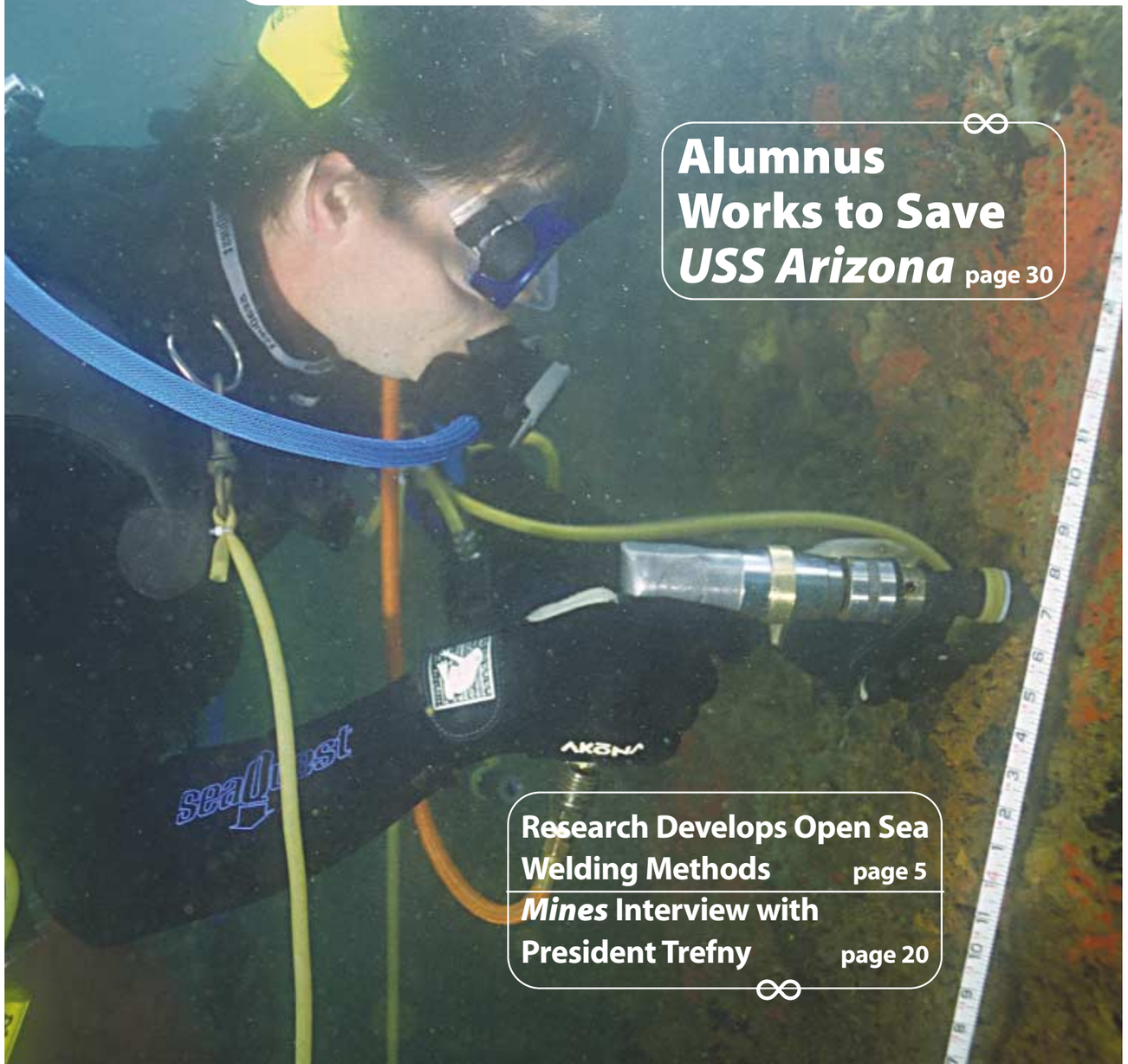
The Magazine of Colorado School of Mines

MINES

Volume 93 Number 1
Winter 2003



Alumnus Works to Save *USS Arizona* page 30

Research Develops Open Sea Welding Methods page 5

***Mines* Interview with President Trefny** page 20

CONTENTS

About Our Cover:

A diver measures corrosion on the *USS Arizona*, submerged in Pearl Harbor. **Donald L. Johnson Met E '50, MSc Met '56** is studying the ship's remains in an effort to better preserve the memorial. Photo by Brett Seymour, National Park Service.

MINES
WINTER 2003

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

Comments and suggestions are welcome. Contact us by writing to MINES, P.O. Box 1410, Golden, CO 80402; or call 303-273-3294 or 800-446-9488, ext. 3294, between 8 a.m. and 5 p.m., M-F, MST; or email *magazine@mines.edu.*

John U. Trefny, President
Colorado School of Mines

John N. Schwartzberg '88
President
CSM Alumni Association

Marsha Konegni, Co-editor
CSM Communications Coordinator

Maureen Keller, Co-editor
CSM Alumni Association

Contributing Writers
Misti Brady
Emily Paton Davies
Elizabeth Hall '02
Leah Kolt
Greg Murphy
Carolyn Reed
Nick Sutcliffe
John Schwartzberg '88

Photography
Misti Brady
McBride Program
Tom Reynolds, Global Divers and Contractors
Brett Seymour, National Park Srvice

Graphic Design
Emelene Russell Advertising & Design

Printing
American Web
CPM Number # 40065056

www.mines.edu
csmaa.mines.edu/alumni

Letter to the Editor

Thanks to CSM

I am very proud of the high distinction with which CSM honored me at the commencement ceremony, December 2002. I have accepted the Mines Medal with great humbleness for two important reasons. First of all, I think that my merits are small in comparison to the unwavering trust and loyalty that CSM has ever evoked to our university since the beginning of our cooperation. I have gained personal friends who not only helped me with the solution of problems but have also become an enriching part of my life. I want to express in public my immense gratitude to my dearest friend at CSM, Dr. Ramona Graves. Without her support, all my earnest intentions and goodwill for our cooperative agreement between the two universities would have failed.

The second reason is a very personal one. Having been born during a terrible war, raised in the period of Cold War and grown older in a period of ever-increasing and escalating terrorism, I have never stopped dreaming the dream of a scientific community that, with mutual tolerance and solidarity, mobilizes its intellectual capacity only for the well-being and not for the destruction of our world. Who else but the young scientific community is called to allow reason to prevail and to curb destructive hatred and intolerance between cultures and nations?

The medium for intolerance and growing hatred is lack of knowledge paired with ignorance. I consider the cooperation with CSM to be a small seed sown for a better understanding between young academics of the United States and Austria. I am pleased to notice that this seed has borne rich fruit. Approximately 50 students from Leoben have studied at Mines and an equal number of Mines students have studied in Leoben. In addition, there have been many visits between petroleum engineering, as well as environmental science and engineering, faculty.

I sincerely hope that CSM will continue to cultivate the partnership with the University of Leoben in the effort to broaden the horizon of the next generation of engineers for the purposes of a better world.

Dr. Brigitte E. Weinhardt
Vice Rector of the University of Leoben
Director of International Programs

Corrections:

Mines magazine regrets that the attribution to Daniel Yergin, author of *The Prize: The Epic Quest for Oil, Money and Power*, was inadvertently omitted from the article "Tracing the Roots of America's Oil Industry" by Gene Tafoya in the Summer 2002 issue.

The Web address for Zome Tools (Fall 2002, "Field Session: From improving knee implants ...to improving third-world economics") is www.zometools.com.

Several readers have inquired about how to reach **Bob Hedlund '75** and the Joint Development Association International, mentioned in the Fall 2002 issue (People Watch, page 19). The group's Web site is www.jdainternational.org.

Maintenance and Repair Welding in the Open Sea

By Elizabeth Hall BSc Eng '02

With the exploration of energy resources pushing into the oceans, engineering structures for oil and gas exploration, production, processing, and transport are a common scene today on ocean waters. These structures exist in the shallow waters of the Gulf of Mexico, off the Brazilian continental shelf, in the Indian Ocean, off-coast West Africa, and in the deep, rough waters of the North Sea. In the lower 48 states of the U.S., sub-sea production of oil and gas is mainly concentrated in the Gulf of Mexico. More than 4,000 offshore platforms and many FPS (Floating Production Systems) and FPSO (Floating Production, Storage and Offloading) vessels currently operate in the Gulf.

Off-shore platform (courtesy of Ing. Faustino Perez)

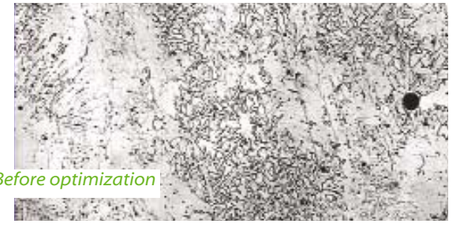
Operation and maintenance of these structures and vessels have become significant to the industry. Repairs of these facilities are necessary due to corrosion, storm loads, damage by vessels, and fatigue; underwater wet welding is becoming more recognized as a viable technology.

Wet welding is often preferred over dry (hyperbaric) welding because it can be mobilized quickly and easily completed in areas where construction of a physical habitat is impossible. Above all, wet-welding repairs can be performed at a significantly lower cost than hyperbaric welding. For the replacement of horizontal K-brace members, dry habitat welding is likely a multi-million dollar project, whereas wet welding could be accomplished at a fraction of the cost. To date, successful wet-weld repairs have been conducted to around 100 m deep water.

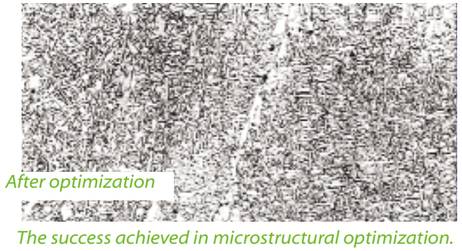
Replacing horizontal K-brace members (courtesy of Tom Reynolds, Global Divers and Contractors)

Underwater Wet Welding Development at CSM

Wet welding is no easy task!
(courtesy of Tom Reynolds, Global Divers & Contractors)



Before optimization



After optimization

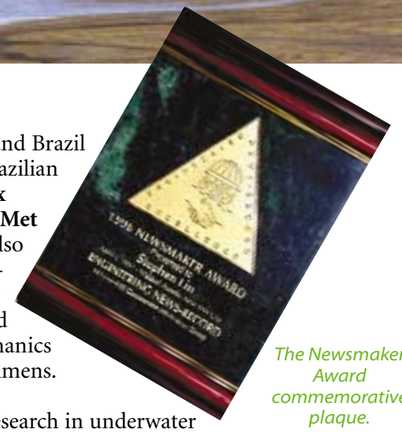
The success achieved in microstructural optimization.

Despite the serene environment and attentive look of the colorful fish, which often participate as nature's observers, welding underwater is not an easy task. The arc (at over 10,000°K) is exposed to the water, which decomposes into hydrogen and oxygen! These two elements are absorbed into the molten steel (at around 2000°C), a whopping 2000 ppm of oxygen and 100 ppm of hydrogen. [As reference, a quality structural steel weld would have around 300 ppm oxygen and less than 5 ml hydrogen per 100g metal.] As such, steel wet welds are expected to contain porosity and experience reduction in ductility and toughness. With the cessation of the arc, the cold water splashes on the weld causing a fast cooling rate and increases in the strength of the weld and excess hardness in the weld heat-affected zone. Porosity also increases with water depth and pressure. Typically, wet welds are classified as Class B welds according to ANSI/AWS D3.6 specification.

CSM's Center for Welding, Joining and Coatings Research (CWJCR) has in the past two decades gained worldwide renown as the leading expert in underwater wet welding technology. Part of the Metallurgical and Materials Engineering Department, CWJCR has conducted multiple joint industry research programs on the utilization of wet welding in repair of offshore structures. CWJCR researchers apply fundamental engineering principles and materials knowledge to understand the problems associated with processing underwater and develop technologies that can resolve the several key issues of wet welding mentioned earlier.

In the late 1970s and early 1980s, CSM professors David L. Olson, **Glen R. Edwards Met E '61**, and David K. Matlock investigated the mechanical performance of wet welds as compared with dry habitat welds. They determined that when uniformly dispersed, fine pores actually pinned the fatigue crack front, retarding its growth rate. In the late 1980s, professors Olson and **Stephen Liu PhD Met '84** studied the rutile-grade consumables for wet welding to explore whether steel wet-weld microstructure could be modified from a coarse grain boundary, polygonal ferrite to acicular ferrite. Beginning in the 1990s, Liu further characterized the rutile-grade electrodes and the oxidizing-grade electrodes. He established joint industry research programs (JIP) with companies including Shell, Exxon*, Mobil*, Amoco*, Texaco, Chevron, Marathon, U.S. Navy, MMS, and Global Divers (* prior to their respective mergers). Global Divers & Contractors was co-principal investigator in the 1990s JIP.) The overall goal of those programs was to further elevate the quality of the wet welds. Specific tasks targeted microstructural refinement (90 percent fine acicular ferrite), hydrogen mitigation (below 20 ml/100g), and porosity minimization (below 1 percent). The effects of consumable composition adjustment were carefully examined.

So far, 10 research students (PhDs, MSs, an exchange student from Delft University and a high school student) have performed wet-welding research at CSM. Current research programs involve international participation from the United States (MMS, CSM-CWJCR), Mexico (IMP/PEMEX), and Brazil (UFMG). The Brazilian collaborator, **Alex Bracarense PhD Met '94** (UFMG), is also investigating wet-welding behavior in fresh water and the fracture mechanics of wet-weld specimens.



The Newsmaker Award commemorative plaque.

For the quality research in underwater wet welding and the practical applications of the technology, Liu's research program was recognized as one of the top 25 Major Engineering Achievements in the construction world by *McGraw-Hill Construction Information – Engineering News-Record* in 1997.

For more information please contact Liu at 303-273-3796, fax 303-384-2189, sliu@mines.edu or www.mines.edu/~sliu.html.

Off-shore platform (courtesy of Ing. Faustino Perez)

Women from Afghanistan

We are Sisters of the World

by Sharon Trefny

Four women from Afghanistan came to the Colorado School of Mines last fall, a special departure from their 12-day official visit to Denver. They were members of a delegation of 18 women who came to the United States for training and development work as part of the initial project of the U.S.-Afghan Women's Council, established in January 2002 and sponsored by the U.S. State Department and Institute of International Education (IIE). Before coming to Denver, they met and dined with President George Bush, as well as Secretary of State Colin Powell. At Mines they spent time with women faculty, staff and students. They were greeted by the president of the School, John U. Trefny, and the president of INTERLINK Language Centers, Ahad Shahbaz, both of whom then left the women to their informal discussions. The men later joined the group for dinner at the president's home. Also invited to dinner were two members of the board of the non-profit organization Joint Development Associates, Inc. (JDA), Tim Steadman and ***Jim Ogg Geol E '52****. A complete list of individuals who attended the discussion/dinner appears at the end of this article.*

From left to right: Ms. Neema Soratger, Lecturer Literature & Language Faculty Ministry of Higher Education; Ms. Shahla Sultani, Staff Member, Ministry of Reconstruction; Dr. John U. Trefny, President Colorado School of Mines; Mrs. Sharon Trefny; Ms. Nooria Banwall, Director of Provincial Relations, Ministry of Women's Affairs; Ms. Fahima Wahedi, Staff Member Interview & Conference Section Ministry of Foreign Affairs; Mr. Ahad Shahbaz, President INTERLINK Language Centers.

After the main course, we retired to the living room for dessert and coffee. Taking me aside, Shirin Jahn [not her real name] grasped my hands. She wanted me to see what could not be expressed through an interpreter. Shirin Jahn's eyes riveted my attention as she flashed through scenes that will engage me forever. I will never forget her eyes, pupils dilating and collapsing as she spoke. Each blink brought a change of scene, and her eyes sizzled anew like lightning crackling through the sky.

"These eyes have seen," Shirin Jahn began, "just this month, the terror of bombs, bodies flying, children lying dead in pools of blood in our streets. I have heard mothers screaming for loss of their children. I watched women fleeing from beatings, mutilations, rapes, humiliations perpetrated by insane men." Pop! Her eyes played out the madness of these unspeakable acts.

"These women come to me," she said. "Every day they form a line of starving mothers begging to feed their children." Shirin Jahn's eyes portrayed a sadness so profound I wanted to weep. "I can only cry with them, for I have nothing to offer them but my tears."

"Sharon," she said, squeezing my hands, "please, do not forget us." Her eyes softened with hope. I held my breath, afraid she might feel my despair, my weakness in not knowing how to help. "Please, never forget who we are, and that we came to you."

Zap! Shirin Jahn's eyes snapped dark, not angry but determined to make me understand. "We have shared all that we have need of with your government," she said. "They have told us to go away, to write a proposal, then come back and then they can help us." She searched my face with penetrating eyes that asked: Could we believe what they said? Who would help us to make them remember these promises?

They came to Colorado for only 12 days to learn how Americans write grants, to learn English, to learn computer skills, to learn how we do things. The women are very smart and they will learn to write a proposal by the time they return to Afghanistan.

I wondered, "How big does this proposal need to be?" We women of Mines had spent a short time talking about their needs, and already we had identified more than any one group, agency or even government could accommodate. They need everything. Start with electricity, water, plumbing and heat. Buildings with roofs, chairs to sit on, desks to write at. Paper and pencils, for heaven sakes! Books, teachers and schools. Food! Clothes, blankets, beds. Roads. Hospitals, doctors. The elimination of landmines so that digging out and building a national infrastructure can begin with relative safety. Safety! Yes, enough security that they can begin to build a government for industry and services.

And another question, "How are we going to communicate with them after they leave?" The women can access only one computer in Kabul. The city provides just two hours of electricity per night. Connecting to the Internet costs $5 a minute. This is a city where an engineer and government worker combined might make $60 a month. There are no phones, no phone lines! There is no postal service! No way to reach them.

It came time for our guests to leave. Shirin Jahn and I were not finished. I wanted to promise something. I wanted to say, "I am so sorry. I want so much to help." I didn't want to let Shirin Jahn go. I might never see her again.

Shirin Jahn's eyes radiated with love and a solemn knowing. She had to leave. She and all of the women looked drained; they struggled to keep to their demanding schedules. We hugged one another not knowing if we would have a future together. We kissed cheeks again and again. As they left, I silently vowed to myself, "Never, never will I forget you, Shirin Jahn!"

It is my great hope that this was the beginning for us. We have already established that we are sisters of the world. The School helped to make connections between these wonderful women and two other interested groups: JDA, created 11 years ago by alumnus **Bob Hedlund Bsc Min '75**, and the CSM student chapter of Engineers Without Borders. We continue to facilitate such connections and to support these two groups in their endeavors, which hopefully will include Afghanistan. We will nurture our relationship with the IIE, which helped sponsor the women's visit to our campus, and we hope to collaborate with the IIE on a proposal for the future.

For the past year a small group connected to Mines has been exploring positive action to help Afghanistan. We hope to continue this effort. From this recent visit we would like to explore the feasibility of projects including student/teacher exchanges, scholarships, a relationship with Polytechnic Institute in Kabul, provision of educational materials, loan of engineers and mining consultations.

We will look for ways to involve the broader community when the time is safe and appropriate, and when we are assured that our efforts will, in fact, reach the people we want to support. In the meantime, I hope that our government will continue to bring security to Afghanistan until the country has established a safe and free government of its own.

If you would like to be added to a list of individuals interested in Afghanistan reconstruction, please e-mail me at strefny@mines.edu.

Women's Round Table Discussion Attendees Fall 2002

Nancy Arneson, International Visitor Program Assistant, IIE Rocky Mountain Regional Center, U.S. State Department

Daud Ayazi, English Language Officer/Interpreter, IIE Rocky Mountain Regional Center, U.S. State Department

Nooria Banwal, Director of Provincial Relations, Ministry of Women's Affairs

Barbara Greadington, Administrative Escort, IIE Rocky Mountain Regional Center, U.S. State Department

Hilde Henderson, Student, Engineers Without Borders, Colorado School of Mines

Deb Lasich, Executive Director, Women in Science, Engineering and Mathematics Program, CSM

Felicia Muftic, Vice Chair, IIE Rocky Mountain Regional Center

Barbara Olds, Associate Vice President, Colorado School of Mines

Laura Pang, Associate Professor, Liberal Arts & International Studies, Colorado School of Mines

Nasreen Sayed, Academic Affairs, Colorado School of Mines

Paula Schmitz, Student, Engineers Without Borders, Colorado School of Mines

Neema Sooratger, Lecturer of Literature & Language, Ministry of Higher Education

Shahla Sultani, Ministry of Reconstruction

Sharon Trefny, President's wife, Colorado School of Mines

Jessica Tylicki, President, Student Chapter of the Society of Women Engineers, Colorado School of Mines

Fahima Wahedi, Interview & Conference Section, Ministry of Foreign Affairs

Tschatschula Keynotes Midyear Commencement

CSM Board of Trustees member Terrance G. Tschatschula was the keynote speaker at midyear commencement ceremonies Dec. 13 in Bunker Auditorium in the Green Center.

More than 250 degrees – including bachelor's, master's, doctoral and professional degrees – were awarded at the ceremonies.

Two honorary degrees were awarded.

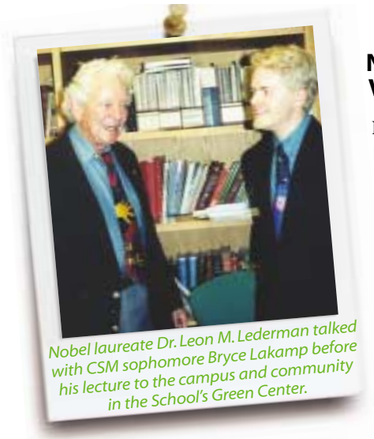
- **Dr. William L. Fisher** holds the Leonidas T. Barrow Centennial Chair in Mineral Resources in the Department of Geological Sciences at the University of Texas in Austin. He is a respected expert in resource assessment, energy research and development policy, and environmental resources.
- **Admiral Richard H. Truly** is director of the Department of Energy's National Renewable Energy Laboratory in Golden. NREL is the nation's premier laboratory for renewable energy research, development and deployment, and a leading laboratory for energy efficiency. He is also executive vice president of the Midwest Research Institute. Retired as a vice admiral after a Navy career of more than 30 years, Truly has had an extraordinary career, notable for its many years of public service.

Two Mines Medals were awarded:

- **Frank Erisman Met E '65** is a leader in maintaining the School's long tradition of excellence. He served for nine years on the School's Board of Trustees, which elected him president from 1996 through 2002. He was also chair of the President's Council and is currently a member of the Foundation Board of Directors. Erisman is a partner in the Denver-based law firm of Holme Roberts & Owen LLP.

Trustee Terrance G. Tschatschula

- **Dr. Brigitte Weinhardt** is the Second Vice Rector of Montanuniversitat Leoben (MUL) in Leoben, Austria. She has been instrumental in building an effective partnership between MUL and CSM that has created a strong exchange program for both undergraduate and graduate students. She is the first woman elected to a vice rector position since MUL was established in 1840.



Nobel laureate Dr. Leon M. Lederman talked with CSM sophomore Bryce Lakamp before his lecture to the campus and community in the School's Green Center.

Nobel Laureate Visits Campus

Nobel Prize laureate Dr. Leon M. Lederman discussed "Science and Simplicity" at Mines in October. "The more we learn about the world, about nature, the origin and evolution of the universe and the fundamental particles and forces, the more simple and elegant it all appears," he explained.

Lederman, awarded the 1988 Nobel Prize in physics for his work on neutrinos, is the former director of the Fermi National Accelerator Laboratory.

Mines sophomores organized this second lecture in the annual Millennium Lecture Series.

An ROTC team from Colorado School of Mines and University of Colorado at Boulder took first place at the 18th Annual Army Ten Miler competition in Washington D.C.

SHORT STAKES

CSM Hosts Children's Diabetes Foundation

Phi Gamma Delta fraternity members hosted a Halloween celebration for the Children's Diabetes Foundation at Denver. Approximately 350 partygoers, both parents and children ages 6 to 8, filled Friedhoff Hall in the School's Green Center. The event is an annual philanthropic project for the fraternity.

Business Expo

More than 40 Golden businesses showed their wares and discussed their businesses with CSM students, faculty and staff at an expo held last fall in the Student Center. Refreshments, activities and door prizes were available at the event sponsored by the Greater Golden Chamber of Commerce.

Golden Chamber Business Expo

Mines freshman Christopher Anderson receives a check from Michael Watson, CSMAA executive director. Anderson won the Colorado Science Fair his senior year of high school. Because he decided to attend Mines, he was awarded the Science Fair Scholarship from the CSM Alumni Association. He receives $500 a semester for his freshman and sophomore years.

Mines Named One of 100 Best Values

Colorado School of Mines was ranked 47 out of the top 100 Best Public College Values, according to *Kiplinger's Personal Finance* October 2002 issue.

CSM was recognized as a school that offers small class sizes and a student to faculty ratio of 13 or less. The School was also acknowledged as a top best value in the category of schools with less than 4,000 students.

According to *Kiplinger's*, their exclusive survey of more than 500 U.S. public colleges and universities reveals great schools with reasonable price tags from coast to coast.

Researchers Receive $5 Million Grant

Mines researchers recently received a $5 million, five-year grant from the Office of Naval Research for a Multidisciplinary University Research Initiative (MURI) to study the fundamental chemistry and physics of direct-oxidation fuel cells, which can use hydrocarbon fuels such as natural gas directly.

MURI is a program designed to address large multidisciplinary topic areas representing exceptional opportunities for future Department of Defense applications and technology options. CSM is the lead institution, but shares the grant with the California Institute of Technology and the University of Maryland.

Preston Prunty (center) of the Students in Space program joins Assistant Research Professor Angel Abbud Madrid (left) and CCACS Director Frank Schowengerdt at a K-12 space education program held on CSM's Brooks Field.

CCACS Annual Meeting

Dr. Eugene Trinh, director of the NASA Microgravity Research Division, spoke this fall at the annual meeting of the Center for Commercial Applications of Combustion in Space (CCACS). Trinh was a payload specialist astronaut on the Space Shuttle Columbia SpaceLab mission.

The Great CCACS Model Rocket Shootoff also took place during the meeting. Held on CSM's Brooks Field, the event gave elementary, middle school and high school students from the Denver area, including Golden, the opportunity to fire model rockets they had constructed as part of a Denver area space education program.

Li Zheng, deputy director of Zhuzhou Cemented Carbide Group Corp., Ltd in the People's Republic of China, Jin Hui Zhou, Ph.D. candidate in materials science and CSM President John U. Trefny meet to award Zhou a Li Foundation Scholarship.

Energy Research

The Colorado governor's Office of Energy Management and Conservation (OEMC) has announced the funding of a center to enhance energy-related research and educational programs for the state.

The Colorado Energy Research Institute (CERI), housed at CSM, will work with the public, the state's universities, government and industry to ensure adequate energy supplies at a reasonable cost for advanced energy related technology and policy issues affecting domestic, agricultural and industrial use.

CERI will also lay the groundwork for Colorado and CSM to elevate their leadership in energy policy and technology development.

Initial funding for CERI includes a $225,000 grant from the OEMC, with matching funds from the School.

CERI's goals include the following:

- Facilitate economic development related to the energy industries, while also promoting energy conservation
- Support technology partnerships between industry and higher education in the state, as well as aggressive commercialization of ideas and inventions
- Create an "Energy Prize" to stimulate innovative technical solutions, encompassing both conservation and new energy technologies
- Host forums, workshops and conferences to provide specialized education in energy issues for policy makers at local and state levels
- Create an information database for use by local and state officials for informed decision-making on legislation and regulation
- Conduct outreach activities to inform the Colorado electorate on energy matters.

Originally, CERI was established in 1974 at Mines by the Colorado Legislature. In turn, it was instrumental in attracting to Golden the Solar Energy Research Institute, now the Department of Energy's National Renewable Energy Laboratory.

"The energy expertise at Mines and at Colorado's other research universities – coupled with the presence of the National Renewable Energy Laboratory in Golden – affords a unique opportunity for the state to become a national leader in the development of energy policy and technology," says CSM President Dr. John Trefny.

Music Program Finds Home

CSM has a new music house. "The Liberal Arts and International Studies (LAIS) Music House at 16th and Elm is a most welcome home for the music program, creating an excellent learning and music practice environment for students," said LAIS Director Arthur Sacks. "The house has also helped to establish a clearer identity for the program. We believe this to be a wonderful investment, and we are grateful to all those in the administration who have helped make this dream a reality."

Music Director Bob Klimek is enthusiastic also. "The new music house gives all students with an interest in music a place to rehearse as individuals or as part of a larger group. We have three pianos, four practice rooms, and four computer stations with music tutorials and pro-tools available. This is a place where you don't have to worry about disturbing anyone around you. It's also a great meeting place for campus musicians to gather and practice, play, arrange, or compose music," he said.

CSM Chamber Singers gather in front of their new home.

A Student Center display, set up by the Muslim Student Association, informed the community about Islam and the principles by which Muslims live. "An important message of the display was that Islam does not condone or support acts of terrorism," said Leslie Olsen, international student adviser.

Schlumberger's Visiting Professor in Geophysics

Lesley Evans, a Schlumberger visiting professor, is the only female faculty member in the Department of Geophysics.

"It is a joy to come and teach at Mines. In addition to teaching, I have been involved in the Women in Geophysics Mentoring Program (WIG) and will continue my involvement after returning to industry," said Evans.

Schlumberger recently sponsored a lecture, "Technology in the Search for Oil & Gas," given by Schlumberger Fellow Craig Beasley.

Lesley Evans

CSM Alumni Association

Officers

John N. Schwartzberg BSc Met '88
President
Arthur T. Biddle Met E '61
President-elect
Alan J. Mencin BSc CPR '79
Treasurer
Kathleen A. Altman BSc Met '80
Secretary

Directors

Scott R. Clark BSc Pet '85
Edwin H. Crabtree III EM '60
Brenda J. Eckles BSc Geop '94
Carole D. Graas PhD Mat Sc '89
Hugh W. Evans EM '49
Roxann M. Hayes BSc Eng '95
Robert Kendrick EM '54
Blase A. Leven MSc Geol '89
Kimberly M. Lewis BSc CPR '92
Amy D. Pflaum BSc Eng '95
Pat Phillips Met E '61
Laurence G. Preble PRE '61
Jeffrey S. Suiter BSc Geop '91
Julie D. White BSc CPR '93

Staff

Michael Watson
Executive Director
Janet Blair
Administrative Assistant
Kathy Breit
Deputy Director
Maureen Keller
Editor
Bob Pearson PE '59
Sections Coordinator
Jo Marie Reeves
Records

P.O. Box 1410
Golden, CO 80402
Office: (303) 273-3295
(800) 446-9488, ext. 3295
Fax: (303) 273-3583
E-mail: csmaa@mines.edu

www.alumnifriends.mines.edu

West

Alaska

Heather Boyd of the Admissions Office met with potential Mines students, their parents and several alumni in Anchorage in early November. **Becky Brown BSc Math '92** organized the event. Pictured from left, **Bob Schultz MSc Pet '98**, Kara Levinson (Chugiak HS '03), **Patty Chamberlain BSc CPR '89**, Heather Frenier (Service HS '03), Alex Lamont (Service HS '03), **Kai Binkley BSc Pet '02**, Becky Brown, "Terry" Hong Chih Hunng (Service HS '03), **Brian Hayden BSc Eng '01** and Zack Kempler (West HS '04).

Washington

Mike McClave Geol E '66, Kim DeRubertis Geol E '61, John Hite Geol E '61 and **John Neff EM '53** socialize at the Mines alumni breakfast in December during the Northwest Mining Conference in Spokane. **David Hebb MSc Min Ec '73** and **Wally McGregor Geol E '52** organized the event.

California

The Mines women's soccer club enjoyed dinner with alumni and friends at The Sizzler in Bakersfield, Calif., during the National Club Soccer Championships Nov. 21. The event was organized by **Joe Nahama MSc Pet '90**.

The Mines women's basketball team shared pizza with alumni and parents in Oakland, Calif., at Holy Names Tournament Nov. 22.

Southwest

Arizona

In Phoenix, 52 Miners and guests enjoyed the Diamondbacks clinching their division championship Sept. 28, at the expense of the Colorado Rockies. Upcoming events include the April 19 "Spring Fling" barbeque and picnic, a golf tournament in July (date TBA), Rockies-Diamondbacks baseball Sept. 14 and the annual CSMAA Olympics Nov. 8.

South Nevada

The Mines wrestling team, parents and alumni shared a moment at the Cliff Keen Wrestling Tournament in Las Vegas Dec. 5.

International

Cameroon

Elizabeth A. Kostiuk BSc CPR '85 and **Joey Tucker BSc Min '77** conducted a meeting of the West Central Africa alumni group Dec. 4 in Douala, Cameroon. Meetings are hosted by Tucker on an impromptu basis each time Kostiuk travels to the region for business. Both are assigned to a development project in Chad and Cameroon. Despite lacking an official charter and formal recognition as an Alumni Chapter, both are true to the adage that a reunion is held each time Mines graduates meet in the furthest corners of the globe.

Kostiuk and Tucker

Japan

Mines alumni attended a reception for CSM Professor John Tilton and his wife at the Toranomon Pastoral Hotel in Tokyo Nov. 25. The event was hosted by the mineral economics section of the Mining and Materials Processing Institute of Japan and CSM alumni. The following day, Tilton gave a presentation from his book, *On Borrowed Time?*, at the Metal Mining Agency of Japan, which was sponsored by the Mining and Materials Processing Institute of Japan (a professional society) and the Metal Mining Agency of Japan (a government agency). The presentation (and the book) explore the on-going debate over long-run availability of mineral resources. Pictured back row from left, Toshihide Ito, **Yukou Yasunaga MSc Min Ec '93**, Shunzo Ishihara, Noboru Hida, John Tilton, Elizabeth Tilton, Daisuke Saji, and **Masao Tsuda MSc Min Ec '82**. Front row, **Atsushi Akaike PhD Min '99, Kenji Sawada MSc Min Ec '83, Gen Seike MSc Min Ec '90,** and **Shinsuke Murakami MSc Min Ec '00**.

For more pictures of Alumni Association events, check out the Web site at csmaa.mines.edu

Staying connected

CSMAA Forging New Partnership with School

Dear Fellow Mines Alumni and Friends of the School,

A few years ago, the CSM Alumni Association commissioned a management study to look at the way our organization goes about its business. It was a lengthy report and, some might say, a sure cure for insomnia. However, that report contained some good observations and made some excellent points. Unlike many similar reports, something good – no, great – is actually coming about because of it.

An eye-opening finding of the so-called Miller Report was that in the community of Mines, the Alumni Association had no "place at the table." We were perceived as being "over there" somewhere in terms of how the rest of the campus community thinks and functions. At the same time, the School has had no clear vision of an alumni-relations program.

Before us lies an exciting and unique opportunity to help expand and improve alumni relations at Mines. We are in the process of working with CSM President John Trefny and his administration to define a partnership that will create a closer working relationship between the Alumni Association and the School so we can do a better job of maintaining lifelong connections to our alumni and friends in a more effective fashion.

A task force consisting of representatives of the Alumni Association and the administration has been working on this partnership for almost a year. The task force is modeling this partnership on a joint venture in which two independent organizations create a third organization to achieve a common goal. The Alumni Association will remain an independent organization with its own Board of Directors, but will partner with the School to create and carry out a comprehensive plan for alumni relations.

During the past few years, the Association has undergone a dramatic change in the way it views itself and the community to which we belong. It began with the management study commissioned by CSMAA President **Mary Pott BSc CPR '83**, continuing with the Umbrella Committees coordinated by President **Dick Beach Geol E '66**. This process was advanced by the strategic plan spearheaded by President **Vicki Cowart MSc Geop '77**, and resulted in a comprehensive business plan unveiled under President **Ed Crabtree EM '60**.

The power of the thinking and creativity that went into that process is truly awesome. From it emerged a revised mission statement for CSMAA and renewed understanding of the importance of our contributions to our constituencies: the students, the School and its administration and faculty, and the alumni. We developed a business plan featuring what we do, why we do it, how we do it, and what it costs to do it. A vision of opportunity to further enhance the quality and reputation of Mines and its alumni became clear.

At the same time, the School has begun the process of developing a strategic plan for the new millennium. A lifelong commitment to its students is a main feature of the administration's vision. The School recognizes the importance of a strong and effective alumni relations program for the continued success of our alma mater.

The Alumni Association and the School were headed in the same direction. Our paths came together and we jointly undertook the challenge to work together. We found that we could – and were – already working together on several fronts including joint publication of *Mines*, cooperative operation of the alumni and friends database, and establishment of the Alumni Admissions Representative program. Other examples of things we do together are not hard to find.

So what does this mean for the Alumni Association? In short, it means opportunity. We now have an opportunity to have a "place at the table." We have an opportunity to help guide the School's direction as together we create a new program for alumni relations – a program that is bigger, better, more effective and is responsive to the needs of the students, the School, and the alumni. We have an opportunity to participate directly in shaping the future of the Colorado School of Mines.

The process continues. As of this writing, the task force has molded a basic plan for affiliation, most of which has been welcomed by the appropriate representatives of each body. While nothing is set in concrete and the proposal currently before the task force still has a few key points to be resolved, I remain optimistic that the Alumni Association and the School will find the common ground on which to improve their relationship and, ultimately, to fulfill the missions of each organization.

In the coming months, as president of CSMAA, I will be letting you know more about this partnership. I am excited about this wonderful opportunity we have and ask that you share my enthusiasm for our future. I am looking for a better Mines in the future and I'll bet all of you are, too. This is our way of helping to make it happen.

With best regards,

John N. Schwartzberg Met E '88, P.E.
President, CSMAA

Family of Mines Scholarships Awarded

By Leah Kolt

The Mines Administrative Faculty Council has announced the awarding of the first Family of Mines Scholarships.

The council started this program last year to provide scholarships to the children of Mines employees who are undergraduate students here, according to Carol Chapman, chair of the scholarship committee.

The kick-off event for fundraising was a "First Blooms" luncheon and silent auction held last May.

The following CSM students received scholarships:

- Dennis "Jason" Dardano of Lakewood, the son of Cherie Dardano, who works in the Special Programs and Continuing Education office. Jason is a sophomore majoring in engineering physics. (top left)
- David Liu of Lakewood, son of Stephen Liu, a professor in the Metallurgical and Materials Engineering Department. David is a senior majoring in metallurgical and materials engineering. (lower left)
- Lisa McDowell of Arvada, daughter of Gary McDowell, in Distribution Services. Lisa is a freshman who has not yet declared a major. (top right)
- Piers Wendlandt of Golden, son of Mines faculty members in the Department of Geology and Geological Engineering, Wendy Harrison and Rick Wendlandt. Piers is a sophomore majoring in mining engineering. (lower right)

For more information about the Family of Mines Scholarship fund, please contact Carol Chapman, secretary/treasurer of the Administrative Faculty Council, at 303-273-3280.

Alexandre Gret

Monitoring the Unpredictable

By Misti Brady

Earthquakes, landslides and volcanic eruptions are natural events with destructive potential. Roelof Snieder and John Scales, professors of geophysics, with graduate students Alexandre Gret and Huub Douma, have created a Coda Wave Interferometry (CWI) technique to monitor change within these and other unpredictable occurrences.

"The technique we've developed is very simple," said Snieder. "We send a wave through an object and have it bounce back and forth many times. By tracking the wave's movement we are able to determine a change within an object as small as 0.1 percent."

CWI could potentially be used to inspect:

- Airplane wings for the formation of cracks
- Nuclear reactor environments to detect loose welding
- Mine tunnel roofs for integrity
- Fault zones
- Radioactive waste disposal sites
- Hydrocarbon reservoirs.

"The difficult part of our research is selecting applications. There are so many possibilities," said Snieder.

According to Snieder, CWI differs from existing methods that are based on line-of-sight, where the wave moves from point to point, instead of repeatedly bouncing back and forth.

Researchers currently rely on wave experimenting to monitor change. In this process a computer image is created from recorded waves. The images are then compared to others taken previously. However, this technique is not precise and generates errors. By comparing two unreliable images the errors are magnified. This is the basic technique used in the oil industry to monitor reservoirs.

By using CWI, researchers are able to directly measure the change in the medium, instead of reconstructing an image, therefore obtaining a direct measure of the medium's change. "CWI could be combined with existing seismic techniques to more accurately plan the timing of repeat surveys," he said.

"Most people think that the oil industry's big challenge is finding the oil. It's not," said Snieder. "The challenge is getting the oil out. When a reservoir is drilled, only 10 percent to 20 percent of the oil is extracted. The trick is to boost that to larger values by adding pressure and changing other variables. The reservoir must be monitored when it is producing because this process is similar to conducting surgery with your eyes closed."

Snieder's research group is highly interested in collaborating with other parties to make these applications operational.

This work is supported by a three-year grant from the National Science Foundation and was recently published in *Science* (vol. 295, p. 2253).

Mines Interview with President Trefny

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

***Mines:* Dr. Trefny, what first drew you to Mines 26 years ago?**
Trefny: I was attracted to Mines because of its clear focus on engineering and science. Also, graduate programs were being developed. The physics Ph.D. program had just been approved. I was excited about being part of an institution that was on the move.

***Mines:* You've seen a lot of changes since then, but what are the enduring characteristics of the School ?**
Trefny: The focus and the quality. At Mines, programs, people and activities relate to one another because we have a relatively small student body and a well-defined mission. I think that connectivity is a source of great strength for the institution. It's quite unique among universities. Even in small liberal arts colleges you find a larger diversity of programs. At Mines, we have a central theme of human and natural resources and every program here relates back to that central theme and connects to it. Also, we have maintained quality, even as we take on more. With every new program, our first consideration is whether we can do this with excellence. Can we really make a contribution that makes a difference?

***Mines:* What advantages does Mines offer today's students?**
Trefny: Students have the advantage of a small campus that is very personal. They can have personal relationships with faculty members, as well as fellow students. At the same time, because we are focused and concentrated in our academic efforts, we can be very effective. The high quality of our programs has a lot to do with specialization.

***Mines:* The School is very specialized, but we live in a rapidly changing world. How does Mines fit into the future needs of society?**
Trefny: Many of the most worrying political problems in the world today stem from inequities in standards of living. The development of natural resources is a fundamental step toward raising quality of life for people. This is our business. I think Mines can play a very meaningful role for the world in the future.

***Mines:* Do you think Mines alumni view the School in a similar light?**
Trefny: Certainly. I talk to many retired alumni and our conversations are frequently retrospective. Looking back on their careers, whether in mining, petroleum, any other engineering discipline, or applied science, they can say they really made a difference because they created opportunities and wealth. In fact, these discussions have led me to start talking about the School in terms of our "noble purpose," which is really to contribute to a better world in the future through our special capabilities.

***Mines:* These are challenging times for higher education, particularly public institutions. How will the School maintain strength in the future?**
Trefny: We have identified a number of what we call "focus areas for preeminence." These focus areas have emerged from the strategic planning process and will help define the School's growth in the future. The field of engineering education, which is our central purpose, is one focus area. Others include energy; environment; materials; computational science and engineering; and finally mining and underground construction, along with their related fields. These are areas where Mines has special capabilities and a longstanding reputation. They relate to research and teaching across the entire campus. The field of energy includes fossil fuels, renewable energy technologies, economic policy and management. There is similar breadth in the other focus areas as well. We aim to continue building on our historical strengths, while forging a path for the future.

***Mines:* What bearing has the Exemplary Institution Bill had on planning?**
Trefny: It's given Mines a degree of autonomy that is unique among public universities, not only in Colorado but nationally. We now have greater license to chart our future. The Board of Trustees can approve new degree programs and set fees, and we can negotiate appropriate reporting requirements with the state. We remain a public institution and we take our responsibilities to this state very seriously, but because of our uniqueness in terms of size, focus, well-defined mission and sense of identity, we were given this opportunity to act a little more independently.

***Mines:* What else would you point to as significant recent developments at the School?**
Trefny: The Abu Dhabi National Oil Company approached us about three years ago with plans to create a university in Abu Dhabi that would provide workforce training for their petroleum industry. About a dozen universities with strong petroleum

engineering programs were similarly approached. After a year of intense competition and scrutiny by the Abu Dhabi National Oil Company and its multinational partners, Mines was selected as the sole contractor. It's an educator's dream to build a whole university from scratch with all the necessary resources provided. It doesn't happen very often. I think it's a testimony to the quality of what happens here in Golden that we were selected by a group halfway around the world. The only criterion we were given was that the new Petroleum Institute has to be of a quality similar to Colorado School of Mines.

I'm also optimistic about the Center for Engineering Education, which was established in 2000. We are one of only four centers for engineering education in the entire United States. It is a natural thing for us to do. There are many complex issues in engineering education and this center will help us more purposefully address them, while providing leadership to the country and the world. The center has attracted national attention. It's realized several seven-figure grants and contracts just in the last year-and-a-half.

***Mines:* Mines is now engaged in a major fundraising campaign. What is the importance of this campaign to the future of CSM?**
Trefny: People are really the heart and soul of this institution. We wish to continue attracting the most purposeful, talented students and faculty. There is a lot of competition for such people and so we need to be able to offer reasonable compensation packages and support, along with modern technology and facilities. The main campaign goals are concentrated on fellowships, scholarships, various levels of endowed professorships, support for key facilities and programs, and capital development, the largest piece of which is the Wellness Center. The campaign is one of the mechanisms that will ensure excellence going into the future. Private support provides the margin of excellence that is absolutely essential if we're going to realize our potential—to serve the state, the country and the world.

***Mines:* What is the significance of the title of the campaign, Transforming Resources: The Campaign For Mines?**
Trefny: I think it's a great name. Of course, it's a play on words. Mines is concerned with the discovery, extraction and development of natural resources—transforming natural resources. Then again, as an educational institution we are transforming human resources and so the name captures the School's mission from a more global perspective. Also, the fields we serve, the natural resource industries particularly, are evolving rapidly and the name captures some of how Mines is changing in response to the needs of society. Finally, the name communicates how we are seeking the resources that will enable Mines to better fulfill the School's mission in a rapidly changing society.

***Mines:* Why should alumni be excited about the opportunity to participate in this campaign?**
Trefny: Because they have spent their careers working for the same "noble purpose" that this institution supports as a whole. We have a history of graduating people who have gone out and made a difference in the world. Now we're inviting alumni to help the School meet the challenge of carrying this into the future. Mines has tremendous capabilities and, therefore, I think it has serious responsibilities to make a difference in the world, to take on the hard challenges, and to be at the table in partnership with other segments of society to try to solve these very serious problems. I think there are few institutions that have such a strong sense of identity that they could articulate such a focused purpose. I would hope that our alumni can see the potential of this institution and will take pride in investing in its future.

***Mines:* Would you elaborate on the plans for a new Wellness Center?**
Trefny: Approximately 85 percent of the student body participates in sports and athletics. In addition to contributing to a person's general well-being, there's a tremendous amount to be learned on the playing field, whether in varsity sports, club sports, intramural sports, or just recreational activities. You learn a lot from working with other people, about meeting challenges, and stepping up to the plate. So we are working hard to enhance the opportunities for our students, faculty and staff with respect to sports and athletics. We're hopeful that we will be able to build the Wellness Center in the next few years. It depends on three sources of funding. We would hope that the state will support it with capital construction

funds. In a referendum last fall, students voted overwhelmingly in favor of raising their fees modestly in order to support bonds that will cover about a third of the cost of the Wellness Center. The remainder would be raised from philanthropic sources, which is why it is a major part of the campaign.

***Mines:* Given the pressures of being a university president, how do you relax?**
Trefny: I used to play golf, but I don't find much time anymore. I think I handle stress not through any overt mechanisms like running 10 miles every day, but somehow internally. I think I relax because I love my job and because I'm inspired by the possibilities of this institution. Sure, there's a lot of stress involved in it, but that's totally overshadowed by the potential and by the good things we might be able to do.

***Mines:* Of all the duties you perform at Mines, what do you find most rewarding?**
Trefny: Officiating at commencement. It is a very happy day for the graduates who are leaving this school and moving on into the great unknown with all the hopes and promises of the future. It's a happy day for their parents too. You can see the pride on their faces and also on the faces of the faculty. To see the many flags displayed representing all the countries from which the graduates have come reminds me of the School's global reach. I find it very meaningful. The day marks what we're all about here—educating young people and then sending them on to do their work in the world.

A Golden Find in Alaska

By Gregory Murphy

Senior volleyball player Laurie Alzheimer loves playing volleyball. In fact, she loves the game so much that she traveled more than 2,000 miles away from home in order to play at the collegiate level.

During her time in Golden, Alzheimer has compiled one of the most brilliant careers in program history. But she almost never came to Mines.

"I was hesitant about coming to Mines at first because it was all engineering," Alzheimer recalled. "And since I wanted to go on to law school after graduation, I wasn't sure if it was the place for me." In addition to selecting a predominantly engineering school, Alzheimer knew that she would be leaving her family far behind in Alaska if she chose to come to CSM. But in the end, she decided to become an Oredigger.

"It was definitely a big change for me at first since I didn't have any family here," Alzheimer said as she recollected her first few months at CSM. "But Coach (Head Coach Michele Harris) and the other players were so warm and friendly to me that it made the entire process much easier."

It appeared that Alzheimer felt right at ease her first season on the court as she was named the Rocky Mountain Athletic Conference Freshman of the Year and also earned Second Team All-RMAC accolades. In 113 games as a freshman, she put up astonishing numbers for a rookie as she led the team with 370 kills and 3.27 kills per game. In addition, she also finished second on the squad with 296 digs and produced 49 blocks, 23 assists and 16 service aces.

"I just went out and played volleyball and had a lot of fun my first year," said Alzheimer, who was named the 1998 Gatorade Player of the Year in Alaska as a high school senior. "It was a big shock to me how well I played and all the awards I received that year."

What made Alzheimer's freshman year even more special was that she entered the CSM volleyball program with four other freshmen. "I came into the program with the expectation of graduating with those girls I came in with," Alzheimer said. But that would not happen.

After compiling outstanding sophomore and junior seasons on the court, Alzheimer was faced with the dilemma of playing her final season of volleyball as the only senior on the Mines roster. As a team co-captain in 2002 along with junior Sonia Hesseltine, Alzheimer was responsible for helping teach the young CSM squad this season. Of the 11 players on the roster, six of them were freshmen.

"I feel very old," Alzheimer joked. "But this season has also been a tremendous learning experience for me. I have always had girls on the team who were older than me, but that wasn't the case this season. I had to be a leader both on and off the court. I wanted to share my knowledge of the game with all the younger girls this season and I hoped they learned that you can never get discouraged or stressed out because it won't help you at all in life."

After graduating in May with a degree in chemical engineering, Alzheimer hopes to work for a few years before going to law school with the ambition of becoming a patent attorney.

"I have met some incredible individuals during my time at Mines," Alzheimer said. "My four years have been both challenging and fun and I wouldn't trade them in for anything."

Mines Soccer Enjoys Record-Setting Season

Despite winning both the Rocky Mountain Athletic Conference regular season and tournament championships, the Mines men's soccer team was on the outside looking in when it came to the NCAA Division II Tournament.

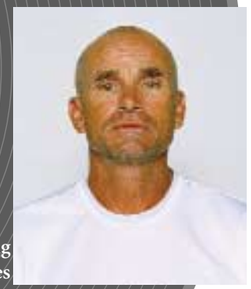
Mines was left out of the postseason tournament since only the top two teams in the Midwest Region earned bids. With Incarnate Word and Midwestern State both undefeated and boasting regular season wins over the Orediggers, there was no slot in the national tournament for CSM.

However, the squad did enjoy a record-setting season under fifth-year Head Coach Frank Kohlenstein as he guided Mines to a single-season school record 16 wins against four losses and one tie. When the team kicks off the 2003 season, it will be riding a nine-game unbeaten streak after CSM closed out the regular season by going 8-0-1.

The Orediggers opened the season with five straight wins and vaulted all the way to the No. 4 spot in the national rankings and the top spot in the Midwest Region. Included in the win streak was an opening night 5-2 victory over Tampa, the defending Division II National Champions, and a 4-3 overtime victory at Fort Lewis. It marked the first time since 1996 that CSM had knocked off the Skyhawks, a span of 10 matches.

Following a midseason slump which saw Mines go just 3-4, including two one-goal losses, the team rebounded by going unbeaten in its last nine matches (8-0-1). Mines rounded out the season by defeating Fort Lewis 4-1 to win its first RMAC Tournament Championship since 1996.

By Gregory Murphy



CSM Head Coach Frank Kohlenstein earned his 300th career victory on Sept. 20 as Mines defeated UCCS, 3-1, at Brooks Field.

MEN'S BASKETBALL

The Oredigger men's basketball team is off to its best start in School history and stands at 15-2 overall and 9-0 in the RMAC. In addition, Mines is ranked fifth in the North Central Region, the highest ranking in school history. Sophomore guard Stephen Bahl is the leading scorer in the conference and is also ranked seventh in the country at 24.4 points per game. CSM is currently 7-0 in Volk Gymnasium this season and has topped the 100-point mark three times at home this season.

SWIMMING

Several CSM swimmers have produced personal-best times this season for second-year Head Coach Dave Hughes. Senior Brooks Masterson leads the men's squad as he has already qualified for the national championships, while junior Gretta Simpson is provisionally qualified for the women's team.

WOMEN'S BASKETBALL

The Mines women's hoops team stands at 2-10 overall and 1-4 in league play this season. A pair of freshman have led the Oredigger's in the early going this season as forward Heather Angel is first on the team in scoring (8.9 ppg) and second in rebounding (6.1 rpg), while center Ashley Gronewoller is second in scoring (8.1 ppg) and first in rebounding (6.8 rpg)

WRESTLING

The CSM grapplers stand at 0-2 this season, but have had some outstanding performances in tournaments. Senior 184-pounder Mark Dubrovich claims a 17-5 mark and has won three tournament titles. In addition, senior 165-pound transfer Greg Chirieleison is 15-7 and has posted a second and third place tally, while sophomore 157-pounder Peter Jenson ranks among the conference leaders with nine pins.

Globetrotting with McBride

By Misti Brady

Orchids lightly drooping over the windowsill of a bamboo hut perched on a mountain, overlooking a pristine lake covered in pink water lilies at the Thaleh Noi Wildlife Preserve in southern Thailand… this is a scene described by Brooks Masterson, a senior McBride Honors Program student, who globetrotted to Asia with 18 other Mines students, also from the McBride program.

Covering six countries in 29 days, these students immersed themselves in the rich, diverse cultures of Singapore, Cambodia, Vietnam, Hong Kong, Thailand and Malaysia.

They not only appreciated these lands from the perspective of American students, but from that of engineers. "Engineering students tend to look at the world in terms of how it works and what really drives the culture, whether it's industry or mining or infrastructure," said Masterson. "We really have a different outlook on those things, just from our educational background."

Visits to several universities reinforced the similarities between the engineering education received at Mines, the University of Malaysia and Mahidol University in Bangkok. "Their textbooks and curriculum are almost identical," said Masterson. "However, the technical support is much different. The computer labs were much more outdated than those at American universities."

The contrast between the technological influences in industry and the lack of technology in the people's daily lives surprised some students. "We saw small homes without plumbing or electricity and then saw microchip production facilities nearby," said Masterson. "It certainly changed my perspective. As a Westerner I felt materialistic, but it made me realize what else is out there."

Despite the differences, he fell in love with Thailand. "I spent a lot of time in Asia devising a plan for how to come back permanently. I decided that as an engineer, I'd like to expand the information technology capabilities, bringing the Internet to individual households," he said. "There's more opportunity to create change in a developing country, because there's more room for improvement."

In addition to the serious engineering aspects of the trip, students explored the culture by sampling the cuisine. "One student ordered pigeon in Saigon. He thought it would be defeathered, and it was, but it came out neck, head and all with a smile on its face. It still might be chirping," said Masterson.

"Without McBride I wouldn't have ever had these experiences on my own. I joined the program because I wanted the opportunity to travel to Southeast Asia and be exposed to different cultures," said Masterson. "I can't wait to go back!"

For additional information on the Guy T. McBride Jr. Honors Program in Pubic Affairs for Engineers see www.mines.edu/academic/mcb_honors/.

Mines Kicks Off Fundraising Campaign

Colorado School of Mines has announced the largest fundraising campaign in the School's history. *Transforming Resources: The Campaign for Mines* aims to raise $125 million for the School in student scholarships, faculty support, capital projects and academic programs. When completed, *Transforming Resources* will nearly double the size of the Mines endowment.

The campaign was formally announced Feb. 22 at a black tie gala attended by more than 200 members of the Mines community. Traveling from all parts of the country, guests enjoyed an elegant evening in Volk gymnasium, specially decorated for the occasion. Following dinner, President John U. Trefny described a strategic vision for the School, outlining the importance of the campaign to the School's future: "Mines is presented with a wealth of opportunity. Issues of global development and sustainability which are of increasing concern to people everywhere, relate directly to those fields in which the School is an international leader. *Transforming Resources* will help harness Colorado School of Mines' extraordinary intellectual capability in the noble purpose of building a better world." He described six focus areas for preeminence that will help guide institutional development and resource allocation in the future. Taking into consideration the School's greatest strengths and the emerging needs of society, these fields include energy, materials, minerals, engineering education, the environment, and computational science and engineering.

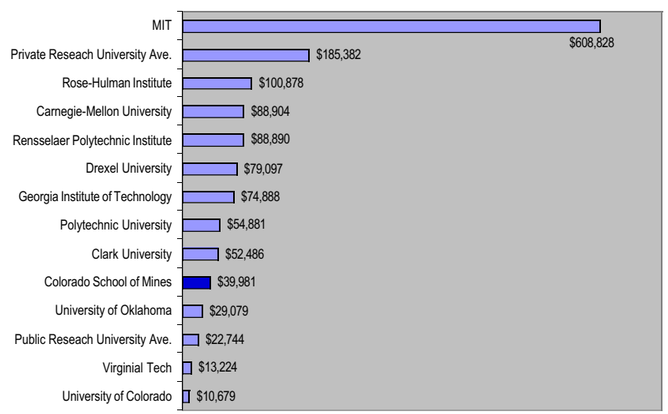
Although the campaign has just been publicly announced, the School initiated its first phase in July 2000. Since that date, discussions with major donors and longtime supporters of the School have resulted in more than $60 million in gifts and commitments. This follows a trend of increasing private philanthropic support for Mines. Over the past 10 years, gifts from alumni, friends, corporations and private foundations have averaged $15 million. During this same period, the School's endowment has grown from $17 million to $115 million.

Trefny emphasized the role these investments play in maintaining the quality of students' educational experience and the School's ability to compete. He added that while the School is ranked 15th in endowment per student among public universities, the size of the institution and the greater-than-average costs of a technical education must be taken into consideration: "We offer a rigorous education in engineering and applied science in the context of a small college campus. There is no doubt that our small size enriches the experience for students, but it also requires substantial investments to maintain the quality of our programs."

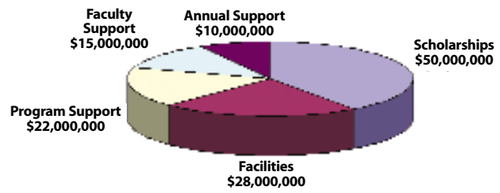
In addition to increased philanthropic support, the School has successfully broadened its revenue sources in other ways. The Exemplary Institution Bill, passed by the Colorado Legislature in 2001, has given Mines a greater degree of autonomy to establish new programs, to set tuition rates, and to pursue opportunities consistent with its statutory role and mission. Strong research programs attracted more than $30 million in sponsored funding in 2001-2002—the largest sponsored research funding year to date. Furthermore, the School's Technology Transfer Program is on the verge of spinning off its first private corporation and is working on numerous additional projects. On this subject, Trefny points out, "The economic paradigm for public universities is changing. It is imperative that we cultivate non-traditional support for the School. We have met with remarkable success in this arena and continue to forge mutually beneficial relationships with a range of private and governmental agencies. In addition to all of these efforts, however, philanthropy will continue to be crucial to our long-term success."

One objective of *Transforming Resources* is to encourage support from new donors, particularly among Mines' young alumni.

2002 Comparative Endowment Per Student



Campaign Goal $125 Million



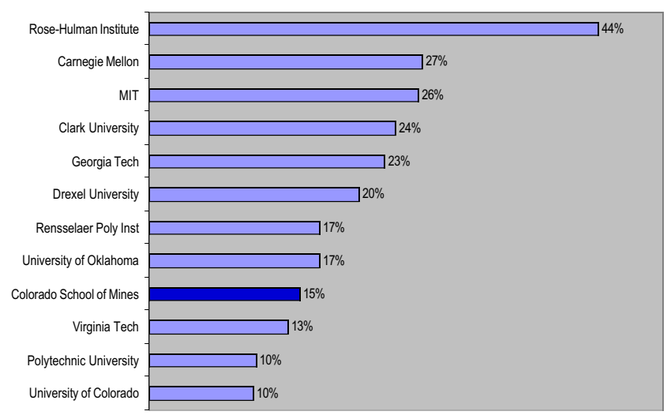
Compared to other public institutions, alumni support for Mines is strong — approximately15 percent of Mines alumni give to the School. However, because of its size and reputation, Mines competes for students, faculty and research contracts with many private engineering schools. Very often these institutions enjoy even higher levels of alumni support and larger endowments.

Ensuring the School's ability to attract leading academics and talented students is clearly a key objective of the campaign — more than 50 percent of the total campaign goal is aimed at student support, professorships and faculty development. The campaign goal for student scholarships and fellowships is $50 million, of which $16.7 million has already been raised. A goal of $15 million has been set for faculty support and endowed professorships, of which $4.6 million has already been secured.

In addition to student and faculty support, *Transforming Resources* seeks to strengthen academic programs, underwrite important new facilities planned for the campus and generate $10 million in enhanced annual support. A goal of $22 million has been set for endowed academic program support. Programs to be funded include collections for the Arthur Lakes Library, undergraduate design and research, and curriculum enhancement through the Center for Engineering Education. A goal of $28 million has been set for capital projects. Capital construction plans include the Wellness Center (covered in the fall 2002 issue of *Mines*), a major addition to Brown Hall, and several laboratory refurbishments.

With more than $60 million already secured, *Transforming Resources* is approximately half way toward achieving its goal of $125 million. Referring to this goal, Campaign Co-Chair Steve Chesebro' '64 observed, "For those who are capable and inclined to do so, this is the time to give back to Mines for the benefit we derived from our education. Our private support is crucial to the continued leadership and strength of the School."

2002 Comparative Alumni Giving



Leadership Commitments to Date

As of Jan. 15, gifts or commitments of $250,000 or more had been received from the following individuals and organizations in support of the *Transforming Resources* campaign:

Lawrence E. Barrett '50
Jerome T. '63 and Rebecca Broussard Family
J. Samuel Butler '68
Allan Caplan [D]
Caterpillar, Inc.
Steve '64 and Dollie Chesebro'
ConocoPhillips
Adolph Coors Foundation
Viola Vestal Coulter Foundation
Robert P. '43 and Stasia Davison
Bart '30 and Helen Ryan De Laat [D]
Stanley and Judy Dempsey
Environmental Studies Group
Hugh W. '49 and Ann Evans
Eunice I. Fettes [D]
Bruce E. Grewcock '76
William F. Guenther, Jr. '42
Ralph L. Hennebach '41
Sylvia F. Hochscheid
Infiltrator Systems Inc.
Alfred T. Ireson '48
John P. '52 and Erika Lockridge
Robert D., Jr. '54 and Barbara Lofgren
J. Robert Maytag
David H. McMurrin '50
Graciela Murdock [D]
Louis C., Jr. '42 [D] and Helen Pakiser
Phelps Dodge Foundation
William A.'58 and Janet Preston
Norman R. Rowlinson '52
Shell Oil Company Foundation
Willard and Emma Slater Family Research Trust
Thomas C. '36 and Mary Snedeker
Robley F. '26 and Elizabeth Sopris [D]
Franklin J. and H. Darlene Stermole
Unocal Corporation
Charles V. '44 and Shirley Woodard
Herbert L. '39 and Doris Young

[D] Deceased

Transforming Resources Campaign Volunteers

Transforming Resources: The Campaign for Mines requires an immense volunteer effort to be successful. For over two years, a core team of volunteers has been meeting with the School's leadership, helping to define strategy, planning and recruiting additional volunteers. The group is made up of leaders in business and civic affairs. With a diversity of knowledge concerning a range of markets and industries, they bring critical perspective to help guide this major initiative. In addition to their advisory capacity, they serve as lead donors, organizers, campaigners and fundraisers. Traveling from all over the nation to attend meetings, these individuals contribute their considerable expertise and give generously of their own resources. They are motivated by a commitment to higher education and a deep loyalty to Mines.

Colorado School of Mines is a great institution with a proud heritage and bright future. Transforming Resources is going to be a crucial vehicle for positioning the School for future leadership and growth.
Campaign Co-Chair
Steve Chesebro'

Heading up the *Transforming Resources* volunteer team are co-chairs **Steve Chesebro' PE '64** and **Howard Janzen BSc Met '76, MSc Met. '77.** Steve is Chairman of Harvest Natural Resources in Houston, Texas. Howard is former President and CEO of Williams Communications in Tulsa, Okla. Together, they have set the pace of the campaign through leadership gifts and by providing step-by-step input into the campaign planning. In addition to recruiting volunteers and encouraging individuals to make leadership gifts prior to the official campaign launch, they have met with the Board of Trustees, the president, and the CSM Foundation board.

Led by Steve and Howard, the following individuals have already made invaluable contributions to the campaign:

Corporate/ Foundation Committee:
Robert E. McKee III '68, Chair
Houston, Texas
Gregory S. Floerke '86
Tulsa, Oklahoma
W. Dennis Heagney '69
Houston, Texas
Robert E. Irelan '68
Austin, Texas
Allen E. May '77
Houston, Texas
Robert R. Vogel '80
St. Charles, Illinois

Major Gifts Committee:
Bruce E. Grewcock '76, Chair
Omaha, Nebraska
Patrick M. James '68
Arvada, Colorado
Charles S. McNeil '71
Englewood, Colorado
Fred C. Schulte '68
Chicago, Illinois
J. Don Thorson '55
Wickenburg, Arizona

Planned Gifts Committee:
William A. Preston '58, Chair
Palo Alto, California
Ralph E. Anderson '52
Huntley, Illinois
George W. Bashen '48
Montgomery, Texas
Franklin J. Stermole
Golden, Colorado

Regional Giving Committee:*
H.R. Klingensmith '75, Chair
Calgary, Alberta Canada

*The regional program is strongly supported by groups located in Texas, Oklahoma, Colorado and California. Please refer to the list in the fall issue of *Mines* (Volume 92 Number 4, p. 34). An overarching Regional Giving Committee will be solidified by late spring.

Of course my enthusiasm for Transforming Resources is partially fuelled by my personal feelings for the School. I also firmly believe that giving to the School is an investment in the future welfare of our nation's prosperity.
Campaign Co-Chair
Howard Janzen

Trefnys Commit $100,000 to *Transforming Resources*

President and Mrs. John Trefny have pledged $100,000 toward the *Transforming Resources* campaign, directing their gift to the Center for Engineering Education (CEE). Their contribution will establish a named endowment to support curriculum and program development minigrants. This choice reflects a number of wishes the Trefnys have for their campaign contribution. "We wanted to make a gift with the potential to reach all departments and programs at Mines. In particular, we wanted to make a gift that will strengthen the educational experience for students in the classroom," said the president.

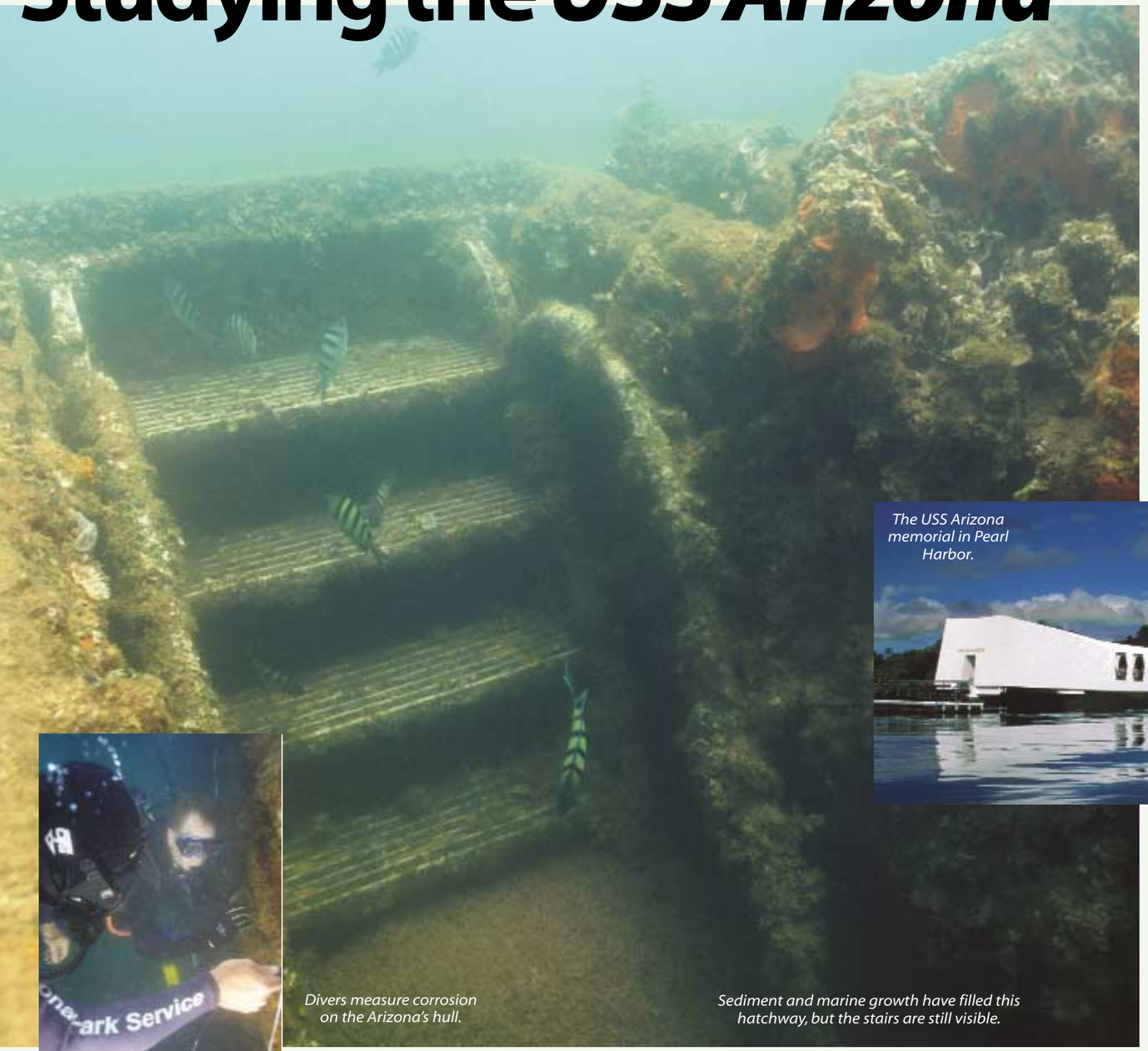
Minigrants will be awarded throughout the School; a department seeking to revise curriculum, a professor wishing to augment an existing course, or groups working to establish a new academic program can all submit proposals. The minigrants program has a proven record of success, and the Trefnys wish to provide a lasting source of funding to extend its benefits indefinitely. Since such initiatives lead directly to improvements in teaching and learning, students in all academic divisions and departments may be helped by the Trefnys' gift.

President Trefny was directly involved in the creation of CEE and is a passionate advocate: "Engineering education is at the heart of what we do. The School's historical approach to teaching, our size and our well-defined focus have all contributed to a uniquely successful engineering pedagogy. Not only does CEE preserve and reinforce these strengths internally, it also provides an avenue for Mines to disseminate successful engineering education practices nationally and internationally."

CEE is now a partner in one of the largest studies on engineering education ever conducted. Along with Stanford, Howard University, the University of Minnesota and the University of Washington, Colorado School of Mines is partnering in the Center for the Advancement of Engineering Education (CAEE), which is funded by a $10 million grant from the National Science Foundation. By studying how students learn difficult concepts in engineering, Mines' contribution to CAEE has the potential to impact engineering education nationwide.

Expressing enthusiasm for the Trefny's gift, Campaign Co-Chair Steve Chesebro' remarked, "By demonstrating their commitment to the institution in this concrete fashion, President and Mrs. Trefny have raised the confidence of Mines' entire constituency. They have shown true leadership and provided a wonderful example for other potential supporters of the campaign."

Studying the *USS Arizona*



Divers measure corrosion on the Arizona's hull.

Sediment and marine growth have filled this hatchway, but the stairs are still visible.

The USS Arizona memorial in Pearl Harbor.

From a boat bobbing on the surface of Pearl Harbor, retired University of Nebraska Professor **Donald L. Johnson Met E '50, MSc Met '56** quietly records readings on his clipboard while divers relay information from below the surface of the water. They are part of a team of UNL engineers studying the *USS Arizona* in Hawaii.

More than 3,000 tourists a day visit the memorial commemorating the casualties of the Japanese attack on Pearl Harbor. While that tourist activity takes place above the surface, Johnson is more interested in what is happening to the old battleship beneath the surface of the water.

Johnson is a retired metallurgical engineer who organized a group of engineers to study the battleship to determine the effect of corrosion on the ship's remains. The group is working in partnership with the National Park Service, which operates the memorial, and its Submerged Resources Center, which investigates shipwrecks to document their locations and conditions.

"This stands as the most unusual memorial anywhere in the world because it's a three-dimensional thing," Johnson says. "Here it is, those people are buried there, and where else do you see this kind of visitor experience?"

Johnson was a teen-ager in 1941 but his memories of the attack are vivid. The calm and serene setting of the memorial belies the tragedy that put the *USS Arizona* in its final resting place. On Dec. 7, 1941, Japan attacked the United States at Pearl Harbor. An armor-piercing bomb ripped though the ship's deck at about 8:10 a.m. The ship exploded and sank in less than nine minutes killing 1,177 crewmembers.

The National Park Service, together with Johnson and his team, discovered that crustaceans attached to the ship's hull impeded the rate of corrosion on the ship and limited the deterioration of the hull, which to this day contains the remains of the seamen as well as an estimated 200,000-300,000 gallons of fuel oil.

The team's measurements so far indicate that the metal on the ship's hull corrodes at less than half of what is normally expected in open seawater – depending on the location on the ship, Johnson says. His goal in his volunteer work with the National Park Service is to develop information the park service can use to manage and preserve the site.

"The buildup of crustaceans is protecting the ship to some extent," says Johnson.

"It's actually forming a reef," explains Bill Splinter, another UNL professor. "Over the centuries, that will be a reef. The metal might be gone but the ship will still be there in the form of a reef."

In the past two years, Johnson has made four trips to the *USS Arizona* to gather data. The team and other researchers use a variety of means to study the ship including X-rays, DNA testing, work with the Navy's dive-salvage unit and metallurgical analysis of pieces of the ship that had already been removed. The partnership is one of cooperation as well as mutual admiration.

Johnson records measurements from divers below.

"Don and the dive team's contributions are extremely important," says Matthew Russell, *USS Arizona* project director with the park service. "I think that with their help we're beginning to learn more about the actual corrosion process on the *Arizona*, which is the first step in developing a long-term preservation plan."

A 14-inch gun rests in the murky waters of Pearl Harbor.

Johnson believes a national icon such as the *USS Arizona* ought to be preserved. "It cannot be preserved for all time, but modern techniques are now available to protect to the extent possible against a major oil release and, at the same time, continue to provide the all-important visitor experience now available to the public."

Reprinted with permission from *Pride of Place*, Summer 2002, Issue No. 2, University of Nebraska Foundation.

HIGH-TECH TEACHING

By Leah Kolt

Walk into a physics lab at Mines and you'll see a roomful of toys, from baseball bats to matchbox cars.

Go down the hall to a physics classroom and you'll see students in front of a big screen, playing with remote "clickers."

Fun and games at Mines?

Actually, the devices are high-tech teaching tools for serious learning, located in the School's new award-winning Center for Technology and Learning Media (CTLM).

On closer inspection, you will see that the toys are connected to computers, which measure physical forces. And the clickers are actually part of a "personal response system," which lets the professor know at the speed of light if students don't understand the lecture.

CTLM also contains Smartboards, computerized "blackboards" that can display a professor's notes as he writes, print them out for distribution, and even post them to a Web page. The building also sports wireless network access and documentation cameras record lab experiments for later review by students.

The clicker technology is funded by an Award of Excellence grant presented to the Department of Physics by the Colorado Commission on Higher Education.

In selected classrooms in CTLM and Meyer Hall, each student is issued one of the wireless devices that transmits an infrared signal to the instructor's computer, according to Program of Excellence Project Coordinator Susan Kowalski.

Portable equipment for use by up to 160 students is available for use in any classroom by all Mines instructors, she added.

When the instructor poses a question, every student can actively participate and see a projected histogram of the results instantaneously, she explained. Complete class records are archived, for use as the instructor wishes.

Professor Tom Furtak has found the devices to be valuable in several ways. "It not only challenges the students but keeps them awake beyond the typical 12-minute attention span," he said. "Sometimes I'm prepared to discuss a topic further but find I don't need to. Other times I assume they understand and find out they don't."

Dr. Frank Kowalski says he now builds in multiple choice questions at the end of his lecture points to gauge student comprehension, as well as preparation level. For example, he wanted to know if students could multiply two matrixes in a linear algebra problem. Thirty percent couldn't. "The students tell me they think if 20 percent or more don't get something, I should spend more time on it," he said.

Department Chair Jim McNeil finds that the clickers reduce time and overhead by eliminating the need for making copies, distributing handouts and taking up quizzes. He also uses the technology to check attitude and motivate students. "When I've been talking too long and see students start to drift away," he said, "I use the clickers to gain another 15 minutes of their attention."

Checking to see if students have done their reading is one way Dr. Todd Ruskell uses the technology. "I also make up questions on the fly to see if they're with me. And I use it for quizzes and taking attendance. It really reduces the paper-shuffling burden," he said.

The Physics Department is loaning out portable clicker sets to K-12 teachers in the Metro area, where they are being used for everything from elementary school orchestras to bully-proofing workshops.

Teachers are reporting that students are literally in tears when they have to return the clickers, as evidenced by a few quotes from enthusiastic teachers:

- "I had some students crying when I had to give the equipment back."
- "My students are literally begging me to give them more questions. I can't quite keep up with their appetite for more questions in class."
- "In 35 years of teaching, this program is one of the best things I've seen come along."

Eighth-grade science and high-school chemistry students in Littleton, Colo., are participating in a study being conducted by Mines researchers to determine how effective the technology is in assisting learning, she added.

Alumni Notes & quotes

Evans '82 Commended for Business Ethics

Pinyon Environmental Engineering Resources has been awarded the 2002 Business Ethics Award from Colorado Ethics in Business for its commitment to ethical business practices. The award was presented Oct. 17.

Pinyon was founded in 1993 by **Lauren E. Evans BSc Geol '82, P.E.** "Doing the right thing in business is not something we do for awards," says Evans. "It's how we operate our business and serve our clients. We do the right thing, and that has won us the support of loyal clients."

R.W. Beck Names Mueller '78 Owner

Peter Mueller BSc Pet '78, senior director for R.W. Beck's Oil and Gas Group, has been appointed an owner by the company's board of directors based on his tenure and contributions to the strategic direction of the company.

Nicholas Guarriello, president and chief executive officer of R.W. Beck, says, "Electing Peter Mueller as an owner of the company allowed us to acknowledge his outstanding contributions to our oil and gas consulting practice." With 22 years of experience, Mueller leads that practice in which he assists clients in the oil and gas industry with independent engineering reviews, litigation support/expert testimony and owner's engineering services.

56 Join Order of the Engineer

Fifty-six Miners were inducted into the Order of the Engineer Link 75 at a ceremony held Nov. 19. The event, sponsored by the CSM Alumni Association, is held once a semester. All but two of the presenters this year were CSM alumni.

New Order of the Engineer inductees and presenters pose after the November ceremony.

Events calendar

March

13-15 Alumni gathering at NCAA Division II National Indoor Track Championships in Boston.

13 Lunch Bunch, an informal alumni get-together, meets at the Buffalo Rose in Golden, Colo., 11:30 a.m.

Denver-area Thursday Mixer: Wyncoop Brewing Company, 1634 18th Street, Denver, 5-7:30 p.m. No charge at door, pay own way. RSVP to Janet Blair, 303-273-3295.

20 Grand Junction, CO, section luncheon at Bookcliff Country Club, 2730 G Road, noon. For information call John Howe at 970-242-4903 or Del Tolen at 970-256-1118.

March

23 Bone Valley annual barbecue in Hardee County, Fla. Begins at 1 p.m. with tours of the CF Industries mining operation. Cost: $25 per family. Contact Judge Holmes '60, 863-533-6634, for details.

31 Annual Scholarship Golf Tournament at The Club at Falcon Point, Katy, Texas, 11 a.m. Sponsored by Houston Section. $100 per person. Contact Dean Stoughton, 3643 Maroneal, Houston, TX 77025, 713-961-8344, dean.d.stoughton@bhpbilliton.com.

April

10 Lunch Bunch, an informal alumni get-together, meets at the Buffalo Rose in Golden, Colo., 11:30 a.m.

April

10 Denver-area Thursday Mixer: Wyncoop Brewing Company, 1634 18th Street, Denver, 5-7:30 p.m. No charge at door, pay own way. RSVP to Janet Blair, 303-273-3295.

17 Grand Junction, Colo. section luncheon at Bookcliff Country Club, 2730 G Road, noon. For information call John Howe at 970-242-4903 or Del Tolen at 970-256-1118.

19 Phoenix Spring Fling barbecue and picnic. 13201 S. 34th Way. RSVP 480-496-0701 or 480-496-0882.

May

7-10 REUNION for the classes of '43, '48, '53, '58, '63, '68, '73, '78, '83, '88 and '93

May

08 Lunch Bunch, an informal alumni get-together, will be held in conjunction with reunions.

12 Salt Lake City. All-Alumni Cocktail Party at AAPG national meeting. 5:30-7:30 p.m., Grand America Hotel. Cash bar. Look for CSMAA banner.

15 Grand Junction section luncheon at Bookcliff Country Club, 2730 G Road, noon. For information call John Howe at 970-242-4903 or Del Tolen at 970-256-1118.

Denver-area Thursday Mixer: Wyncoop Brewing Company, 1634 18th Street, Denver, 5-7:30 p.m. No charge at door, pay own way. RSVP to Janet Blair, 303-273-3295.

History of CSM

CSM has a committee of alumni, faculty and friends who are working on a history of the school in upward of 225 pages with lots of pictures. The plan is to fulfill orders for this book around July 2004. We have an author

(Bill Eckley, Emeritus Head of Humanities) and some money that has been donated for the effort.

To be a part of this team or just to check us out, log on to *mines.edu/all-about/e-history/*.

In memoriam

BILLY G. BAUGH Geop E '50 died Nov. 14 in Aurora, Mo., at age 76. After graduation from Mines, he became a trainee at Seismograph Service Corporation in Tulsa, Okla., advancing to vice president of Central and South American operations and then vice president of Western Hemisphere operations. In 1985 he was named company president, retiring in 1990. After retiring, he and his wife of nearly 53 years returned to the Baugh family farm southwest of Mount Vernon, Mo. His widow, Lonnie, three sons and nine grandchildren survive him.

KENT C. BURESH BSc Pet '82 of Lafayette, La., died in a bicycle accident Sept. 29 at age 42. The Broomfield, Colo., native was valedictorian of his high school and

graduated from Mines summa cum laude. He was a member of Sigma Alpha Epsilon fraternity where he served as secretary and was a member of the Krewe of Apollo, where he served as treasurer for several years. Buresh was also active in Mines Little Theater and student government. He was co-owner of Southland Auto Interiors for 18 years. "Kent was a fine person who well represented the high caliber of CSM graduates," said his friend and classmate Eric Lauber BSc CPR '82. "He left his piece of the world better than he found it. He will be missed." Buresh is survived by his companion of 18 years, Pat Rauch, his father, stepmother and a brother.

SYLVESTER J. FISHER Pet E '48 died Aug. 17 at age 82. The Denver native was a petroleum engineer for the U.S. government. He served in the U.S. Army from 1942-1946. Fisher was a 50-year member of the Society of Petroleum Engineers, past president of the Lions Club and Toastmasters International and a member of Theta Tau fraternity. At Mines he was a member of Alpha Tau Omega and had attended his 50th class reunion. Fisher was predeceased by his wife, Mary Jane. He is survived by three sons.

CLIFFORD FRONDEL Geol E '29, a mineralogist who opened the first box of

moon rocks and became the namesake for two minerals, died Nov. 12 at age 95. He also held a master's degree from Columbia University and a doctorate from the Massachusetts Institute of Technology. As a principal scientist for NASA, Frondel was the first to peek into the first box of moon rocks as they sat in a specially constructed vacuum enclosure to safeguard against lunar organisms. "It looked like a bunch of burned potatoes," he said. He was also the first to make a microscopic examination of lunar dust and determine its mineral composition. During World War II, Frondel worked on quartz oscillator plates for military radios as a civilian employee of the Army Signal Corps. For a time, he worked on the synthesis of sapphires and rubies for Linde Air Products Co., on the crystallization and caking of salt for International Salt Co., and worked with specialists at the Fogg Art Museum and the Museum of Fine Arts in Boston on spectrochemical methods of identifying art forgeries. Frondel was a professor at Harvard from 1939-1977 and chairman of the Department of Geological Sciences from 1965-1969. He described and named 48 new minerals species including Cliffordite and Frondelite. He also discovered Laubmannite, a hydrous iron phosphate he named for a German mineralogist. Frondel is survived by his widow, Judith Weiss, and a daughter.

RICHARD A. GANONG PE '47 died Nov. 2 at home with his family in Bakersfield, Calif. He was 80. Ganong was a third-generation Californian who loved its mountains and taught his passion for skiing to his children and grandchildren who included professional skiers and a U.S. National Team racer. He obtained a pilot's license in 1938 at age 18. Color blindness kept him from flying during World War II, but his CSM ROTC training prepared him to be a second lieutenant training army combat engineers. He married his high school sweetheart, Janet Koch, in 1944, completed his Army tour of duty and returned to Mines to complete his degree. He was a member of the Sigma Nu fraternity and a multi-sport athlete. In 1955, Ganong started a private consulting petroleum engineering and geology practice exploring for oil and gas in California. He was a registered professional engineer and a registered geologist in California. He was a member of the Society of Petroleum Engineers, American Association of Petroleum Geologists, American Petroleum Institute and California Independent Producers Association. As an active alumnus, Ganong supported the Bakersfield section and attended functions welcoming students and school visitors to the area. In his 52 years of business he developed a reputation for honesty, integrity and selfless work. All who knew him professionally recognized that he had a passion for the oil business. During his professional practice, Ganong took up flying again and flew his airplanes to visit well locations, family and friends. He also developed an interest in golf. He had been an early member of the Bakersfield Country Club and was an active member of the Stockdale Country Club. Ganong taught his family what it meant to be a gentleman, an advocate, a scientist, an engineer, an outdoor enthusiast, a husband, a father, a grandfather and an inspiration. He is survived by his widow, three sons, daughter Barbara PE '82, 10 grandchildren and a sister.

ALFRED G. HOYL Geol E '40, EM '40 died Oct. 8 at home in Rollinsville, Colo. He was 89. Hoyl, a mining man and rancher, met 3-year-old Damaris Sayre in a mud puddle when he was 10 and the two were married in 1942. They celebrated their 60th anniversary in July. At 16, Hoyl enrolled at Mines, but dropped out during the Depression to work, first for the U.S. Coast and Geodetic Survey, later with United Fruit in Honduras. It was there he invented and patented the Hoyl Banana Bagger, still in use today. The proceeds paid for the rest of his education. Hoyl served in the U.S. Army during World War II and developed and patented numerous systems for demolition and land mine and obstacle removal that were used at D-Day and elsewhere. He was discharged as a major. The rest of his life was spent in mining-related businesses. He also spent 52 years as ranch manager for Los Lagos Ranch in Colorado where he was highly regarded for his preservation of the unique sub-alpine ecology of the ranch. His seminal published work, *Vignettes of Mining History* (co-authored by son Gregory), examined the life and times of the hardscrabble miners who opened up the West. Hoyl is survived by his widow, a daughter, two sons, six grandchildren, a sister, his dog and his 35-year-old horse.

KURT E. LANKFORD BSc CPR '81 of Boulder, Colo., died Sept. 17 of a heart attack while running. He was 43. A noted backcountry skiing expert, he co-wrote the best-selling guidebook *Skiing Colorado's Backcountry* in 1989. Lankford climbed his first Fourteener at age 10 and had made over 1,000 lifetime ascents from the Arctic Circle to the equator. He was an active member of the Colorado Mountain Club's Denver juniors group. From age 16-22, he was a professional mountaineering guide for his family's adventure travel company, leading expeditions in Alaska, Colorado, Montana, Wyoming, Mexico, Kenya and Tanzania. Later he traveled to Nepal, climbing in the Annapurna region to an altitude of more than 23,000 feet. He also was an avid rock climber. In addition to his Mines degree, Lankford earned a master's degree in mechanical engineering from Colorado University. He worked as a senior engineer at Starsys Research Corp., and invented a thermal switch incorporated in two upcoming Mars Rover Exploration missions scheduled for launch later this year. Lankford is survived by his widow, Karla, a daughter, a son, his parents, a sister and a brother.

JOHN L. LABRIOLA Met E '49 of Englewood, Colo., died Sept. 12. He was 74. Labriola served in the Army Corps of

Engineers during the Korean War. He was founder and owner of Colorado Piping and Mechanical Inc. He was a member of Kappa Sigma and the Alumni Association. He loved hunting and fishing. Labriola is survived by his widow, Rose Marie, brother Francis Met E '52, his mother and many nieces and nephews.

ERNEST J. MALOVICH Geop E '50 of Lakewood, Colo., died Sept. 25 at age 77. He was a senior member of the Alumni Association and attended his 40th reunion and other functions over the years. He was preceded in death by his wife Evelyn and is survived by two sisters and numerous nieces and nephews. "Ernest was very proud to have graduated from the School of Mines," says his sister, Elsie E. Beazley, "and spoke of the good times and hard times he had at the School."

CURTIS L. MILLER EM '60 died Sept. 17 at home in Cañon City, Colo. He was 71. Miller was born and spent the first part of his life in rural Kansas. During the Korean Conflict, he was commissioned as a first lieutenant in the U.S. Air Force. After marrying Shirley Ann

Ping, he attended CSM. He retired from CF&I as superintendent of quarries. Miller loved to ski, golf, hunt and travel. He was dedicated to his family and friends. He was a member of Fremont County Habitat for Humanity, Lions Club and the Cañon City Public Library and was an active member of CSMAA. Miller is survived by his widow, two sons, four grandchildren and numerous other relatives.

ALLEN M. RUGG JR. Geol E '41 died Oct. 18 in Scottsdale, Ariz., at age 83. He also earned a master's degree from the California Institute of Technology. Rugg began his career doing oil exploration in west Texas. After serving in the Pacific with the U.S. Navy during World War II, his profession as a geophysicist and passion for adventure took him to Alaska where he had previously

surveyed for the construction of the Alaskan Highway. He was stationed at the Coast and Geodetic Survey Observatory in College, Alaska. In the ensuing years, Rugg worked throughout the western United States, Mexico, Canada and Australia doing mineral exploration and seismology projects. From 1955-1961, he was an independent consultant working out of Tucson, Ariz. Among his accomplishments were seismic evaluation and site selection for the Nevada nuclear test site at Yucca Flats and the establishment in Payson, Ariz., of the Tonto Seismic Laboratory to detect underground nuclear tests. One of Rugg's most memorable experiences was a two-month trek with his son, Jon, from Australia to Germany in 1974. After retiring, Rugg returned to Paonia, Colo., to the family ranch and reopened Valley View Orchards where he raised peaches and nectarines. He is survived by his wife of 61 years, Eleanor, brother Edwin S. Rugg EM '43, MSc Geol '56, five children, 11 grandchildren and six great-grandchildren.

MICHAEL C. RUPERT BSc Chem '74, MSc Geochem '79, of Highlands Ranch, Colo., died Oct. 25 at age 50. He is survived by widow, Karen, a son, a daughter, his mother and stepfather, a sister and a brother.

RICHARD A. WEISS BSc Geol '86 died in a kayaking accident June 25, 1997, at age 33. Originally from Steamboat Springs, Colo., Weiss was a two-time slalom kayak Olympian. He began the 1996 paddling season by winning the Slalom Olympic Team Trials, earning the No. 1 boat designation for men's kayak. He finished in sixth place, bettering his 16th-place finish at the 1992 Olympic Games in Barcelona, Spain. He was named the 1996 U.S. canoe and kayak team's slalom Male Athlete of the Year. He was the first American to win a medal in men's kayak at a world championship when he won the silver in 1993 in Mezzana, Italy. He also made U.S. kayaking history with his third-place finish in the overall World Cup standings in 1991, the highest finish ever for an American men's kayaker at the time. He was the overall champion of the first-ever Champion International Whitewater Series in 1990, a title he also claimed in 1993. In addition to his Mines degree, Weiss earned a master's degree in hydrology from Pennsylvania State University and a Ph.D. in geological sciences from the University of British Columbia in Vancouver. He owned Weisswater Associates, where he served as an environmental consultant. His wife, Rosi, was pregnant with their first child when he died.

JOHN E. WILLSON EM '36 died June 3 at age 90. He began his career as a mining engineer for Union Pacific Coal Company in Wyoming. He then became a professor at the University of Utah and was named head of the Mining Engineering Department in 1954, retiring in 1983. Willson devoted his professional career to his students and to building a strong mining engineering program at the University of Utah. He was widely recognized for his knowledge of coal mining, his keen insight, his analytical approach and his ability to solve problems. In 1973 he was recognized by then-assistant Secretary of the Interior Hollis M. Dole for his contributions to the success of the Coal Mine Health and Safety Act. In 1975, he received the CSM Distinguished Achievement Medal. In 2000, the John E. Willson Distinguished Alumnus Award was established at the University of Utah. Willson is survived by his widow, Alberta, two daughters, three grandchildren and one great-grandchild.

Also in Memoriam

Robert H. Barz BSc Met '97	Nov. 25, 2001
John W. Chester EM '44	2002
John G. Cowan PE '49	Nov. 11, 2002
Reeve M. Duhme Geol E '40	2002
Rafael J. Garcia PRE '68	2001
Robert T. Goebel Geol E '51	Oct. 23, 2002
Steven M. Gruver PE '82	Sept. 2, 2002
Maurice Naftaly EM '38	Dec. 16, 2000
Robert G. Rodriguez Geop E '67	November 2002
Everett W. Schank Met E '44	August 19, 1998
Jack G. Sutton Met E '49	May 1, 2002

CSMAA Contributors

The Colorado School of Mines Alumni Association thanks the following individuals who, in addition to paying their annual memberships, made contributions to the Alumni Association between Nov. 1, 2001 and Nov. 22, 2002. For more than 100 years, CSMAA has operated as an autonomous independent nonprofit organization dedicated to serving the interests of Mines alumni. Contributions support the CSMAA student financial assistance fund, the endowment fund and the general operations fund.

William A. Abbott '68
Joseph M. Abell '56
Robert Abercrombie '54
Larry F. Adamson '91
Robert B. Affleck '85
Frank M. Akiyama '55
Frederick C. Aldrich '43
Michael Alexander '52
Robert J. Andersen '54
Arvid N. Anderson '54
Brent C. Anderson '87
George W. Anderson '56
John E. Anderson '78
Teiichi Ando '80
Donald I. Andrews '50
Tanya L. Antoniuk '87
Michael L. Armentrout '95
Richard J. Arnold '49
Erling K. Arnston '52
John B. Ashby '78
James S. Ault '52
Julie L. Bader '87
Russell Badgett, Jr. '40
Leanne M. Baker '81
Byron E. Ballantyne '01
A. Frederick Banfield, Jr. '64
Denver M. Barb '43
T. Jay Barbour '47
Dwight F. Barger '61
Karen L. Barnes '88
Douglas G. Barr '89
Robert D. Barree '84
Valencia L. Barree '86
Lawrence E. Barrett '50
William P. Bartow '73
Gary L. Bauer '74
William F. Baumann
Alan M. Baxter '02
Mary Beth P. Beach '69
Richard A. Beach '66
Donald A. Beattie '58
Christine M. Beatty '95
Peter I. Bediz '41
John R. Beers '53
Kevin J. Behrens '99
Leslie D. Bell '92
Marion S. Bell '49
Thomas P. Bellinger '47
Arden L. Bement, Jr. '54
Chris E. Bement '88
Shawn L. Bennett '91
Douglas F. Benton '50
John H. Benton '78
E. James Bergamo '82
Theodore R. Bergstrom '54
Gerald W. Berk '62
Donald L. Berry '50
Hassan Beykpour '60
Theodore A. Bickart
S. Peter Bickley, Jr. '53
Arthur T. Biddle '61
Carl L. Bieniewski '52
Ryan M. Billson '97
Wesley T. Bitzer, Jr. '52
J. Michael Blackwell '59
Janet Blair
Robert J. Blair '39
Edmund R. Blakeman '51
Charles R. Blomberg '39
Duane N. Bloom '65
Regina M. Bochicchio '86
George C. Bodine, Jr. '48
Robert D. Bokan '75
Richard (Kelly) F. Bolender '52
Kelsey L. Boltz '53
Meredith A. Bond '88
Steven D. Borenstein '99
Leroy V. Bovey '57
James L. Bowen '43
Robert F. Bowie '42
Robert D. Brace '49
Liselotte F. Bradford '86
Hugh E. Bradley '50
Robert E. Brady, Jr. '71
Donald L. Brehm '52
George N. Breit '80
Kathleen M. Breit
Alex A. Briber '48
John C. Briggs '68
Tyler Brinker '50
Warren M. Broman, Jr. '66
Albert H. Brookes '36
Darren L. Brown '84
Douglas E. Brown '51
Mark J. Brown '77
Gordon W. Bruchner '58
Gerrett H. Bryant '53
Bruce C. Bunch '90
Edward C. Burgan '54
Bryan J. Burinda '94
J. Newt Burkhalter '59
William P. Burpeau, Jr. '53
John H. Callanan '61
James W. Calvin '71
Charles W. Campbell '47
Harry D. Campbell '42
Mark X. Cannon '94
John C. Capshaw '54
Vincent S. Carabelos '98
Dale C. Carlson, Jr. '93
Richard J. Carlson '69
Peter H. Carson '84
Archie L. Carver '43
Walter S. Case '59
Jeffrey S. Castor '85
Alfredo Chambilla-Quispe '99
John B. Chase, Jr. '53
David A. Chasis '61
Deng-Bo Chen '82
Janis S. Christopher '97
Matthew J. Christopher '97
Richard E. Church '56
Dixie L. Cirillo
J. Russell Cirillo '93
Charles O. Clark '49
Christopher W. Clark '96
Conrad J. Clark '68
Jessica M. Clark '02
James S. Classen '57
William A. Cline '61
A. Bernard Coady '54
Noelle R. Cochran '86
John P. Cogan '47
David R. Cole '52
Thomas H. Cole '43
Evelyn A. Coleman
Robert B. Coleman '49
Eileen E. Colleary '78
William M. Colleary '77
Bruce A. Collins '71
Daniel G. Collins '83
David C. Collins '98
Keith G. Comstock '50
Harry M. Conger III '55
C. Gene Consalus '64
Courtney E. Cook '49
David F. Coolbaugh '43
Melville J. Coolbaugh '54
John K. Coors '77
W. Grover Coors '96
John D. Corbett '58
Anne M. Cornellisson '82
Joseph L. Cornellisson '79
Jeffrey R. Corwith '80
Robert G. Couch '36
Vicki J. Cowart '77
Heather D. Crabb '02
Edwin H. Crabtree III '60
Bruce D. Craig '70
DeAnn Craig '73
Donald A. Craig '48
Kevin D. Creel '95
Leslie K. Creel '96
Carl E. Cross '75
Marshall C. Crouch III '67
Walter L. Crow '41
Dawn R. Culley '00
James G. Cunningham '47
Lawrence B. Curtis '49
William G. Cutler '48
Ed Cutrell '54
Kenneth E. Dahlin '77
Richard A. Daniele '60
James R. Daniels '51
Charles A. Daugherty '57
Bertram B. Davidson, Jr. '59
Jeffrey D. Davidson '79
Keith V. Davidson '49
Michelle R. Davis '00
Paul B. Davis '39
Howard F. De Kalb '56
Carter De Laittre
Peter A. De Santis '51
Francis DeFilippo '72
Richard W. Deneke '43
C. Frederick Deuel III '49
Gregory L. Dewey '92
Richard F. Dewey '43
Donald I. Dickinson
Jeremy N. Dillman '02
Jack S. Diskin '52
Norman H. Donald, Jr. '39
Peter R. Donovan '63
W. Leon Dotson '53
Ralph H. Dougherty '56
Joseph Drake '00
David M. Drummond '75
Joseph C. Du Bois, Jr. '50
Paul D. Dubois '87
Beverley C. Duer '53
Frederick F. Dueser '49
George A. Dunham '59
James D. Dunn '64
Jack D. Duren '48
Arthur J. Dyson '51
Lawrence G. Eagan '65
Bruce J. Eberhard '57
Charles D. Ebinger '56
Robert R. Edison '49
Richard B. Egen '60
Karl W. Eggers '84
Henry P. Ehrlinger III '50
Rodney J. Eichler '71
Charles A. Einarsen '47
Robert L. Elder '58
Darrell H. Eldridge '93
Merlyn L. Ellickson '66
Paul J. Ellis '59
Harry A. Ells, Jr. '54
John F. Emerson '38
Steven R. Enger '81
Colin M. Engle '89
W. Durand Eppler '77
Mark A. Erickson '95
Tyler A. Erickson '98
Justice William H. Erickson '47
Marc D. Ernest '74
Lynn D. Ervin '40
Hugh W. Evans '49
Richard J. Evans '63
Ronald E. Evenson '57
William H. Everett '50
Bengt G. Fagerberg '47
Thomas G. Fails, Jr. '54
Alfred S. Falcone '49
Kenji C. Farinelli '74
George Featherstone Jr. '43
Glenn M. Fedderson '49
Dean A. Feller '00
Casey D. Felmlee '02
Reed W. Ferrill '68
Kerri L. Fiedler '95
Edmund P. Finch '67
Robert E. Fischer '56
William G. Fischer '56
Joseph F. Fisher '61
Kirk C. Forcade '36
Robert T. Forest '56
Michelle M. Foss '85
J. Frank Fox '52
John A. Fraher '44
Robert E. France '36
Melody Francisco
Robert Francisco
Raymond B. Franklin '49
David W. Frazier '99
Tonya L. Frazier '97
Eric D. Freeman '78
Henri Freyss '57
Robert E. Friend '49
Misty D. Fritz '95
Brian R. Frost '78
Clyde W. Frost '60
Weldon G. Frost '52
David H. Fruhling '61
Carol V. Fuchs '74
Kenneth P. Fuchs '74
Thomas R. Fulton '53
Michael J. Gamba '87
Barbara L. Ganong '82
Richard A. Ganong [D] '47
James M. Gardner '68
Michael L. Garrison '66
Richard J. Gaugler '79
George E. Gebhardt '40
Gary J. Gehlhoff '69
Frank E. Gibbs '84
W. Dennis Gibson '76
Mary Jo Giddings
Jennifer R. Glennon '96
Jack V. Glinkman '54
Benjamin L. Godwin '92
John P. Golden II '39
Norman E. Goldstein '57
Nicholas B. Gomez '87
Christoph M. Goss '97
Tatiana M. Goss '00
Gerald E. Gould '47
Robert J. Governski '64
Raymond W. Govett '52
W. Scott Graeme '79
Daniel S. Gralla '85
James L. Green '73
Robert E. Green '60
Dean O. Gregg '59
Dennis E. Gregg '50
Bob Greider '43
Gerald G. Grimes '58
Jimmie D. Grimes '67
Cecil D. Gritz '66
Stanford O. Gross '49
Niles E. Grosvenor '50
Fred J. Gruberth '55
Steven M. Gruver [D] '82
Donald Grybeck '69
Jack J. Grynberg '52
Robert E. Guttridge '68
Garrett C. Haag '99
Frank A. Hadsell '61
John P. Hager
John D. Haley '48
Jon F. Hamlin '58
Duncan L. Hammon '77
James L. Hancock '83
John W. Hancock
Anna C. Hanley '95
Eric A. Hansen '92
Robert C. Hansen '51
Jack C. Haptonstall '60
Joseph L. Harbison '55
Jerald L. Harmon '62
Joshua J. Harris '00
Warren L. Harrison '67
Michael J. Harstad '79
Hugh E. Harvey, Jr. '74
Dexter C. Hatch '51
Richard F. Hatfield '54
Jeffrey C. Haughton '84
John D. Haun
Garth L. Hayes '54
Victor L. Hayes, Jr. '48
Howard B. Hebble, Jr. '53
Thomas C. Hedlund '44
David R. Heer '97
Joseph B. Heffernan '80
S. Bruce Heister '60
Rev. Don K. Henderson '61
Carson D. Henrion '97
Josephine R. Hernandez '00
Donald C. Herron '50
Sarah L. Herron '01
Arthur W. Heuck '36
Patrick J. Hickey '81
Richard L. Hickman '65
George W. Hicks '58
Debra K. Higley-Feldman '83
Rick T. Hildebrand '84
Robert A. Hildebrand '54
Douglas P. Hildenbrandt '58
Stephen L. Hillis '79
Gene W. Hinds '49
Paul J. Hinds '50
Joseph H. Hoage [D] '48
Harold T. Hoak '53
Paul A. Hodges '51
John E. Hoffman '57
Hermann A. Hofmann '50
Richard B. Hohlt '47
John P. Holland '53
David E. Hollingsworth '81
Emil F. Homuth '69
Linda Sue Hoops '81
Timothy L. Hoops '79
Harry F. Hopp, Jr. '47
Liesa C. Houdashelt '74
Robert G. Howard, Jr. '73
Robert W. Howard '56
Van D. Howbert II '51
James A. Hull '88
George E. Hulpiau '49
Edgar T. Hunter '53
Lynn R. Hunter '83
Ted J. Huston '78
Kregg L. Hyer '92
Kenneth D. Ibsen '61
James A. Imrie '63
Robert E. Irelan '68
Alfred T. Ireson '48
Charles W. Irish '50
William H. Isaacs '57
F. Thomas Ise '55
Fabian O. Iwere '79
George R. Jackson '79
William D. Jackson '57
David H. James '51
Ray P. Jarnagin
Jeannine Jecha-Ernstberger '97
Gerald W. Jefferies '52
Henry C. Johns '66
Donald L. Johnson '56
Donald M. Johnson '64
George W. Johnson
Jeffrey J. Johnson '78
Philip O. Johnson '80
James G. Johnstone [D] '48
John T. Jonas '75
Kevin D. Jones '78
Lawrence M. Jones '56
Leonard D. Jones '71
Ronald R. Jones '67
Claude H. Joseph '81
Gretchen L. Joseph '02
Robert B. Joyce '54
Keith D. Jung '53
Andrew C. Jurasin '54
Donald J. Kaczynski '78
Gene J. Kaefer '53
Ronald B. Kahler '61
Donald L. Kammerzell '71
Kevin F. Kane '78
Joe S. Keating '42
Thomas G. Keiser '49
Ray F. Keller '41
Harold E. Kellogg '55
Jason M. Kelly '95
Everett L. Kenworthy '49
Victor Kerlins '59
Jessica M. Kern '00
Scott M. Kern '98
Clyde W. Kerns '50
William W. Kerr '51
Robert L. Kerwin '53
Robert P. Kewley '39
Kevin J. Kidd '98
Ben H. King '47
Darwin D. King '76
George Y. King '51
William S. King '49
Brian C. Kirby '97
John M. Kirkpatrick '84
Terrie Tonkinson Kirkpatrick '84
George J. (Joe) Kirn '57
Steve S. Kith '98
Robert W. Klatt
H. R. Klingensmith '75
Eugene Koch '54
Ronald D. Koehler '59
Roderick W. Koontz '44
Dunn Krahl '54
Darrell L. Kramer '84
Jonathan K. Kreb '92
Edmond A. Krohn '43
Jack A. Krug '70
Marvin A. Kunde '52
Daniel L. Kunkle '77
Ulf A. Kutschera '93
Wolfgang F. Kyllmann '59
Richard J. Laman '72
Karl Lambertson '49
Robert A. Lame '59
Marvin E. Lane '44
Richard P. Lane '93
Jessica M. Latka '95
E. Dean B. Laudeman '55
Dale L. Lauer '88
T. William Lauman '67
Terry J. Laverty '70
William N. Lawless, Jr. '59
Richard L. Lea '59
Charles W. Leaf III '52
Wayne Lebsack '49
J. D. Lee '75
Kay L. Lee '75
Thomas S. Lee '54
Cheryl D. Leighton '87
Alan L. LeJeune II '02
Rebecca K. Lenz '87
Christopher P. Leone '95
Katryn S. Leone '96
M. H. Levy '47
R. Scott Lewis '86
Ronald L. Lewis '56
Fred H. Lightner '68
James M. Link '59
Dorington Little II '50
John E. Litz '57
Erika H. Lockridge
John P. Lockridge '52
Thomas M. Loeffler, Jr. '00
Damon R. Lona '93
Richard R. Loring '38
Chester L. Love '55
Norman V. Lovett '42
Delwyn J. Low '45
Mark K. Lunsford '76
William N. Lyster '53
Robert W. MacCannon '51
Ian H. Mackay '53
Peter A. MacQueen '50
Michael G. Magill '01
Stefan G. Magnusson '82
John W. Maharg '51
Richard H. Mandel, Jr. '53
Addison B. Manning '40
Reed M. Marquand '00
Ralph Z. Marsh '58
Richard G. Martin '50
Robert G. Martin '53
Tina R. Martinez '97
Michael Martinez-Schiferl '02
Joel Mascitelli '68
James E. Massey E.M. '52
Lee M. Mathews '48
John C. C. Mathewson '53
J. Paul Mathias '63
Frederick K. Maxeiner '64
William A. May '79
Eldon J. Mayhew '41
David B. Mazer '47
Guy T. McBride, Jr.

CSMAA contributors

Thomas C. McCaa '97
Harvey E. McCann '53
Harry E. McCarthy '60
Samuel L. McClaren '54
E. Jerre McClelland '58
Robert A. McClevey, Jr. '32
Clifton M. McDaniels '50
Edward J. McDonald IV '99
M. Elizabeth McDonald '98
Gillian McGee '94
Allen McGlone '54
Karen M. McHale '96
John D. McIver '50
Charles H. McKinnis '59
Donald E. McLaughlin '73
Alexander M. McLean '82
Harry O. McLeod, Jr. '53
Eugene C. McMahan '49
John P. McNaughton '42
Wayne E. McNeely '51
W. Jones McQuinn '46
George N. Meade '41
F. Kenneth Meitz '53
Charles E. Melbye '50
Laurence S. Melzer '39
Harold L. Mendenhall '38
Joann M. Menebroker '91
F. H. Merelli '59
Robert C. Merritt '48
April E. Mestas '98
Edwin J. Mets '50
Robert A. Metz '55
Adam M. Michener '00
Kevin L. Midkiff '89
Donald G. Miller '58
Douglas F. Miller '64
James A. Miller '70
Michael J. Miller '97
Claudia Renee Milliken '90
Frank R. Milliken, Jr. '66
Jason A. Mills '98
William N. Miner '49
George W. Mitchell, Jr. '53
Adolph V. Mitterer '52
Thomas O. Mohr '56
Annette D. Monaco '01
Robert R. Monok '71
F. Steven Mooney '56
H. Boyd Moreland '56
Ellen Morris '83
Clyde E. Morrison '67
Anthony L. Morroni '71
Robert A. Morroni '76
Gregg M. Moser '74
Robert P. Moston '58
Morris W. Mote, Jr. '49
Frank R. Moulton, Jr. '51
William M. Mueller [D] '40
Peter M. Mueller '78
Nilendu S. Mukherjee '68
H. Deon Murphy '80
Timothy J. Murphy '77
Donald A. Myers '58
Michael S. Nagorka '83
John M. Negomir '55
Daniel J. Nelipovich '54
Gerald P. Nelson '56
Karl R. Nelson '69
Donald E. Neuschwander '51
James F. Newman '86
Ralph R. Newman '70
Cynthia Wood Newton '84
Dong P. Nguyen '94
Kenneth W. Nickerson '48
Karl E. Nielsen '59
Victoria B. Jackson Nielsen '92
James H. Nienaber '54
Gary J. Nilson '76
Gary L. Nordloh '71
Chester F. Norstrom, Jr. '55
Eric J. Northcut '95
Uno Nummela '50
Christopher M. Nyikos '81
Michael S. Nyikos
Leah K. Oberley '91
Mark J. Oberley '89
Eugene A. O'Brien '53
George E. Ogden III '92
Lawrence Ogden '58
Chris A. Oglesby '80
C. Michael Oldenburg '65
William F. Oline '52
Thomas W. Olsen '74
David L. Olson
Ward O'Malley '42
Richard E. Oppel '51
Newell H. Orr, Jr. '54
Karen G. Ostrander-Krug '84
Dennis P. Ott '98
Robert B. Owen '51
Robert S. Padboy '50
Arthur J. Pansze '63
Jack McK. Pardee E.M. '36
William G. Parfet
Ben H. Parker, Jr. '49
Ira Pasternack '82
Mark V. Patton '70
George B. Paulding '39
Daniel Pavone '48
William L. Payne, Jr. '50
William R. Pearce '82
Joshua B. Pearson '99
Robert W. Pearson '59
Walter C. Pearson, Jr. '66
William H. Pedler '83
John F. Peeso '48
Norman E. Pence '86
Jess A. Peonio '96
Jacob C. Perkins '00
Nathan R. Perkins '92
M. Curtis Perry '02
Brian J. Peterman '88
Amy L. Peterson '81
David R. Peterson '68
Eric A. Peterson '59
Richard L. Peterson '41
Jack S. Petty '52
Patricia C. Petty
Sidney B. Peyton '54
Amy Inkell Pflaum, P.E. '95
Louis L. Phannenstiel '54
Patrick E. Phillips '61
Robert G. Piper '49
William R. Pitman '62
Jack H. Pizante '60
Clayton S. Plucheck '85
Herbert A. Poitz '41
James A. Polhamus '73
Benjamin C. Pollard '65
Gary D. Porter '64
Mary J. A. Pott '83
Bill R. Pottorf '65
Glenn J. Poulter '50
Robert M. Pozzo '52
Rebecca Price
Loren L. Pritzel '67
John R. Rairden III '51
Pierson M. Ralph '48
Charles A. Ranlett '55
William S. Ransom '60
Edward G. Rapp '60
Kai A. Ravnborg '57
Robert T. Reeder '49
Christopher M. Reidinger '01
Francisco Reis '57
John H. Reiss '68
John A. L. Rense '74
Robert A. Reseigh '68
Vincent V. Rex '52
Edward B. Reynolds '66
Roger A. Richter '51
John Robertson, Jr. [D] '49
John B. Robertson '61
W. John Robinson, Jr. '77
Veronica M. Rodriguez '97
Howard A. Roepnack '93
Michael A. Rogalski '66
John R. Ross '52
Louis C. Rove, Jr. '51
Norman R. Rowlinson '52
James F. Rucker '52
Jennifer E. Rupp '02
Corlee Rutherford
Peter A. Rutledge '59
Steven K. Saborsky '77
Dedi Sadagori '99
Craig T. Sakata '96
Miklos D. G. Salamon
Jeffrey S. Samuels '83
Robert L. Sandefur '66
Scott R. Sanderson '97
William R. Sandifer II '62
Samuel C. Sandusky '48
Michael C. Savell '62
Brian E. Scarborough '01
Herman T. Schassberger '50
Judith A. Schenk '90
Dawn A. Schippe '02
Jenny E. Schlittenhart '99
Todd M. Schlittenhart '99
Howard K. Schmuck, Jr. '40
Robert W. Schneider '64
James E. Schock '76
Ronald C. Schutz '59
John R. Schuyler '72
John L. Schweizer '51
Major W. Seery '56
Frank A. Seeton '47
Marvin B. Seldin '48
James D. Sell '55
David L. Seymour '63
James R. Sharpe '79
William E. Sherbondy '40
George D. Shier '60
Harry L. Shively '51
Joseph Shoaf '50
Roland H. Shubert '58
Kelli A. Shuter '85
Glenn H. Sides '50
Justin F. Slepitis '53
Ben H. Slothower '50
Norman J. Smallwood '60
David E. Smink '57
Charlotte R. Smith '88
Dwight L. Smith '88
John B. Smith, Jr. '60
John R. Smith '60
Lester L. Smith '57
Richard P. Smith '81
Robert E. Smith '55
William D. Smith '57
William H. Smith '59
Thomas C. Snedeker '36
Donald D. Snyder III '63
Henry W. Snyder '57
Halee D. Somerville '00
Robert A. Somrak '71
Chu H. Son '94
Joseph R. Soper, Jr. '44
Charles A. Sorvisto '54
Earl L. Spieles '48
Charles O. Spielman, Jr. '55
D. Erik Spiller '70
Holly Jo Sprackling '91
John S. Sprackling '86
Robert J. Spring '75
Edward W. Stafford '98
Richard L. Stallings '55
Mark R. Stanton '97
Gordon L. Steele '59
Robert J. Steele '63
E. W. Steffenhagen '41
Richard M. Stephens '68
Franklin J. Stermole
H. Darlene Stermole
Floyd L. Stewart '43
Paula F. Stewart '76
S. Arthur Stewart '75
John C. Stimson '54
Charles M. Stoddard '51
David M. Stokowski '99
Bryan W. Stone '85
Todd C. Storer '47
Richard R. Storm '53
Tracy M. Stotler '01
Kurt-Martin Strack '81
Dennis G. Strauch '69
Robert P. Strode '79
Michael J. Sullivan '81
Roger L. Sullivan '54
Sandra A. Sullivan '82
John F. Sulzbach '56
John Dirk Sutphin '82
Christian J. Sutton '00
James R. Swaisgood '59
Sonia Swartz '78
Andrew P. Swiger '78
I. Robert Taylor '48
Hugh E. Templeton '36
James C. Ternahan, Jr. '51
James R. Thoma '55
Vernon R. Thompson '52
Rodger E. Thornton '66
Eric S. Thurston '89
Katheleen A. Thurston '88
Joan Tilden '96
D. Steve Tipton '67
Roger H. Todd '54
Delbert F. Tolen '57
Michael R. Tolliver '78
Stewart W. Towle '54
Phinn W. Townsend, Jr. '53
Lee C. Travis '48
John U. Trefny
Abelardo Trevino '53
Michael L. Troyer '82
Lester G. Truby '48
Chontel Trujillo '00
Gordon A. Trujillo '00
John A. Turley '65
John Turner '76
Lee A. Turner '70
Louis D. Turner '41
Edward W. Tutkaluk '64
John E. Tuttle '49
Cecilia K. Tyler '87
Charles D. Tyler '53
Walter W. Tyler '57
Frank J. Ucciardi '59
John R. Underhill '76
W. Don Van Arnam '66
Richard Van Horn '47
Craig W. Van Kirk '72
James R. Van Meter '90
Gerald E. Van Sickle '58
Thomas L. Vandergrift '85
Vesper A. Vaseen '39
Charles J. Vasilius '81
R. Glenn Vawter '60
Arthur K. Veeder '42
Richard Veghte '54
Paul L. Vernon '01
Randall F. Versaw '83
Gregory R. Vigil '88
Eduardo M. Villareal Bell '40
Mark I. Vlcek '84
Boris S. Voukovitch '51
Mark S. Vozar '76
William H. Wahl '58
Richard Waissar '62
Christopher M. Walker '81
John J. Walker '37
John W. Walker, Jr. '68
John J. Wanner '48
Richard B. Wanty '81
Frederick W. Ward '52
William F. Ward '50
Thomas A. Warfield '52
Don L. Warner '56
Edward M. Warren '50
Jasper N. Warren '50
Torrin S. Warrender '80
Douglas Waterman, Jr. '52
Robert H. Waterman, Jr. '58
Carl J. Watson '50
David L. Watson '60
Michael B. Watson
William D. Watts '52
George H. Wayne, Jr. '85
Frank E. Weagant '51
John R. Weber '66
David C. Webster '94
Frederick L. Weigand '39
Scott A. Weisbeck '94
Kevin J. Welch '87
Larry E. Wells
Ronald L. Wells '59
Charles N. Wentz '68
Laura A. Westler '00
William M. Westler, Jr. '00
Richard Wheeler, Jr. '56
Ronald G. White '97
Thomas G. White '66
Jack S. Whittaker '38
Tamara A. Whittington '89
Paul A. Wichmann '58
Ronald V. Wiedenhoeft
W. Gordon Wieduwilt '53
Donald R. Wienecke '55
Charles R. Wilderson '58
James D. Wildharber P.E. '85
Bleecker R. Williams, Jr. '64
Jennifer L. Williams '97
Matthew M. Williams '00
Thomas G. Williams '96
Charles L. Wilson '44
Donald E. Wilson '52
Eric Douglas Wilson '94
John H. Wilson II '48
Robert L. Wilson '41
Willton R. Wilson '65
David G. Winslow '77
John R. Wise '68
Frank W. Wolek '57
Edwin T. Wood '48
Mark H. Wood '78
Robert M. Woodbury '65
Robert E. D. Woolsey
John W. Work '83
Sandra J. Wrobel '82
John H. Wyatt '50
Shawn M. Yasutake '82
Brian P. Yeagley '92
Nancy L. Yeagley '90
William J. Yopp '56
Doris S. Young
Herbert L. Young '39
Stanley G. Young '58
Thomas R. Young '52
Norio Yuki '95
John R. Zak '65
Ferdinand F. Zdenek '57
Norman R. Zehr '52
Stephanie L. Zertuche '93
Melvin Zetz '51
Gerald P. Zink '72

on the move

1941

Walter L. Crow EM is retired in Tigaro, Oreg.

1948

Samuel M. Hochberger EM is retired in Villanova, Pa.

Robert D. Kesler Met E is retired in San Diego.

1950

Lawrence A. Garfield EM is retired in Stewartville, Md.

1953

Dunston F. Boyd Met E is retired in Grand Junction, Colo.

J. Thomas Reagan PE is senior vice president and manager of specialized deposits for Wells Fargo Bank West N.A. in Denver.

1954

Richard Veghte PE is retired in Golden, Colo.

1960

Burke B. Krueger PE has retired from Thunderbird Drilling, Inc., and lives in Oro Valley, Ariz.

R. Glenn Vawter PE is president of ATP Consulting Services in Dillon, Colo.

1961

Clifford B. Farris PRE, MSc PRE '66 is principal staff engineer for VECO Rocky Mountain Inc. in Englewood, Colo.

1963

Bruce A. Miller Geol E has retired as senior vice president from Marsh Inc. He and his wife, Judy, live in Roswell, Ga.

1964

Lawrence J. Gralla EM is owner and wine and food instructor for Venerable Wine Paraphernalia in Reno, Nev.

John F. Lohmiller Met E is retired in Crosslake, Minn.

Charles C. Petty PRE is retired in Portland, Texas.

1965

Gary K. Gantner EM is president and owner of Gantner Associates Inc. in Golden, Colo.

James R. Larsen Met E is director of business development for Separmatic Fluids Systems in Milwaukee, Wis.

1966

Robert D. Carson EM is chief executive officer and senior portfolio manager for Monarch Capital Management in Denver.

1968

Donald L. Beckwith EM is principal for Investment Security Group in Denver.

Gregory H. Hoyl EM is president of National Services Group S/C Ltd. in Santana do Parnaiba, Brazil.

Jack R. McClellan PE is retired in Gilcrest, Colo.

1970

Robert C. Scharp EM is chairman and CEO of Horizon Natural Resources in Ashland, Ky.

D. Erik Spiller BSc Met is vice president of operations for Outokumpu Physical Separation Division in Jacksonville, Fla.

Andy Weinzapfel Geol E, Conoco geological fellow and senior global explorationist, is retiring after 33 years and moving to Florissant, Colo.

1971

Paul C. Beck BSc CPR is program manager at Coors Brewing Company in Golden, Colo.

James M. Bell Geop E is senior geophysicist for Newfield Exploration Mid-Continent Inc., in Tulsa, Okla.

R. John Oxenford M Eng Met is manager of research programs for Syncrude Canada Ltd., in Edmonton, Alberta.

1972

Franklin A. Hamisch BSc Pet is a facilities engineer consultant for Pioneer Natural Resources in Cape Town, South Africa.

1973

Hamza T. Mabruk BSc Min, retired from Libyan Iron and Steel Company, is now a technical assistant for Newras International Shipping in Tripoli, Libya.

Donald E. McLaughlin BSc Math is manager of worldwide asset and priority for ExxonMobil Exploration Company in Houston.

1974

Daniel L. Blakeman BSc Met is a project engineer for TE Consolidated LLC in Orange Park, Fla.

Liesa C. Houdashelt BSc CPR is an independent consultant in Fairfield, Calif.

Stewart G. Squires BSc Geop, MSc Geop '86 is an exploration manager for Aspect Energy LLC in Denver.

1975

Susan B. Eaton BSc CPR is retired in Ashland, Ky.

John D. Underwood BSc Phy is a partner for Rosetta Energy Partners in Dallas.

1977

Elane C. Flower-Maudlin BSc Met, MSc Met '82 is program manager at Los Alamos National Laboratories in Los Alamos, N.M.

Jerry L. Fuller BSc Min has retired as a regional safety manager from the U.S. Department of Labor in Denver.

David E. Germer BSc Geol is an assistant manager for Matanuska-Susitna Borough in Palmer, Alaska.

1978

Gregory A. Drwenski BSc Pet is an asset manager for Chesapeake Energy Corporation in Oklahoma City, Okla.

John P. McDonnell BSc Min is an engineering manager for Excel Mining Systems. He lives in Littleton, Colo.

James Swain BSc Geop and Dana Geddis were married Sept. 14. The couple resides in San Ramon,

Calif. He is a petroleum engineering adviser for ChevronTexaco.

Gary L. Weihs BSc BE owns Natural Pork Production II in Harlan, Iowa.

1979

Mark M. Gygax BSc Pet is a consulting petroleum reservoir engineer in Midland, Texas.

Kenneth J. Konrad BSc CPR is vice president of Alaska Gas for BP in Anchorage.

Martin D. Wittstrom MSc Geol is vice president for The Information Store in Houston, Texas.

1980

Robert A. Biernbaum BSc Pet is a field development consultant for Granherne-Halliburton in Houston.

Glenn M. Douglass BSc Min owns Douglass Engineering in Arvada, Colo.

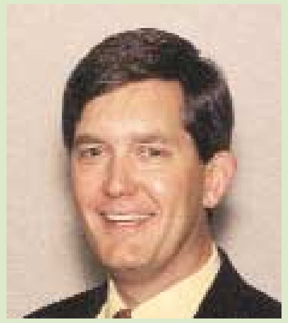
James C. Ferguson BSc CPR is an assistant professor of petroleum engineering at University of Alaska.

Thomas E. Jorden BSc Geop, MSc Geop '87 is vice president of exploration for Cimarex Energy Company in Denver.

Robert M. Pickard BSc Geol is president of Islands Exploration Company and a realtor with Cherry Creek Southeast Ltd., Denver.

1981

Edwin Downer Jr. BSc Min was promoted to regional sales manager



for Whayne Supply Company's Lexington, Ky., and Ashland, Ky., branches.

Floyd D. Varley BSc Min is a mining engineer for the National Institute for Occupational Safety & Health, Spokane Research Laboratory in Spokane, Wash.

Thomas L. Young BSc Geol and **Cecile BSc Geol** have returned to the United States and live in Kingwood, Texas.

1982

Daniel R. Boltz BSc Geop is an IT consultant for Landmark Graphics Corporation in Houston.

Richard F. McClure BSc Pet, M Eng Pet '86 is chief operating officer for Ellora Energy in Boulder, Colo.

Serge Nicoletis MSc Geop is head of reservoir geophysics in geosciences, field reserves development, exploration and production for Total Fina Elf in Paris la Defense Cedex, France.

Kevin L. Smith BSc Geop is a senior geophysicist for Mustang Fuel Corporation in Irving, Texas.

1983

Craig E. Burson BSc Min was promoted to managing director at H.I.G. Ventures in Miami, Fla.

Ellen Coopersmith BSc Pet is president of Decision Frameworks LLC, in Houston.

Joel A. Eacker BSc CPR is vice president of projects for CH2M HILL Handford Group Inc. in Richland, Wash.

David R. Goddard BSc Min is a lieutenant colonel and deputy G8 for V Corps in the U.S. Army in Heidelberg, Germany.

James L. Hancock BSc Min is town engineer for Gypsum, Colo.

Craig R. Hofmeister BSc CPR is president of Sterisil in Fort Collins, Colo.

Kurt R. Nielsen MSc Min Ec is president and CEO for American Soda LLP in Glenwood Springs, Colo.

Jonathan S. Schultz BSc Pet is joint-venture manager for Phillips Petroleum in Perth, Australia.

David K. Young BSc Min is vice president of mining for Apollo Gold Inc. in Denver.

1984

Brian D. Huff BSc Pet is a team leader for BP in Anchorage, Alaska.

Kirk H. McDaniel BSc Min, M Eng Min '89 is manager of ventilation projects for Earth Tech in Oakland, Calif.

Paul R. Onsager BSc Pet, M Eng Pet '97, P.E., has been promoted to vice president of Questa Engineering Corporation. Questa Engineering is an international petroleum consulting firm located in Golden, Colo. www.questa.com.

Gregg A. Tripp BSc Pet, MSc Env Sc '94 is a principal and project engineer for Mesa Applied Technologies LLC in Cortez, Colo.

Daniel P. Wollenhaupt BSc CPR is a vice president for Science Applications International Corp. in Denver.

1985

James P. Diebold MSc CPR is senior research engineer for Community Power Corporation in Littleton, Colo.

Carol A. Edson BSc CPR is a senior engineer for Cameron-Cole in Boulder, Colo.

David F. Hopp BSc Pet is a senior software engineer for Micromedex in Greenwood Village, Colo.

1986

Stephen F. Biagiotti Jr. BSc Met, MSc Met '94 is a risk engineering manager for Bass-Trigon Software in Littleton, Colo.

Kyle A. Moreau BSc Geop is an embedded systems and Symbian OS specialist for TietoEnator Wireless Tech AB in Krista, Sweden.

Kristal A. Wolfe BSc Chem is a physician in Coral Springs, Fla.

1987

Renata J. Bollich BSc CPR is a process engineer for Berlex Laboratories Inc. in Bothel, Wash.

Todd P. Courtney BSc Eng is vice president and branch manager for Ingersoll-Rand Company in Portland, Ore.

Melanie Marquardt Westergaard BSc Geop is staff geophysicist and executive assistant for BP America Inc. in Houston.

J. Stevens Zuker MSc Geol is vice president of Gallant Minerals Inc. in Golden, Colo.

1988

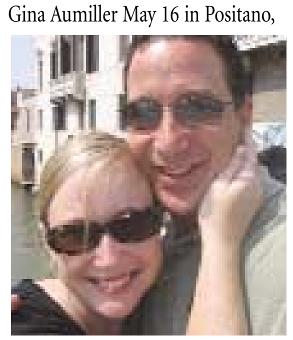
Lotfi Ben Rached BSc Pet is a reservoir engineer for Serept in Sfax, Tunisia.

Jess A. Elshere BSc Eng is a sales associate for Puffer-Sweiven in Stafford, Texas.

Randall A. Reddig BSc Math retired from the U.S. Air Force because of complications from the removal of a brain tumor. He lives in Mount Laurel, N.J.

1989

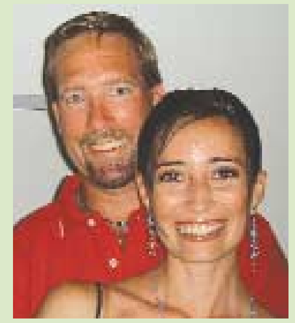
Dale Bender BSc Met married Gina Aumiller May 16 in Positano,



Italy. The couple resides in San Francisco.

John A. England BSc Eng is associate vice president and Denver-area manager for ARCADIS G&M Inc. in Highlands Ranch, Colo.

James "Jody" Helbling BSc Pet married Amalia Faz in Reynosa,



Mexico, Oct. 26. Family and friends traveled from Colorado, Texas, Hawaii and Alaska to attend. **Paul Williams BSc Pet** was best man. Other Mines alumni in attendance included **Wendy King BSc Pet '90, Becky Brown Williams BSc Math '92, Chris Herne BSc Min '90,** and Rob Ward, who attended Mines but left before graduation. Helbling is engineering manager for Schlumberger. The couple resides in Reynosa.

Beverly K. Luedke-Chan BSc Pet is a petroleum engineer for Petrotechnical Resource of Alaska Inc. in Anchorage.

Paul E. McElligott BSc Eng is project manager for the Inukshuk project for ConocoPhillips Canada in Calgary, Alberta.

Mark E. Zitterich BSc Eng is staff facilities engineer for Shell International Exploration and Production B.V. in Rijawijk, The Netherlands.

1990

Jeffrey J. Jacoby BSc Min is general supervisor for American Soda LLP in Parachute, Colo.

Wendy D. King BSc Pet is director of external strategies for Conoco Phillips Alaska in Anchorage.

Claudia Renee Milliken BSc Eng is an independent engineering recruiter in Denver.

Joe Nahama MSc Pet and **Beth Mensing-Nahama BS Pet '89** welcomed their first child, Jake Hale, to the world Sept. 12. The Nahamas live in Bakersfield Calif., where Beth is a production engineer for Aera Energy and Joe is vice president of NNG and a geologist/engineer for Vaquero Energy.

Adolfo Polillo PhD Pet is a well technology and engineering manager for Petrobras in Rio de Janeiro, Brazil.

1991

Ronald P. Boese BSc is an account manager for Jason Geosystems in Houston.

Robert J. Golden Jr. BSc Min is a senior engineer at the Climax Molybdenum Company. He lives in Golden, Colo.

Tami (Smith) McKeon BSc Eng and **Daniel McKeon BSc Eng**

announce the addition of Dylan Thomas McKeon to their family July 18. He joins big sisters Courtney and Kayla.

Terry and **Jodi Menebroker BSc CPR** welcomed their first child,

Trevor Ryan, to the world March 17. He weighed in at 8 lbs. 6 oz. He is pictured here at 5 ½ months.

on the move

John T. Sanchez III BSc Pet is chief engineer for Bill Barrett Corporation in Denver.

Tanya M. ten Broeke BSc Eng is an associate veterinarian for Pacific Veterinary Clinic in Grants Pass, Ore.

1992

George E. Ogden III BSc Pet is an executive chef for Vail Resorts in Vail, Colo.

1993

David J. Anderson BSc Eng is project manager for URS Corporation in Austin, Texas.

Bryan M. Christjansen BSc CPR is an operations engineer for 10 ethanol plants across central United States. He works for Broin & Associates in Sioux Falls, S.D.

Robert A. Morris BSc Eng is network engineer and account manager for NEC Eluminant Technologies Inc. in Denver. He and his wife, Anney, have adopted a Russian child, Alexander Ilya.

Amanda M. O'Connor BSc Eng is an associate for Galloway Romero and Associates Inc. in Greenwood Village, Colo.

Andreas Rueger MSc Geop is a staff geophysicist in R&D geophysical technology for Landmark in Highlands Ranch, Colo.

Timothy B. Toussaint BSc Math is an independent consultant in Peyton, Colo.

1994

Laurence E. Douglas BSc Eng is a product engineer for Sundyne Corp. in Arvada, Colo.

John W. Robinson PhD Geol is a consultant in Littleton, Colo.

1995

Nicole D. Cain BSc CPR is a chemical process engineer at Roche Colorado Corporation in Boulder, Colo.

Bruce J. Chantry BSc Eng is regional manager for Lincoln Electric Company in Witkoppen, South Africa.

Eric C. Coyle BSc Eng is a senior risk engineer for Bass-Trigon Software in Littleton, Colo.

Jeff Dillon BSc Eng and his wife, Tiffany, announce the birth of their first child, David Clay, born Dec. 23, 2001. They are expecting their second child this summer.

1996

Christopher M. Kaiser BSc CPR is a law student at Chicago-Kent College of Law in Chicago.

Anthony R. Lewis BSc CPR is a graduate student at Harvard Business School.

Brian D. Stevens BSc Eng is senior systems consultant for Stevens.com Inc., in Lakewood, Colo.

Scott G. Van Sickle BSc Math is a software engineer for DoubleClick Inc., in Broomfield, Colo.

Gary C. Yerby MSc Met is project manager for Caterpillar, Inc. in Peoria, Ill.

1997

Andrea M. Z. Alleyne BSc Geol is an InTouch engineer in data management field support for Schlumberger Information Solutions in Houston.

Jason M. Koch BSc Eng is a product engineer for Telogis in Irvine, Calif.

Misty Lynn Pyatt BSc CPR married Christopher M. Gervais April 27 at St. Michael's Catholic

Church in Poway, Calif. Miners who attended include **Tenley Krueger BSc CPR '98, Jared Spritzer BSc Eng, Janis (Spinuzzi) Christopher BSc Eng, Matt Christopher BSc Eng** and **Clay Ost BSc Eng.** The couple resides in San Marcos, Calif.

Lihua Yang Msc Math is a senior system analyst for ConocoPhillips Company. She lives in Katy, Texas.

1998

Shawn D. Green BSc CPR is vice president of Home Solutions Realty Inc. in Westminster, Colo.

Heather J. Hernandez BSc Eng is a junior engineer for Sitech Engineering Corporation in Tomball, Texas.

Erin L. Iverson BSc Geol is a senior GIS specialist for Treadwell & Rollo Inc. in San Francisco.

Jeanette K. Jerz MSc Geochem earned a PhD in geological sciences from Virginia Tech. She lives in Greencastle, Ind.

Scott M. Kern BSc Phy is a quality assurance engineer for Baan CRM in Golden, Colo.

Kristopher L. Kuhlman BSc Geol is a graduate student at University of Arizona in Tucson.

David J. Meidlinger BSc Phy and **Mandi Lyons Meidlinger BSc Phy** are both in the PhD program at Michigan State University in East Lansing.

Lonnie G. Settle BSc CPR is an engineer for BJ Services Company in Corpus Christi, Texas.

1999

Kurrin K. Barrett BSc Eng, BSc Econ, MSc Min Ec '00 is a partner and a senior consultant for Metavisio in Littleton, Colo.

Aragorn Earls BSc CPR and Jill Mendoza are engaged and plan to marry in 2003. Earls was recently promoted to plant superintendent for Archer Daniels Midland Company and is relocating to Gomez Palacio, Mexico.

Muhammad Javed Iqbal M Eng Pet is a reservoir engineer for BP Pakistan in Islamabad.

Alexis Garibay Kayanan BSc Eng is an executive officer in the U.S. Army at Fort Richardson, Alaska.

Carsten B. Laubsch BSc Eng is a protocol officer in the U.S. Army at Fort Sill, Okla.

Diana H. Lockyer BSc Geol is an engineer for Granite Construction Company in Agoura Hills, Calif.

Todd R. McFadden BSc Pet is a graduate student at University of Colorado in Boulder.

Paul E. Murray MSc Geop is a research scientist associate at the Bureau of Economic Geology at University of Texas at Austin.

Witsarut Thungsun-tonkhun MSc Pet is a graduate student at New Mexico Tech in Socorro.

2000

Andrea M. Capra BSc Eng is a graduate student at CSM studying computer science and engineering technology management.

Chontel Cordova BSc CPR and **Gordon Trujillo BSc CPR** were married June 1 at Saint Elizabeth Catholic Church in Denver. Chontel works for IBM and Gordon works for Accenture. Both are pursuing MBAs at Regis University.

Zane A. Kuenzler BSc Pet, BSc Econ '01 is a petroleum engineer for Phillips Alaska Inc. in Anchorage.

Reed M. Marquand BSc Eng is a business systems analyst for McData Corporation in Broomfield, Colo.

Tandra L. Zitkus MSc Env Sc is an environmental engineer for Sear-Brown Group in Golden, Colo.

2001

Katrina E. Britton BSc Chem Eng is an engineer in carbon dioxide forecasting and emission reduction on the Alaska-Canada gas pipeline for BP Exploration (Alaska) Inc. in Anchorage.

Luca Duranti PhD Geop is a research geophysicist for ChevronTexaco Exploration and Production Technology Company in San Ramon, Calif.

John C. Gerczak BSc Met & Mat Eng is a senior engineer at Caterpillar Inc., in Peoria, Ill.

David A. Jack BSc Phy, BSc Eng married Trisha Joy Nadeau March 1 in Morrison, Colo. He is a graduate student at University of Missouri.

Kari Kunkel BSc Phy married **Nathaniel Barnes BSc Eng** in August. The couple resides in Huntington Beach, Calif.

Chad J. Lindgren BSc Eng is a product engineer for Sundyne Corporation in Arvada, Colo.

Wesley S. Marlan BSc Math & Computer Science is manager of his independent business, Lighthouse Web Design, in Lakewood, Colo.

Vikram Singh MSc Min Ec is an analyst for LCG Consulting in Los Altos, Calif.

Channing L. Sparks BSc Math & Computer Science is a computer systems design engineer associate for Lockheed Martin Space Systems in Denver.

Sean L. Thorne BSc Eng is an electronic package design engineer for Aeroflex UTMC in Colorado Springs, Colo.

Jody L. Trantham BSc Eng is a project engineer for ExxonMobil in Houston.

2002

Michelle L. Anderson BSc Met & Mat Eng is a pipeline engineer for El Paso Corporation in Colorado Springs, Colo.

Heather M. Barker BSc Math & Computer Science is a graduate student at University of Maryland in College Park.

Brett P. Chambers BSc Eng is a design engineer for Engineering Solutions Inc. in Pearl City, Hawaii.

Dale R. Clark BSc Eng and chemical engineering senior Maggie Roderick recently announced their engagement. Clark is a CSM graduate student. The couple will move to Redmond, Wash., after spring graduation where Dale will work for GT Engineering and

Maggie will look for work.

Stephen R. Connor BSc Eng is a civil engineer for URS Corporation in Houston.

Kelly Holman Defaye BSc Met & Mat Eng is a receptionist for Minor Planet in Bois Colobes, France.

Mariah Forte BSc Econ, BSc Chem Eng and **Steve R. Connor BSc Eng** were married June 22 in Steamboat, Colo. They have moved

to Texas where Mariah is a gas control analyst for Exxon Mobil Corp.

Robert P. Gillis BSc Eng works for Ames Construction in Aurora, Colo.

Benjamin T. Griffith BSc Math & Computer Science is an associate software engineer for Lockheed Martin Federal Systems Inc. in Boulder, Colo.

Wesley B. Harbert BSc Eng is a design engineer for TST of Denver, Consulting Engineers, in Littleton, Colo.

Scott L. Huffman BSc Eng is an electrical engineer for Black & Veatch Engineers in Aurora, Colo.

Todd A. Hund BSc Eng is a civil engineer for Northstar Engineering in Pueblo, Colo.

Dayven H. Johnston BSc Min is a mining marketing representative for Caterpillar Inc. in Peoria, Ill.

Rachel L. Krabacher BSc Geol is an environmental technician for Lesair Environmental Inc. in Littleton, Colo.

Sandy J. Lindholm BSc Math & Computer Science is a software engineer associate for Lockheed Martin Management & Data Systems in Boulder, Colo.

Dain A. McCoig BSc Eng is a staff engineer for National Chemical in Corpus Christi, Texas.

Traci Jean Olson BSc Chem Eng is a process engineer for Shell Oil Company in Washington.

Nathanael G. Palmatier BSc Chem Eng, BSc Math & Computer Science is a graduate student at Central Washington University in Yakima.

M. Curtis Perry BSc Eng is a performance engineer for Excel Energy in Golden, Colo.

Tomy W. Poerwanto M Eng Met is a corrosion engineer for BP Indonesia in Jakarta.

Brandon S. Schrenk BSc Chem Eng completed Officer Candidate School at Naval Aviation Schools Command, Pensacola, Fla., and is now an officer.

Tara R Sistko BSc Eng married **Patrick Bump BSc CPR '00** Sept. 6 at the Chapel at Red Rocks. The couple lives and works in Chandler, Ariz.

Craig W. Softley BSc Eng is a reliability engineer for Kennecott Energy Company in Gillette, Wyo.

Luke J. Spence BSc Chem is an ensign for the National Oceanic Atmospheric Administration Corps in Silver Spring, Md.

Benjamin M. Upsall BSc Geol is a graduate student at University of Washington.

Alexandra Wayllace BSc Eng is a graduate student at CSM.

2001-2002 CMSAA Financial Statement

The annual financial report was presented to the CSMAA Board of Directors at its October meeting. The financial audit was done by Kundnger, McCutcheon, Corder & Engle, P.C.

Total Revenue	$397,981
Total Expenses	522,001
Assets:	
Investments	433,580
Cash Accounts	116,839
Student Loans Outstanding	156,435
Other	45,178
Total Assets:	752,032
Liabilities and Net Assets:	
Liabilities	39,419
Net Assets	
General Unrestricted	67,347
Temporarily Restricted	421,036
Permanently Restricted	224,230
Total Net Assets:	712,613
Total Liabilities and Net Assets	752,032

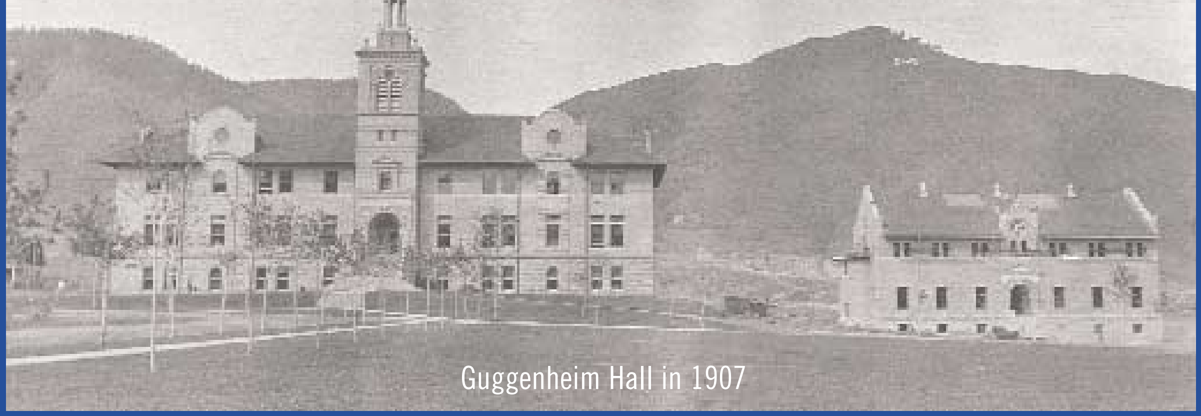
Looking for a Job?

Check CSMAA's list of job openings at alumnifriends.mines.edu/Alumni/career/job_listings

Colorado School of Mines

REUNION

for the classes of
'43, '48, '53, '58, '63, '68, '73, '78, '83, '88 and '93



Guggenheim Hall in 1907

Join your classmates May 7, 8, 9 and 10, 2003

on campus and at the Golden Hotel in downtown Golden for a class dinner, all-alumni dinner, tours of campus and departments, possible trips to the "M," Dinosaur Ridge, Denver Art Museum, Central City, an alumni golf outing and more!
For more information, check out the Web site:
csmaa.mines.edu, and click on "Reunion Weekend."

Please Join Us!

Your classmates are on this list of those already planning to attend Reunion Weekend.
Why not join them May 7-10, 2003?

1948
Anthony F. Corbetta
Norm Domenico
Jack Haley
Arthur W. Lankenau
Lee M. Mathews
Ken Nickerson
Samuel C. Sandusky
Robert Seklemian
Les Truby

1943
Peter G. Burnett
Richard W. Burrows
Richard F. Dewey
George J. Featherstone Jr.
Bob Greider
Doug Grobecker
Harvey F. Pings
William F. Shelton

1953
Joseph Paul Bacca Jr.
John R. Beers
Kelsey Boltz
Dunstan "Dusty" Boyd
William P. Burpeau Jr.
Jorge E. Castillo
George L. Freeland
Bart Hebble Jr.
Paul D. Hinrichs
Harold T. Hoak
Ed Hunter
Keith "Doug" Jung
Raymond E. McGraw
George Minick
G.W. Mitchell
Fran O. Mueller
John L. Neff
Eugene A. O'Brien
John Parkin III
Donald H. Quam
Don Quick
Thomas W. Rollins
Michael D. Russell
Thomas J. Ryan
Fred Schwartzberg
Phinn W. Townsend Jr.
Charles D. Tyler
Leslie E. West II
Franklin D. Wicks
John R. Witt
F. Thomas Wyman

1958
Ian Achong
G.S. Peter Bergen
Jon F. Hamlin
Bill Wahl
Paul A. Wichmann

1963
Gene H. Adams
James Warren Andrews
Dan McFadden
Art Pansze
Roger Phillips
Robert J. Steele

1968
Bob Burnham
Ken Fournier
Bob Irelan
Danny R. Kirschman
Harold Korell
Rob Pahl
John H. Reiss
Richard D. Smith

1973
Barton R. Cox
Tom Haycraft
David Hebb
Tom Huzzey
Donald Lightburn
Logan MacMillan
Ben E. Mares
D.E. McLaughlin
Robert A. Reeves
John Robertson III

1978
Brian Frost
Greg Golike
Stephen Ice
Gary Lacy
Harold H. Miller
Darrell "Glenn" Mores
Peter M. Mueller
John C. Schmid
James P. Schumacher
Sonia Swarz
Shelley J. (Skopinski) Wolf

1983
Friedrich R. Bassier
Darrell D. Dinges
Joel Eacker
Lisa M. Edington
G. Timothy Fisher II
Todd Hablistion
Jim Hancock
Neal P. Mares Jr.
Cathy Mencin
Mike Nagorka
Kurt R. Nielsen
Tom Poole
William J. Prymak
Michael Weis

1988
Meredith Bond
Patricia Chambers
Catherine (Wightman) Collins

1993
David J. Anderson
Reeda and Andy Baturevich
Richard Clark
Gary Coblentz
Joseph Harvey Eshun
Heidi Gorrill
Kerry Jones
Robert Allan Morris
Amanda O'Connor
Carl T. Schmidtlein
Robin Simmons
Chad Soliz
Tim Toussaint
T.C. Wait

Colorado School of Mines
Alumni Association
P.O. Box 1410
Golden, CO 80402-1410

More than 200 junior high school girls, parents, teachers and counselors attended the Expanding Your Horizons Workshop last fall at Mines. Presenter Kathy Brown, a teacher at Everitt Middle School, taught the workshop "When am I going to use this?"

CHANGE SERVICE REQUESTED

NON–PROFIT ORGANIZATION
U.S. POSTAGE
PAID
Golden, Colo.
Permit No. 98