Studying the USS Arizona
An alumnus works to save the underwater monument

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.
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 unswerving trust and loyalty that CSM has ever extended 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 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 Tafaya 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.
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, 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.

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.
Women from Afghanistan

by Sharon Trefny

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 would engage me forever. I will never forget her eyes, pupils dilating and reflecting the sky. Each blink brought a change of scene, and her eyes dazzled me like lightning cracking through the sky.

“Shirin Jahn’s eyes stared fixedly, not angry but determined to make me understand.”

She said, “They have told us to go away, to leave. The women are very smart and they will learn to write a proposal for the future.”

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 leave. The women are very smart and they will learn to write a proposal for the future.”

“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 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 Hedin, and the CSIM, 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.

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).

Interpreter Shirin Jahn arrived at the School of Mines the next day as part of the visit. She was greeted by the president of Mines, John U. Trefny, and the president of INTERLINK Language Centers, Ahad Shalhoub, both of whom then led 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 Engineers Without Borders, Colorado School of Mines.

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

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 would engage me forever. I will never forget her eyes, pupils dilating and reflecting the sky. Each blink brought a change of scene, and her eyes dazzled me like lightning cracking 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 leave. The women are very smart and they will learn 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.
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:

- 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 sustainable 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.

- 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.

CSM Hosts Children’s Diabetes Foundation

Phi Gamma Delta fraternity members hosted a Halloween celebration for the Children’s Diabetes Foundation at Denver Approximately 500 partygoers, both parents and children ages 4 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.

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.

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 100 school 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.
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 clear 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.

CCACS Annual Meeting

Dr. Eugene Truh, 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). Truh 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.

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:

- 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.

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.
CSM Alumni Association

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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, Sara Levinson (Chugiak HS ’83), Patty Chamberlain BSc CPR ’98, Heather Frenier (Service HS ’03), Alex Lamont (Service HS ’03), Kai Binkley BSc Pet ’02, Becky Brown, “Terry” Hong Chih Hung (Service HS ’03), Brian Hayden BSc Eng ’01 and Zack Klemper (West HS ’04).

Washington
Mike McClave Geol E ’66, Kim DeRubertis 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.

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. 3.

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.

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 and CSM alumni. Both are true to the adage that a reunion is held each time Mines graduates meet in the furthest corners of the globe.

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

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Kostiuk and Tucker
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 out of it.

As an eye-opening finding of the so-called Miller Report was that in the 1980s, 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 had no clear vision of its 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 CSMAA President John Trefoy and his administration to define a partnership that will create a closer working relationship between the Alumni Association and the School.

The 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 joint 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 Geol ’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

CSMAA Forging New Partnership with School

STAYING CONNECTED

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 management.

- Lisa McDowell of Arvada, daughter of Gary McDowell, who works in Distribution Services. Lisa is a freshman majoring in metallurgical and materials engineering.

- David Liu of Lakewood, son of Stephen Liu, who is a professor in the Metallurgical and Materials Engineering Department. David is a senior majoring in metallurgical and materials engineering.

- Piers Wendlandt of Golden, son of Mines faculty members in the Department of Geology and Geological Engineering.
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 Douna, 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).
The high quality of our programs has a lot to do with our academic efforts, we can be very effective. As well as fellow students. At the same time, campus that is very personal. They can have Trefny:

What advantages does Mines offer that makes a difference?

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 more independently.

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 thinking about the School in terms of "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, all with their related fields. 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 will the Exemplary Institution Bill mean to planning?

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Mines: What else would you point to as significant recent developments at the School? Trefny: The Abdu 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 related fields, and with their related fields. It doesn’t happen very often. I think it’s 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 at the center for education in the 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 make 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: What will the Exemplary Institution Bill mean to planning?

Trefny: It has 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 more independently.

Mines: What will the Exemplary Institution Bill mean to planning?

Trefny: It has 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 more independently.

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. Firstly, 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 campus.

Mines: Given the pressures of being a university president, how do you relax?

Trefny: I used to play golf, but I don’t find it 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.
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 3.77 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 2003, 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."
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 Public Affairs for Engineers see www.mines.edu/academic/mbc_honors/.
Trefny emphasized the role these investments play in the School's endowment. Raising $17 million from private sources, the School’s endowment has grown from $17 million to $100 million, with more than $60 million already secured. This follows a trend of increasing private philanthropic support for Mines, which were the School's greatest strengths and the emerging needs of society, including energy, minerals, and computational science and engineering.

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. Compared to other public institutions, alumni support for Mines is strong—approximately 15 percent of Mines alumni give to the School. However, because of its size and reputation, Mines enjoys more generous support from students, faculty and research contracts with many private engineering schools. Very often these institutions enjoy even higher levels of alumni support and largesse.

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. Three percent of this goal, or $4.6 million, has already been secured.

In addition to student and faculty support, Transforming Resources seeks to strengthen academic programs, undertake 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 of 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.”

The campaign was formally announced on Feb. 22 as a black tie event 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 longterm 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.”

Leadership Commitments to Date

As of Jan. 15, gifts or commitments of $230,000 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 Viola Chesebro’s Conocophillips
- Adolph Coors Foundation
- Viola V. Couter Foundation
- Robert F. ’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 F. Fettes [D]
- Bruce E. Grewock ’76
- William J. and Robert, Jr. ’42 Ralph L. Hennebach ’41
- Sylvia F. Hochschend Infiltrator Systems Inc.
- Alfred T. Jessen ’48
- John P. ’52 and Erika Lockridge Robert D., Jr. ’74 and Barbara Loggen J
- J. Garvan Frey ’51 and Louise Granahan
- David H. McMinn ’50
- Graciela Murdock [D]
- Louis C., Jr. ’42 [D] and Helen Piskier Phillips Dodge Foundation
- William A. ’58 and Janet Preston Norman R. Rowlinson ’52
- Shell Oil Company Foundation
- Williard and Emma Slater Family Research Trust
- Thomas C. ’56 and Mary Snedker Robley E. ’26 and Elizabeth Soprile [D]
- Franklin J. and H. Darlene Sternmle Unocal Corporation
- Charles V. ’44 and Shirley Woodand Herbert L. ’39 and Doris Young

[D] Dated

### 2002 Comparative Alumni Giving

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<tr>
<th>Institution</th>
<th>2002 Giving</th>
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<tr>
<td>Massachusetts Institute of Technology (MIT)</td>
<td>$10,679</td>
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<td>Massachusetts Institute of Technology (MIT)</td>
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<tr>
<td>Carnegie Mellon University</td>
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<td>Carnegie Mellon University</td>
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<tr>
<td>Rensselaer Polytechnic Institute</td>
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<tr>
<td>Duke University</td>
<td>$700,000</td>
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<td>Duke University</td>
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<tr>
<td>Georgia Institute of Technology</td>
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<tr>
<td>Colorado School of Mines</td>
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<tr>
<td>University of Colorado</td>
<td>$350,000</td>
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<td>University of Colorado</td>
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### 2002 Comparative Endowment Per Student

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<td>MIT</td>
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<td>Duke University</td>
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### Campaign Goal

<table>
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<th>Goal</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Scholarships</td>
<td>$20,000,000</td>
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### Transforming Resources

- 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.
- 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.
- Transforming Resources will help harness Colorado School of Mines’ extraordinary intellectual capability in the noble purpose of building a better world.
- The economic paradigm for public universities is changing. It is imperative that we cultivate non-traditional support for the School.
- 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.”
Philanthropy

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.

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
Montgomery, Texas
George W. Bashen ’48
Huntley, Illinois
Ralph E. Anderson ’52
Englewood, Colorado
H.R. Klingensmith ’75
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
Edmonton, 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

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

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

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 teenager 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 through 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.

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.
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.Eng. “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.”

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.

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.

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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.

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.Eng. “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.”

56 Join Order of the Engineer

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BILLY G. BAUGH Geoph E ’50 died Nov. 14 in Aurora, Mo., at age 76. After graduation from Mines, he became a trainer at Seismographic Service Corporation in Tulsa, Okla., achieving 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.

CLIFFORD FRONDDEL 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, Fronddel 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, Fronddel worked on quartz oscillator plates for military radios as well as a civilian employee of the Army Signal Corps. In 1945, Fronddel 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, Fronddel graduated from Mines with his degree. He was a member of the Sigma Nu fraternity and a multi-sport athlete. In 1955, Fronddel graduated from Mines with his degree. He was a member of the Sigma Nu fraternity and a multi-sport athlete.

RICHARD A. GANONG PE ’47 died Nov. 2 at home in Golden, Cola. 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 1958 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, Jean 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 firm specializing in 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 Boulderfield section and attended functions welcoming students and school visitors to the area. In his 52 years in the oil business, he helped select 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 Monterey 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 wife, Judith Weiss, and a daughter.

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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 had 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. LARRIBLA Met E ’49 of Englewood, Cola., died Sept. 12. He was 74. Larrriba served in the Army Corps of Engineers during the Korean War. He was an active member of Colorado Piping and Mechanical Inc. He was a member of the Sigma Nu fraternity and a multi-sport athlete. In 1955, Fronddel graduated from Mines with his degree. He was a member of the Sigma Nu fraternity and a multi-sport athlete. In 1955, Fronddel graduated from Mines with his degree. He was a member of the Sigma Nu fraternity and a multi-sport athlete. In 1955, Fronddel graduated from Mines with his degree. He was a member of the Sigma Nu fraternity and a multi-sport athlete. In 1955, Fronddel graduated from Mines with his degree. He was a member of the Sigma Nu fraternity and a multi-sport athlete. In 1955, Fronddel graduated from Mines with his degree. He was a member of the Sigma Nu fraternity and a multi-sport athlete. In 1955, Fronddel graduated from Mines with his degree. He was a member of the Sigma Nu fraternity and a multi-sport athlete. In 1955, Fronddel graduated from Mines with his degree. He was a member of the Sigma Nu fraternity and a multi-sport athlete. In 1955, Fronddel graduated from Mines with his degree. He was a member of the Sigma Nu fraternity and a multi-sport athlete. In 1955, Fronddel graduated from Mines with his degree. He was a member of the Sigma Nu fraternity and a multi-sport athlete. In 1955, Fronddel graduated from Mines with his degree. He was a member of the Sigma Nu fraternity and a multi-sport athlete. In 1955, Fronddel graduated from Mines with his degree. He was a member of the Sigma Nu fraternity and a multi-sport athlete. In 1955, Fronddel graduated from Mines with his degree. He was a member of the Sigma Nu fraternity and a multi-sport athlete. In 1955, Fronddel graduated from Mines with his degree. He was a member of the Sigma Nu fraternity and a multi-sport athlete.

ERNEST J. MALOVICH Geoph E ’50 of Lakewood, Cola., 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, Elise E. Bradley, “and spoke of the good times and hard times he had at the School.”
surveyed for the construction of the Alaskan Highway. He was stationed at the Cook Inlet Geologic Survey Observatory in College, Alaska. Among the ensuing years, Rugg worked throughout the western United States, Mexico, Canada and Australia doing mineral exploration and stratigraphy projects. From 1955-1961, he was an independent consultant working out of Tucson, Ariz. Among his accomplishments were seismic evaluation and air 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 returning, 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 Geel '56, five children, 11 grandchildren and six great-grandchildren.

MICHAEL C. RUPERT BSc Chem '74, MSc Gеосhеm '79, of Highlands Ranch, Colo., died Oct. 23, 2002. He is survived by widow, Karen, a son, his mother and stepfather, a sister and a brother.

RICHARD A. WEISS BSc Geel '86 died in a kayaking accident June 25, 1997, at age 33. Originally from Steamboat Springs, Colo., Weiss was a two-time slalom kayak Olympic. 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 to 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 Slalom in 1990, a title he also claimed in 1993. In addition to his Miners degree, Weiss earned a master’s degree in hydrology from Pennsylvania State University and a Ph.D. in geologic 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’86 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 Hoolis M. Dole for his contributions to the success of the Coal Mine Health and Safety Act. In 1975, he received the CSM Distinguished Achievement Award. In 2000, the John E. Willson Distinguished Alumni Award was established at the University of Utah. Willson is survived by his widow, Alberta, two daughters, three grandchildren and one great-grandchild.

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

James Swain BSc Geop and Dana Golds were married Sept. 14. The couple resides in San Ramon, Calif. He is a petroleum engineering adviser for Chevron-Texaco. James is a senior engineer at the Los Angeles regional office of Chevron-Texaco in Oakland, Calif.

1981

Ebbie Dutton Jr. BSc Min was promoted to regional sales manager for Whetstone Supply Company’s Lithington, Ky., and Ashland, Ky., branches.

1982

Robert A. Birnbaum BSc Pet Jr. is a field development consultant for Granite-Halliburton in Houston. Glenn M. Douglas BSc Min owns Douglas Engineering in Arvada, Colo.

James C. Ferguson BSc CPR is an assistant professor of petroleum engineering at University of Alaska. Thomas L. Jordan BSc Geop MSc Min ‘87 is vice president of exploration for Cameco Energy Company in Denver.

1983

Craig E. Burson BSc Min was promoted to managing director at H.L.G. Ventures in Miami, Fla. Elin CooperSmith BSc Min is president of Decision Frameworks LLC in Houston.

Joel A. Eckle BSc CPR is a vice president of projects for CHRM FELL. Stanford Group Inc. in Richland, Wash.

1984

Dan E. Holb BSc Geop is an IT consultant for Landmark Graphical Corporation in Houston. Richard M. McClure BSc Pet, MEng ‘84 is chief operating officer for Energy Online in Badger, Colo. Sergi Neszletta MSc Min is head of corporate geographic information systems, field research development, exploration and production for Total E&P in Paris. Le'veon Bell Jr. BSc Min in St. Louis, Mo., lives in London, New Zealand.

1985

James P. Diethol MSc CPR is senior research consultant for Community Power Corporation in Denver. Carol A. Johnson BSc CPR is a senior consultant for Cameco-Cole in Brecken, Colo.

David F. Hoep BSc Min is a senior software engineer for Minemine in Greenwood Village, Colo.

1986

Stephen F. Baggett Jr. BSc Min, MSc Min ‘94 is a risk management engineer for Bass-Boylan Software in San Francisco.

Kyle A. Morrison BSc Geop is an embedded systems and Symbolics Open specialist for Totelrant Wireless Tech AB in Kista, Sweden. Krista A. Wolfe BSc Chem is a physician in Coral Springs, Fla.

1987

Brent A. Bullard BSc CPR is a process vice president and branch manager for Ingersoll-Rand Company in Portland, Ore.

Melanie Marquardt Westinghouse Geop is a staff geophysicist and executive assistant for BP America Inc. in Houston. James T. Zeller MSc Min is vice president of Galtalt Minerals Inc. in Golden, Colo.

1988

Loelf Brubaker BSc Pet Jr. is a reservoir engineer for Xsport in San, Tunisia.

Jae A. Hibbbs BSc Eng is a sales assistant for Para Systems in Stafford, Texas.

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

1989

Dale Rundell BSc Min married Gina Aumiller May 16 in Positano, Italy. The couple resides in San Francisco.

John A. England BSc Eng is an operations vice president and Denver area manager for ARCADIS CHM Inc. in Highland Ranch, Colo.

James H. "Hick" Blitch 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 Miners in attendance included Wendy King BSc Min ‘90, Becky Brown Williams BSc Math ‘92, Chris Herne BSc Min ‘90 and Bob Ward, who attended Mines but retired from the U.S. Air Force.

1990

Jeffery J. Jacoby BSc Min is scientific advisor for NNG and a geologist/engineer for Vaquero Energy.

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

1991

Brendel R. Borek BSc is an account manager for Jones Geosystems in Houston.

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

Toni (Smith) McKenney BSc Eng and Daniel McKenney BSc Eng announce the addition of Dylan Thomas McKenney to their family July 18. He joins big sisters Courtney and Kayla.

Terry and Jeddi Menebroker BSc CPR welcomed their first child, Trevor Ryan, to the world March 17. He weighed in at 8 lbs. 4 oz. He is pictured here at 5 months.

For Whetstone Supply Company’s Lithington, Ky., and Ashland, Ky., branches.

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COLUMBUS MEDICAL, In.
John T. Sanden III BSc Pet is chief engineer for Bill Barrett Corporation in Denver. Tara M. Sun BSc BkEng is an associate statistician for Pacific Veterinary Services in Grants Pass, Ore.

1992

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

1993

David J. Anderson BSc Eng is project manager for URS Corporation in Austin, Texas. Bryan M. Christiansen 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 a network engineer and account manager for NBE Eliminate Technologies Inc. in Denver. He and his wife, Amy, have adopted a Russian child, Alexander Ilya M. A. O’Connor BSc CPR is an associate for Galloway Romero and Associates Inc. in Greenwood Village, Colo.

1996

Christopher M. Kaiser BSc CPR is a low student at Harvard Business School. Brian D. Stevens BSc Eng is a senior systems consultant for IBM Corp. in Broomfield, Colo. Andrea R. Smith MSc Geop is a staff geophysicist in R&D for Schlumberger in Houston.

1997

Andrew M. Z. Alleyne BSc Geol is an independent consultant in Puyton, Colo.

1999

Laurence E. Douglas BSc Eng is a program engineer for Sandylee Engineering in Arvada, Colo. John W. Robinson PhD Geo is a consultant in Littleton, Colo.

2001

Karin L. Barrett BSc Eng, Econ, MSc Min Eng ’97 is a partner and a senior consultant for Metanor in Littleton, Colo. Ansgar Earls BSc CPR and Jill Mendenhall are engaged to plan and execute for Denver. Mandy Lynn Pyatt BSc Pet married Christopher M. Gervais April 22 at St. Michael’s Catholic Church in Boston. Ansgar Earls BSc CPR is an engineer for Venoco Inc. in Katy, Texas.

2002

Michael W. Barker BSc CPR & Mat Eng is a piping engineer for El Paso Corporation in Colorado Springs, Colo. Matthew L. Barker BSc Math is a software engineer at Black & Veatch Engineers in Aurora, Colo.

2003

Katie E. Britton BSc Chem Eng is an engineering student in carbon dioxide formulating and emission reduction on the Alaska-Cana gas pipeline for BP Exploration (Alaska) Inc. in Anchorage.

Alexis Garibay Kayanan Bsc BkEng is an executive officer in the U.S. Army at Fort Richardson, Alaska. Carson R. Ludick BSc BkEng is a protocol officer in the U.S. Army at Fort Bliss, Okla. Diana H. Leckley BSc Geo is an engineer for Granite Construction Company in Aurora, 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 at the Bureau of Economic Geology at University of Texas at Austin.

2004

Andrew M. Capra BSc BkEng is a junior engineer for Drahead & Associates in Tempe, Texas. Eric L. Benson BSc Geo is a senior GIS specialist for Golder Associates Inc. in San Francisco. Jeanette K. Jerz MSc Geochem is a graduate student at University of Missouri in Columbia. Bryan M. Christjansen BSc CPR is a consultant in Littleton, Colo.

2005

Tenley Krueger is a civil engineer for KTGY in Irvine, Calif. Misty Lynn Pyatt BSc CPR is an executive of her own company in Littleton, Colo.

2006

Maggie will look for work. Snyder BSc CPR & Mat Eng is a consultant for Caterpillar Inc. in San Ramon, Calif. John D. Geraci BSc BkEng & Mat Eng is a senior engineer at Caterpillar Inc. in Perilla, Ill. David A. Jack BSc BkEng married Trisha by Prophet in Pueblo, Colo. He is a graduate student at University of Missouri in Columbia. Roderick recently announced their engagement. Stephanie M. Romero BSc CPR is an InTouch engineer in data management field support for Schlumberger Information Solutions Inc. in Broomfield, Colo. Benjamin T. Griffith BSc Math & Computer Science is an undergraduate student at University of Arizona in Tucson.

2007

Ona L. Thompson Bsc BkEng is an engineering student at Pennsylvania State University in New York, Pa. Aragorn Earls BSc CPR is a mining marketing representative for Northstar Engineering in Pueblo, Colo. He has moved

Write to us!  
magazine@mscoe.wm"
Rachel L. Krabacher BSc Geol is an environmental technician for Linear Environmental Inc. in Longmont, Colo.

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

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

Nathanial G. Palmaier 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.

Tony W. Purkavaa M Eng Met is a corrosion engineer for BP Energy in Golden, Colo.

Lesair Environmental Inc. in Chandler, Ariz., is now an officer.

Tara R. Sistko BSc Eng completed Officer Candidate School at Naval Aviation Schools Command, Pensacola, Fla., and is currently an ensign for the National Oceanic and Atmospheric Administration Corps.

Tara R. Sistko BSc Eng is a graduate student at CSM.

Patrick Bump BSc CPR ’00 is a graduate student at University of Washington.

Alexandra Wayllace BSc Eng is a corrosion engineer for Kennecott Energy Company in Gillette, Wyo.

Benjamin M. Upsall BSc Geol is a graduate student at University of Wisconsin-Madison.

Jared A. Whipple BSc Chem is an environmental technician for Alcoa in New Jersey.

The annual financial report was presented to the CMSAA Board of Directors at its October meeting. The financial audit was done by Kundinger, 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:

General Unrestricted 67,347

Temporarily Restricted 421,036

Permanently Restricted 224,230

Total Liabilities and Net Assets 752,032

Looking for a Job?

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

Join your classmates May 7, 8, and 9, 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: cmsaa.mines.edu, and click on “Reunion Weekend.”

Why not join them May 7-10, 2003?

Choose your classmates from this list of those already planning to attend Reunion Weekend.

Your classmates are on this list of those already planning to attend Reunion Weekend.

CSMAA Financial Statement

2001-2002

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