presently working in Erbil, Kurdistan.



BEYOND ENGINEERING

Heather Hoops '05, MS '07 graduated in May 2013 from the University of Iowa Carver College of Medicine as the top surgical student and is now completing her surgical residency in Portland at Oregon Health & Science University. Joining her at graduation were parents Tim '79 and Linda Sue '81 Hoops. "I think it is awesome that Mines not only prepares oil/mining/engineering professionals, but professionals for all aspects of life," writes proud father Tim.

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pc

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sharing your commitment to innovation.



STANDING, LEFT TO RIGHT

Stanley Gradisar Patent Attorney, Of Counsel
B.S., Mining Engineering, 1974

Matthew Ellsworth Patent Attorney, Shareholder
B.S., Engineering, with honors, 2003,
M.S., Engineering Technology Management, 2005
Top Graduating Electrical Engineer

Brad Knepper Patent Attorney, Shareholder
B.S., Electrical Engineering, 1998

Bruce Kugler Patent Attorney, Shareholder
B.S., Petroleum Engineering, 1981

SEATED

Doug Swartz Patent Attorney, Shareholder
B.S., Mining Engineering, Minor in Metallurgical
Engineering, 1982

Kristen Gruber Patent Attorney, Associate
B.S., Chemical and Petroleum Refining
Engineering, 2000

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CELEBRATING INNOVATION

Eli F. Jennings
 Alicia C. Jessop
 Kerry O. Jones
 Benjamin R. Luckey
 Allison F. Marier
 Brian J. McMorrow
 Dylan Mikesell
 Grant W. Newton
 Jeffrey M. Perkins
 Shannon Schoepflin 
 Justin R. Spittler
 Matthew J. Vahsholtz
 Dahren L. Wayman
 Jess G. Whittington

2007

Samuel M. Bradley
 Brianne M. Brennan
 Rex M. Carter
 Aaron N. Clubb
 Lauren D. Doyle
 Bryan J. Florendo
 Nathan Greeney 
 Daniel R. Hanten II
 Grant A. Hudish
 Luke A. Jain
 Sean Patrick Kelly
 Adam R. Koester
 Allen J. Kuhn
 Travis R. Little
 Christine M. Martinovich
 Colin A. Meidell
 Allison L. Nold
 Jonathan P. Parker
 Antonio Peralta Romero
 Eirik A. Pyhtila
 Chad R. Reeves
 Jonathan Sachen
 Adam F. Seibel
 Christopher M. Worley
 Shiu-Hang Yueh

2008

David J. Appelhans
 Zachariah J. Baldwin
 Kate R. Charlton
 Chester J. Crabb
 Nathan C. Crawford
 Michael J. Deal
 Amelia N. Dupont
 Aleksandr Gamble
 Richard M. Gonzales
 Kurtis A. Griess
 Jason Hobson
 Aaron M. Isabel
 Elizabeth Jeffries
 Benjamin Krugman
 Kent M. Larson
 Egan J. Lohman
 Christina McClard
 Casey D. Morse
 Nicole E. Mosby
 Matthew R. Owens
 Emily Przekwas
 Nathan Rutledge
 Gunther Rudolf Schwab
 Collin Timm
 Andrew J. Tupper
 Julia L. Turelli
 Hidemichi Yonezawa

2009

Jared C. Alexander
 Ryan J. Bartingale
 Don A. Burton
 Daniel J. Coleman
 Timothy L. Eller
 Jack R. Ferrell III
 Amy D. Goodson
 Braden R. Kappius
 Meredith P. O'Brien
 Kimberly N. Powers
 Natalie Smiley
 Jeremiah D. Tucker

2010

Aizada Abdrakhmanova
 Christopher J. Amsden
 Robert J. Beach
 Reyna S. Bryan
 Bryan L. Cantor
 Cita Cisse 
 Scott W. Cochran
 Wil R. Escalante
 Renee R. Francese
 Stephen M. Frank
 Allauddin A. Gantyno
 Brian G. Gerlach
 Daniel D. Gibson
 Lillian I. Giddings
 Adam C. Goering
 Allan K. Haas
 Michael D. Halsema Jr.
 Erik R. Hill
 Alexander L. Hureau
 Jennifer M. Keswick-Caballero
 Daniel G. Lescanec
 Elliot C. Makuh
 Crystal M. Mapes
 Prajnajyoti Mazumdar
 Sarah W. Morgan
 Lewis S. Patterson
 Sara P. Post
 Amber C. Rath
 Michael H. Rector
 Jocelyn K. Ross
 Benjamin R. Tiller
 Parker M. Valora
 Robbin J. Vinnola Jr.
 Wesley R. Woods

2011

Rashed M. Al-Ghenaim
 Kristopher M. Alley
 Ahmed A. Ambarak
 Brett D. Arpin
 Andrew C. Fager
 Jacob T. Fielding
 Megan L. Fitzpatrick
 Evan R. Forbes
 Jamie M. Furney
 Chad M. Gieck
 Austin W. Haller
 Zachary S. Harmon
 Silas M. Hatch
 Lex M. Hubbard
 Dale S. Jenne
 Michael E. Junk
 James M. Milford
 Rafael E. Pinto Ortiz
 Brittany A. Smyth
 William M. Spadinger
 Justin C. Tappan



NEW FACES Kurtis Griess '08, MS '10, who is also CSMAA's office manager, married Cynthia Miranda on October 27, 2012, in Denver, Colo. (Above) Mines alumni who hammed it up at the wedding include Nathan Holzrichter '08 (standing half of the wheelbarrow), Levi Harris '09 (the wheelbarrow), John Dibble '11 (standing, right), and Keith Stevens '11 (piggy back). (Left) Their family grew on August 17, 2013, with the birth of their son, Samuel.

Sarah A. VanLingen
 Salvatore E. Vigil
 Chad R. Wermager
 Eric A. White

2012

Banks K. Beasley
 Anthony J. Bordonaro
 Hannah R. Brinkmann
 Mary R. Bubb
 Alan T. Carter
 Sarah E. Cassinis
 Jayson T. Childers
 Edward B. Coalson
 Ilse M. Cobos Garcia
 Benjamin J. Collins
 Neville B. DeWitt Pierrat
 Andrew W. Eilers
 Chelsey R. Fedel
 Christopher M. Fehn
 Gerardo Fraustro
 Laura A. Garchar
 Chad Garrett 
 Bryan A. Hampson
 Peter C. Harmon

Aaron J. Hart
 Christopher I. Hatcher
 Ryan M. Jessop
 Zachary C. Keller
 Emily C. Kuhr
 Michael L. Laing
 William B. Lambert 
 Andrew J. Maul
 Brandon J. Mestler
 Stephen R. Miller
 Kyle W. Moody
 Jonathan C. Musso
 Ramon J. Ortega
 Bradley T. Price
 Mark J. Robinson
 Matthew R. Shaw
 Brian J. Simonds
 Cassandra M. Stember
 Aizhan Turmanbekova
 Christopher P. Ventura
 Bree Waltman

2013

Rustin M. Adler
 Nicholas S. Amidei

Eric D. Anderson
 Edward S. Aponte
 Alice M. Arsenault
 Adam M. Bent
 Zachery S. Bogle
 Michael J. Bouwkamp
 Zachary P. Bradshaw
 Alexander D. Carlson
 Thomas R. Carpenter
 Carla C. Carvajal Meneses
 Andrew M. Coleman
 Austin J. Cordova
 Noe Cuevas
 Samuel J. Dyas
 Jeffrey C. Edelen
 Timur Erkebaev
 Perapon Fakcharoenphol
 Samuel E. Frazier
 Rachel I. Gelman
 Aaron T. Glauch
 Amar M. Gujral
 Eric L. Hainey
 Rachel E. Herbert
 Chadwick P. Herges

Robert D. Hickham
 Ryan D. Hieronymus
 Nadine M. Janecek
 Matthew L. Krueger
 Edward C. Lee
 Bara K. Mann
 Paul T. Martin
 Adam N. Midgley
 Jon D. Nilemo
 Theresa R. Nottoli
 Timothy R. O'Hara
 Benjamin O. Ohnstad
 Kenneth W. Pacheco
 Amanda L. Paradisa
 Stephen R. Phillips
 Indah H. Putri
 Robert B. Reed
 Kimberly Reggish 
 Austin R. Rial
 N. William Rommel
 Clifford J. Sanden
 Nima Sherpa 
 Gregory S. Vance
 Jon A. Woodhead

ALUMNI: What in the world are you doing? Send us your photos and a brief description of your activities (for instance, getting married, growing your families, traveling, meeting other alumni) to magazine@mines.edu.

IN MEMORIAM

“When you are sorrowful look again in your heart, and you shall see that in truth you are weeping for that which has been your delight.”

—Kahlil Gibran

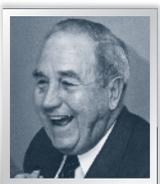


R. BRUCE ALLISON of Loveland, Colo., died December 21, 2013. Born in 1930, Bruce was the athletic director at Mines 1976–1995, leading both the school's

17-sport intercollegiate athletic program and intramurals. He was also the head lacrosse coach and the men's golf coach. Prior to joining Mines, Bruce served as athletic director for four years and coach for 19 years at Union College in Schenectady, New York. He earned bachelor's and master's degrees from SUNY Cortland in New York, and was a Marine.

A two-time president of the U.S. Intercollegiate Lacrosse Association, Bruce is credited with developing and implementing the NCAA lacrosse system in 1971 and with forming the Rocky Mountain Intercollegiate Lacrosse League in 1978. He was honored many times for his achievements in athletics, including inductions into the U.S. Lacrosse Colorado Chapter Hall of Fame in 1995; the National Association of Collegiate Directors of Athletics Hall of Fame in 1995; the Rocky Mountain Athletic Conference Hall of Fame in 2006; the Colorado School of Mines Athletics Hall of Fame in 2007; and the National Lacrosse Hall of Fame in 2011. Bruce was a past member of the NCAA Council. A professor emeritus at Mines, he supported the university as a member of the President's Council for many years.

Bruce was predeceased by his wife of 60 years, Ann. He is survived by his children, Nancy Lefebvre and Tom Allison.



ALBERT H. BROOKES '36 of Wheat Ridge, Colo., died November 6, 2013. Born in 1914, Al earned a professional degree in metallurgical engineering from

Mines, where he was a member of Kappa Kappa Psi and Blue Key honor societies, Kappa Sigma fraternity, ROTC, band and the Press Club. He earned a bachelor's degree from Johns Hopkins University

in 1941 before serving in the U.S. Army during World War II in the South Pacific, North Africa and Italy. He retired as a colonel. Al founded Brookes Engineering and was a member of ASM International, as well as a life member of the Colorado School of Mines Alumni Association. He was also active in the Masonic order. Al is survived by his wife of 72 years, Gene; sons Albert and Thomas; three grandchildren; and five great-grandchildren.



CARL M. BROWN '87 of Eaton, Colo., died March 21, 2009. Born in 1965, Carl received a Boettcher Scholarship to attend Mines, where he helped start the chapter of Campus

Crusade for Christ and spent summers evangelizing in the former Soviet Union. After graduating with a bachelor's degree in geological engineering, he studied engineering geology as a Fulbright Scholar at the University of Bucharest in Romania for two years and worked to start a covert campus ministry there.

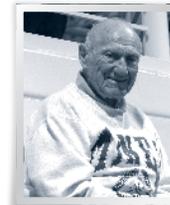
Carl earned a master's degree in religion in 1992 from Trinity Evangelical Divinity School in Deerfield, Ill., and he worked as an engineer for Harza Engineering while attending seminary. With his family, he took his ministry to Kazan, Russia (1995–2001), Kazakhstan (2005–2008) and Kandern, Germany, where he was living at the time of his death. Carl is survived by his wife, Angela; daughters Janey, Kara, Kathy and Izzy; parents Dick and Karen Brown; sister Angela Burchett; and brother Dudley Brown.



KENNETH W. CARLSON '42 of Boise, Idaho, died August 9, 2013. Born in 1920, Ken served in the U.S. Navy during World War II as a safety officer at Mare Island

Naval Shipyard in California. He earned a professional degree in mining engineering from Mines and also attended the

University of Arizona. Following graduation, Ken worked for Ingersoll-Rand in New York City, Idaho and Oregon. In 1972, he moved back to Boise and helped to found C&A Equipment, where he continued working for the next 41 years. He is survived by his wife of nearly 60 years, Fai; sons Vic and Bill; two grandsons; and five great-grandchildren.



ANTHONY F. CORBETTA '48 of Golden, Colo., died October 10, 2013. Born in 1923, Tony enrolled at Mines in 1941, where he played football for two years. He left Mines in 1943 for three years to serve in the U.S. Navy in World War II, and then returned to complete his professional degree in metallurgical engineering.

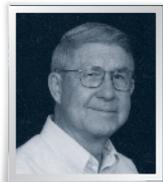
The year he graduated, Corbetta started to build a career as a sales engineer with CF&I Steel, where he worked until his retirement in 1983. A tireless supporter of Mines, Tony was a member of the Heritage Society, the President's Council and the alumni association. In 2009, he established the Anthony F. Corbetta Endowed Scholarship focused on supporting Colorado high school graduates who participate in varsity athletics. On April 25, 2014, Tony will be honored posthumously with the 2014 Mines Medal, given by Colorado School of Mines for unusual and exemplary service to the university.

Tony was predeceased by his son, Paul. He is survived by his daughters, Dianne Connolly and Patricia Corbetta; three grandchildren; and three great-grandchildren.



TERRY P. EVANS '77 of Golden, Colo., died June 28, 2013. Born in 1952, Terry played basketball at Mines, his 7-foot-2-inch frame giving him a 50 percent shot from the field. He was featured on “Ripley's Believe It or Not” as the tallest

Eagle Scout in the world and for being rejected from military service due to his height. Terry earned a bachelor's degree in geological engineering from Mines and worked for Urania until 1982. From 1985 until his retirement in 2011, he was a materials tester for the Colorado Department of Transportation. Terry was an avid photographer and became the unofficial photographer for CDOT's highway projects. He was predeceased by his sister, Kay Evans, and is survived by his sister, Teal Snapp.



VIRGIL R. FRIEBEL PhD '72 of Longmont, Colo., died May 26, 2012. He was born in 1932 in Britton, S.D., and was raised on his family's farm. After two years

of college, Virgil joined the U.S. Navy Air Cadets, where he earned his Navy Wings of Gold in 1954. He went on to serve as a pilot in the U.S. Marine Corps for two and a half years, stationed in Korea for 13 months and then as a flight instructor. He was honorably discharged in 1956.

Returning to college, Virgil earned a bachelor's degree from South Dakota School of Mines in 1959, a master's degree from the Missouri School of Mines in 1960, and a doctorate in metallurgical engineering from Mines. He worked for ASARCO as a metallurgist 1960–1963 in New Jersey, for Dow Chemical at Rocky Flats in Colorado as a metallurgical engineer until 1966, and for Ball Aerospace in Boulder as an engineer/manager until he retired in 1993. He holds several patents.

Virgil was predeceased by his first wife, Ann. He is survived by his wife, Beverly; daughter Kathy Jensen; son Daniel Friebel; four grandchildren; one great-grandson; and Beverly's family, including sons Bill and Lee Peterson, and their six children.



DONALD N. HAINES '78 of Bremerton, Wash., died March 7, 2012. Born in 1955, Don attended Mines on an academic scholarship, earning a bachelor's degree in engineering physics. He earned master's and doctoral degrees in physics from Montana State University and taught the apprentice program at Olympic College in Bremerton for the 11 years preceding his death. Don enjoyed backpacking, camping, fly-fishing, hiking, kayaking, shooting and woodworking. He is predeceased by his father, Carl, and is survived by his mother, Wanda.



JOHN D. HALEY '48 of Littleton, Colo., died January 27, 2014. Born in 1924, John graduated from Mines with a professional degree in petroleum engineering in between serving as a naval aviator in World War II (1943–1946) and the Korean War (1952–1954). A member of Sigma Nu fraternity, John remained a member of the U.S. Naval Reserve during his years at Mines. His career included working as a petroleum engineer with Creole (Exxon) in Venezuela, a field engineer with Texaco in southern Louisiana, and VP of production for Anschutz in Denver. In 1987, he formed a consulting firm, Haley Engineering, in Littleton.

In 1997, John received CSMAA's Outstanding Alumnus Award, having served on the association's board of directors 1992–1996, including the last year as president. He went on to the Colorado School of Mines Foundation's board of directors 1996–1998. John was a member of the Mines President's Council for more than 30 years. He was predeceased by his wife, Laurie. He is survived by his children, Brian Haley, Laura McNeil, Patricia Miller, Sharon Haley, Norine Goodwin and Kathleen Martinez; 10 grandchildren; and three great-granddaughters.



WALTER E. HEINRICHS JR. '40 of Tucson, Ariz., died October 10, 2013. Born in 1919, Walter claimed an unusual historical connection to Mines. In the 1870s,

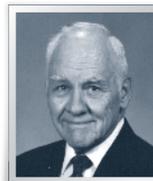
when the Territorial Legislature stipulated that the school's founders needed at least three students to receive funding, his grandmother enrolled. In addition, Walter's own father, Walter E. Heinrichs 1913, and his uncle, Archibald A. Sproul '26, were also Mines alumni.

After earning a professional degree in geological engineering from Mines, where he was a member of the varsity ski team, Walter served in World War II in the U.S. Naval Reserve 1944–1946. He then worked as a geophysicist for a number of organizations over the next 12 years, including Herbert Hoover Jr.'s United Geophysical Company. His work there led to his discovery and development of the Pima copper mine in Arizona (now the ASARCO Mission Complex) in the early 1950s, which is said to be the first documented geophysical discovery in the southwestern United States. Walter wrote about his experiences in the book,

"The Pima Mine Story: Forerunner of the Mission Complex" (Western Economic History Center; 2000). He was awarded the van Diest Gold Medal from Mines in 1955 for this discovery.

In 1958, Walter and his brother, Grover, formed Heinrichs GEOEXploration, which explored major metallic ore deposits around the world; it remained active until 2011. He was inducted into the Hall of Fame of the Mining Foundation of the Southwest in 1993 and into the Colorado School of Mines Athletics Hall of Fame in 2001 for his role on the 1936–1940 ski teams. That same year he received the Ben F. Dickerson Award from the Society for Mining, Metallurgy and Exploration.

Walter was predeceased by his first wife, Jean. He is survived by his wife, Rosella; son Frederick; six grandchildren; and 11 great-grandchildren.



BEN H. KING '47 of Katy, Texas, died May 11, 2013. Born in 1921, Ben was a member of Mines' "Fair Haired Boys" who served together in World

War II. He was in the Army Corps of Engineers in the European Theater of Operations 1943–1946, returning to Mines after his service to complete a professional degree in petroleum refining engineering. At Mines, he was a member of Blue Key and Tau Beta Pi honor societies.

Ben worked for Texaco for 37 years until he retired in 1984. He was a member of Theta Tau professional engineering fraternity, Scabbard and Blade, and the American Society of Mechanical Engineers, and he was a 32nd degree Mason. He also supported Mines as a member of the President's Council for many years. Ben is survived by his wife of 66 years, Elaine; children Gary King, Doug King and Julie Robinson; four grandchildren; and two great-grandchildren.



DAVID J. LARSON '78 of Lockport, N.Y., died December 10, 2010. Born in 1956, David earned a bachelor's degree in metallurgical engineering from Mines and an MBA from Arizona State University in 1983.

Between degrees he was a production foreman for Inland Steel in East Chicago, Ind. David enjoyed flying, hunting and traveling. He is survived by his wife, Bonnie; children Eric and Rachel; mother Marie; sisters Donna Kane and Debbie Wyrebek; brother Daniel; and brother-in-law Don Chislow '78, MS '81.



MICHAEL E. McNAMARA '71 of Red Lodge, Mont., died July 28, 2013. Born in 1946, Michael was valedictorian of his class at South Park High School

in Fairplay, Colo. He earned a bachelor's degree in petroleum engineering from Mines, where he was a member of Sigma Alpha Epsilon fraternity. His career in petroleum engineering included work for Amoco Production, Universal Resources, Brooks Exploration, and Envirocorp Services and Technology. His great passion was skiing, but on weekends when he wasn't skiing, he fly-fished, played softball, camped, golfed, sailed and did woodworking in his workshop. Michael is survived by his wife, Anne; children Ted, Charlie and Becca; three grandchildren; siblings Jeanie, Becky, Pat and Kathy; and nieces and nephews, including Sean McNamara '01.

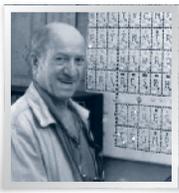


JOSEPH M. PEERY '43 of Golden, Colo., died November 26, 2009. Mayford, as he was known, was born in 1920 and raised in Golden by his parents,

who owned the Golden Mill and Elevator. He earned a professional degree in mining engineering from Mines, where he was the wrestling Rocky Mountain Champ at 145 pounds, according to his family.

Mayford served in the Pacific during World War II as a bomber pilot and squadron leader. After graduating from Mines, he worked briefly as a mining engineer, and then went into business with his father at the mill. He was involved in many other businesses throughout his career, including mink farming, turkey farming, poultry processing and land development. He enjoyed many vacations fishing with his family all over the world.

Mayford was predeceased by his first wife, Virginia; his second wife, Winnie; his son, Norman; and his brothers, Tom '41 and Bill '42 Peery. He is survived by his children, Linda Doyle and Richard Peery; four grandchildren; eight great-grandchildren; and nephew A. Tom Peery '66.



ALEXANDER S. SABITAY '53 of Osborne Park, Western Australia, died June 6, 2013. Al was born in 1929 in Chicago and graduated from high school in Fairmont, Va.

After high school, he enlisted in the U.S. Army Signal Corps and was posted to MacArthur's general headquarters in Tokyo. He attended the Illinois Institute of Technology before transferring to Mines, where he earned a professional degree in geophysical engineering. He was a member of Beta Theta Pi fraternity, and Blue Key and Sigma Gamma Epsilon honor societies. He also worked on *The Oredigger* and the Prospector yearbook.

Al began his career with geophysical contractor GSI in locations throughout the U.S. and in Saudi Arabia, the U.K., Indonesia and Australia. He returned to GSI's headquarters in Dallas, Texas, in 1960, where he was the first party chief of a newly invented digital seismic technology. He returned to oil exploration four years later, taking the first foreign land digital seismic crew to France. He went on to work in land and marine digital seismic exploration in the U.K., Italy, Libya and Angola. After 15 years with GSI, he became an oil and mineral exploration consultant in Australia, finishing his career as managing director of Seahawk Australia Oil. In 1986 he retired to his vineyard near Perth. Al is survived by his daughters, Andrea, Karen and Tracy, and his son, David.



FRANKLIN D. SCHOWENGERDT of Alexandria, Va., died February 12, 2014. Born in 1936, Frank, a Mines professor emeritus, taught physics at

the school 1973–2003, serving as department head 1977–1990. He was also VP of academic affairs and dean of faculty 1990–1995, and supported the school through membership in the President's Council.

Frank attended the University of Missouri–Rolla, where he earned bachelor's, master's and doctoral degrees in physics. While at Mines, he founded the Colorado Advanced Materials Institute and helped create the Colorado Advanced Technology Institute. He also founded the Center for Commercial Applications of Combustion in Space at Mines, a NASA-funded research center, which he led 1996–2003. In 2003, Frank became director of space product development at NASA and was senior advisor for the Innovative Partnerships Program. Four years later he became director of the Pacific International Space Center for Exploration Systems at the University of Hawaii-Hilo. Frank is survived by his wife, Ellen; children Anna and John; and brother Richard.



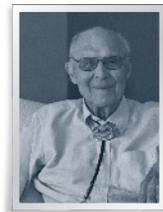
JAMES F. SIMONS '58 of Kentland, Ind., died September 28, 2012. Born in 1929, Jim served briefly as a paratrooper in the U.S. Army before earning a professional degree

in petroleum engineering at Mines, a J.D. from the University of Colorado and an MBA from the University of Chicago. He and his family lived in Park Forest, Ill., while Jim worked for Borg Warner and Standard Oil. In 1976, he returned to Kentland and his passion, the family farm, where he was able to continue flying. In addition to being a past member of the bar associations in Colorado, Illinois and Indiana, Jim was a member of the U.S. Patent Bar and the National Association of Securities Dealers. Jim is survived by his wife of 59 years, Virginia; children Mark Simons and Cathy Standish; two grandchildren and three step-grandchildren; and three step-great-grandchildren.



JOSEPH R. SOPER '44 of San Diego, Calif., died October 22, 2013. Born in 1922, Joe earned a professional degree in metallurgical engineering from

Mines, where he was a member of Sigma Phi Epsilon fraternity and Sigma Gamma Epsilon honor society. Upon graduating, he was hired by Linde Air Products in Buffalo, N.Y., to work on the Manhattan Project. His career spanned work in sulfur mining, commercial construction and plant engineering, concluding with six years at the U.S. Bureau of Mines, from which he retired in 1987. Joe was a 32nd degree Mason, a Life-Master in bridge, and a life member of the Colorado School of Mines Alumni Association. He is survived by his wife of 68 years, Ruth; children Chuck, Robin, Chris, Steve and Pam; 10 grandchildren; and one great-grandchild.

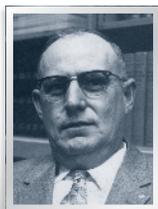


E. KEITH STALEY '35 of Oro Valley, Ariz., died November 19, 2013. Born in 1913, Keith earned a professional degree in mining engineering from

Mines, where he was a member of Sigma Alpha Epsilon fraternity. His first job after graduation—during the Great Depression—was as a surface laborer at the American Smelting and Refining mine and coke plant in

Cokesdale, Colo. In 1941, he was sent to Alaska to serve in the U.S. Army Corps of Engineers.

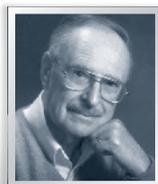
Keith was considered a pioneer in copper mining in the state of Arizona, his career spanning 40 years, starting with the Phelps Dodge mine in Morenci, Ariz., and then 30 years with Magma/Newmont Mining. He retired as general manager of the massive copper mine in San Manuel, Ariz. In retirement, Keith designed jewelry in silver and cut rocks. He was predeceased by his wife, Frances; uncle George W. Mitchell '23; and cousin J. Harold Mitchell '36. He is survived by his children, Cecelia Pfeiffer, Alex Martin, Richard Staley and Douglas Staley; many grandchildren and great-grandchildren; and cousin George W. Mitchell Jr. '53. (Find out more about Keith in our alumnus profile, "A Miner's Century," in the spring 2013 issue.)



CHARLES W. STARKS
'42, MS '47 of Denver, Colo., died May 25, 2011. Born in 1919, Jack, as he was known, earned professional and master's degrees in metallurgical engineering

from Mines, where he was a member of Sigma Phi Epsilon fraternity and Kappa Kappa Psi honor society. Between his degrees, he served in the U.S. Army in the Central European Theater, climbing to the rank of lieutenant colonel.

After earning his master's degree, Jack taught chemistry at Mines for more than 30 years, retiring as a professor emeritus. He served Mines in a number of other capacities, including sitting on the Administrative Advisory and Readmissions committees, assisting in the admissions office, and teaching the first Pershing Rifles class given by the former Military Department. In 1975, the National Association of Corrosion Engineers gave him the title of corrosion specialist. Jack was a professional engineer in Colorado and was active in the Masonic order. He was predeceased by his wife, Georgia. He is survived by his children, Charles, Roxanne, Charlotte, Cindy and William; 12 grandchildren; and eight great-grandchildren.



ALBERT F. TRITES JR.
'46 of Wheat Ridge, Colo., died August 17, 2013. Born in 1921, Al earned a professional degree in geological engineering from

Mines, where he was a member of Sigma

Phi Epsilon fraternity. He received a master's degree from Columbia University in 1948, after which he worked as a geologist for the U.S. Geological Survey for eight years. His career then shifted into the full-time ministry for International Child Evangelism Fellowship; he was the director of work in Denver for seven years, followed by five more as national director of Australia's Child Evangelism Fellowship.

In 1968 Al returned to Colorado, taking a position as senior geologist for International Mineral Engineers. He continued working as a geologist for many years, moving into consulting in 1970; he specialized in economic geology related to the location, acquisition and evaluation of mineral properties. Al is survived by his wife of 66 years, Nona; children Nancy Botkin, Helen Peters and Timothy Trites; eight grandchildren; and nine great-grandchildren.



JASPER N. WARREN
'50 of McAllen, Texas, died August 5, 2013. Jack, as he was known, was born in 1922 and grew up in rural Mississippi during the

Great Depression. He served with the U.S. Army Airborne Engineers during World War II in the South Pacific and received several awards and citations, including the Purple Heart. He earned a professional degree in petroleum engineering at Mines, where he was a member of Alpha Tau Omega fraternity

and Blue Key honor society.

In 1971, Jack bought Goldrus Drilling and built it into one of the largest private energy enterprises in the U.S., operating throughout Texas and South Louisiana. He is said to have pioneered the concept of turnkey drilling and held several patents for drilling tools and processes. A personal friend and confidante of former President Jimmy Carter, Jack influenced the nation's energy policy, working with Congress and the Executive Branch for the deregulation of petroleum product prices. He helped forge compromises among Congress, consumer groups, the oil industry and environmental activists that led to enactment of key elements of the President's National Energy Plan, including the creation of the U.S. Department of Energy and the passage of the Energy Security Act.

Jack's service to Mines continued long after he graduated. He was a member of the Resource Fund Executive Committee 1975–1985, the Board of Trustees 1980–1987, the Trustee Development Council 1998–2000, the Century Society, the Heritage Society and the President's Council. In 1978, he was awarded the university's Distinguished Achievement Medal.

Jack is survived by his second wife, Maxine; children Thomas Warren, Patrick Warren, Cynthia Warren, Michelle Connor and Leigh Wooldridge; stepsons Marc, Hall and Paden Cheshire; 14 grandchildren; and six great-grandchildren.

—Compiled and edited by
Amie Chitwood and Nancy Webb

ALSO REMEMBERED

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J. BRADLEY BENTON '70	July 24, 2011
WILLIAM L. BROWNE '81	October 14, 2011
NORMAN J. CHRISTIE '35	September 26, 1997
RAYMOND J. FERRERA '62	November 5, 2003
GREGORY S. JENKINS '99	March 12, 2009
FREDERICK E. KASTNER MS '70	March 29, 2005
NORMAN KORN '50	October 18, 2011
CHESTER L. LOVE '56	September 28, 2011
ADDISON B. MANNING '40	June 1, 2006
SHRI B.S. NEGI '47, MS '48	July 15, 2001
WILLIAM R. SCHIELE '41	August 3, 2006
WILLIAM B. SCHMIDT '62	April 17, 2006
GILBERT H. SCHOONVELD '57	February 13, 2009
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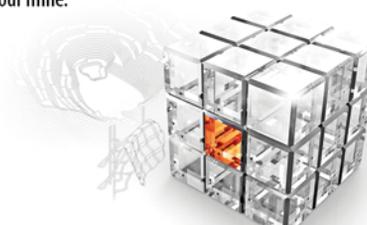
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MINER'S PIC



VALENTINE'S MOON

With the full moon taking place on Valentine's Day this year, photographer Steven August set an alarm in time to capture this shot, taken at 4:42 a.m. on February 14. We were moonstruck; hope you are, too. August's work has been shown in a number of Colorado art shows and galleries.



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