The Magazine of Colorado School of Mines

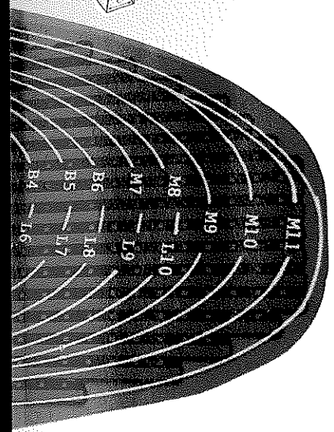
MINES

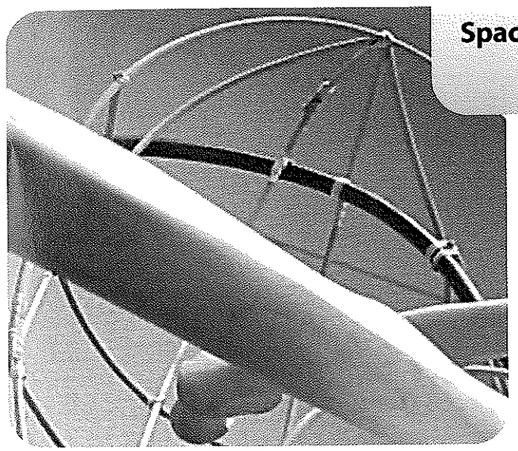
Volume 90 Number 3

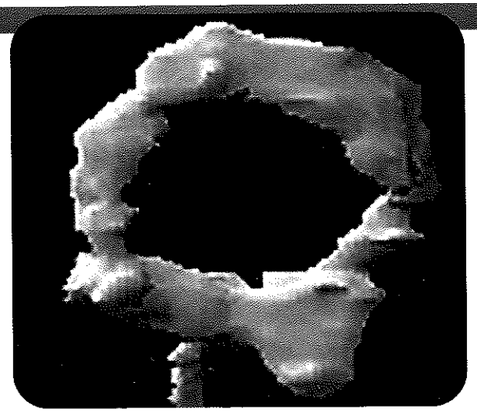
Smart Feet

Visions of Africa

New Department Heads





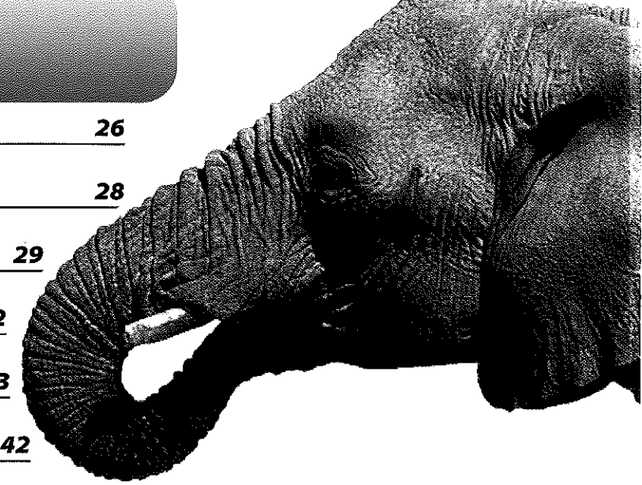


CONTENTS

6

20

24



MINES

Mines is published quarterly by the Colorado School of Mines and the CSM Alumni Association for alumni and friends of the School.

Comments and suggestions are welcome. They may be directed to the phone numbers or address listed below.

John Trefny, Interim President Colorado School of Mines

Michael Watson, Director CSM Alumni Association

Leah McNeill, Co-editor, Director of CSM Office of Public Affairs

Maureen Keller, Co-editor CSM Alumni Association

Contributing Writers
Misti Brady
Jeff Duggan
Marsha Konegni
Bob Pearson
Jo Marie Reeves
Howard Stableford
Krys Strzelec
Jane Taylor

Photography
Douglas Baldwin
Misti Brady
Karl Gehring
Marsha Konegni
Joe Lange
Jane Taylor

Cover photo
Karl Gehring

Graphic Design
Emelene Russell
Advertising & Design

Printing
American Web

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 9 p.m.

Welcome to the new Mines magazine.

This spring, Colorado School of Mines and the Colorado School of Mines Alumni Association signed a historic agreement to jointly produce *Mines* magazine and to distribute it to all alumni and friends of the School.

The new magazine you have in your hands is the result—a 48-page, four-color, quarterly publication that contains the most popular features from each of its predecessors, *Mines Magazine* and *Mines Today*.

We hope you like the new and improved coverage you are seeing in this quarter's *Mines*. The changes include a redesigned and updated look, more articles, in-depth looks at alumni and their activities, and much more.

The change is more than skin deep. This joint publication of the CSM Alumni Association and the Colorado School of Mines represents the interdependent relationship we have and our growing partnership. We intend to bring you the stories that you—our alumni and friends—care about from across the campus, as well as from alumni around the world.

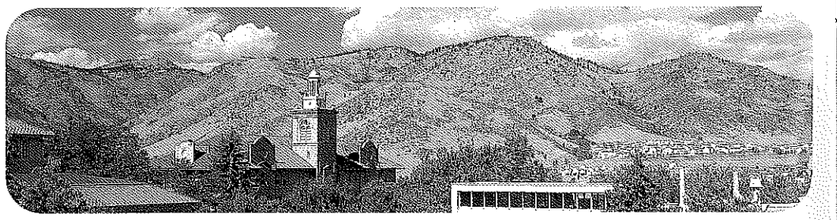
Although our partnership on *Mines* is new, the CSMAA and the School have always been partners on many issues and levels. For example, by Colorado law, the Board of Trustees must have a minimum of four members who are Mines alumni. One member of Mines' Board of Trustees serves as a member of the CSMAA Board of Directors. And members of the CSMAA Board and the School's Board of Trustees serve on the Board of Directors of the CSM Foundation. These three groups all work together, dependently and interdependently, for the good of Mines.

Even as we make changes, our goal remains the same—to keep you connected to the School and each other. We look forward to hearing from you about your magazine—*Mines*.

Vicki Cowart
CSMAA President

Frank Erisman
CSM Board of Trustees President

John Trefny
CSM Interim President



Alumni Events Calendar

September

21 Denver section luncheon at Merrick and Company, 2450 S. Peoria. Presentation on Geographical Information Systems, 11:30 a.m.

21 Grand Junction section luncheon. An informal alumni get-together at noon the third Thursday of every month at the Bookcliff Country Club, 2730 G Road. Call for information: John Howe (970) 242-4903 or Del Tolen (970) 256-1118.

23 Football. Mines hosts Ft. Bays State at 1 p.m. Tailgate party at Brooks Field, 11:30 a.m.

October

7 Football: Mines at Fort Lewis College (Durango, Colo.) Four Corners section event TBA.

13 Golden Lunch Bunch. An informal alumni get-together at the Buffalo Rose, 1119 Washington St., Golden, Colo., the second Thursday of every month, 11:30 a.m.

14 Football: Mines hosts New Mexico Highlands at 1 p.m. Tailgate party at Brooks Field, 11:30 a.m.

19 Grand Junction section luncheon. An informal alumni get-together at noon the third Thursday of every month at the Bookcliff Country Club, 2730 G Road. Call for information: John Howe (970) 242-4903 or Del Tolen (970) 256-1118.

20 Homecoming

21 Homecoming game: Mines hosts Mesa State at 1 p.m. Tailgate party at Brooks Field, 11:30 a.m.

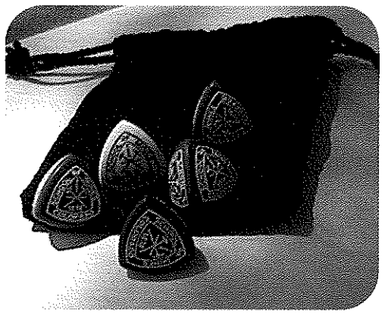
29 Soccer: Mines hosts DU at Pioneer Field, 1 p.m. Tailgate party at noon! Tickets: $2 each for a group of 20 or more. Call Bob Pearson at (303) 273-3959.

November

16 West Denver breakfast. 6:30 a.m. Sheraton Hotel, 137 Union Blvd., Lakewood, Colo. Speaker: CSM student body president. $8 at the door.

December

6 Holiday party. The Petroleum Club, 555 17th St., Denver. Reservations required. (303) 273-3295 or 3290.



Mines marbles, the latest from the Miner's Pick, went on sale for the first time during Reunion 2000. The marbles, each a spherical triangle approximately 7/8 inch tall, come five to a velour bag, four blue and one white. They sell for $10 per bag plus $1.50 for shipping and handling.

CSMAA Mines Marbles ORDER FORM

Ship to:
Name _____

Address _____

City _____ State _____ Zip _____

Telephone _____

Quantity	Unit Price	Total
_____	$10/bag of 5 Mines marbles	
	Merchandise Total:	
	Sales Tax: 7.3% (Colorado only)	
	Postage & handling	$1.50
	TOTAL (payable to CSMAA)	

return form and check or money order to:
CSMAA Mines Marbles P.O. Box 1410 Golden, CO 80402

‘Smart feet’ help diabetics feel their pain

Although pain suppression is often the goal of medical attention, diabetics need to be able to feel their pain.

So a flexible sensor which fits inside the shoes or socks of diabetes sufferers has been designed by researchers at Mines to prevent diabetes patients from developing ulcers and burns that often lead to amputation.

The problem is extremely significant, according to Dr. Rahmat Shoureshi, the G.A. Dobelman Distinguished Professor of Engineering. Half of the amputations carried out in the United States are due to diabetes.

A tragic complication for people with diabetes is a loss of blood circulation to body extremities, such as the hands and feet. This leads to numbness and lack of feeling in these areas.

Consequently patients don’t realize if their feet are too close to a gas fire, for example, or if there is a small stone in their shoes that they are treading on all day long. Normally the brain would direct that the stone be removed immediately, but without any sensation the stone remains. Left undiscovered it can result in ulceration eventually leading to amputation.

Shoureshi and research assistant Tim Romig ’00 have worked with physicians at the Denver Veterans Affairs Medical Center to develop user-friendly sensors that measure temperature and pressure over the surface area of the sole of the foot. Changes in these parameters can be used to predict the extent of potential ulceration.

The sensors can be linked to a handheld device, enabling the patient to monitor a color map of temperature gradients on the foot. The information can also be transmitted automatically to a clinic, where medical staff can page the patient to alert them as problems arise.

The research team is currently carrying out field trials with diabetes patients.

“Our long-term goal is a device connected to part of a nerve that still works normally, which would send a signal to the brain,” Shoureshi said. “The brain would then react in a completely natural way, with the patient once again ‘feeling’ the pain in his or her foot.”

Shoureshi speculates that this technology could eventually be used for other conditions, too, such as lower-back pain.

And the military is even interested in combining it with robotics to develop exoskeleton suits for soldiers that would enable them to jump higher and see farther!

By Howard Stableford and Leah McNeill

Large photo at left: Potential hot spots on a diabetic’s foot are displayed on screen as sensors in his shoe send data to the computer.

Insets: (Top) Dr. Rahmat Shoureshi, left, and Tim Romig review data from the sensors. (Bottom) Sensors are placed in the shoe of a patient during clinical trials.

Trefny named Interim President

Dr. John U. Trefny, vice president for academic affairs and dean of faculty at Colorado School of Mines, has been named interim president by the CSM Board of Trustees.

Trefny has been a member of the CSM faculty since 1977. Named interim vice president for academic affairs and dean of faculty in 1995, he was formally appointed in June 1997.

In making the announcement on June 26, CSM Board of Trustees President Frank Erisman stated: "Dr. Trefny was chosen to head the School for his leadership abilities in academics, research and the community. While serving as vice president, he led a successful endeavor to reform the Mines curriculum, an extensive effort which has been acknowledged by the Colorado Commission on Higher Education as a model for other educational institutions."

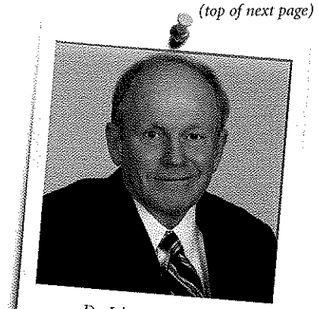
He added, "John is respected and well liked on both the campus and in the city of Golden. Residents of Golden, he and his wife Sharon are widely known for their work on the Jefferson Symphony Orchestra Board and have participated in many other civic activities. We know John will do a fine job maintaining good relations with the Golden community, the CSM Alumni Association, and other friends of the School."

Accepting the appointment, Trefny said, "The School is in an excellent position for producing leaders in science, engineering and business who can use the current explosion in technology to help raise the standard of living around the world. I am looking forward to keeping Mines on a steady course for the next year or so, as our Board conducts a world-wide search for our next president."

Trefny has won several teaching excellence awards, including the *James R. Wailes Award* by the Colorado Alliance for Science in recognition for his leadership in science, technology and mathematics education in 1997.

He also received the Excellence in Science Teaching Award in 1992 from the Colorado Association of Science Teachers for his work in helping determine the needs of future graduates, leading to improvement in K-12 science education.

(top of next page)



Dr. John U. Trefny

Trefny served as head of the CSM Department of Physics from 1990 to 1995 and has authored over 70 technical publications on such topics as quantum mechanics, solid-state physics, acoustics and direct energy conversion.

He holds a B.S. in physics from Fordham University and a Ph.D. in physics from Rutgers University. After a post-doctoral appointment at Cornell University, he taught at Wesleyan University before coming to Mines.

Marr receives Dow Outstanding Faculty Award

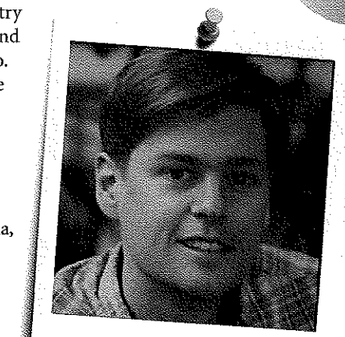
Chemical Engineering Assistant Professor David Marr received the Dow Outstanding New Faculty Award at the annual conference of the American Society for Engineering Education (ASEE) in St. Louis, Mo., on June 21.

Since 1969, the Dow Award has been bestowed annually upon an engineering educator of outstanding ability who has recently entered the profession of engineering education.

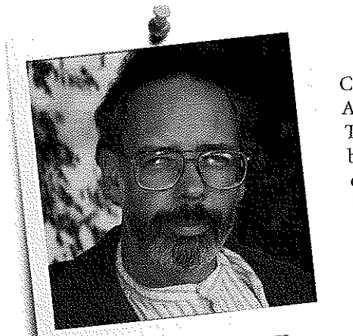
Dr. Marr is one of only eight engineering educators from universities across the country to receive this distinction, and the only one from Colorado.

He earned a B.S. from the University of California, Berkeley, and holds an M.S. and Ph.D. from Stanford University.

His research interests include interfacial phenomena, complex fluids, scattering techniques, and density functional theory.



SHORT STAKES



Dr. Bob King, director of MEL

Mines wins cost effectiveness award

Colorado School of Mines was named among the winners of the Academic Excellence and Cost Management National Awards Program in June. These awards are presented by The American Council on Education (ACE) and the USA Group Foundation. CSM was selected from more than 120 entries. The prestigious awards program, held in Washington D.C., recognizes innovative strategies at colleges and universities that strengthen academic quality while containing costs.

The School's Multidisciplinary Engineering Laboratory (MEL) was cited as an exemplary program.

"One way we trim costs is with our MEL. It integrates hands-on learning from a variety of disciplines – engineering, environmental science and metallurgy – which translates into savings for these departments," explains Dr. Joan Gosink, director of the Division of Engineering.

In addition to being featured at the June 12 awards ceremony, Mines will be highlighted in a publication of effective practices available later this year to U.S. colleges and universities and to the news media.

The USA Group Foundation is the research and philanthropic arm of Indianapolis-based USA Group, the nation's largest student loan guarantor and administrator.

The Foundation helps to advance higher education through support of research and sponsorship of programs and engages in charitable giving.

ACE is a comprehensive association of the nation's colleges and universities dedicated to analysis of higher education issues and advocacy on behalf of quality higher education programs.

Counted among ACE's members are more than 1,800 accredited, degree-granting colleges and universities and higher education-related associations, organizations, and corporations.

New scholarships awarded in honor of first CSM alumnae, Columbine High School

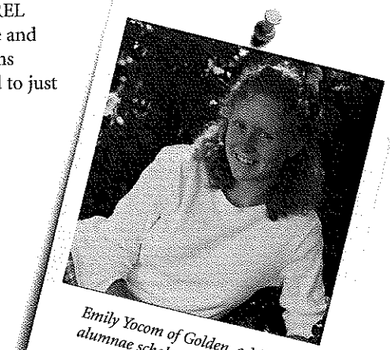
In honor of the first women graduates of Mines, the School awarded new scholarships to three female students this spring at the annual "Take Our Daughters to Work" luncheon sponsored by the Colorado Women's Chamber of Commerce.

CSM has also awarded three new NREL Columbine Spirit Scholarships to Columbine High School seniors.

The managing partners and employees who operate the Department of Energy's National Renewable Energy Laboratory (NREL) endowed the scholarship fund last fall with an initial gift of over $25,000.

An additional gift of $10,000 for the fund was announced by NREL in April. Other private and corporate contributions have brought the fund to just under $40,000.

First CSM alumna Florence Caldwell Jones



Emily Yocom of Golden, a Mines alumnae scholarship winner

Short takes

Spring Commencement 2000

Fifty-nine graduate students and 353 undergraduate students received degrees at the 126th commencement in May, including a record-setting number of double degrees (20).

Three honorary degrees were awarded to:

Dr. Mary Good, the Interim Dean of the College of Information Science and Systems Engineering, as well as the Donaghey University Professor at the University of Arkansas-Little Rock.

Ralph Peterson, chief executive officer of CH2M HILL Companies, Ltd., an employee-owned organization of more than 8,000 people, operating in 100 offices, on six continents.

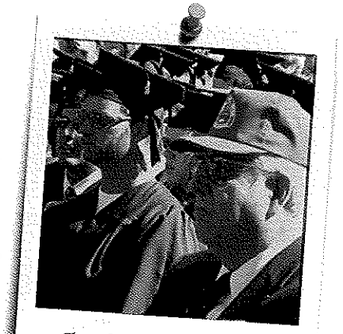
Dr. Octave Levenspiel, emeritus professor of chemical engineering at Oregon State University. His primary interest is in chemical reactors, and his teaching, writing and research aim at finding general principles and methods for designing these units.

The Edmond C. Van Diest Medal was presented to Dr. Penny Iwamasa, the principal process engineer for The Timken Company, an international manufacturer of highly engineered bearings and alloy steels.

Distinguished Achievement Medals went to Gerald Grandey, president of Cameco Corporation; Bob Irelan, executive vice president of worldwide operations for Occidental Oil & Gas Corporation; and George Off, chairman of the board of Catalina Marketing Corporation.

The Mines Medal, awarded to those individuals who have rendered unusual and exemplary service to the School, was presented to minerals management consultant Gary Hutchinson.

The Mines Medal was also awarded to independent petroleum geologist and consultant Fred Meissner, who develops exploration projects in the Rocky Mountains and other U.S. and foreign areas for sale and promotion to industry partners.



Class of 2000 and Class of 1950

WERC, WERC, WERC and then some

CSM engineering senior design teams placed first and second in the U.S. Department of Energy's Waste Management Education and Research Consortium (WERC) design project competition held in late spring in Las Cruces, N.M.

Over 20 U.S. and international universities competed, including Purdue University, Louisiana State and Michigan State.

The Mines teams received $5,000 for their efforts.

The teams designed a bench-scale model to deactivate and decommission thousands of contaminated pieces of equipment and glove boxes, which must be disposed of by being placed in 55-gallon drums for shipment.

The current method is tedious and labor intensive, so CSM students took on the challenge to make this procedure more efficient and safe.

In another winning project, a freshman EPICS team called "CRATER" presented their Mars "mining" project to a NASA/Houston panel, taking top honors.

The CSM team defeated rivals University of California, Berkeley; Pennsylvania State University; California Technology Institute; University of Maryland and others.

Even better, the judges' decision in favor of the CSM team was unanimous!

Women's experiences are focus of new Hennebach Professor

The experiences of women in different cultures are the research focus of Bella Vivante, the new Hennebach Visiting Professor in the Humanities for the 2000-2001 school year.

The first scholar of Greek and classical languages to serve as the Hennebach Professor, she is a classics scholar in the Humanities Program at the University of Arizona–Tucson.

Having resided in several countries, she speaks or is literate in more than 10 languages, including Greek, Latin, Hebrew, German, French and Native American Muskogee Creek.

A graduate of Columbia University, she received her Ph.D. in classics from Stanford University.

Dr. Bella Vivante

Engineering's Gosink receives 'Unique Woman Award'

Engineering Division Director Joan Gosink received the "Unique Woman of Colorado Award for 2000" at a banquet on May 8 prior to the "Unique Lives and Experiences Lecture" that evening.

The lecture series, sponsored annually by *The Denver Post*, featured Pakistan's Benazir Bhutto as the keynote speaker.

Gosink is one of only a handful of female engineering department heads/deans in the United States. At MIT, she was one of 14 female students in a class of 1,000.

Since 1991 Gosink has been at Mines, where she helped develop the rationale and framework for the Women in Science, Engineering and Mathematics (WISEM) program that was created three years ago.

"I hope this award brings attention to programs such as WISEM. Engineering needs women for design. They have new ideas and can make significant contributions," said Gosink.

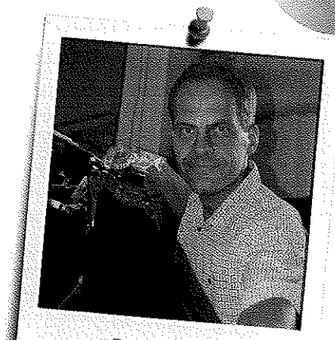
Furtak wins tech transfer award for improvement to thin film process

Physics Professor Tom Furtak recently received the Technology Transfer Award from the Colorado Photonics and Opto-Electronics Program.

Two years ago, CSM received a grant to partner with ITN Energy Systems Inc. to develop new technologies for the thin film material industry.

Through work performed under the grant, Furtak developed the Parallel Detecting Spectroscopic Ellipsometer (PDSE), an instrument capable of sensing the optical properties of a thin film material during production.

Only one award is presented each year, recognizing excellence in research related to improving small businesses in Colorado.



Dr. Tom Furtak

Chicago Field Museum selects Mines for T. rex workshop

Last May Chicago's world-renowned Field Museum of Natural History unveiled Sue, the most complete T. rex ever discovered.

Sue, who hails from South Dakota, is also the largest T. rex ever found. She has a skull the size of a refrigerator and 12-inch teeth – an amazing dinosaur specimen the Museum wants to share.

So they contracted with Colorado School of Mines to collaborate on designing and teaching a K-12 teacher's institute "Sue and Paleontology" this summer.

Why would a museum in Chicago, an international leader in evolutionary biology and paleontology research, select an engineering school in Colorado to help with teacher enhancement training?

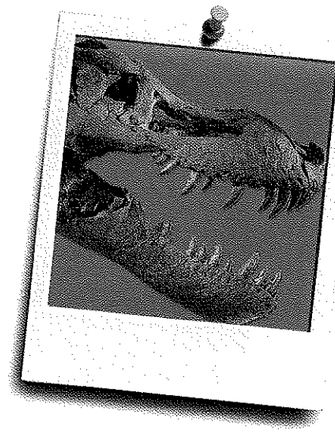
The Field Museum wanted a high quality hands-on/minds-on program to provide K-12 teachers in the Chicago area with the information necessary to fully appreciate and understand the significance of 'Sue,' according to Dr. Gary Baughman, director of the CSM Office of Special Programs and Continuing Education (SPACE).

"With its vast resources, the Museum could obviously have created its own program, but because they were aware of the quality of our Denver Earth Sciences Project module, they decided to use our program in its entirety," he said.

The K-12 teacher enhancement program at Mines may be its best-kept secret. For over 25 years, SPACE has been training thousands of teachers around the country in curriculum-rich programs.

During her academic career, Vivante has given nearly 75 lectures and presentations and has authored several publications.

In addition to her public Hennebach lectures on women's cultural experiences, she will teach a unique senior seminar on the roots of traditional cultures while at CSM.



Gifts of Appreciated Property Are Appreciated ...

. . . and can provide for you and the School, for example:

- You may receive a tax deduction for the full market value of your property.
- You may avoid any taxable capital gain.
- You may be able to provide lifetime income for yourself and your family.
- You may realize estate- tax savings.
- With gifts of $1,000 or more in value, you are recognized as a member of the CSM President's Council.

Undeveloped, revenue generating or environmentally sensitive land may be accepted by the CSMF Property Management Corp. The unique expertise and talents of the CSMF Property Management Corp. could help relieve you of the liability of property with environmental issues.

Gifts of property, stock or other capital assets can be used in making a charitable gift to your alma mater. As with any gift to the School, you will have the satisfaction of knowing that you are providing for future generations of students.

For more information,
contact the Managing Director, CSM Foundation Inc.
Linda M. Landrum at (303) 273-3142

Bickart retires

Dr. Theodore A. Bickart, the 14th president of Colorado School of Mines, announced his retirement in May, effective July 31, 2000.

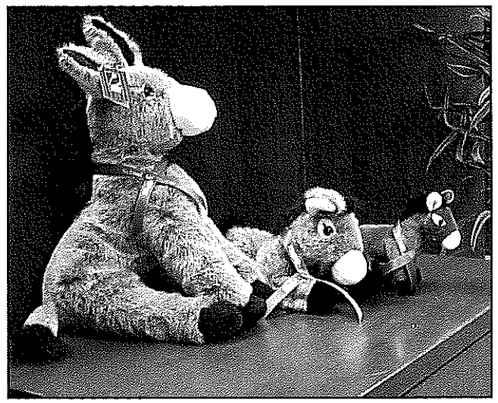
Dr. John Trefny, vice president for academic affairs, was named Interim President in mid-June.

The Bickarts were honored by the campus with a farewell reception on September 6 in the Green Center, where he was presented with a silver diploma and a spherical triangle desk ornament.

In announcing his plans, Dr. Bickart said he felt he had met his goal of helping the School transition from a period of long-term stability in the fields of applied science and engineering to an era of rapidly changing technology.

Born August 25, 1935, he joined Mines on August 1, 1998. Previously, he had been dean of engineering at Michigan State University. Prior to his tenure at Michigan, he was a member of the Syracuse University electrical engineering faculty for 26 years, serving as dean of engineering for over five years.

WE'RE LOOKING FOR GOOD HOMES!



CSMAA OFFERS A FAMILY OF BLASTERS TO CHOOSE FROM

LARGE (18" TALL) $21
MEDIUM (8" TALL AND FLEXIBLE) .. $13
SMALL (6½" TALL) $7
PLUS SHIPPING, HANDLING, INSURANCE:
UP TO $10 .... $3
$11-$20 ..... $5
$21 AND UP ... $6
PLUS 7.3% SALES TAX (CO. ONLY)

TO ORDER, CALL (303) 273-3295 OR
(800) 446-9488, EXT. 3295 (8 A.M.-5 P.M., M-F, MST)

Byron Poos

Bobbie Jo Poos

John Rovero

Veronica Poos Rovero

H. William Poos Jr.

Susan Poos

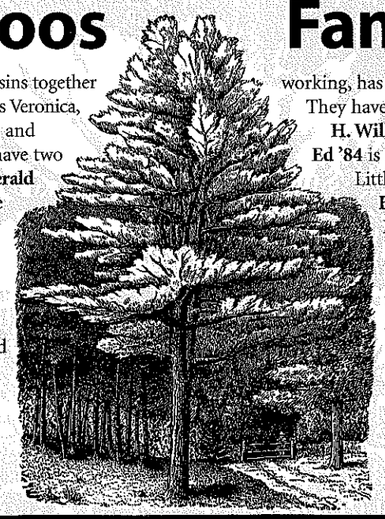
Gerald Harrow

Roger Witte

The Poos Family Tree

The Poos family and their spouses and cousins together account for eight Mines graduates. Poos siblings Veronica, Henry ("Bill") and Byron all attended Mines and married Mines graduates. In addition, they have two second cousins, **Roger Witte PRE '66** and **Gerald Harrow BSc CPR '77**, who also attended. Witte is regional sales manager for John Zink Co., in Tulsa, Okla. Harrow is owner of Ascent Training LLC in Carrollton, Texas.

Veronica Poos Rovero BSc BE '79 is married to **Lt. Col. John L. Rovero, BSc BE '79**. He is a career U.S. Army officer stationed in Concord, Mass. Veronica, currently not working, has been an engineer for the government. They have three children.



H. William "Bill" Poos Jr. BSc CPR '81, MSc Min Ed '84 is an operational research consultant in Littleton, Colo. His wife, **Susan Reeder Poos BSc Min '82** is senior mining engineer for Pincock, Allen & Holt Inc., also in Littleton.

Byron P. Poos BSc Econ '96 is married to **Bobbie Jo Poos BSc Econ '99** and they live in the Denver area. Byron is a Java e-Commerce programmer with Immedient. Bobbie Jo works for Aggregate Industries.

Faces at reunion 2000

Photo Credits: Douglas Baldwin, Richard Sturm

Two hundred and thirty-seven alumni relived their days at Mines during an event-packed reunion weekend May 3-6.

Represented at Reunion 2000 were the classes of 1940, '45, '50, '55, '60, '65, '70, '75, '80, '85 and '90—with the spotlight clearly on the 66 members of the Class of 1950 who returned to campus for their Golden Anniversary. The class breakfasted with President and Mrs. Bickart, received commemorative Mines ties, posed for a new class picture on the steps of Guggenheim Hall, and received commemorative gold-on-silver diplomas during commencement ceremonies.

The Class of 1960—the second largest represented at Reunion 2000—paid tribute to "royalty" of its own at a barbecue at Ken and Nancy Larner's home. The class presented Dr. Anton Pegis, humanities professor from 1954 to 1982, with a silver diploma recognizing his honorary membership in the Class of 1960, and voted to endow an undergraduate scholarship in his name.

"The alumni dinner is what I enjoyed most. It gave us time to get reacquainted with each other and to catch up on the last 10 years. Reunions are important for sharing memories from the past and our hopes for the future."

–Ward Whiteman
Reunion Gift Committee Chair, Class of 1990

Recreation was in abundance for the alumni and guests at Reunion 2000: individual class receptions and dinners; tours of the campus and the National Earthquake Information Center; visits to various departments; tours of CSM's Experimental Mine and Ocean Journey; and drives to the cherished "M."

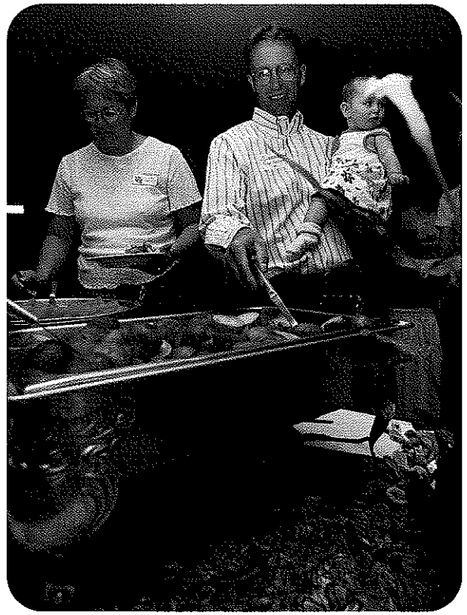
Individual fraternities sponsored breakfasts, and Sigma Alpha Epsilon hosted a Reunion Golf Tourney and Barbecue at the Applewood Golf Course.

A favorite event was a golf outing at Westwoods Golf Club. It drew 43 alums and their spouses—16 from the Class of 1980.

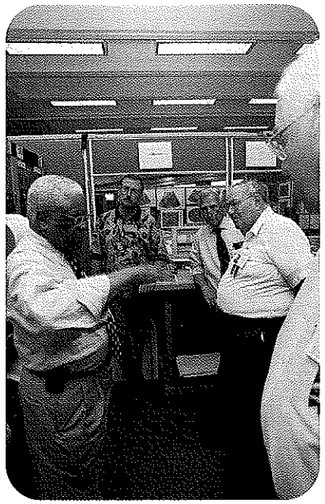
"Command Central" for the weekend was Hospitality Room #149 at the Denver Marriott West. There, CSMAA staff greeted alumni, handed them reunion packages and souvenirs, and let them mix, mingle and reminisce.

The culminating event was the All Alumni Banquet. Bill Mueller '40 presented the School with a check for $2,317,224 representing the total giving for the 11 reunion classes. Volunteer alumni who worked on the Planning and Reunion Gift committees were recognized, and several alumni were presented with awards.

Reunion 2001 is set for May 2-5 for the classes of 1941, '46, '51, '56, '61, '66, '71, '76, '81, '86, and '91. To keep abreast of the details, visit the Alumni and Friends web site at http://www.alumnifriends.mines.edu.

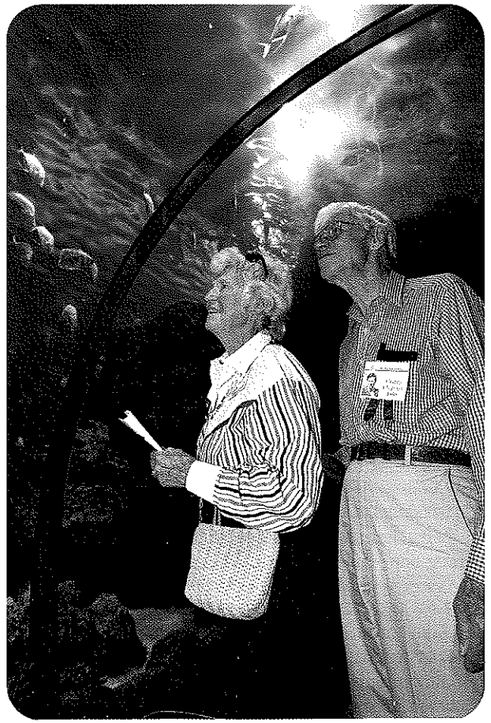


Left: Michael Banschbach '80, baby daughter, and wife, Gayle, partake of the weekend's final buffet at the All Alumni Banquet. Above: Jeff Fodor '90, Carrie Fodor, Wayne Costa '90 and Lisa Costa check in for their first reunion.

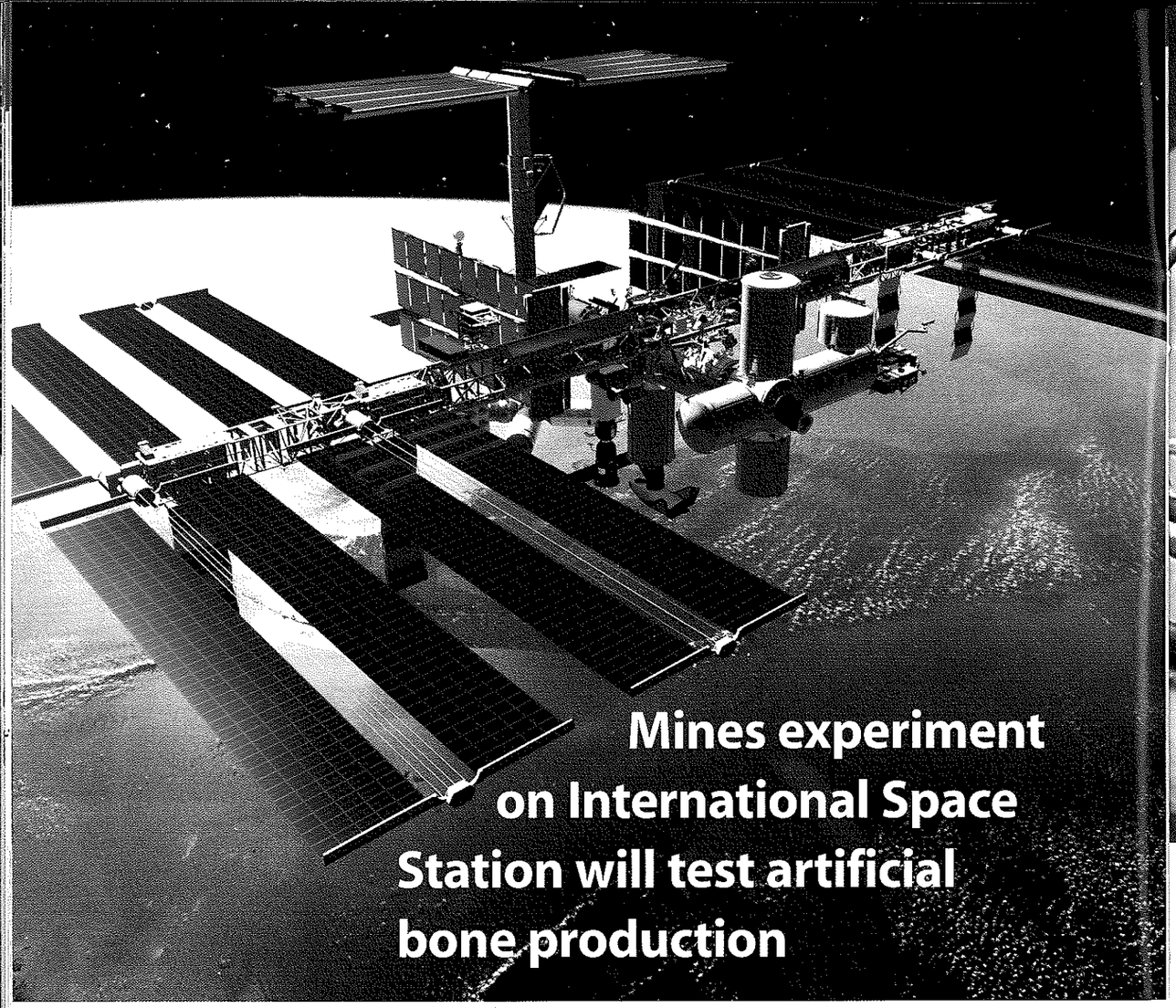


"A reunion allows you to reconnect with people who were so integral to your day-to-day life in the intense years as students. Old friends are important. It was also an excellent reminder of the time we all took to be a little crazy. Going to Mines was a lot of fun besides being a lot of work–sometimes we only conveniently remember the work."

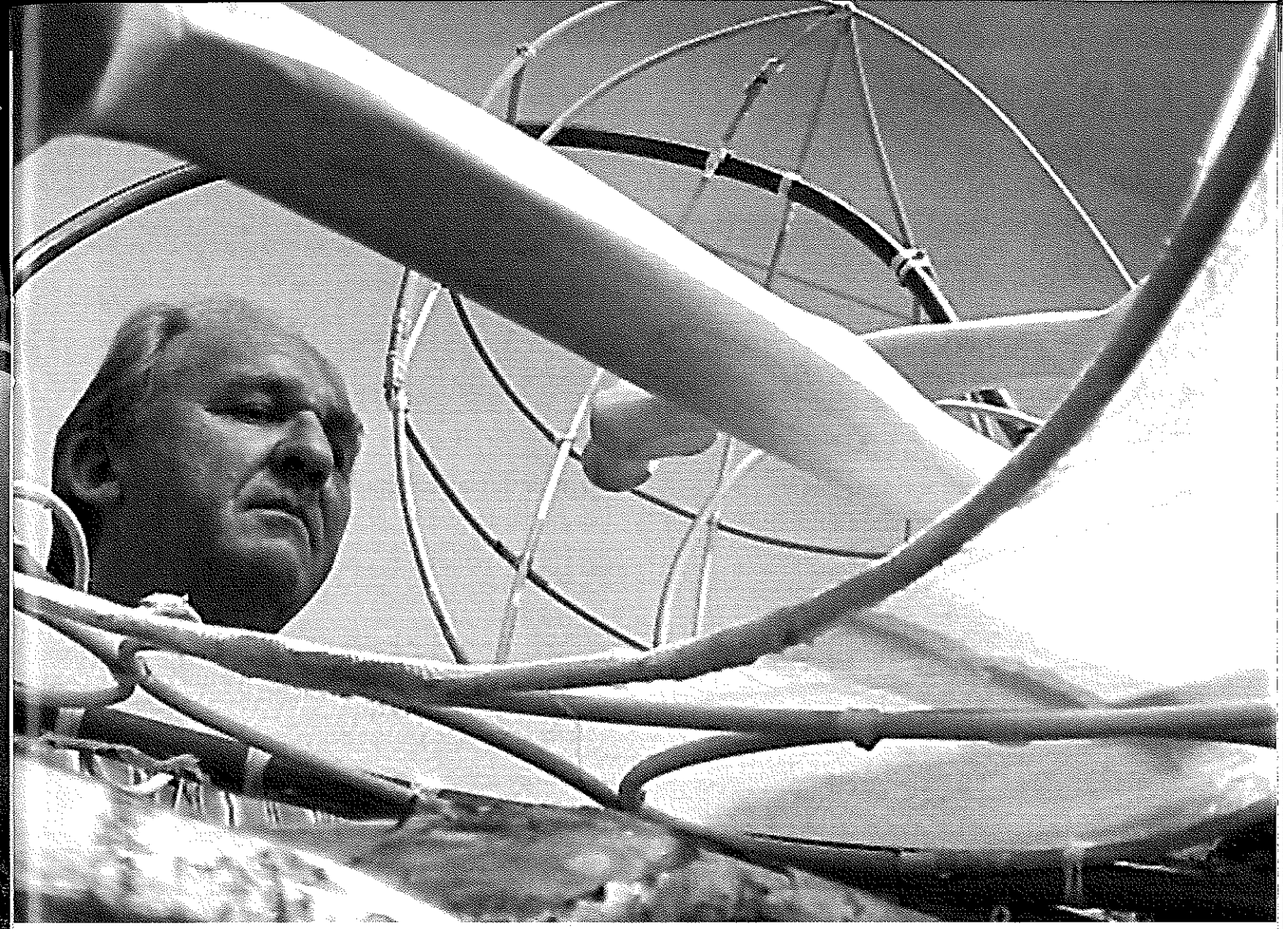
–Roger Abel
Reunion Gift Committee Chair, Class of 1965



Clockwise, from top: Left to right: Waverly Persons, Keith Brownlee, Cleveland Deer '50, Henry Ehrlinger; reunion Alumni spend time during the weekend to experience the expertise of Waverly Persons at the Earthquake Center. The Golden Anniversary Class of 1950 applauds the School's newest alumni, the Class of 2000. Chappy '50 and Cathy Chapman enjoy the view at Ocean Journey. Bill Wilson '65 gets smiles from Craig Garrett '70, Cindy Garrett and John White '66 at the Alumni Reception.



Mines experiment on International Space Station will test artificial bone production



Artist Jan Akey's "Growth of Bone" is composed of wood, cotton, copper and raffia, while the artifical bone created by CSM's Frank Schowengerdt and John Moore is made of titanium and glass ceramic. Here Dr. Schowengerdt examines Akey's sculpture on display at Golden's Foothills Art Center.

One of the first experiments to be carried out when the International Space Station opens for business over 200 miles above the earth's surface next year will be testing of manmade materials for use in bone reconstruction surgery.

Two Mines researchers, a physicist and a metallurgist, are collaborating to produce artificial bone material in the zero gravity conditions of space.

Dr. Frank Schowengerdt and Dr. John Moore hope this will help create the desired characteristics to overcome the limitations of the current bone replacement materials.

In cases where patients' bones need rebuilding after an accident, or where genetic defects need correcting due to disease, surgeons currently must use animal bones, reconstituted bone, or even artificial material such as reconstituted ground-up coral, according to Schowengerdt, who is the director of CSM's Center for Commercial Applications of Combustion in Space.

Titanium metal and other artificial bone materials are currently used by surgeons, explains Moore, head of the Department of Metallurgical and Materials Engineering and director of the Advanced Coatings & Surface Engineering Laboratory at Mines.

Although these materials may have the necessary porous structure to allow blood to flow through them, there are always problems, such as promoting natural bone growth and matching the mechanical properties at the interface between the natural bone and the artificial material.

Furthermore, because the porosity and elasticity of natural bone differs greatly in various areas of the body, current implant techniques take a long time to design and several hours to manufacture. Additionally, replacements need to match the properties of the original bone precisely. For instance, the stress loads on the tibia are far greater than needed on a cheekbone.

The Space Station experiments will establish the fundamental role that gravity plays in determining how a range of porous materials may be produced with ideal properties for bone replacement.

With this knowledge scientists will be able to design materials that mimic the structures of real human bone precisely and to manufacture them to formulaes that can be mass-produced and be readily available in hospitals.

The Mines team is working towards the day when hospital technicians can select the perfect match of artificial bone straight off the shelf and use it immediately on a patient, confident of no future complications.

Over the past months Moore and Schowengerdt have been experimenting with prospective suitable material compounds in the reduced gravity environment of NASA's "Vomit Comet" and then testing materials for bone compatibility. So far, they say, mixtures of a compound of titanium with other substances look promising because they are light and strong.

Calcium phosphate could also prove useful because it can be re-absorbed into the bloodstream as natural bone grows into it. A mixture of titanium and glass ceramics is also being tested. Early results show promising signs of in-bone growth rates.

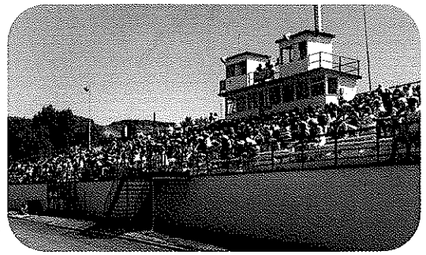
The candidate materials must have precise and complex properties in order to be suitable. They need to be between 40 and 60 percent porous. The pores need to be between 100 and 500 microns in size. They also must be biocompatible and bioactive to encourage the growth of natural bone over them.

So selecting the right material is no easy task. But the Space Station results will provide vital information that will help write the basic rules from which these revolutionary new materials will be created.

By Howard Stableford and Leah McNeill

By Jeff Duggan

Left
Sophomore golfer Marty Jertson placed first in District VII spring qualifer.



Right
Last year's Hall of Fame football game at Brooks Field drew an enthusiastic crowd.

Jertson wins District VII spring qualifier

Sophomore golfer Marty Jertson placed first at the District VII spring qualifier in his hometown of Phoenix, Ariz., April 17-18.

Jertson, who prepped at Mountain Point High School in Phoenix, shot rounds of 69, 71 and 71 (211) to finish at –5 and win by four strokes.

As a team, Mines finished eighth out of 11 teams in Phoenix. Freshman Ray Rodriguez tied for sixth place with rounds of 75, 70 and 76.

11 athletes named All-RMAC

Following the 2000 spring season, seven baseball and four softball players were named to All-RMAC teams. The baseball team, which finished 14-37 overall and 4-20, had four second team and three honorable mention selections. After finishing at 10-28 overall and 6-22 in conference play, the softball team had one first team and three honorable mentions. Mines' 2000 baseball and softball All-RMAC players are:

Baseball

Player	Position	Team
Taylor Goertz	Third Base	2nd Team
Chad Herbers	Second Base	2nd Team
Chris Michna	Lefty Pitcher	2nd Team
David Naibauer	Catcher	Hon. Mention
Galin Nelson	Righty Pitcher	Hon. Mention
Fernando Saenz	Shortstop	Hon. Mention

Softball

Player	Position	Team
Stacey Martinez	Third Base	1st Team
Kristen Kraynak	Catcher	Hon. Mention
Rachel Wilde	Outfield	Hon. Mention
Carrie Wittkopf	Designated Player	Hon. Mention
Terry Packer	Outfield	2nd Team

2000 Athletic Hall of Fame inductees announced

Inductees for the 2000 class of the Athletic Hall of Fame are:

Tom Carroll - football, baseball, basketball and boxing (1953-59)
Mike Collodi - football and baseball (1968-71)
Jim Swain - basketball (1974-78)
Richard Hickman - wrestling (1961-65)
Dick Stapp - head track coach, assistant football and assistant wrestling coach (1967-89)
Swimming Teams of 1934-35 through 1937-38 - won three conference titles
Walter and Grace Lofgren – outstanding supporters

The fifth annual Athletic Hall of Fame weekend, Sept. 1-2, will feature the annual golf outing and brunch on Friday, followed by the induction dinner that evening. Saturday, the Orediggers kick off the 2000 football season hosting Mid-America Nazarene at 1 p.m. at Brooks Field in Golden.

For more information, please contact the athletic department, 303-273-3360.

Stacey Martinez is a first team all-RMAC selection at third base in 2000.

14 student-athletes named to RMAC's spring 2000 All-Academic list

Mines 2000 All-Academic student athletes are:

Athlete	Sport	Year	Major	GPA
Brian Buck	Men's Tennis	SO	Chem. & Petroleum Refining Eng.	4.000
Geno Fallico	Tennis	SR	Chem. & Petroleum Refining Eng.	3.203
Charity Garrison	Outdoor Track & Field	JR	Chem. & Petroleum Refining Eng.	3.726
Leslie McCandless	Outdoor Track & Field	SO	Chem. & Petroleum Refining Eng.	3.568
Tiffany Mensing	Outdoor Track & Field	SO	Econ. and Chem. & Petr. Eng.	3.497
Michelle Roberts	Outdoor Track & Field	SR	Engineering Physics	3.809
Brandon Desh	Outdoor Track & Field	SO	Civil Engineering	3.479
Paul Fisher	Outdoor Track & Field	SR	Mechanical Engineering	3.840
Mike Sharkey	Outdoor Track & Field	SO	Mechanical Engineering	3.356
Geoff Streit	Outdoor Track & Field	JR	Economics and Petr. Eng.	3.753
Zane Kuenzler	Baseball	JR	Economics and Petr. Eng.	3.488
Kerry Petranek	Softball	JR	Economics	3.235
Amanda Kelly	Softball	SO	Math & Computer Science	3.450
Rachel Wilde	Softball	SR	Metallurgical & Metals Eng.	3.836

In addition, tennis player Geno Fallico and women's basketball player Kristin Dillard were selected as Mines' *Phillips 66* Honor Student-Athletes for the 1999-2000 school year. Dillard, a senior, is majoring in chemical engineering and petroleum refining and currently has a 3.869 cumulative grade point average. Each year, one male and one female athlete from each charter school in the RMAC are selected for this award. It is the highest academic honor an RMAC student-athlete can achieve.

To be named to the RMAC's All-Academic list, a student-athlete must have a 3.200 or better cumulative grade point average, be a starter or key reserve on the team and have been a student at their school for at least two consecutive semesters.

Men's tennis team wins 2000 RMAC championship

The RMAC men's tennis championship belongs to Mines this year with a 6-3 victory over rival Metro State in the title match of the RMAC men's tennis tournament in Grand Junction, Colo., April 22.

The Orediggers (17-5 overall, 5-1 RMAC in 1999-2000) defeated host Mesa State 9-0 in the first round of the tournament and the University of Nebraska-Kearney 5-4 in the semi-finals to advance to the final match.

Singles winners for the Orediggers were David Rademacher, Brian Buck and Matt Walsh. Geno Fallico and Rademacher, Brad Howe and Kevin Yu, and Buck and Walsh won as doubles.

Other members of the team included Pat Calvert and Matt Reynolds.

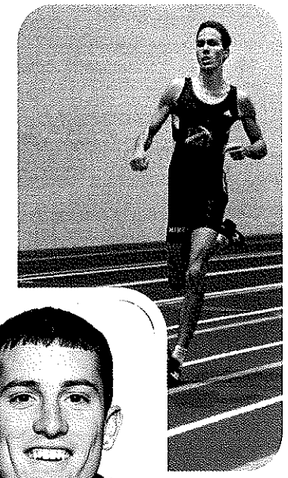
Four track athletes earn All-American honors

Student-athletes Dayven Johnston, Eric Stellmon, Jim Beideman and Ben Lengerich each earned All-American honors for their finishes at the NCAA II Outdoor Track & Field Nationals May 25-27 in Raleigh, N.C.

The four-man 1,600-meter relay team placed sixth with a school-record run of 3:11.64.

Johnston also took eighth place (47.75 seconds) in the 400-meter dash and Stellmon took fifth (51.78 seconds) in the 400-meter hurdles and seventh (14.49 seconds) in the 110-meter hurdles.

For his efforts, Stellmon earned All-American honors in each of his three events. Johnston was All-American in both of his events. Beideman and Lengerich both garnered All-American laurels for the relay team's sixth-place finish.

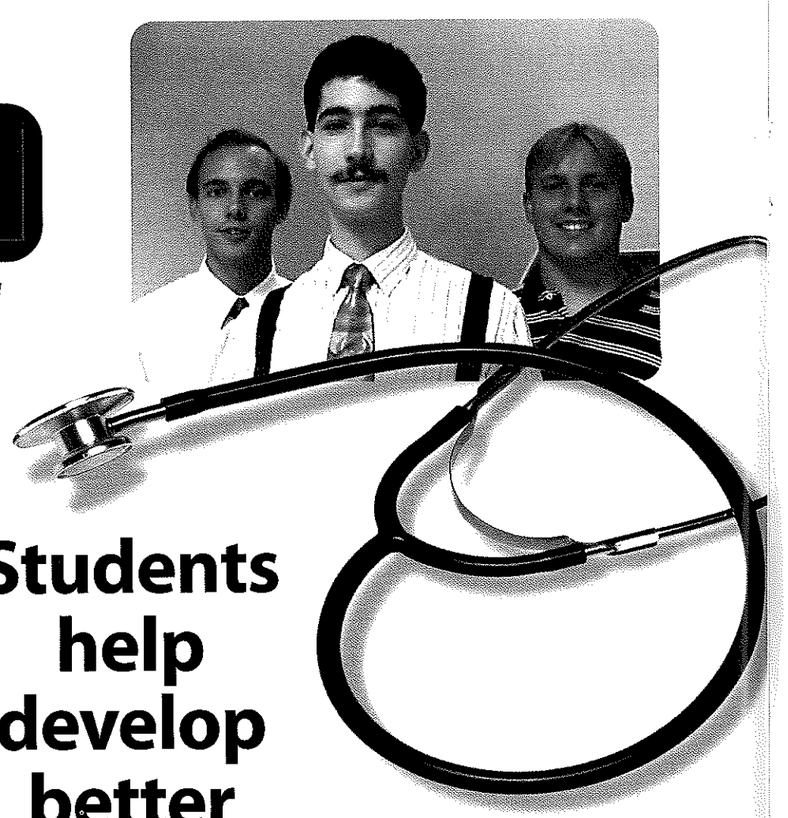


Far right: Ben Lengerich was a member of the 2000 CSM All-American 1,600-meter relay team. Near right: Eric Stellmon was named a three-time All-American for 2000.

Original heart valve ultrasound image

Image enhanced by software

Heart valve team members are (from left) Drew Holland, Isaac Rutenberg and Brandon Rodgers.



Students help develop better heart valves for children

Even the heartbeat of a young child can cause wear and tear on an artificial valve, so hard plastic is currently the material of choice for these life-saving devices.

But the rigidity of hard plastic stresses the heart, which may lead to the need for replacement during open-heart surgery, a costly and potentially dangerous procedure.

A team of three CSM students took on the challenge of helping develop a better heart valve as their summer field session project in the Mathematical and Computer Sciences Department (MACS).

Working with bioengineer Robin Shandas at Denver's Children's Hospital, they have developed a software program that provides a previously missing link in the process of developing a better heart valve.

Dr. Shandas wanted to conduct a finite element analysis on ultrasound images of experimental valves to determine how various valves hold up inside a pig's body. However, unenhanced ultrasound images, are too indistinct for this type of study.

So the students have developed software that refines ultrasound data into high resolution 3-D "pictures" that can be rotated, measured and otherwise studied for deformation of the valve by the heart muscle.

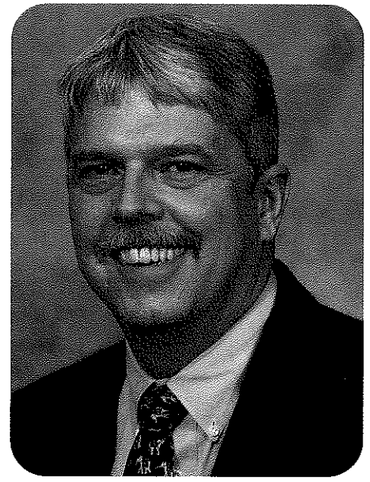
In this way, Dr. Shandas hopes to test various designs and materials to develop a long-lasting flexible valve that is not so stressful to its host heart.

"This project is typical for our summer field session. We try to find real-world problems for the students," says MACS Associate Professor Robert Underwood. "If they are commercially feasible, even better. Not only does this motivate the students but it provides them with valuable business experience in dealing with a client. It also looks great on their resumes when they start job hunting."

Other projects developed by MACS students this summer include:

- 3-D crystal modeling software to help scientists study why different metals crystallize into their characteristic lattice patterns
- "Showtime," a computerized service for real estate agents allowing them to use computers for after-hour and remote scheduling, canceling and viewing of their showings – someday even using cell phones and palm-held computers to perform these functions
- Optimized hydrothermal scheduling, a model for power plants which will allow more cost-efficient operation.

By Leah McNeill



New department heads envision strengthening top programs

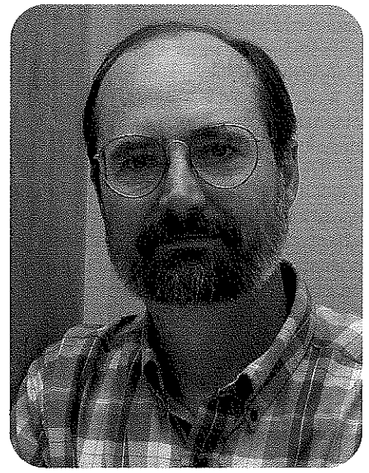
James F. Ely is the new department head for CSM's Department of Chemical Engineering and Petroleum Refining (CEPR).

Ely's goal is to position CEPR in the top 25 percent of chemical engineering programs for graduates and research, while maintaining the top-tier status of the undergraduate program.

However, he realizes it will take some delicate balancing of the graduate and undergraduate programs in order to be successful in both.

Objectives for the undergraduate program include the following:

- Improve the quality of undergraduate education by involving students in research projects, providing a better feel for their chosen field. The Research Experience for Undergraduates (REU) program sponsored by the National Science Foundation will help undergraduates to participate in summer research projects.
- Enable more students to broaden their experiences through co-ops, international study, and internships. Ely would like to see the number of participants in these programs increase from 5 to 25 percent.
- Continue to refine the curriculum. Many chemical engineering students have expressed concern that after their junior year they have only been exposed to theory in their classes and have not had an opportunity to have hands-on experience within chemical engineering.



James A. McNeil, a professor of physics at CSM, is the new head of the Physics Department, which has 120 undergraduate and graduate students, as well as nearly 20 faculty members.

His vision is to deliver high quality education and research by ensuring that all activities and actions promote excellence in the department's three core missions.

Planning for the future, McNeil has devised a three-fold plan.

The first component addresses the undergraduate service courses. Currently all undergraduate students must take nine credit hours of physics, a recent increase from seven hours.

"Because Physics I, II and III support the entire curriculum, it is important for the department to deliver high quality learning experiences," he said.

The second departmental goal focuses on improving an already strong undergraduate physics major program. This will be accomplished by having greater depth and breadth of elective courses, and improved mentoring of students within the department's "mixed advising mode," where student advising is done in concert with engineering faculty.

The third objective is to improve graduate education and research. "The department struggles to recruit graduate students. We need to identify a target market and go after high-quality graduate students," said McNeil.

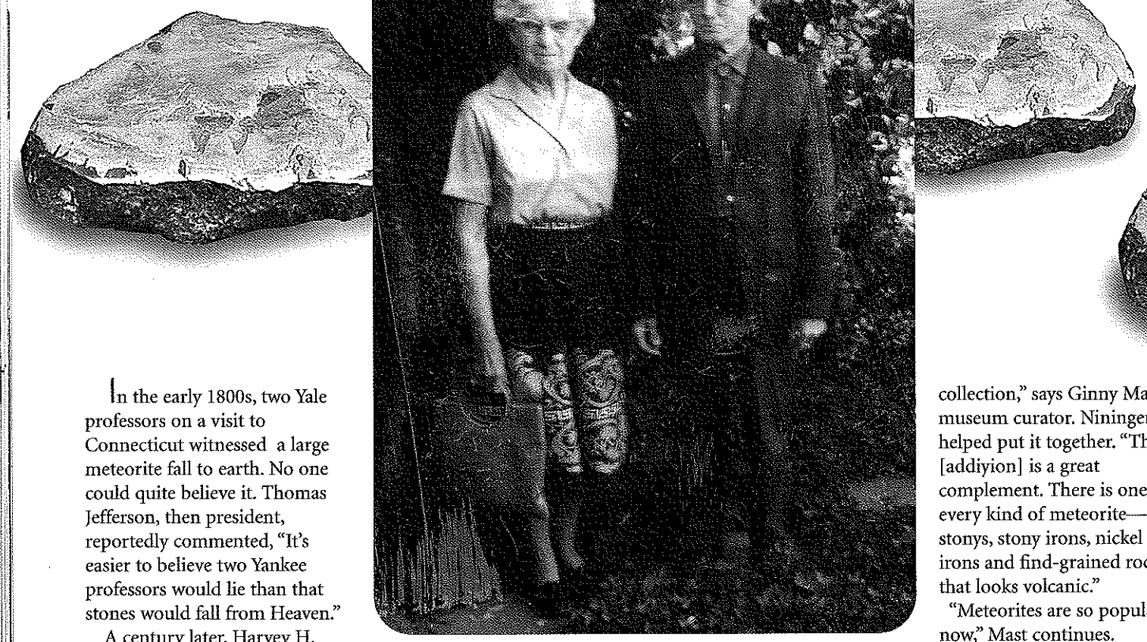
He would also like to see a greater depth and breadth in graduate electives to create an intellectually stimulating environment where graduate students can develop their own method of scientific approach and discovery.

"That's what graduate training is about," said McNeil.

By Misti Brady

Stones that fall from heaven

Meteorite collection donated to CSM's geology museum



Addie and Harvey Nininger circa 1936. His interest in meteorites created a whole new science.

In the early 1800s, two Yale professors on a visit to Connecticut witnessed a large meteorite fall to earth. No one could quite believe it. Thomas Jefferson, then president, reportedly commented, "It's easier to believe two Yankee professors would lie than that stones would fall from Heaven."

A century later, Harvey H. Nininger saw another large meteorite streaking across the sky. His reaction was to see if he could find it. A museum authority at the time told him he could spend a lifetime looking for meteorites and he'd be lucky to find one. On his first excursion, he found two! Chasing down meteorites became a hobby, then turned into his life's work. He amassed the world's largest personal collection of meteorites and turned the study of them into a science.

Nine autographed copies of Nininger's books and 14 meteorite samples have been donated to CSM's geology museum by a close friend of Nininger's, Alexis McKinney and his wife, Irene, widow of P. H. Stevenson, EM '23. In addition to meteorites, the collection includes trinitite formed at ground zero of the first atomic blast in Alamagordo, N.M., and polished spheroids mounted on star-shaped aluminum made for possible use as decorations in Las Vegas' Stardust Lounge.

"We have a small and very fine, very complete meteorite collection," says Ginny Mast, museum curator. Nininger helped put it together. "This [addiyion] is a great complement. There is one of every kind of meteorite—stonys, stony irons, nickel irons and find-grained rock that looks volcanic."

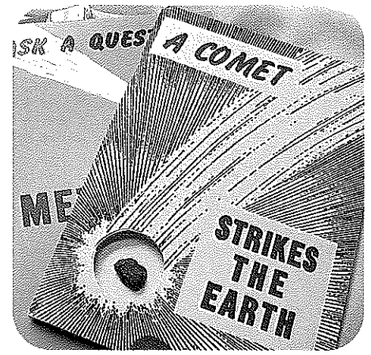
"Meteorites are so popular now," Mast continues. "Twenty years ago it was gold everyone wanted to find. But because of the Mars meteorite [a recent discovery showing the possibility of water on the Red Planet], they have become the darling of collectors. Today, their value is totally out of sight."

Throughout the 1920s and 1930s, Nininger devoted much of his time to tracking down meteorites throughout the western United States and Mexico. Although not lucrative at first—in 1925-26 he and his wife, Addie, and their three children lived in a homemade trailer—Nininger did forge for himself a unique career. He began his search in his native Kansas by visiting out-of-the-way community schools and attending small-town gatherings sharing his theories. He was an excellent speaker and his lectures included a display of meteorites. His enthusiasm for the subject was richly rewarded by his audiences, many of whom led him to strange rocks turned up by Kansas plows. One year, his lectures yielded 31 meteorites brought in by people who had heard him speak. In this way he also discovered a 770-pound meteorite, the second largest recovered meteorite in the world.

Nininger's success at locating meteorites was due in part to the search method he devised. After a meteorite had been spotted, Nininger followed up eyewitness accounts by drawing their lines of sight on a map. He would begin searching where the lines intersected. His collection eventually included many thousands of meteorites from hundreds of "fall" sites.

Nininger was more than a collector. He had a doctorate in zoology from University of California and was teaching biology when meteorites caught his attention and he switched sciences. During his study of meteorites, he developed radical new theories that were at first scoffed at. Nininger was the first person to conduct a complete excavation of a meteorite crater, one he found in Haviland, Kan. He also demonstrated that meteorites collide with Earth about 1,000 times more often than previously believed. He offered proof that different meteorite "falls" overlap and that it's possible to identify a meteorite by its fall. In 1942, Nininger suggested that the shape of space-vehicle nose cones be patterned after meteorites, which they later were. He also correctly predicted that when astronauts landed on the moon they would find deep, impact-created dust, a surface pulverized by meteorites, asteroids and comets.

In 1930, Nininger established the Nininger Laboratory in Denver and later was curator of meteorites at the Denver Museum of Natural History, where he also temporarily housed his meteorite collection. Several years later, he and Addie founded the American Meteorite Museum near Sedona, Ariz. Nininger thoroughly studied the Meteorite Crater in Arizona and determined that when great meteorites strike the Earth, they explode outside their craters rather than burrow into them. Previously, scientists had spent years looking inside craters for the meteorites that caused them. In the late 1950s, Nininger sold part of his collection to the British Museum of Natural History and eventually negotiated with the National Science Foundation to sell the remainder to Arizona State University at Tempe before he and Addie retired.



Photos: Misti Brady

The donated collection included wonderful old books written by Nininger.

The star, made from polished spheroids, was designed for possible use as decoration for the Stardust Lounge in Las Vegas. The star sits atop other meteorites donated from the collection of Alexis and Irene McKinney.

Ginny Mast, curator of CSM's geology museum, holds one of the collection's meteorites. It may not look exciting, but meteorites have become valuable and sought after.

Nininger helped found the Meteorological Society, an international organization that honored him in 1966 by naming a complex sulfide of iron, manganese, magnesium, calcium and chromium found in meteorites "Niningerite." A fossil discovered in 1926 at the Grand Canyon also was named after him. In 1986, a *National Geographic* article entitled "Invaders from Space" featured him.

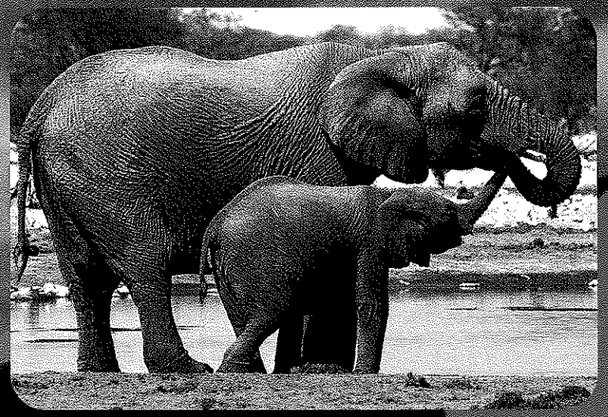
To celebrate Nininger's 95th birthday, the scientific community named asteroid 2421 "Nininger" to honor him. He proudly described it in a note to McKinney as "of moderate size, 25 miles in diameter, equal to 10 or 15 Pikes Peaks rolled into one."

Nininger was the first scientist to theorize that Earth's geography was shaped by impacts from outer space, a theory so accepted today it is used to explain the extinction of dinosaurs. In the early 1930s, though, most scientists believed the moon's pitting and scarring were the result of volcanoes, not meteoric bombardment. The same was thought for Mars and Mercury. But Nininger believed that Earth would also appear pitted and scarred if not for its vegetation and oceans. Once again, his theories turned out to be right.

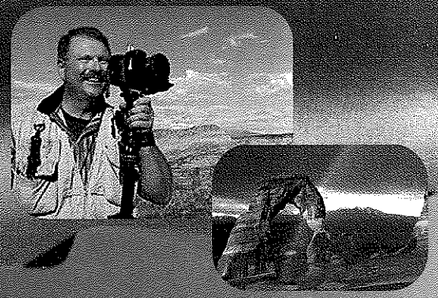
By Maureen Keller

Sand dunes, Namib Desert National Park, Namibia

VISIONS OF AFRICA



Elephant mother and calf, Etosha National Park, Namibia

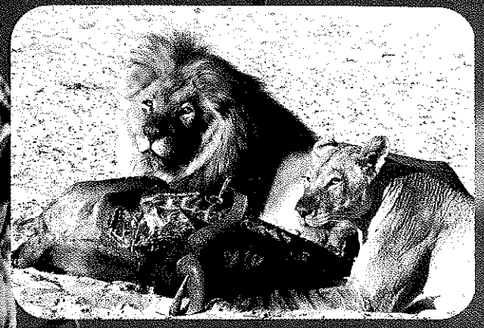


As the sun creeps over the African horizon you might find Joe Lange exploring the Great Sand Dunes of Namibia or peering over a meercat family's breakfast. A professional nature photographer, Lange is also a '63 Geological Engineering graduate from CSM.

Each year he troops from the arches of Utah to Africa, exploring nature's treasures and secrets. Several groups of eager Americans, who yearn to see Mother Earth through Lange's eyes, participate in his workshops held all over the globe. For more of Lange's "Dramatic Light Nature Photography" see http://www.dramaticlightphoto.com.

By Misti Brady

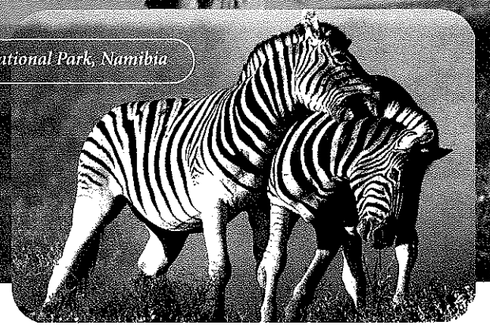
Meercat family, Kalahari Gemsbok National Park, Republic of South Africa



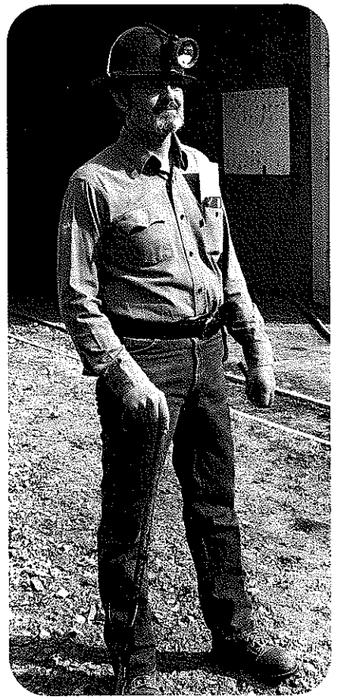
Lion pair devouring wildebeest, Kalahari Gemsbok National Park, Republic of South Africa

Flowers in Namaqualand, Western Cape Province, Republic of South Africa

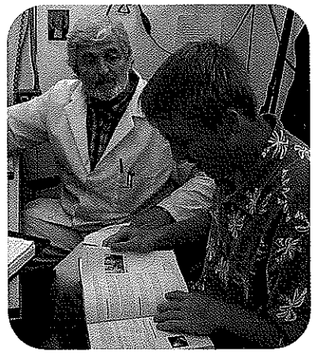
Wildebeest at sunrise, Kalahari Gemsbok National Park, Republic of South Africa

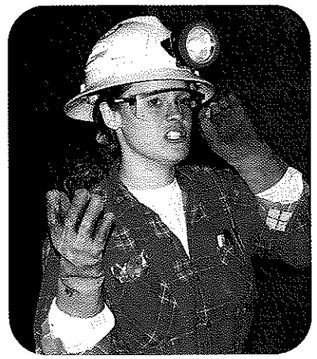


Fighting zebra stallions, Etosha National Park, Namibia



Michael Thomas





'For applied *anything,* Mines is the best'

He's emphatic about it. "I don't take my students to Edgar Mine for a tour," says high school teacher Michael Thomas.

Although this was the 25th year that Thomas has taken J.K. Mullen High School students to CSM's experimental mine in Idaho Springs, they don't go to sightsee. Instead, the students complete two-thirds of a work shift.

They drill, blast, load and sample the ore. For three weeks prior to the visit, students prepare in the lab at Mullen, and they must pass a mine health and safety test.

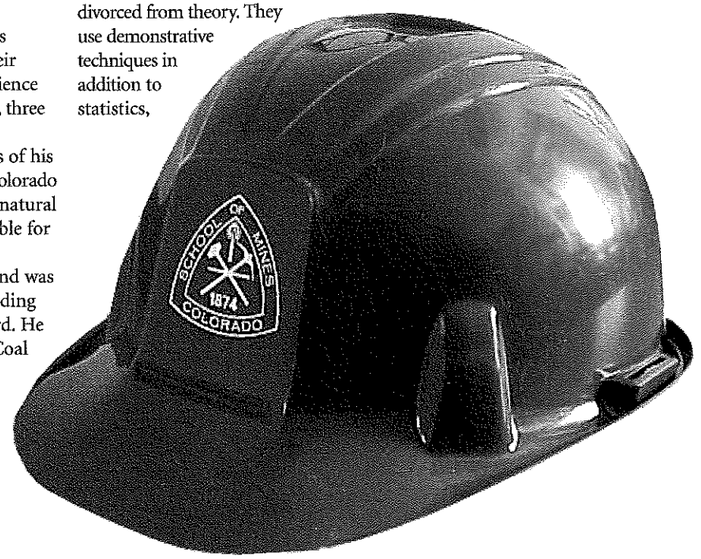
Thomas's hands-on, just-do-it approach not only involves students in a work shift at Edgar Mine, it also influences their college and career decisions. Of CSM's seven bachelor of science graduates from the Mining Engineering Department in May, three were former Mullen students.

One of those graduates was Matthew Lengerich, who says of his former high school teacher, "There is no greater advocate in Colorado high schools for mining technology and the importance of natural resources in our society. And there is no one more responsible for the direction of my career."

At CSM Lengerich made the Dean's List every semester and was the recipient of a number of scholarships and awards, including the Colorado Engineering Council Graduating Senior Award. He has accepted a position with Kennecott Energy's Colowyo Coal Mine in Craig, Colo.

"I usually have one or two students a year who go into mining engineering at Mines. A lot do other things – chemistry, geological engineering," Thomas says. "I see my students in metallurgy, chemical engineering, electrical engineering."

Thomas believes that the inspiration for an engineering career begins with application. "My classes are not just theory from books. Labs are 99 percent motivation," he explains. "I attended university in Germany, and I pattern a lot of what I do from gymnasium in Germany—their application of things and the way lab work is not divorced from theory. They use demonstrative techniques in addition to statistics, and they stress fundamentals. Come into our lab at Mullen, and you'll see something going on that's real."



Thomas' students choose to attend a variety of higher education institutions. "But for 'applied anything' Mines is the best. The kids who come out of there do very well," he notes.

Dr. Tibor G. Rozgonyi, head of the Mining Engineering Department, notes, "I am impressed with the depth of Mr. Thomas' knowledge and with his unparalleled enthusiasm for teaching. I hope he will work with us for many years, bringing the best minds and the most talented individuals to Mines."

Thomas asks his students to report on their college experiences. "I want to keep tabs on what is going on in the university classrooms so that my instruction prepares them. One thing I know is that they have to learn to generate formulas, not memorize them. I tell my students if you depend on memorizing, you're dead."

Thomas also follows the successful careers of those he has taught.

"He is a truly gifted and determined individual who lives to see his students go on and do great things," says former student Lorraine Miller, BSc Min 1996, who is now an engineer/shift supervisor for Phelps Dodge Corp. in Morenci, Ariz.

Denver's J.K. Mullen High School is a Catholic college preparatory school. Thomas, B.A., M.S., teaches geology, physics and chemistry at the school. He describes himself as "an academic gypsy," but says his "favorite niche is mining."

In addition to teaching, Thomas consults for mining companies. With income from his consulting work and donations from major companies including Marathon Oil, Thomas and his students have built a well-equipped laboratory, unlike any other. According to Thomas, it is probably the only high school in the United States that has three atomic absorption spectrophotometers.

"If you teach, you have to love what you do. Kids know when you connect, when you love your subject, and your excitement is catching," says Thomas. "You maybe can't be up and ready to fly everyday as a teacher, but if you are up a good part of the time, you've got it whipped."

Always learning, Thomas constantly adapts his curriculum, doing whatever it takes to keep his courses interesting, relevant and current.

Just don't ask him to take you on a mine tour.

By Marsha Konegni

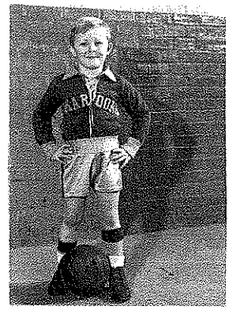
Check out and order CSMAA merchandise

on line at:

csmaa.mines.edu/alumni

sweatshirts • shorts • shirts • hats • baby bibs • stuffed animals • marbles • mugs • towels • pens • license-plate holders • key chains • shot glasses • ornaments • playing cards • bumper stickers

CAN YOU GUESS THIS CMS ALUMNUS?



YOU'VE BEEN EXPOSED TO ROUGHLY 5,000 ADVERTISING MESSAGES IN THE LAST 24 HOURS? CAN YOUR REMEMBER TWO?

THIS IS ONE ADVERTISEMENT THAT YOU NEED TO REMEMBER FOR ALL YOUR TAX PLANNING AND STRATEGY ESTATE PLANNING AND COMPLEX REAL ESTATE TRANSACTIONS!!

E-mail: Taxlawyer1@aol.com

FK

Frontier-Kemper Constructors, Inc.

Heavy Civil & Mining Construction

SHAFT SINKING

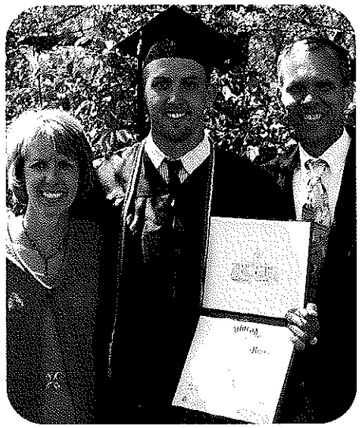
RAISE BORING TUNNELING

MINE DEVELOPMENT

GROUND FREEZING

P.O. Box 6548
Evansville, IN 47719-0548
812-426-2741
TELEX 27-2141
FAX 812-428-0337

Learning by Fishing



Matthew Lengerich, center

Mullen High School teacher Michael Thomas was an inspiration to recent CSM graduate ***Matthew Lengerich.*** *But Lengerich had many influences. In the following excerpts from his student address at spring commencement, Lengerich explains the influence of family—and fish.*

The family camping trip is perhaps the greatest adventure known to the American family. So it was with my family each summer. Every other weekend, packing up the trailer, off we would go, to some unknown destination for days of exploring, eating, fishing, hiking and just plain fun.

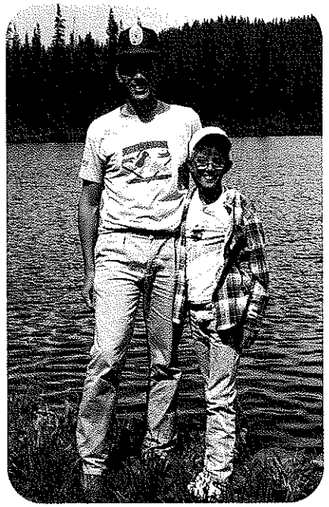
Of course, my family had its own little twist on this American adventure. We didn't just camp—we engineered. We chose our campsite carefully—trees, wind direction, water and bathroom proximity were of utmost importance. The spot for the trailer was imperative. It had to be level and spacious, with enough sunlight for the morning and enough shade for the afternoon.

So much was learned on these trips. How to pack a pop-up trailer so the total unused space was less than half a cubic foot. How to spend an entire afternoon whittling one stick. How to tell which direction was north without a compass. And how a perfectly built campfire could be the pinnacle of engineering.

However, the greatest of all adventures in camping was going fishing. My dad taught me everything he knew about fishing—where to fish, how to fish, which knot to tie and which fly to use. But the most important thing he taught me was: 'Be quiet. You'll scare the fish.'

Today I am just beginning to understand what was really meant. It wasn't about scaring the fish at all. Always being focused on the goal of catching fish meant that the rest of the time was unimportant, so I filled the space with idle chatter. The same is true of any experience, if the only focus is the goal, the meaning is lost. This is especially true in engineering.

The final product in many cases—be it a bridge, a machine, a mine, a map, or a substance—is never really beautiful in itself, although functional and practical for sure. What makes it enjoyable to the engineer is the process and experience that went into the design, and what we learned in getting there.



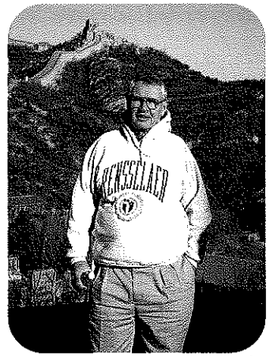
Matthew and his dad

'Be quiet, you'll scare the fish' had so many meanings. It was also my dad's way of teaching me how to enjoy being outside, and about how powerful being alone with your thoughts can be. It was on those trips that the first engineering instinct became evident. I would spend entire afternoons building pools, dams and bridges on the river.

Before I leave I would like to thank those professors, faculty, family and friends who have helped teach this lesson: that education is a journey with no final destination. Those who have challenged us to look beyond the question of 'how' and to ask the harder question 'why.' To those who have pushed us to change our focus from the final grade to understanding the concept.

I am not sure it really matters if you're quiet when you're fishing. I don't think the fish really care. In the future, though, I hope to take many more family camping trips, and should I have the privilege of having a son, I will tell him the same thing my father told me: 'Be quiet. You'll scare the fish.'

By Matthew Lengerich



Corson '58 Consults in Mainland China

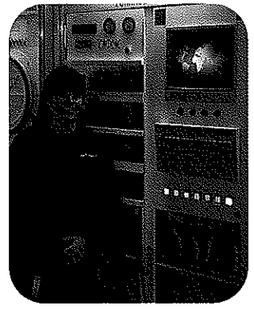
Although semi-retired since 1994, **John T. Corson Geop E '58** still works a few months a year, usually in an exotic location. Last fall he spent three months in the Republic of China performing a feasibility study on a proposed 1000-kilometer railroad. The Chinese government wants to build a line between Hefei and Xi'an, home of the famous terra cotta soldiers, and was borrowing $300 million from the Asian Development Bank. As a condition of granting the loan, the bank required an outside group of consultants to review the proposal. China is building the $3 billion line to open up the plains beyond Xi'an to development and to gain better access to major coal fields located north of that city.

"I was surprised they gave it to us," says Corson about his firm being chosen to participate. "It was only three months after we [the U.S.] had bombed their embassy [accidentally during a NATO raid in Yugoslavia]." Corson says the Chinese weren't eager to see any of the consultants because "they knew they were better than us." They had spent many years developing their own complicated feasibility study. But they tolerated the consultants as a condition of the loan.

As one of five consultants on the project, Corson had the task of reviewing the environmental impact study. He was given two reports—1,100 pages, semi-translated—and had to condense them into one 20-page document. "It took weeks just to pick out what they were saying because the English was so convoluted," he says. In the end, the consultants approved the project and recommended the bank proceed with the loan, which it did.

The Chinese people "were very intent on being hospitable," says Corson, although sometimes he wished they weren't. Although most of his time was spent in Beijing, Corson did visit every major city along the proposed railroad route. "Every town we came to had a big banquet for us serving all kinds of rare delicacies. At one place they served a whole turtle, cooked intact. I tried to say no but they said as the guest of honor, I had to eat it." Corson managed a few bites before passing it on. "I didn't like it," he adds. In another incident, Corson sprained a back muscle while working out in a gym and had trouble walking. "Every night they'd bring me different doctors who would massage me until I was really in pain."

Since his semi-retirement began, Corson has worked in New Guinea, Vanuatu (in the South Pacific), Thailand and Romania. This year his prospects include Bulgaria or a return to China.



Pettigrew '92 Organizes Experiments for International Space Station

In May, **Penny J. Pettigrew BSc Chem '92** became a project scientist for NASA's Materials Science Research Facility at the George C. Marshall Space Flight Center in Huntsville, Ala. She acts as the liaison between scientists designing experiments for the International Space Station and engineers building the rack and experiment modules that will contain those experiments. The first rack, approximately 6 feet tall, 3.5 feet wide and 3 feet deep at its deepest point, is scheduled to launch in 2002. Two additional racks are also being built to accommodate more experiments in the future. "Experiments have to just plug in the existing hardware and be ready to go," Pettigrew explains. It will be the job of the astronauts on board the Space Station to switch out and run the experiments according to a schedule that she helps devise.

Currently, Pettigrew's job is to make sure this first rack can provide the power, heating, cooling, vacuum or whatever other conditions an experiment might require. She also must try to predict what conditions future experiments might need because each rack has a life expectancy of 10 years. Only two experiments can be accommodated into a rack at one time. The time and conditions needed for each experiment will vary so all instrumentation changes will be predetermined by Pettigrew and software controlled. "I imagine it will be a scheduling nightmare," she says.

"The Space Station will offer opportunities to conduct microgravity experiments that the United States has never had before," Pettigrew continues. For example, unlike on Earth where convection can be driven by gravity, perfect crystals can be grown and the information learned from them can be applied in numerous fields such as the pharmaceutical and semi-conductor industries. Currently, the Space Shuttle provides the only opportunity for such experiments, which must be completed within a three- to four-day time frame.

Another of Pettigrew's duties is to determine which investigations will get aboard and when, although NASA will try to accommodate as many people as possible. NASA has determined a minimum percentage of investigations for university research and CSM expects to have an experiment aboard the first launch, according to Frank Schowengerdt, director of CSM's Center for Commercial Applications of Combustion in Space.

After graduation from Mines, Pettigrew went to the University of Alabama in Huntsville and earned a master's degree in chemistry and is finishing up another in materials science. She is qualified for her new position, she says, "because I have a strong science and materials science background plus I've been involved with flight experiments in the past. None of my degrees are in engineering, but since I went to Mines, I have a basic engineering background." Pettigrew's flight experiments were for her graduate research and they flew on the Space Shuttle and the Russian Space Station MIR.

Pettigrew could make a career of this new position since the data from the experiments will need to be constantly monitored after the racks are in place in the Space Station. Also, any necessary trouble-shooting will be done as part of ground support for the project. In addition, various launches will send new experiments and return old ones so scheduling and support will always be needed. Pettigrew has a different goal, though. She wants to be an astronaut aboard the Space Station and has had her application in for several years. "It would be a dream come true," she says. Pettigrew would like to continue working with NASA, but would eventually like to transfer to the Kennedy Space Center in Florida. "I've had the opportunity to see several Shuttle launches including Sen. Glenn's return to space. "I would love to be able to attend such events regularly."

Axler '90, '94 assesses nuclear weapons effectiveness

The end of the Cold War created complex technical challenges in the nuclear-disarmament field, and **Keith Axler MSc Mat Sc '90, PhD Mat Sci '94** is working on them. He was recently appointed division group leader for nuclear materials science at Los Alamos Laboratory. With the discontinuation of underground nuclear testing, science-based stockpile stewardship has evolved to determine the reliability, safety and longevity of the U.S. nuclear arsenal. His group collaborates with weapons designers and investigators to extrapolate these materials changes to provide lifetime and reliability predictions for the nuclear stockpile. His group also conducts disassembly and postmortem examinations of retired nuclear weapons. "We have to determine how long our weapons can be safely stored and retain their reliability," explains Axler, who oversees a department of more than 80 scientists and engineers, including quite a few Mines alumni. "Underwriting the safety and reliability of nuclear stockpile systems is a tremendous responsibility to our country and it is taken at the highest level of intensity and vigilance within this group."

Axler's group comprises the largest assemblage of nuclear materials expertise in the nation. They perform optical and electron microscopy, dynamic testing, surface science, crystallography, thermodynamic and kinetic measurements and phase investigations.

Providing materials characterization support to the weapons design community is another aspect of Axler's job. "The science-based stockpile stewardship is comprehensive beyond my group," he says. "It engages what is arguably the most sophisticated computer modeling in the world. We develop the specimens and conduct some of the dynamic experiments that feed data to the modelers. It's a synergy between our advanced materials characterization and the sophisticated computer modeling done elsewhere at Los Alamos. Lamenting at the end of underground nuclear testing, the modelers have a saying, 'If you can't shoot it, you have to compute it.' Our groups' role is to physically investigate the materials."

Because of the radioactive nature of the materials, nuclear weapons degrade over time. Radioactive materials corrode from the inside out in addition to corroding from the outside in. "The radiolytic reactions influence diffusion, allotropic phase stability, mechanical properties, etc.," explains Axler. "Therefore, the prediction of mechanical and structural property changes draws weighty materials science challenges. On many occasions, we have enlisted the expertise in the Mines Metallurgical and Materials Engineering Department under Dr. John Moore. Those collaborations have allowed us to gain unique resources needed in complex problem-solving. For example, specific corrosion problems have been addressed with our colleagues in the Advanced Ceramics and Surface Engineering Laboratory (ACSEL), a consortium hosted out of the Metallurgical and Materials Engineering Department at Mines."

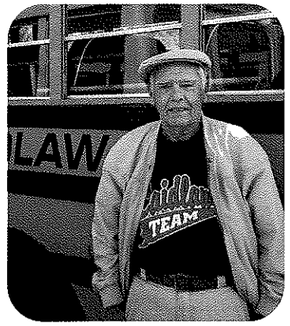
Axler came by his job at Los Alamos serendipitously. He received a chemistry degree from S.U.N.Y. at Cortland, N.Y., in 1979. "I was on a cross-country motorcycle trip but I ran out of money in Santa Fe [N.M.] on my way to California," he says, "so I started working as a technician at Los Alamos doing metal purification." Apparently, Axler took to the work because Los Alamos then sent him to Mines for his master's and doctorate degrees. "The education I received at Mines was very powerful and very vocational," Axler says. "I can honestly say that on a regular basis, I use the majority of what I learned at Mines in my current job." Axler fell in love with Colorado and one day plans to retire here.

In May, Axler was one of many Los Alamos residents evacuated from his home in the middle of the night as fire swept across northern New Mexico. Fortunately, his home was spared though some of his coworkers weren't so lucky. Axler is married and has a four-year-old daughter. He can be contacted at materials@att.net.

Warren '48 drives a school bus

After retiring at age 55 from his position as a chief metallurgist, **Milton "Gene" Warren Met E '48** now finds himself back at work, this time behind the wheel. "It's just one of those things," he says about returning to work. "I retired too early."

Today, Warren drives a school bus for Laidlaw Passenger Services in Seymour, Conn. "I'm providing a public service and there's nothing better than that," he says.



"As a whole, the retired men that work here are some of my best employees," says Pam Newton, Warren's supervisor. "They're punctual, always willing to help out, reliable. It's a pleasure to work with them."

Warren has been driving since he was 12 growing up in Alabama, but still had to undergo rigorous testing. "It's not easy to become a school bus driver at any age," says Newton. In addition to written tests and driving tests, Warren had a Department of Transportation physical. "I'm in good shape," he reports. "When I know I'm not as sharp as I was, I'll quit."

Currently, Warren's schedule includes two routes—a 100-mile trip to deliver a special-education student to school in the morning and back home in the afternoon, and a 10-mile trip midday to deliver two other special-education students. The 200+-mile trip takes him seven hours.

Warren recently moved to New England to be near his three sons but he had lived in Florida for 20 years. While there, he wrote a non-destructive testing manual for NASA. In addition to his degree from Mines, he also holds a degree from Washington University in St. Louis. After graduation from Washington and before attending Mines, Warren served in the U.S. Navy in Guam where he worked with Henry Fonda and played tennis on the admiral's fancy courts with Bobby Riggs and Don Budge.

Hesselbarth '73 helps inner-city residents

"I was a typical college student trying to figure out 'Who am I and what am I?'" says **Dennis Hesselbarth BSc Met '73** about his college days. "I went to Mines because they offered me the biggest scholarship."

Although Hesselbarth has never been employed as an engineer, he hasn't shied away from hard work. Today he is pastor of the Evangelical Free Church in a depressed neighborhood in Wichita, Kan. "I'm still an engineer type," he says. "I even keep a mechanical pencil in my shirt pocket, when I'm wearing that kind of shirt."

Hesselbarth's congregation is small—about 40 to 50—but he plays a significant role in the community according to an article in *The Wichita Eagle*. His community, called Hilltop, is a rundown area built as temporary housing during World War II. Sixty years later, the neighborhood still struggles with its "temporary" stigma. People move in hoping to eventually move somewhere else. Homeowners don't upgrade their homes and landlords don't maintain their properties well for fear the city will decide to condemn the whole area. "Probably, if it wasn't for Dennis, the situation would be worse," a local resident told the *Eagle*. "In fact, his everlasting optimistic outlook is a good influence to a lot of people."

After graduation from Mines, Hesselbarth decided to spend a few years working for Campus Crusade for Christ. "Two years became three, then four," he says. "After about five or six years, I decided to burn my slide rule behind me."

Hesselbarth earned a master of divinity degree from the Denver Seminary. He and his wife then moved to the Watts area of Los Angeles and the experience "got to our hearts," he says. When the opportunity to start a ministry in another depressed urban area arose, they decided to take it on and moved to Wichita.

"In this kind of ministry, helping people develop is the focus," Hesselbarth says, and his rewards are watching people in the community succeed.

"I owe a lot to my Mines years," Hesselbarth adds. "When I was interviewing for a job after graduation, the thing I heard over and over from interviewers was 'anyone who made it through Mines knew how to work hard, could learn, had a degree of flexibility and could work in a team setting.' That's the part of Mines I use all the time."

In memoriam

John F. Finn

John F. "Pat" Finn PE '42 died of natural causes April 2. He was an active member of the Alumni Association and President's Council. While he was at Mines, he was on the football team.

Anna Fursova

Anna Fursova MSc Geol '97 was killed in a car accident May 27, one week before her marriage to Ilya Kats BSc Eng '96. She was 31. According to Kats, Fursova was driving from Dallas, where she worked for Arco, to Austin so they could spend Memorial Day weekend together. Near the end of her trip, less than two miles from Kats' house, her car hydroplaned on the Mopac Expressway, spun around, and was thrown onto the oncoming lane, where her car was hit on the driver's side by another vehicle. The impact killed her instantly.

Fursova and Kats met at CSM in 1994, where she was working on her master's degree under Roger Slatt, and Kats was an undergraduate in engineering.

Fursova was born in Moscow, Russia and had earned a master's degree in petroleum engineering with a "Red Diploma" (4.0 grade point average) from the Oil and Gas Institute in Moscow. She worked as a research assistant at CSM to gain American academic and industry experience. Her work at CSM was recognized by the faculty and several commercial firms, who supported her education.

A memorial service was held in Texas and then Katz accompanied her body to Moscow for burial.

John Marcus Gardner

John Marcus "Mark" Gardner PE '33 died April 29 in Escondido, Calif. He had lived in Pauma Valley, Calif. since last August. He also had lived in Houston for 36 years and in Dallas for 14 years.

Born Christmas Eve 1911 in Topeka, Kan., Gardner was raised in Denver, Colo. During World War II, he served as a major on Canton Islands and in Europe with the Allied Forces.

Gardner's professional career in the oil business began with Phillips Petroleum Co. He served as senior vice president of Loffland Brothers; president of IDECO; vice president and director to Delta Drilling Co.; president and director of Zapata Offshore Co.; executive vice president of Advance Engineering and most recently, senior vice president of Quest. Before joining Quest, he founded High Seas, Inc. and served as president and director.

Gardner was a member of Tau Beta Pi, Theta Tau, Beta Theta Pi, the Houston Club, Pauma Valley Country Club and had been a longtime member of Brookhollow Country Club. He served many years on the Houston Council of Alcoholism, and was a member of Lovers Lane Methodist Church in Dallas and Chapelwood United Methodist Church in Houston.

Gardner is survived by his wife of 65 years, Charline Highberger Gardner; a son, a daughter, six grandchildren and five great-grandchildren.

George T. Gould

George T. Gould PE '32 died earlier this year. He had been president and owner of Gould Engineering Co. and was an active member of the Alumni Association.

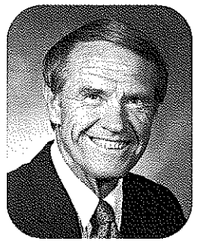
Richard C. Panesi

Richard C. Panesi EM '34 died Nov. 11 after open-heart surgery. He was 86. According to his widow, Rena, "He was always so happy and proud that he received such an extensive education from the Colorado School of Mines."

Panesi was the retired chief engineer for the Denver Water Department. He worked for the department for more than 40 years. He also spent five years in the U.S. Army Corps of Engineers in Alaska and the Aleutians building the Alaskan Highway.

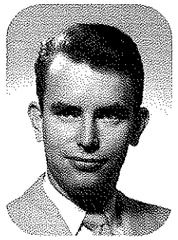
" He enjoyed traveling, fishing, gardening and time with his family," says Mrs. Panesi. "No matter how far he traveled he was always happy to return home. He was highly respected in his work and many coworkers told me at his service that he had hired them when no one else would because they were Japanese American. They said, 'He was a man of high integrity and morals and I hope I can pattern my life after him.'"

Panesi is survived by his widow, a son and a daughter, four stepdaughters, a stepson, a brother and a sister.



Louis Landers

Louis L. Landers Met E '50 died in his sleep May 17 at the age of 74. He had just attended his 50th class reunion earlier in the month. Landers was retired from Asarco Inc. where he had been employed for 30 years. He is survived by his widow, Frona Lee, and three children.



Charles M. Schneider

Charles M. Schneider Jr. EM '48 died March 23 at the age of 75. Schneider was an active member of the Alumni Association and was a member of Sigma Phi Epsilon fraternity. In 1951 he married Winifred Wimberly. He served in the Navy and was an engineer with Shell Oil.

Schneider is survived by his widow, two sons, a daughter and three grandchildren.

Also in Memoriam

Patrick M. McCarthy BSc Eng '93, MSc Engr Sys '90	Unknown
Carroll Z. Morgan PE '43	Feb. 1, 2000
L. Voyle Osborn EM '42	March 1999
Paul W. Wagenbach PRE '50	March 2000

on the move

1939

John R. Tower PE is senior petroleum engineer for Z Inc. in Dallas.

1940

M.S. Patton Jr. PE is an owner of Graybol-Patton Co. in Tulsa, Okla.

1943

Peter G. Burnett PE is retired in Kenilworth, Ill.

1949

Robert B. Coleman Met E is senior technical adviser for Hazen Research Inc. in Golden, Colo.

Marvin H. Estes Met E is vice president of Risk Management Services Inc. in Wheat Ridge, Colo.

James M. Perkins Geol E has retired from Mobil Oil Corp. and lives in Oklahoma City.

1950

Donald G. Ashe Met E has retired as president of Ecolaire Pump Co. and lives in Naples, Fla.

Richard C. Siegfried Geop E is retired president of IGG Resources-Calgary who now lives in Chandler, Ariz.

Brook D. Tarbel PE is retired in Tulsa, Okla.

Carl J. Watson PE is retired in Arvada, Colo.

1951

Harry L. Shively EM is retired in Oro Valley, Ariz.

1952

Gerald W. Jefferies PE, MSc Pet '56 is retired in Sterling, Colo.

Richard A. Lowery EM is retired in Midland, Texas.

1953

George L. Freeland Geol E is retired in Coral Gables, Fla.

Howard B. Hebble Jr. Geop E is retired in Southampton, Pa.

Robert B. Schlosser EM is retired in Brownsville, Ore.

Charles A. Sorvisto EM is retired in Tucson, Ariz.

1954

Albert J. Matthies EM is retired in New Bern, N.C.

1955

Bernard Radovsky Geol E is retired from Texaco, Inc. and lives in San Diego.

Charles H. Stewart PE is retired in Casper, Wyo.

1956

Charles D. Ebinger Geol E is president of Completion Engineers in Lafayette, La.

Ronald L. Lewis PE, MSc Pet '63 is retired in Sheridan, Texas.

H. Boyd Moreland EM is retired in Casper, Wyo.

Gail E. Penfield PRE is retired in Novato, Calif.

Joseph T. Teeters Geol E is an independent mathematician in Lake Zurich, Ill.

1957

John E. Hoffman Geol E is retired in Golden, Colo.

Jerry W. Tuttle PE is retired in Fort Worth, Texas.

1958

David L. Bowler PE is retired in Houston, Texas.

Bruce E. Russell Geol E is a consulting geological engineer in Cypress, Texas.

Jerry Tuttle has retired from Lockheed Martin Corp. in Texas.

Richard W. Volk PE was named chairman of Denali Inc. in Houston in March 1999. Last January he was appointed president and chief executive officer. He also is affiliated with Richard Volk & Associates.

Donald E. Wilson Geop E is retired in Kittredge, Colo.

1959

Roger L. Kaesler Geol E is director, Paleotological Institute and a geology professor at University of Kansas. He is also curator-in-charge of the Natural History Museum in Lawrence, Kan.

James D. Shambach Met E is an independent consultant in Columbia, Md.

1960

Thomas M. Carroll III PE is an independent consulting engineer in Lakewood, Colo.

Richard A. Daniele Met E has started a consulting business, Daniel Metal Mineral Services in Lakewood, Colo.

G. Wesley Hoagland Met E is field director for Northwestern Mutual Life in Denver.

Dennis B. O'Neil Met E retired from Caterpillar Inc. and lives in Golden, Colo.

1961

John H. Callanan EM is retired in Rainbow Lake, N.Y.

David H. Fruhling Geop E is a consultant for Spring Consulting Inc. in Dallas.

Joseph E. Gust Jr. Met E is retired in Flagstaff, Ariz.

John B. Robertson Geol E is hydrogeologist for HydroGeoLogic in Reston, Va.

Fred A. Thebus Met E is a metallurgist for Scottsboro Aluminum in Scottsboro, Ala.

1962

Gerald W. Berk PE is capital project manager for Phillips Petroleum Co. in Bartlesville, Okla.

CSM Boosters

Earth Sciences, Inc.
E-mail: staff@earth-sciences.com
www.earth-sciences.com
(303)279-7641 • FAX (303)279-1180
910 12th Street • Golden, CO 80401

Roland B. Fischer, Met. E.'42
U.S. Army 1942-1946
Battelle Memorial Institute 1946-1963
Rocky Flats Plant 1963-1983
Retirement Projects 1983-present

Appraisals

ELLIS INTERNATIONAL SERVICES, INC.
Geology • Economics • Appraisals
TREVOR R. ELLIS '78
Mineral Economist
Certified Minerals Appraiser 1993
Certified Professional Geologist 6740
600 Gaylord St.
Denver, CO 80206-3717, USA
Phone: (303) 399-4361
FAX: (303) 399-3151
trevor_ellis@prodigy.net
• Property Valuation
• Reserve Evaluation
• Investment Analysis
• Market Studies
www.mineevaluation.com

Computers

Richard Banks '53
Scientific Computer Applications, Inc.
2815 Skelly Drive, Suite 820 — 918-293-0306
Tulsa, OK 74105 — 800-552-4106
dbanksl@scaitul.com

Serving the Energy Industry Since 1969
- Bi-directional economic and production data conversion (ARIES, OGRE, FEGS, PowerTools, etc.)
- Industry's fastest economics and graphics system: Forecasting, Economics and Graphics System (FEGS)
- Non-gridded, multisurface, fault handling contouring system: Mapping-Contouring System (MCS)
- Gas Balancing System (GBS)
- Consulting Services

Call us today about placing a professional ad.
(800) 446-9488, EXT. 3294

Consultants

R. Bret Rhinesmith,P.E., BSc. CPR '86
President
Engineering Development Company
P.O. Box 117 • Pine, Colorado 80470 • USA
Phone: (303) 838-8090 • Fax: (303) 838-1423
E-mail rhinesmith_rb@pearldc.com
mobil (303)887-7835

Consultants Cont.

DIGITAL FORMATION
Tel: (303) 770-4235
Fax: (303) 770-0432
E-mail: Info@DigitalFormation.com
Web: www.DigitalFormation.com
Consulting
• log analysis
• reservoir characterization
• petrophysical reservoir descriptions
• equity determinations
Michael Holmes '73
Dominic Holmes '91

Earth Science Software Directory
Earth Science Computer Applications
• Mining Software Evaluations
• Program Searches and Comparisons
Contact: Betty L. Gibbs, '69, '72
GIBBS ASSOCIATES
bglbbs@csn.org
P.O. Box 706, Boulder, CO 80306-0706 (303) 444-6032

Decision Precision®
Training and Assistance in Risk and Economic Decision Analysis and Project Risk Management
JOHN SCHUYLER
CSM '72 '77 CU '77
CAM, CMA, CMC, PE, CCE, CPIM, PMP
(800) 214-3916
(303) 693-0067
fax: 693-2827
Aurora, Colorado
john@maxvalue.com
http://www.maxvalue.com

DAVID J. DUNN
Metallurgy/Materials Consulting
MET. ENG. CSM 1959
30 Years Industrial Experience
Current Passport French, Spanish
930 Mountain View Dr.
Leadville, CO 80461
(719) 486-0838

Contractors

Howell Construction
550 Lipan Street
Denver, CO 80204
303-825-6257 • Fax 303-899-4786
www.howellconst.com
Howell
Bob Howell '39 • Jim Howell '66

Drilling

JRS GeoServices
Drilling and Core Processing
J.R. Schmedeman
President
JRS GeoServices Incorporated
5833 Brannen Road West
Lakeland, FL 33813-2704
941/644-3654
Mobile: 941/640-1840
FAX: 941/647-3662
E-mail: jschmede@aol.com

Environmental Consultants

RIDOLFI ENGINEERS Inc.
Callie A. Ridolfi, P.E., 1980
Bruno Ridolfi, P.E., 1978
Colin Wagoner, P.E. 1982
1411 Fourth Avenue, Suite 770 • Seattle, Washington 98101
206-682-7294 • email: info@ridolfi.com • www.ridolfi.com

Supporting your Alumni Association since 1910.

John F. Messner PE, MSc Pet '69 is a consulting engineer in Littleton, Colo.

Allan G. Provost EM is chief executive officer and chairman of the board for Harrison Western Mining Corp. in Lakewood, Colo.

1963

Larry G. Barksdale EM is retired in Cedaredge, Colo.

Jay L. Kratz Met E is branch chief, information technology and planning for Defense Supply Center of Philadelphia. He lives in Cherry Hills, N.J.

Donald G. Meyers Met E is retired in Roseburg, Ore.

Charles N. Speltz EM, MSc Min Ec '74 is president of American Industrial Minerals, Inc. in Lakewood, Colo.

1964

A. David Alcott Geol E is principal/project manager for LAW Engineering and Environmental Services, Inc. in Kennesaw, Ga.

Kenneth L. Ancell PE is executive vice president of corporate development for Tipperary Corp. in Houston.

Gordon L. Scheig PE is retired in Morrison, Colo.

1965

Roger L. Abel PE is a retired executive vice president of Occidental Petroleum Corp. in Austin, Texas.

David C. Chapman PRE is a process engineer for CDI in Charleston, W.Va.

Herbert S. Price EM is retired in Green River, Wyo.

Robert M. Woodbury EM is general manager of Dutra Materials in San Rafael, Calif.

1966

John L. Scheve PRE is retired in Marietta, Ohio.

Stephen B. Self Geol E is self-employed in Silt, Colo.

Robert K. Towner EM is a self-employed consultant in Tempe, Ariz.

Donald E. Vandenberg PE is president, oil/gas sector, for H.M. Huber in Houston.

1968

Han-Ling Ong DSc Chem is managing director of PT Geoservices in Bandung, Indonesia. His e-mail address is bdgoff@geoservices.co.id.

Stephen A. Willner Met E, MSc Met '70 is an engineer for Willner Engineering in Denver.

Thomas C. Pool EM is vice president of engineering for Nuclear Fuels Corp. and lives in Golden, Colo.

1969

H. George Beggs Jr. Geol E, MSc Geop '77 is a geophysicist for Exxon-Mobil Exploration Co. in Houston.

Daniel F. Evans BSc Geol is associate partner for Andersen Consulting LLP in North Balwyn, Victoria, Australia. His e-mail address is evans5@ozemail.com.au.

Thomas M. Mauro Math E is senior vice president for First Bank of Colorado.

Gregory L. Paolino Met E is a manufacturing manager for Kaiser Aluminum and lives in Veradale, Wash.

Alexander H. Paul Geol E, MSc Geol '75 is chief geologist for Albian Sands Energy Inc. in Ft. McMurray, Alberta, Canada.

1970

George W. Off BSc Math is chairman of the board for Catalina Marketing Corp. and lives in Arvada, Colo.

1971

J.B. Long BSc Pet is president/ general manager of The Barlon Engineering Group Inc. in Calgary, Alberta, Canada.

John R. Pfuetze BSc CPR is chairman of the Congressional Reporter in Littleton, Colo.

Randy Weingart MSc Min is quality and product research director for Luck Stone Corp. in Richmond, Va.

1972

J. Leif Colson BSc Phy is a computing center manager for Schlumberger-GeoQuest in Englewood, Colo.

Robert T. Johnson BSc Min is a senior mining engineer for RAG Twenty Mile Coal Co. in Oak Creek, Colo.

George W. Mellors BSc Math is an operations manager for Syska & Hennesy in San Jose, Calif.

Michael J. Roark BSc CPR is manager, natural gas marketing, for Western Gas Resources, Inc. and lives in Arvada, Colo.

Victor A. Sterner Jr. BSc Min is technical manager for Austin Powder Co. in Lancaster, Ohio.

Robert H. Tenney Jr. BSc Math is a traffic engineer for the Colorado Department of Transportation in Denver.

Karen L. (Larsen) Tonso BSc Geol is assistant professor at Wayne State University in Detroit.

Thomas A. Watkins BSc Geol, MSc Geol '76 is geologist/owner of Table Mountain Explorations, Inc. in Golden, Colo.

E. Dean Wendler BSc CPR is site manager for Ticona Celstran Inc. in Winona, Minn.

1973

Eugene D. Clower Jr. BSc Geop is division exploration manager for EOG Resources Inc. in Denver.

Kewal K. Kohli M Eng Min is a senior mining engineer for the Office of Surface Mining in Pittsburgh, Pa.

William L. MacBride Jr. BSc Geol is an attorney with Gough, Shanahan and Waterman in Helena, Mont.

1974

Joseph E. Burford BSc Math owns Valley Feed Yards Inc. in Morrill, Neb.

Hugh E. Harvey Jr. BSc Min, MSc Pet '80 is a partner for Intrepid Oil and Gas LLC in Denver.

Ricardo Moreno Campoy BSc Min is managing director for Carbor Cross Inc. in Larchmont, N.Y.

Dennis R. Canfield BSc Met is facilities engineer for Chevron Overseas Petroleum Inc. in San Ramon, Calif.

John S. Dayton BSc CPR, an independent consultant and Jan D. (Light) Dayton BSc CPR live in Bigfork, Mont.

1975

Charles W. Cropper BSc Min is a report specialist for Sprint Inc. in Herndon, Va.

Bruce E. Grewcock BSc Min is executive vice president for Peter Kiewit Sons' Inc in Omaha, Neb.

Kenneth A. Larsen BSc Pet is drilling manager for British Gas Bolivia in Santa Cruz, Bolivia. His e-mail address is kenneth.larsen@bgep.uk.

John D. Underwood BSc Phy is an exploration manager for Heyco International in Roswell, N.M.

Stephen C. Weston BSc Geol is a partner for PLAN B Co. in Parker, Colo.

1976

Michele K. Mudrone BSc Pet is a petroleum engineer/senior vice president for Texas Capital Bank in Dallas.

James D. Reed BSc Math is an information technology specialist for Hewlett-Packard Co. and lives in Englewood, Colo.

Richard P. Wilson Jr. BSc Met is a gas turbine specialist for Reliant Energy in Webster, Texas.

1977

Robert D. Deister BSc Met is a financial planner for Wells Financial Services in Leadville, Colo.

David J. Kelly BSc Met, MSc Min Ec '87 is vice president of sales and marketing—welding systems for Messer Cutting and Welding AG in Wiener Neudorf, Austria. His e-mail address is djkelly.77@alum.mines.edu.

Claudio D. Manzolillo MSc Geol is an independent consultant in Houston.

Kendall D. Olander BSc CPR is a maintenance worker in Windom Conference Center and lives in Peachtree City, Ga.

Francis J. Smith BSc Geop is director of engineering for Parker Vision in Pleasanton, Calif.

Joey Tucker BSc Min recently completed an 18-month assignment as Fluor Daniel's environmental director at the Batu Hijau project on the island of Sumbawa, Indonesia. He is now assigned to Krasnodar, Russia supporting construction of a crude oil pipeline from Tengiz, Kazakhstan to Novorossiysk, Russia.

Thomas W. Windle BSc Geop is a computer programmer for Broadwing Communications in Austin, Texas.

1978

John A. Bettridge BSc Pet is operations manager for Duncan Oil Co. in Denver.

John P. Griffith Jr. BSc Met is chief financial officer for Nord Resources Corp. in Albuquerque, N.M.

John P. McDonnell BSc Min is operations superintendent at the Granger Mine for FMC Wyoming Corp. He lives in Green River, Wyo.

Douglas M. Nordlander BSc Min is an American Family Insurance agent in Denver.

Robert J. Peterson BSc Geop is a supervising engineer for Montgomery Watson in Steamboat Springs, Colo.

Gary L. Weihs BSc BE is chief operating officer for RDO Equipment Co. in Fargo, N.D.

1979

Brian A. Barngrover BSc BE is a self-employed consultant in Broomfield, Colo.

Mark W. Lockhart BSc CPR is process design manager for ABB Lummus Global in Houston.

Luis J. Rodriguez BSc CPR is domestic (Venezuela) market sales manager for Petroleos

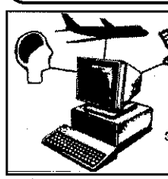
Executive Search

NERI NATIONAL EXECUTIVE RESOURCES, INC.
ALAN N. PIKE '71
5445 DTC PARKWAY, SUITE P4
ENGLEWOOD, COLORADO 80111
303-721-7672
800-886-7672
e-mail: AlanPike@NERIsearch.com

Exploration

ROBERT A. METZ '55
MINING GEOLOGIST
EXPLORATION
EVALUATION
PROJECT MANAGEMENT
675 N. Houghton Road
Tucson, Arizona 85748
Phone/Fax (520) 885-2877

Kinnickinnick Exploration Inc.
Onshore S. La. Experience
3D & 2D Prospect Generation
Steven S. Anderson, Geop. Eng.'75
133 S. Audubon, Lafayette, LA 70503
318-261-0211 • Fax 318-261-0218



William C. Pearson '70
Exploration Geophysicist
pearsonl@csn.org
PEARSON TECHNOLOGIES, INC.
303-989-2014 • Fax: 303-989-5096
12596 W. Bayaud Ave., Ste. 215
Lakewood, CO 80228

Pearson
Exploration Geophysicist
Gravity, Magnetics, Geology, Seismic Interpretation
William C. Pearson, Ph.D.
President
Pearson Technologies, Inc.
134 Union Blvd., Suite 650
Lakewood, CO 80228
Phone: 303-989-2014
Fax: 303-989-5096
E-mail: bpearson@pearsontechnologies.com
Website: www.pearsontechnologies.com

Finance

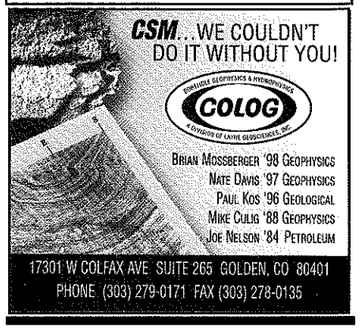
NORWEST BANKS
Norwest Bank Colorado, N.A.
Denver
Energy & Minerals
1740 Broadway
Denver, CO 80274-8699
(303) 863-5017 *FAX: (303) 863-5196*
J. Thomas Reagan, V.P., PE, '53
Thomas M. Foncannon, V.P., MSC, Min Ec, '91

A NEW INVESTMENT PRODUCT
INTELLIGENT, QUANTITATIVE
ALAN J. MENCIN, P.E., MBA, '79
INVESTMENTS AND INSURANCE SOLUTIONS
303-989-4185
REGISTERED REPRESENTATIVE
BLAKE STREET SECURITIES L.L.C.
1860 BLAKE STREET, STE. 500 DENVER, CO 80202 303-292-9077

GEOPHYSICS

Phyllis Fett Halvorson '80
Consulting Geophysicist
610 Thayer Road • Bonny Doon, CA 95060
831-471-9351
• *Mineral Exploration*
• *Aquifer Definition • Oil Research*
• *Gravity and Magnetic Surveys*

MGC
MICROGEOPHYSICS CORPORATION
* ENGINEERING GEOPHYSICS
* ENVIRONMENTAL GEOPHYSICS
MARY ANN FORE
DAVID BUTLER
PHONE: (303) 424-0499
FAX: (303) 424-0607
INNOVATIVE SOLUTIONS SINCE 1974



HAZEN **Hazen Research, Inc.**
Process Development for the Mineral and Environmental Industries
4601 Indiana Street
Golden, CO 80403 U.S.A.
Tel: (303) 279-4501
Fax: (303) 278-1528

Hasbrouck Geophysics, Inc.
Mining, Groundwater, Environmental & Engineering
James C. Hasbrouck
President/Geophysicist
2307 James Street
Montrose, CO 81401 USA
Phone/Fax: (970) 252-8768
E-Mail: jim@hasgeo.com

GPS

SATLOC
PRECISION GPS APPLICATIONS
Satellite-Based Differential GPS
Portable Systems for Field Exploration
• Hand-held data collector
• East-to-use software
• Precise positions (better than 1 meter)
• Wide area coverage (all North America)
George Downs GE '61
Scottsdale, AZ
602-607-3836 ***Fax 602-607-2932***

Venezuela (PDVSA) in Caracas, Venezuela. His e-mail addresses are hat932@telcel.net.ve (home) and rodriguezlg@pdvsa.com (work).

Kenneth R. Story MSc Geop is senior geophysicist for CAEX Services, Inc. in Houston.

1980

David A. Bouvier BSc CPR is senior engineer for Noosh Inc. in Palo Alto, Calif. He and wife **Karen C. (Barker) Bouvier BSc CPR,** worker production manager at Raychem Corp., live in San Carlos, Calif.

Henry C. Cook Jr. BSc Min, MSc Min '86 is a design engineer in mining for Vulcan Materials Co. in Birmingham, Ala.

David M. DeSonier BSc Geop is vice president of investor relations, a corporate officer position reporting directly to the CEO, for Leggett & Platt Inc. He also shares responsibility for corporate communication and participates with senior management in strategic planning efforts.

Russell W. Kemp BSc CPR is business manager for Rhodia Inc. in Robbinsville, N.J.

James V. Mahoney BSc CPR is senior associate for Pi Technology Associates Inc. in Katy, Texas.

David F. Mayer BSc Pet is a reservoir managment engineer for Aera Energy LLC in Bakersfield, Calif.

Karen E. Miller BSc Geol is sales promotion and advertising manager for Special Metals Corp. in Huntington, W.Va. She lives in Flatwoods, Ky.

Donald B. Ratcliff MSc Min Ec is a vice president for Phelps Dodge Sales Co.

Richard P. Smiley BSc Pet is a drilling engineer for Burlington Resources, Inc. in Spring, Texas.

Robert R. Vogel BSc Min is vice president, southeast division of Vulcan Materials Co. in Atlanta.

1981

Noel H. Ginest BSc Pet is production/completions engineer for Saudi Aramco in Udhailiyah, Saudi Arabia. Her e-mail address is ginestnh@yahoo.com

Michael G. Malsam BSc CPR is senior project development manager for ABB Lummus Glabal in Kingwood, Texas.

Martin W. Sharps BSc Geop is chief geophysicist for Unocal Vietnam in Ho Chi Minh City, S.R. Vietman. His e-mail address is msharps@unocal.com.

William A. Warmack BSc Min is a water resources project engineer for Tuttle/Applegate in Denver.

1982

Alva L. Kuestermeyer MSc Min Ec is director, New York operations, for Pincock, Allen & Holt, Inc. in Jersey City, N.J.

Stefan G. Magnusson BSc Geop, MSc Geop '85 is senior vice president of HSBC Bank USA in New York City. His wife, **Ellen Morris BSC Geop '83** is principal of Sustainable Energy Solutions, Ltd.

Eric F. Peterson BSc Pet is vice president/senior section manager for Earth Tech in Long Beach, Calif.

Rebecca L. Wickert BSc CPR is a technical adviser for Federal Express in Colorado Springs, Colo.

Michael T. Schwein BSc Pet is project manager for U.S. West and lives in Golden, Colo.

Gerald C. Smith Jr. BSc Pet is an engineer for Northeast Utilities and lives in Moodus, Conn.

1983

Richard A. Degner BSc Geol, BSc Geop '83 is president of Petroleum Geo-Services Onshore Inc. in Houston.

Scott A. Haberman MSc Geop is manager, Latin American operations for System Technology Associates in Denver.

Todd R. Habliston BSc CPR is resource development manager for Seven Seas Petroleum in Grand Junction, Colo.

Tanya L. (Mueller) Inks BSc Geop, MSc Geop '87 is president of Vector Interpretation Services Inc. and **Timothy J. Inks BSc Pet '82** is a reservoir engineer for Hallwood Petroleum Inc. in Denver.

David M. Macary BSc CPR is manager of quality engineering for Boston Scientific-Meditech in Sussex, N.J.

Joseph A. Nenni BSc CPR is staff engineer for Bechtel in Idaho Falls, Idaho.

Matthew L. Nolan BSc Geop is an eight-grade teacher for Denver Public Schools.

Gary J. Sanchez BSc Geol is operations manager for Retex, Inc. in Lakewood, Colo.

William K. Schenderlein BSc Chem is a consulting engineer for ESA Consultants in Fort Collins, Colo.

on the move

1984

David A. Baska BSc Geol is president of Cascadia Earthquake Consultants Inc. in Mercer Island, Wash.

Jeffrey S. Childs BSc Pet is a commercial manager for BP Oil Europe in Milton Keynes, England. His business e-mail address is childsjs@bp.com.

Jonathan C. Goodman BSc Geol is president and chief executive officer for Dynamic Mutual Funds Ltd. in Toronto, Canada.

Thanh D. Le BSc Pet is commercial team leader for BP Amoco in Sugar Land, Texas.

C. Barclay Macaul II BSc Min is corporate account manager for Sybase Inc. in Alpharetta, Ga.

Bruce D. Peterman BSc Geol is project engineer for SAIC and lives in Broomfield, Colo.

Scott D. Ryan BSc Geop is senior systems engineer for Rhythms Netconnections Inc. in Englewood, Colo.

Edmond G. Suher BSc Geol is project manager for AEI-CASC Engineering in Riverside, Calif.

Brian G. Tilton BSc Geol is senior civil engineer for Foster Wheeler Corp. and lives in Golden, Colo.

Jean-Michael H. Tourre MSc Met is vice president of strategy at Teris in Croissy-Siseine, France. His e-mail address is jmtourre@teris.fr.

Jonathan F. Wade BSc Met is an information specialist for U.S. West and lives in Westminster, Colo.

Dean M. Warne BSc Min is an airline pilot for Great Lakes Aviation and lives in Conifer, Colo.

John L. Wheeler BSc Geol is an environmental consultant for GSI Inc. in West Des Moines, Iowa.

1985

Jeff V. Bialek BSc CPR, MSc Min Ec '92 is project manager for Murphy Company Mechanical Contractors in Denver.

Bradford B. Bredehoft BSc Pet is a webmaster for the Science Museum of Minnesota in Minneapolis.

Kevin K. Elliott BSc Pet is branch manager for Agra Infrastructure in Henderson, Nev.

Michelle M. Foss MSc Min Ec is assistant research professor in the college of business administration and director of the Energy Institute at University of Houston in Texas.

Richard E. Gaber Jr BSc Geol, MSc Geol '92 is a software engineer for US West in Denver.

Tyler Pl Hoovler BSc Pet is an independent consultant in Golden, Colo.

Mari Angeles Major-Sosias BSc Geop, MSc Min Ed '92 is a uranium analyst for USEC Inc. in Gaithersburg, Md.

Gina M. Morrison BSc Geol is associate water resources control engineer for North Coast Regional Water Quality Control Board for California in Santa Rosa, Calif.

John M. Ryding MSc Chem is a regional engineer for the state of Washington health department in Seattle.

Fred Seymour MSc Math is process engineer-measurements for Newmont Mining Corp. in Denver.

Barbara Slayman BSc Geop, MSc Env Sc '93 is project manager for Research Systems in Boulder, Colo.

James M. Thorson BSc Geop is a manager of exploration and new ventures for Resource Solutions and lives in Littleton, Colo.

1986

John C. Barkmeier MSc Math is vice president of investments for Robert W. Baird and lives in Boulder, Colo.

Cynthia L. Beech BSc Met, MSc Met '89 is technical manager—pickling department for AK Steel Corp. in Newburgh, Ind.

J. Glen Honstein BSc Pet is senior project engineer for Driltek in Bakersfield, Calif.

James F. Mattern BSc Geop is president/founder of Hydro Sciences Inc. in Reading, Pa.

Daniel J. Pratt BSc Pet is assistant director of Dumont Pharmeceutical in Amesbury, Mass.

Jon S. Price BSc Met is senior metallurgist for ERA Technology in Katy, Texas.

Anthony R. Rossi BSc Eng is senior strategic planner for Lower Colorado River Authoirty in Austin, Texas.

Cahtleen M. Speak BSc Geol is executive vice president, operations for Arcadis Geraghty & Miller and lives in Golden, Colo.

John W. Stinson BSc Eng is support manager/mining industry group, rotary drill division, for Ingersoll-Rand Co. in Dallas.

METALLURGICAL ENGINEERING

EMTEC
FRED R. SCHWARTZBERG, P.E.
JOHN SCHWARTZBERG, P.E.
ROCKY MOUNTAIN ENGINEERING AND MATERIALS TECHNOLOGY, INC.
An Engineering Consulting Firm
2452 South Trenton Way, Suite H (303) 306-0660
Denver, Colorado 80231 Fax: (303) 306-0990

MINERAL ECONOMICS

MINING INVESTMENT SERVICE
Metals, Mining & Metallurgy
■ Research into equity mining investments
■ Multi-client surveys
■ Registered Investment Advisor
3441 Raintree Drive, Tucson, Arizona 85741 (520) 575-8467

Andes Nevada Mining Corp.
Underground Mining & Management Consultants
Practical Solutions for Difficult Mining Problems
Thomas Kelly, E.M. , M.E. '74, '95
22 West Bryan St., #397
Savannah, GA 31401
(912) 897-6900
(912) 897-0057
andesnevad@aol.com

MINING

Evaluation • Audits • Planning • Feasibility • Costs
• Worldwide Mining Service •
STEVE L. MILNE, P.E. '59
Underground Mining Consultant
1651 CALLE EL CID • TUCSON, AZ 85718
TEL: (520) 297-1291 e-mail: slmilne@aol.com FAX: (520) 742-1741

GROSVENOR ENGINEERING COMPANY
Niles E. Grosvenor, E.M. '50
David E. Krebs E.M. '66
709 W. Littleton Blvd.
Littleton, Colorado 80120 Mining &
Office: (303) 798-0181 Geological Consultants

MINE DEVELOPMENT ASSOCIATES
Neil Prenn, P.E. E.M. '67
210 South Rock Blvd. Reno Nv 89502
Phone: (775) 856-5700 Fax: (775) 856-6053
Evaluation > Audits > Planning > Feasibility > Costs

JOHN F. ABEL, JR.
MINING ENGINEER
303-279-4901
FAX 278-8163
JFAbel2@Home.com
310 LOOKOUT VIEW COURT
GOLDEN, CO 80401

JAMES M. LINK '59
PRESIDENT
LINK
JAMES M. LINK, INC.
CONSULTING ENGINEERS
5752 W. Marquette Drive
Denver, CO 80235-3121
(303) 985-7985

Hire an alum!

MINING–BRAZIL

INTERNATIONAL ENGINEERS AND CONSULTANTS, INC.
GEMCOM - WHITTLE REP.
INTEC LTDA.

Arthur W Ruff D. Sc.

MINING ENGINEER - GEOLOGIST
MANAGING DIRECTOR

AREA CODE 55 021
TEL/FAX 257-4942

C. POSTAL 12192
AV. COPACABANA, 330/404
RIO DE JANEIRO
BRASIL

PETROLEUM

APP, Inc.
Petroleum Consulting Services
ANDREW PFAFF, P.E. '74
President
16912 W. 74th Avenue
Arvada, CO 80007 USA
appinc@uswest.net
Phone: (303) 424-4846 FAX: (303) 424-8461

MALKEWICZ • HUENI ASSOCIATES
Worldwide Petroleum Consultants

A client oriented consulting firm providing practical solutions to reservoir management problems.

Steve Malkewicz ('74)
Brenda Bain ('83)
Deborah Waterloo ('88)
Dan Simpson ('93)

14142 Denver West Parkway, Suite 190
Golden, Colorado 80401
Office: (303) 277-0270
Fax: (303) 277-0267

H. K. VAN POOLLEN
'50, '55
PETROLEUM CONSULTANT
Box 712, Penrose, CO 81240
(719) 372-3625 email: HvPoolen@AOL.com

HALEY ENGINEERING INC.
PETROLEUM CONSULTANTS - DOMESTIC & INTERNATIONAL
5601 SOUTH BROADWAY, SUITE 360
LITTLETON, COLORADO 80121
John D. Haley '48
President
Phone: 303-795-8578
FAX: 303-795-5058

Call (800) 466-9488, ext. 3294
to place an ad (8 a.m.-5 p.m. MST).

LONG Consultants, Inc.
Independent Petroleum Engineers
D. R. Long
P.E. '67
909 Fannin, Suite 3810, Houston, Texas 77010-9998
713-650-6828 • Fax 713-650-8605

STA
System Technology Associates, Inc.
Petroleum & Environmental Consulting

Alan Burzlaff '77
Stanley Obernyer '78
K. Papakonstantinou '98
Andrew Prestridge '85, '91, '96
Raymond Stewart '69
George Vassilellis '93

4700 Stockdale Hwy.
Suite 110
Bakersfield, CA 93309
Tel. (661) 325-0038
Fax (661) 325-4178

14142 Denver W. Pkwy.
Suite 300
Golden, CO 80401
Tel. (303) 271-1478
Fax (303) 271-1482

INTEGRATED SERVICES · OPTIMIZED SOLUTIONS

Robert N. Wagner BSc Pet is vice president of engineering for Quicksilver Resources Inc. in Keller, Texas.

Daniel S. Wilkinson BSc Geop is senior DSP software engineer for Sytex Inc. and Colleen R. Wilkinson BSc Geop '85 is a geophysical consultant for Wilkinson Research. They live in Golden, Colo.

1987

Michael A. Ferranro BSc Met is a business analyst for Maxtor Corp. and lives in Broomfield, Colo.

Joanna M. Forbes BSc Math is product marketing engineer for Agilent Technologies Inc. and lives in Loveland, Colo.

J. Scott Kimbrough BSc Chem is senior compliance specialist for Glaxo Wellcome. He lives in Cary, N.C.

Steven T. Marts BSc Geop is an environmental engineer for ThermoRetec in Billings, Mont.

Kurt A. Ranzinger BSc Geop, MSc Geop '90 is a software engineer for Geo-Logic Systems and lives in Louisville, Colo.

Melanie (Marquardt) Westergaard BSc Geop is senior geophysicist for Vastar Resources, Inc. in Houston.

J. Stevens Zuker MSc Geol is an exploration geochemist for Harrods Natural Resources Inc. in Golden, Colo.

1988

Patricia Glora Chambers BSc CPR is vice president, operations for Tango Technologies Ltd. in Boulder, Colo.

Paul A. Ferre BSc Geop is a graduate student at University of Arizona in Tucson.

Daniel H. Silverman MSc Min Ec is executive vice president for Petrominerals Corp. in Houston.

Dennis M. Vidmar BSc CPR is an OIMS adviser for Exxon Mobil Corp. in Houston.

1989

Gregory R. Cahill BSc Geop is a gas consultant for Navigant Consultants and lives in Broomfield, Colo.

David A. Ellerbroek MSc Env Sci is supervising hydrologist for Montgomery Watson Mining Group in Steamboat Springs, Colo.

Michael W. Longshaw BSc Eng is a materials engineer for Ritchie Paving Inc. in Holcomb, Kansas.

Andrew B. McDonald BSc Eng is a sales representative for Swagelok in Hinesville, Ga.

Beth Mensing-Nahama BSc Pet is an engineer for Aera Energy and Joseph A. Nahama MSc Pet '90 is vice president of Hanama Natural Gas. They live in Bakersfield, Calif.

David J. Mulligan BSc Eng is project manager for Agilent Technologies Inc. and lives in Littleton, Colo.

Thomas A. Oliver BSc Chem is a hydrologist for Pacific Western and lives in Lakewood, Colo.

Stephen J. Rule BSc Geol is geotechnical manager for Midland Grouting and Drilling Co. Ltd. in West Bromwich, England. His e-mail address is Stephen.Rule@ukgateway.net.

Paul M. Veatch BSc CPR is senior engineer for Burlington Resources Inc. in Midland, Texas.

William Wagner III BSc Eng is a control systems engineer for Mountain Peak Control and lives in Lakewood, Colo.

Betty J. Wilt BSc Geol is an assistant transportation systems engineer in the regional office of the USDA Forest Service in Juneau, Alaska.

1990

Bryan Wayne Baird BSc Met is senior business associate for Equilon Enterprises LLC and lives in The Woodlands, Texas.

John H. Fronczak BSc Pet is a senior engineer for Baker Hughes Inc. in Midland, Texas.

Vincent J. Hamilton MSc Geol is president and director of Mart Resources Inc. in Sevenoaks, United Kingdom.

Errol P. Lawrence MSc Geol is owner of Hydro Solutions in Lakewood, Colo.

Michael D. Mishak BSc Eng is an electrical engineer for Agilent Technologies, Inc. in Fort Collins, Colo.

Janice (Purfield) Nelson BSc Math is a senior consultant for Shell Services International and Ronald D. Nelson BSc Pet is a senior subsea systems engineer for Shell International Exploration and Production in New Orleans.

Russell M. Pulling BSc Math is executive director of New Development M Power Solutions Inc. He lives in Highlands Ranch, Colo.

Shelly Stanton BSc CPR '90 is senior consultant for Nexant LLC, an independent Bechtel technology and consulting company serving the global energy industry.

on the move

J. Ben Wesley MSc Geol is a systems programmer for FO&L in Austin, Texas.

1991

Surjan Wirjadiputra BSc CPR is now Suryan Wirya Simunovic. He is an associate with Enron Europe Ltd in London.

1992

Patrick S. Carlin BSc Eng is project engineer for Soils and Materials Consultants Inc. in Arvada, Colo.

Russell A. Frishmuth BSc Eng is senior environmental engineer for Duke Energy Field Services Corp. in Denver.

Scott A. Gustafson BSc Eng is a mechanical engineer for Merrick & Co. in Los Alamos, N.M.

Gillian L. Harrison BSc Eng is a cybrarian for Affinia in Denver.

Randall P. Sulte BSc Min is an engineer for Nalco Chemical Co. in Lincoln, Neb.

1993

Jeffrey Morganfield is senior software engineer for Raytheon in Aurora, Colo.

1994

Steven D. Buck BSc Met is vice president of Great Plains Stainless, Inc. in Tulsa, Okla.

Budi Nataatmadja MSc Env Sc is managing director of Marina Internusa Pratama, PT in Jawa Barat, Indonesia.

Carla (Maguire) Gustafson BSc CPR is a process design engineer for Merrick & Co. in Los Alamos, N.M.

Samuel S. Roushar BSc Eng is a structural engineer for Stone and Webster and lives in Aurora, Colo.

Kristen M. (Morahan) Jerger BSc Eng is project engineer for Valleylab in Boulder, Colo.

1995

Roxann (Mackenzie) Hayes, BSc Eng is county engineer for Archuleta County. Matthew B. Hayes, BSc CPR works for Donoho and Associates, Architects and telecommutes as a design engineer for Phoenix Exchanger Works. They live in Pagosa Springs, Colo., and can be reached by e-mail at roxandmatt@yahoo.com or mbhayes@pagosa.net

Amy Doran Inkell, BSc Eng married CPT Patrick Daniel Pflaum, U.S. Army, July 29 at the St. Elizabeth of Hungary Church in Denver. Pflaum, of Olney, Md., is a 1995 graduate in environmental engeineering of the U.S. Military Academy at West Point. He currently attends law school at the University of Colorado, Boulder. Inkell is in her fifth year as a project engineer with Merrick & Company in Aurora, Colo., and recently earned her license as a Colorado Registered Professional Engineer. The wedding ceremony was followed by a dinner reception at The Westin Westminster. Joining the couple on their special day were several Mines alumni including Wendy BSc Eng '96 and Jason Johnson BSc Eng '96, Yulee BSc Pet '94 and Joe Cordts BSc Eng '93, Renee BSc Eng '93 and Michael Luka BSc CPR '93, Chris BSc CPR '96 and Mark Vessely BSc Geol '94, Stephanie (Morales) Passarelli BSc Eng '93 and Lisa Nuttleman BSc Geop '95.

1996

Daniel M. Edwards BSc CPR is a process engineer for Baxter Hemoglobin Therapeutics in Boulder, Colo.

1997

Mary (Wasgatt) Faulk BSc Eng is project coordinator for the Directorate of Public Works and Tyler K. Faulk BSc Eng is a 1st lieutenant In the U.S. Army Corps of Engineers in Germany. Their e-mail address is bass86@bnv-bamberg.de.

Daniel P. Freed MSc Min Ec is an economist for Totalfina S.A. His business address is Paris—La Defense, France. His e-mail address is daniel.freed@total.com.

Tammerin K. Stover BSc Eng is a geosynthetic specialist for Contech Construction Products in Wheat Ridge, Colo.

1998

Shawn D. Green BSc CPR is a mechanical engineer for RMH Group in Lakewood, Colo.

Courtney L. Smith BSc Math is an associate application software engineer for Lockheed Martin Corp. Husband Tad E. Smith BSc Math is a software engineer for Longhair Technologies. They live in Colorado Springs, Colo.

1999

Robin L Ausbrooks MSc Geol is a geologist for Barrett Resources Corp. in Denver.

PETROLEUM CONT.

PETER B. JONES, D. Sc. '66
Acad., Russian Academy of Natural Sciences
STRUCTURAL GEOLOGY,
PETROLEUM EXPLORATION
PH: (403) 233-0494 FAX: (403) 262-1629
E-MAIL: peter.jones@thementors.com

SERVIPETROL LTD.
International Petroleum Consultants
Independent Oil and Gas Producers
ROBERTO AGUILERA
M.Eng. '71, Ph.D. '77
Naturally Fractured Reservoirs
Log Interpretation • Well Test Analysis
Performance Forecasts
Reservoir Modeling
Economics
Petroleum Short Courses
736 6 Avenue SW, Suite 1640
Calgary, Alberta, Canada T2P 3T7
Tel: (403) 266-2535 Fax: (403) 264-8297
http://www.servipetrol.com
EMAIL: AGUILERA@SERVIPETROL.COM

Questa Engineering Corporation
International Petroleum Consulting

Dr. John D. Wright '69, '85
Richard F. McClure '82, '86
Louise M. McClure '85, '87
Russell C. Schucker '86
Dave O. Cox '74, '77
Nancy R. Sahr '82
Paul R. Onsager '84, '97
Scott L. Stockton '71, '76

1010 Tenth Street Golden, CO, USA 80401
Phone 303-277-1629 fax 303-277-0119
WWW.QUESTAENG.COM
QUESTA@QUESTAENG.COM

PROFESSIONAL SERVICES/LEGAL

DAVID L. NELSON '66
Attorney at Law
14142 Denver West Parkway - Suite 285
Golden, Colorado 80401
(303) 273-9387 – Office/ (303) 273-9395 – FAX

Holme Roberts & Owen LLC
ATTORNEYS · AT · LAW

Ted Stockmar '43
Frank Erisman '65
Ross Breyfogle '79
Stan Gradisar '74

A Full-Service
International Firm
with Offices in Denver, Boulder,
Colorado Springs, Salt Lake City,
and London

303-861-7000

PROFESSIONAL SERVICES/LEGAL (CONT.)

ROLAND H. SHUBERT
PATENT ATTORNEY
1664 BACHAM COURT
RESTON, VIRGINIA 20190
MAILING ADDRESS
POST OFFICE BOX 2339
RESTON, VIRGINIA 20195
PHONE (703) 435-4141
FAX (703) 435-1842

GOUGH, SHANAHAN JOHNSON & WATERMAN
Attorneys at Law
Serving the Mining Industry Since 1878
PO Box 1715
Helena, MT 59624
(406)442-8560
URL: http://www.gsjw.com
William L. MacBride, Jr. '74

JORDAN MICHAEL FOX - CPR '89
ATTORNEY AT LAW
•Commercial Litigation
•Domestic Disputes
•Oil and Gas
•Energy and Environmental Law
Mile High Center
1700 Broadway, Suite 1006
Denver, CO 80290
(303)894-0875

DENNIS A. CARUSO '82
Pezold, Richey, Caruso & Barker
Attorneys At Law
15 W. Sixth Street, Suite 2800
Tulsa, Oklahoma 74119-5415
(918) 584-0506

REMOTE SENSING

SANDRA L. PERRY
MSc. Geol. '85
• Satellite Image Analysis & Processing
• Photogeology • Training • GIS
Perry Remote Sensing LLC
22 Sedgwick Dr. Phone: (303) 761-7777
Englewood, CO 80110 Fax: (303) 761-7778

Analytical Imaging and Geophysics LLC
Providing Remote Sensing Solutions
Joseph W. Boardman '85, PhD.
Fred A. Kruse '84, PhD. '87
Kathryn S. Young '86, PhD.
James M. Young '86
4450 Arapahoe Ave. Ste 100 • Boulder, CO 80303
Phone: 303-604-2844 • Fax: 303-665-6090

Keep in touch with old friends and support your school.
Join the Alumni Association

on the move

Donald W. Bucholz PhD Met & Mat Eng is vice president of technology for Conforma Clad, Inc. in New Albany, Ind.

Robert D. Clark BSc Eng is a rolling mill electrical supervisor in the Seattle division of Birmingham Steel Corp. He lives in Federal Way, Wash.

Matthew W. Juth BSc Min is a mining engineer for Southdown Inc. in Lafayette, Colo.

Susan A. Rainey BSc Eng is an engineer for Thermo Retec in Lakewood, Colo.

Shannon R. Rasmussen BSc Eng is a plant engineer for Holnom Cement Inc. in Laporte, Colo.

Randy A. Wampler BSc Eng is project engineer for J.F. Sato in La Salle, Colo.

2000

Recent graduates had great success finding jobs. They are listed below by discipline.

Richard A. Rail BSc Econ is executive director for Mountain Side Home Improvements.

Double degrees: **Samuel F. Harms BSc Phy, BSc Eng** is a 2nd lieutenant in the U.S. Army; **Zachary S. Herman BSc Math & Comp Sci, BSc Eng** is an engineer for IBM; **David M. Kleiman BSc Phy, BSc Eng** is a graduate student; **Michael J. Liedtke BSc CPR, BSc Econ** is a business consultant for Andersen Consulting LLP; **Bryan R. Strand BSc Phy, BSc Eng** is a design engineer for Hewlett-Packard Co.

Double degrees of BSc Eng (mechanical) and BSc Eng (civil): **Patrick Brent Bush** is an engineer/superintendent for Railworks Midwest in Commerce City, Colo.; **Will E. Edeen** is a construction site engineer for Bechtel; **David A. Estabrook** is an analyst for Andersen Consulting LLP.

BSc Min: Stephen A. Dulcey is president of Kel-Con Service Co., Inc. in Weatherly, Pa.; **Kevin J. Gunesch** is a mining engineer for BHP; **Matthew D. Lengerich** is an engineer for Colowyo Coal Co. in Meeker, Colo.; **Liam N. Schenk** is an engineer/estimator for Kiewit Construction Co.

BSc Met & Mat Eng: Eric D. Bemiss is a process metallurgist for Lone Star Steel in Lone Star, Texas; **Christopher L. LaPole** is a steel business associate with The Timken Co.;

Wade A. Lumpkins is a metallurgist for the Chaparral Steel Co. in Midlothian, Texas; **Ian M. Nickerson** is a metallurgical engineer for U.S. Steel International Inc.; **Nickolus R. Pigott** is an inside sales engineer for Marmon/Keystone Corp. in Denver; **Ryan W. Rathbun** is a graduate student at CSM; **Shannon M. Stephenson** is a management assistant for U.S. Steel International Inc.; **Rachel S. Wilde** is in the Ford College graduate program at Ford Motor Co. in Dearborn, Mich.; **Raymond Chi-Wai Yeung** is a process engineer for Intel Corp.

BSc Geol: Richard A. Behning is an engineer for Kiewit Underground of the Kiewit Mining Group Inc. in Omaha, Neb.; **Scott A. Randle** is a geotechnical engineer for Professional Service Industries; **Laura C. Sweezey** is a geological engineer for Yeh & Associates and lives in Lakewood, Colo.; **Lana R. Wilson** is staff engineer for Environmental Reclamation Inc. in Englewood, Colo.

BSc Pet: Sabrina L. English is an oil and gas research analyst for Petrie Parkman & Co. in Denver. **John Jerome Estabrook Jr.** works for Alyeska Pipeline Service Co.; **Tyson S. Foutz** is a DSE for Schlumberger Ltd.; **Kimberly E. Kloppel** is a petroleum engineer for Vastar Resource Inc. in Houston; **Henry C. Lowrey III** works for BP Amoco; **Alvaro L. Ranero-Celius** is an engineer for Anadarko Petroleum Corp. in Englewood, Colo.; **Sally J. Rautio** is a petroleum engineer for Kerr-McGee Corp.; **Adan I. Saenz** is a junior field engineer for Schlumberger Ltd.; **Arman A. Tulegenov** is an engineer for Texaco, Inc.

BSc CPR: Robert B. Alexander is a process engineer for Texas Instruments Inc. and lives in Richardson, Texas; **Geno L. Fallico** is a process engineer for Motorola, Inc.; **Jason E. Gumble** is a geoscience intern for Marathon Oil Co.; **Michael J. Littlehorn Jr.** is a telecommunciations consultant for American Management Systems in Golden, Colo.; **David J. Livesay** is an engineer for Radian International LLC in Denver; **David E. Petrick** is a graduate student; **Elizabeth J. Reagan** is in law school; **Matthew B. Seefeldt** is a graduate student at University of Colorado; **Codi D. Shafer** is an analyst for Andersen Consulting LLP.

BSc Mat & Comp Sci: Miranda C. Albracht is a software engineer for IBM in Boulder, Colo.; **Amy S. Bollinger** is an information technology analyst for Great Western Life & Annuity; **Matthew C. Cooper** is a software developer for J.D. Edwards & Co.; **Steve E. Jeltema** is a software developer for U.S. West; **Haifeng Liu** is a software developer for Lucent Technologies Inc. in Denver; **Nathan D. Muggli** works for Lockheed Martin Corp.; **Jess D. Odum** is an associate software engineer in technical operations for Lockheed Martin Corp. in Aurora, Colo.; **Jeffrey W. Pinkal** is an associate consultant for Braun Consulting in Denver; **Eric K. Pinkston** works for computer programming support for Lockheed Martin Corp. in Aurora, Colo.; **David E. Stockton** is a programmer for J.D. Edwards & Co.; **Jessica R. Trundy** is a technical analyst for Andersen Consulting LLP; **Geoffrey M. Vasil** is a graduate student at New York University; **Jason C.K. Walp** is a software engineer for IBM; **Sarah J. Wheeler** is a graduate student at CSM.

BSc Phy: Danny C. Fisher is a research engineer for the Rocky Mountain Musculoskeletal Research Laboratory in Denver; **Joseph I. Gilbert** is a 2nd lieutenant in the U.S. Army; **Victor J. Rhodes** is an engineer for Melco Embroidery Systems in Denver.

BSc Eng: Arthur D. Abercrombie is an analyst for Andersen Consulting LLP; **Matthew V. Ammerman** is a project engineer for Archer Western Contractors in San Diego; **Dustin L. Ballinger** is a 2nd lieutenant in the U.S. Air Force; **Amy A. Bathurst** is a semicustom design engineer for Motorola, Inc.; **Glendon W. Berrett** is an engineer for TST Inc. in Englewood, Colo.; **Damon J. Burnett** is a grduate student at Rensselaer Polytechnic Institute; **Jennifer D. Cartwright** is an engineer at IBM; **Dustin D. Duncan** is an engineer for Community Power Corp. in Littleton, Colo.; **Shivayam Ellis** is a design engineer for community Power Corp.; **Paul D. Fisher** is an engineer/scientist for IBM; **Paul R. German** works for Caterpillar Inc. in Dunlap, Ill.; **Aaron L. Giesick** is a mechanical engineer for Solid Systems Engineering in Boulder, Colo.; **Nathaniel P. Graf** is an engineer-in-training for Fuhrmann Engineering Services in Denver; **Jason A. Greene** is an associate test engineer for Lockheed Martin Corp.; **Joshua J. Harris** is a mechanical engineer for Bechtel; **Joseph A. Humm** is an analyst for Andersen Consulting LLP; **Bradley S. Johnson** is a product engineer for Caterpillar Inc.; **Brandon L. Johnson** is an analyst for Andersen Consulting LLP; **Doug K. Johnson** is an engineer-in-training for Lehigh Portland Cement; **Sarah J. Jurgensmeier** is a graduate student; **Richard E. Kopp** is an analyst for Andersen Consulting LLP; **Adam D. Krier** is a graduate student at CSM; **Kevin J. Mandeville** is an equipment engineer for NEC Electronics; **Brandon K. Miera** is a device engineer for Motorola, Inc.; **Mark C. Moon** is an analyst for Andersen Consulting LLP; **Michael J. Morrissey** is software engineer for Core Systems Inc. in Boulder, Colo.; **Christopher R. Nalepa** is an intern at U.S. West; **Angel Daniel Nieto** is a production engineer for Texaco Inc.; **Patricia R. Ochoa** is an environmental engineer for the U.S. Environmental Protection Agency in Denver; **Nathan Lee Peterson** is a sales engineer for Ingersoll-Rand Co.; **Christophe G.P. Ponsart** is an analyst for Andersen consulting LLP in Denver; **Ryan J. Redman** is an entry-level engineer for VStructural; **Thomas R. Repp** is an engineer for Martin/Martin Inc.; **Craig A. Schlott** works for the Kansas Department of Transportation in Garden City, Kan.; **Aaron I. Springfield** is an electrical engineer for Bechtel; **Travis J. Starns** is a process engineer for ADA Environmental Systems; **Gregory R. Stowers** is a facilities engineer for Evergreen Resources Inc., in Denver; **Hobie Troxell** works for Motorola Inc., in Austin, Texas; **Renee D. Tschannen** is an equipment engineer for Motorola, Inc., in Mesa, Ariz.; **Michael S. Watkins** is a power engineer for Community Power Corp.; **Matt M. Williams** is a project engineer for MK Centennial Engineering, Inc.; **Sara A. Willimas** works for Motorola, Inc.

RESOURCE EXPLORATION

Red Rock Resources, Ltd.
Ian H. Mackay D.Sc. P.Eng.
Geol Eng '53
440 Aquitaine Tower
540 Fifth Avenue S.W
Calgary, Alberta, Canada
T2P0M2
(403) 294-1234

SOFTWARE

TECHBASE
"Engineering Software for Solving Real World Problems"
- Database
- Graphics
- Pit Design
- Reclamation
- Lerchs-Grossman 3-D Optimizer
- Statistics
- Modeling
- Geostatistics
- Monitoring
- Data Analysis

Michael N. Norred '78
MINEsoft Ltd.
165 South Union Blvd., Suite 510
Lakewood, CO 80228
Phone: (303) 980-5300
FAX: (303) 969-0022

MINESIGHT Medsystem
is an integrated system which offers the maximum flexibility and power for geologic modeling, mine planning and mine evaluation which can be applied to all types of mines (underground, open pit and strip mines).

Mintec employs a professional staff of mining engineers, geologists and technicians who are available to provide maintenance, training and technical support for MineSight®/Medsystem® as well as offering a full array of consulting services to the mining industry.

MineSight®/Medsystem® software is now used by over 300 clients in more than 20 countries worldwide and offers one of the most comprehensive mine planning packages available — 470 individual technical programs that comprise a tool kit for use in mine operations, feasibility studies and for exploration.

MINTEC, Inc.
3544 East Ft. Lowell Road
Tucson, AZ 85716-1705
Phone: (520) 795-3891
Fax: (520) 325-2568
E-Mail: market@mintec.com
Website: www.mintec.com

DIGITAL FORMATION
Tel: (303) 770-4235
Fax: (303) 770-0432
E-mail: Info@DigitalFormation.com
Web: www.DigitalFormation.com
Software
- petrophysical analysis
- log presentation
- data visualization
- composite log generation

Michael Holmes '73
Dominic Holmes '91

For more information on how to place an ad, call the CSMAA Office
303-273-3294 (local)
(800) 446-9488, Ext. 3294
(8 A.M.-5 P.M. MST)

Whisler '84 named chairman of Phelps Dodge

J. Steven Whisler MSc Min Ec '84, Mines Medalist '94, president and chief executive officer of Phelps Dodge Corp., assumed the additional role of chairman of the board at the close of the company's annual shareholders meeting in May.

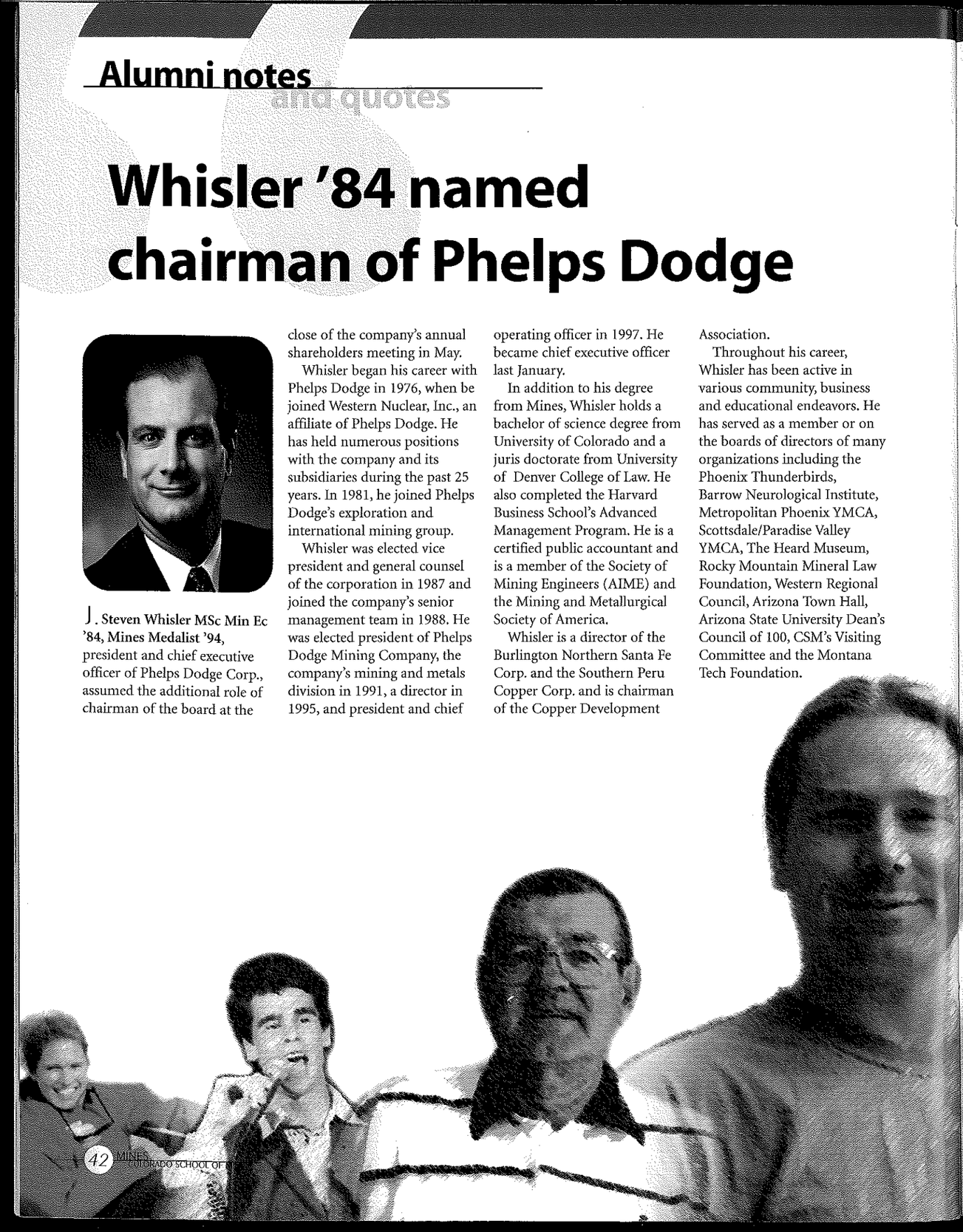
Whisler began his career with Phelps Dodge in 1976, when be joined Western Nuclear, Inc., an affiliate of Phelps Dodge. He has held numerous positions with the company and its subsidiaries during the past 25 years. In 1981, he joined Phelps Dodge's exploration and international mining group.

Whisler was elected vice president and general counsel of the corporation in 1987 and joined the company's senior management team in 1988. He was elected president of Phelps Dodge Mining Company, the company's mining and metals division in 1991, a director in 1995, and president and chief operating officer in 1997. He became chief executive officer last January.

In addition to his degree from Mines, Whisler holds a bachelor of science degree from University of Colorado and a juris doctorate from University of Denver College of Law. He also completed the Harvard Business School's Advanced Management Program. He is a certified public accountant and is a member of the Society of Mining Engineers (AIME) and the Mining and Metallurgical Society of America.

Whisler is a director of the Burlington Northern Santa Fe Corp. and the Southern Peru Copper Corp. and is chairman of the Copper Development Association.

Throughout his career, Whisler has been active in various community, business and educational endeavors. He has served as a member or on the boards of directors of many organizations including the Phoenix Thunderbirds, Barrow Neurological Institute, Metropolitan Phoenix YMCA, Scottsdale/Paradise Valley YMCA, The Heard Museum, Rocky Mountain Mineral Law Foundation, Western Regional Council, Arizona Town Hall, Arizona State University Dean's Council of 100, CSM's Visiting Committee and the Montana Tech Foundation.



Seeton '47 wins Lifetime Achievement Award

Frank Seeton EM '47 is the recipient of the first Arthur C. Daman Lifetime Achievement Award, an honor created by the Colorado MPD (Minerals Processing Division) of SME (Society for Mining, Metallurgy and Exploration). The award was created to recognize lifetime achievement in the mining industry and is given to those individuals who have contributed significantly to the image of the mining industry, promoted goodwill both within and outside the industry, and made a significant impact on the mining industry in either property development, equipment design or engineering serivces.

The recipients of this award are to be of the highest professional and ethical standards and must have character that is above reproach. The award is named in memory of the founder of the Denver Equipment Co., **Arthur C. Daman EM '15, Medalist '56, Hon Mem '65.**

The inaugural presentation was made at the 50th annual meeting of the Colorado MPD section in May at the Broadmoor Hotel in Colorado Springs, Colo. Two similar awards were given posthumously at the same time Seeton was honored.

Retired humanities professor emeritus Anton G. Pegis receives honorary membership in the Class of 1960, presented by ***Bruce Heister Met E*** *at their class reunion dinner in May. Pegis, who also served as CSM vice president for development and student affairs, was the first person to be given honorary membership in the class. "The course, History of Western Civilization, that he taught opened my eyes and my life to literature—history, philosophy and much more," says* ***Ken Larner Geop E '60, Medalist '81****, who hosted the class dinner. "He is the youngest 80-year-old you could imagine—right down to his unchanged crewcut and absolutely unchanged gentlemanly ways and appreciation for continued learning. In addition to awarding Pegis a "silver diploma," the Class of '60 set up an endowment in the CSM Foundation for the Anton G. Pegis Scholarship Fund for undergraduates.*

Photos: Douglas Baldwin

Whisler '84 named chairman of Phelps Dodge

J. Steven Whisler MSc Min Ec '84, Mines Medalist '94, president and chief executive officer of Phelps Dodge Corp., assumed the additional role of chairman of the board at the close of the company's annual shareholders meeting in May.

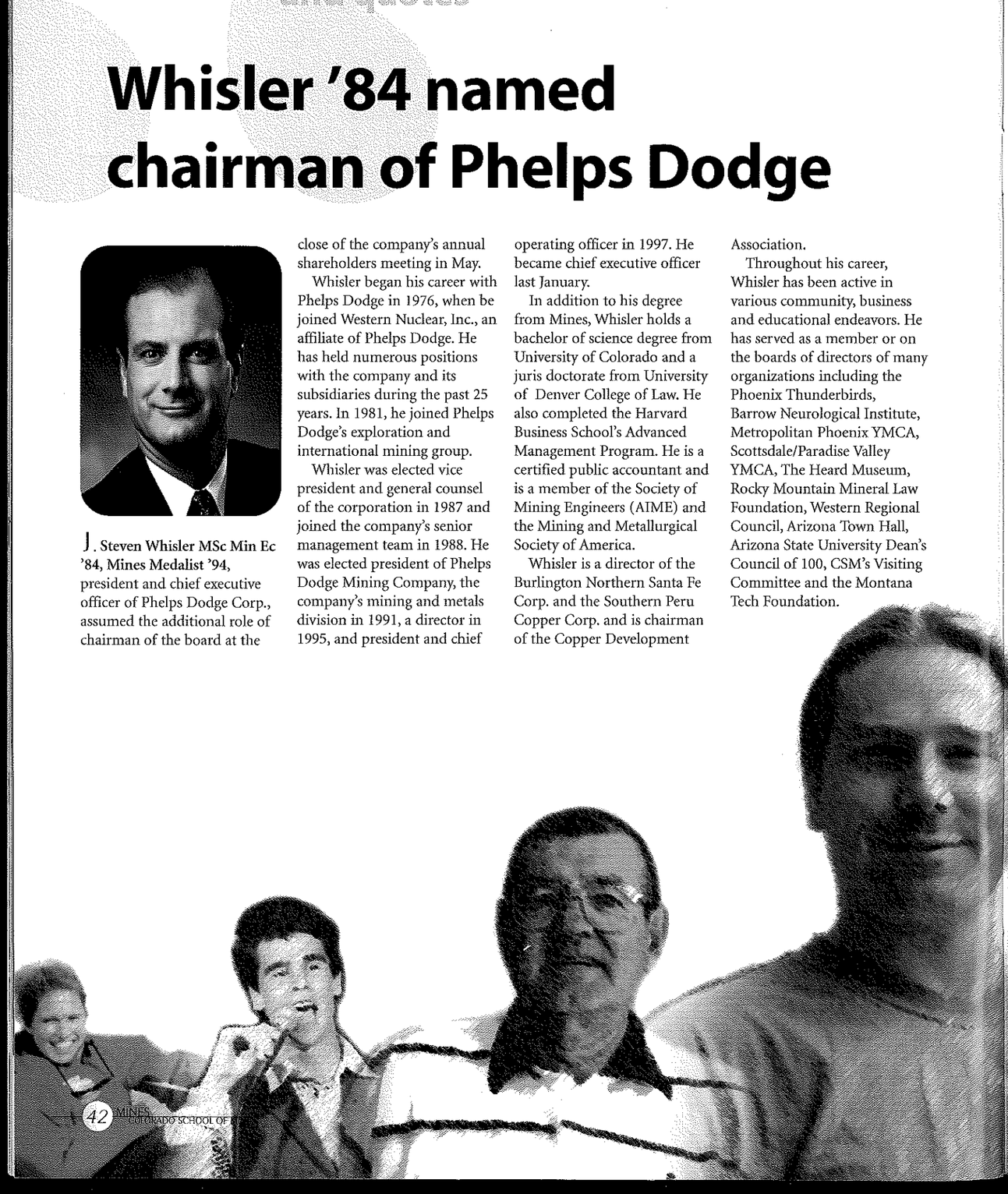
Whisler began his career with Phelps Dodge in 1976, when be joined Western Nuclear, Inc., an affiliate of Phelps Dodge. He has held numerous positions with the company and its subsidiaries during the past 25 years. In 1981, he joined Phelps Dodge's exploration and international mining group.

Whisler was elected vice president and general counsel of the corporation in 1987 and joined the company's senior management team in 1988. He was elected president of Phelps Dodge Mining Company, the company's mining and metals division in 1991, a director in 1995, and president and chief operating officer in 1997. He became chief executive officer last January.

In addition to his degree from Mines, Whisler holds a bachelor of science degree from University of Colorado and a juris doctorate from University of Denver College of Law. He also completed the Harvard Business School's Advanced Management Program. He is a certified public accountant and is a member of the Society of Mining Engineers (AIME) and the Mining and Metallurgical Society of America.

Whisler is a director of the Burlington Northern Santa Fe Corp. and the Southern Peru Copper Corp. and is chairman of the Copper Development Association.

Throughout his career, Whisler has been active in various community, business and educational endeavors. He has served as a member or on the boards of directors of many organizations including the Phoenix Thunderbirds, Barrow Neurological Institute, Metropolitan Phoenix YMCA, Scottsdale/Paradise Valley YMCA, The Heard Museum, Rocky Mountain Mineral Law Foundation, Western Regional Council, Arizona Town Hall, Arizona State University Dean's Council of 100, CSM's Visiting Committee and the Montana Tech Foundation.



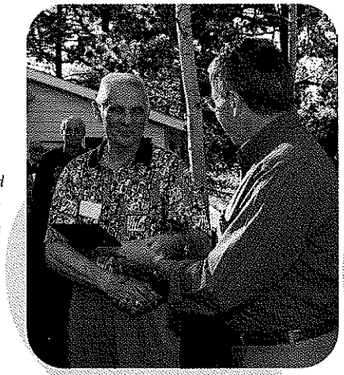
Seeton '47 wins Lifetime Achievement Award

Frank Seeton EM '47 is the recipient of the first Arthur C. Daman Lifetime Achievement Award, an honor created by the Colorado MPD (Minerals Processing Division) of SME (Society for Mining, Metallurgy and Exploration). The award was created to recognize lifetime achievement in the mining industry and is given to those individuals who have contributed significantly to the image of the mining industry, promoted goodwill both within and outside the industry, and made a significant impact on the mining industry in either property development, equipment design or engineering serivces.

The recipients of this award are to be of the highest professional and ethical standards and must have character that is above reproach. The award is named in memory of the founder of the Denver Equipment Co., **Arthur C. Daman EM '15, Medalist '56, Hon Mem '65.**

The inaugural presentation was made at the 50th annual meeting of the Colorado MPD section in May at the Broadmoor Hotel in Colorado Springs, Colo. Two similar awards were given posthumously at the same time Seeton was honored.

Retired humanities professor emeritus Anton G. Pegis receives honorary membership in the Class of 1960, presented by ***Bruce Heister Met E*** *at their class reunion dinner in May. Pegis, who also served as CSM vice president for development and student affairs, was the first person to be given honorary membership in the class. "The course, History of Western Civilization, that he taught opened my eyes and my life to literature—history, philosophy and much more," says* ***Ken Larner Geop E '60, Medalist '81****, who hosted the class dinner. "He is the youngest 80-year-old you could imagine—right down to his unchanged crewcut and absolutely unchanged gentlemanly ways and appreciation for continued learning. In addition to awarding Pegis a "silver diploma," the Class of '60 set up an endowment in the CSM Foundation for the Anton G. Pegis Scholarship Fund for undergraduates.*



Photos: Douglas Baldwin

Following is a sampling of gifts received between December 21, 1999, and June 30, 2000.

Individual Gifts

Johanna P. Collester, widow of **Stewart M. Collester '50**, contributed an additional $65,350 in appreciated securities to the Collester charitable remainder trust.

Additional distributions of $182,071 were made to the **Bart and Helen Ryan De Laat Scholarship Fund.**

Frederick F. Dueser '49 renewed his membership in the Simon Guggenheim Society with a gift of $25,000 to the Mines Annual Fund.

Wilma Fogarty donated $28,035 in stock to the Charles F. Fogarty Scholarship Fund.

Gerald Grandey '68 contributed $25,000 to the Gerald W. Grandey Endowment for the McBride Honors Program.

William Chun Lim Hui contributed $100,000 to the Stephen and Anna Hui Endowed Fellowship Trust.

Francis J. Labriola '52 contributed $250,000 to the George Ansell Distinguished Chair in Metallurgical Engineering.

John P. Lockridge '52 contributed $40,000 in stock and cash to support the Geology Department.

Carolyn Mann donated an additional $50,000 to the John and Carolyn Mann Graduate Fellowship in Geology Fund.

J. Robert Maytag contributed $175,000 to support the CSM Andes Scholarship.

A cash gift of $39,000 was recently distributed from the estate of **Robert H. McMullin.**

Isabel McNeill donated $50,000 to establish the Harry L. McNeill Endowed Scholarship Fund.

F. Steven Mooney '56 contributed $25,781 in appreciated securities to the Mines Annual Fund.

James D. Mulryan '54 donated $25,402 in stock to the James D. and Lois H. Mulryan Endowed Scholarship Fund and the Mines Annual Fund.

John V. Newhouser '50 made a gift of $50,000 to establish the John V. and Charlotte Newhouser Geology Endowment Fund in honor of his 50th reunion.

Prior to his death in March, **Willard R. Slater '40** contributed $25,000 to the Slater Family Research Endowment, which supports Engineering Design. The endowment is also the beneficiary of a $1.4 million trust set up through Mr. Slater's estate.

J. Don Thorson '55 established the J. Don Thorson Endowment for Engineering Senior Design Fund with a gift of $100,000 and a pledge of $100,000.

Jasper N. Warren '50 gave $25,000 to the Mines Annual Fund.

Unitrust Affirms Preston Commitment to Mines

William A. Preston (Class of '58) and his wife, Janet, have established a charitable remainder trust that gives Colorado School of Mines an irrevocable 50 percent interest currently valued in excess of $1.6 million. The balance of the trust remainder will go to other charitable interests. The trust will make quarterly payments to the Prestons for their lifetime. The trust was established with appreciated securities, a strategy that allowed the Prestons to re-invest for additional income without paying capital gains taxes.

In addition to the trust, Bill and Janet have made annual contributions to the Renewal Fund, an endowed scholarship fund for students in their junior or senior year. Bill and his classmate and close friend, Robert H. Waterman, Jr., established the fund in 1993.

Corporate and Foundation Gifts

The following companies donated computer software to the Petroleum Engineering Department during the 1999-2000 academic year: **Computer Modeling Group, Halliburton Company, Kappa Engineering, Maurer Engineering, Merak Projects Ltd., NSI Technologies, Schlumberger, Scientific Software Intercomp, Inc.**, and **Theta Enterprises.**

With a gift of $75,000, the **Adolph Coors Foundation** provided scholarships to 17 students in the Minority Engineering Program.

A $25,000 gift from **ARCO Technology and Operations Services** is funding Geophysics fellowships for two graduate students.

The Baker Hughes Foundation contributed $25,000 to the Baker Hughes Scholarship Program for 17 scholarships in the Division of Engineering and the departments of Chemical Engineering and Petroleum Refining, and Petroleum Engineering.

A gift of $30,000 from **BP Amoco Production Company** provided support to the Department of Geology and Geological Engineering's Mesa Verde Almond Study.

Gifts totaling $35,000 from **Burlington Resources Foundation** are supporting the departments of Geology and Geological Engineering, and Petroleum Engineering.

DuPont Company continues to support Professor Dianne Ahmann in the Environmental Science and Engineering Division with a gift of $25,000.

Gifts totaling $66,000 from **Elf Exploration, Inc.** are supporting the Genetic Stratigraphy Research Program.

A gift of $36,800 from **Hazen Research, Inc.** will provide support for Dr. John Hager, the Hazen Research Professor in Extractive Metallurgy.

ICI Technology contributed $53,650 to support the research conducted by the Department of Chemistry and Geochemistry under the direction of Professor Kim R. Williams.

ISS Foundation continues to support Dr. John Speer in Metallurgical and Materials Engineering with a gift of $25,000.

Lucent Technologies Foundation donated $25,000 to the Young Scholars Math Camp Program. The program encourages at-risk American Indian students to stay in school so they can enter college programs in science, engineering and math.

The **Mikkelson Foundation** contributed $25,000 to the Engineering and Applied Technology Program.

Contributions totaling $60,000 from **Mitsubishi Chemical Corporation** support the research of Dr. David Tai-Wei Wu in the Department of Chemistry and Chemical Engineering.

Motorola donated a Rapid Thermal Processing unit and other equipment to support Chemical Engineering's new undergraduate silicon processing laboratory under the direction of Dr. Colin Wolden.

Phelps Dodge continued contributions to the Phelps Dodge-Ansell Endowment for

Continued on page 45

Reunion Gift Bolsters Need-Based Barrett Scholarship

"I knew that every dollar was important to Mines and would be used to benefit the students."—Larry Barrett

Larry Barrett's dream as a boy growing up in rural Craig, Colorado, was to become an engineer, travel, and excel in his profession. A full-tuition scholarship to Mines for two years, an Advanced ROTC stipend and help from his parents paved the way for him to accomplish all three.

He graduated in 1950 as a petroleum engineer at age 21; served as a combat engineer in Korea and Japan; traveled with his wife to Europe, Asia, South America and Antarctica; and embarked on an illustrious 33-year career in the petroleum engineering industry, where he rose through the ranks to become Senior Vice President of International Exploration and Operations for Ladd Petroleum Corporation.

In recognition of the importance of his scholarship, Barrett in early 1999 established the Lawrence E. Barrett Endowed Scholarship Fund with a commitment of $200,000. This year, in honor of his 50th reunion, he contributed an additional $128,025 toward fulfilling his pledge. The fund provides four-year, need-based scholarships for undergraduate students, and is a testimonial to a man who embraces philanthropy at Mines.

"I've always supported the School monetarily, and have increased my support over the years," said Barrett. "While I was giving money to Mines, my wife was giving money to her alma mater, Mt. Holyoke. A few years back, Charlotte and I decided we wanted to do more for both our schools, so we set up scholarships, for whomever, to help toward a degree. Our hope is that the recipients will use their degree to help better themselves and the community."

Individually endowed scholarships, such as Barrett's, recognize outstanding students and assure them of monetary support so they can pursue their studies through graduation. Need-based scholarships are awarded to young men and women who meet Mines' high academic standards, but who do not have the financial ability to attend Mines, while merit-based scholarships primarily recognize and reward academic excellence.

The School's current 125 endowed scholarships assist 800 undergraduates. These scholarships can cover tuition, fees, books, or other legitimate academic expenses within the guidelines of the CSM Foundation's spending policy each year.

Endowed scholarships can be established with a minimum initial gift of $25,000, which can always be augmented. In many families, adding to a scholarship or fellowship fund established years ago has become a multi-generational tradition.

"I remember my first gift to Mines; I made it in 1956," said Barrett, who for the past 15 to 20 years has been soliciting contributions to the Mines Annual Fund and the 1950 Reunion Giving Committee. "It was very small, $5, but I knew that every dollar was important to Mines and would be used to benefit the students. To me, my fondest memory of Mines was 'getting out' (graduating). Hopefully, the students who will be awarded this scholarship will enjoy their graduation experience as much as I did mine."

Larry Barrett

2000 Reunion Class Gifts

Reunion Class	Class Gift	Class Participation
Class of 1940	$1,462,677	40%
Class of 1945	$950	40%
Class of 1950	$357,406	57%
Class of 1955	$317,520	34%
Class of 1960	$57,682	37%
Class of 1965	$91,493	22%
Class of 1970	$55,334	23%
Class of 1975	$29,265	20%
Class of 1980	$36,812	20%
Class of 1985	$23,720	16%
Class of 1990	$7,355	12%
Grand Total	$2,440,214	23%

Continued from page 44

Excellence in Mining Engineering with a gift of $200,000. In addition, the Phelps Dodge Foundation made a $40,000 gift in support of the Department of Mining Engineering.

Phillips Petroleum Company reaffirmed its commitment to the "Phillips Scholars Program" with a gift of $60,000. Phillips also contributed an additional $40,000 for scholarships and unrestricted support to various departments.

A gift of $35,000 from the **Research Corporation** is supporting the chemical contrast imaging research of Dr. Peter W. Sutter, Department of Physics.

Rockefeller Brothers Fund, Inc. contributed $25,000 to support the biofilm research of Dr. Junko Munakata Marr.

Schlumberger-Doll Research continues its support of the Department of Geophysics with a cash gift of $25,000.

The **SEQ Foundation** contributed $25,000 to the Seismic UNIX Project.

Sercel, Inc. donated seismic recording equipment to support the Department of Geophysics with their summer field camps.

Two separate gifts of $25,000 from **Shell Oil Company Foundation** support the Department of Geophysics.

This year, the **Edna Bailey Sussman Fund** will support nine Mines graduate students as interns with government agencies and companies focusing on environmental issues. The fund awarded CSM $41,022 from its Environmental Internship Program.

The Texaco, Inc. gift of $37,341 supports Marc Jager, a graduate student in Chemical Engineering and Petroleum Refining, with his studies in gas hydrates.

Staying connected

Southwest Region

Arizona

More than 25 people attended the CSM special mine tour put on by Phelps Dodge at its Morenci, Ariz., mine in June. The tour was led by **Lorraine Miller BSc Min '96** and **Matt Reilly BSc Min '87** and **Harry "Red" Conger BSc Min '77**. Everyone enjoyed the competition and learning experience of playing Copper Jeopardy, seeing the massive operations and getting together with fellow Miners.

West Texas

The newly rejuvenated Midland-Odessa section hosted a picnic supper for the petroleum engineering field-session group in May. **John Gould BSc Pet '80, MSc Min Ec '95** and **Aimee Edwards BSc Pet '96** coordinated the event with the support of Chevron, BJ Services, Antero Production (**Larry Gillette, BSc Pet '76**), Gel Technologies Corp., and **Rex Marshall BSc CPR '80**. Food and drink was provided to alumni, faculty, family, friends and students. **Tim Thompson Geol E '57** and **Mike Banschbach BSc CPR '80** had planned to attend but didn't make it. Look for another get together this fall!

Gulf Coast Region

Houston

More than 50 alumni friends and family attended a Houston Astros vs. Colorado Rockies baseball game at the new Enron Field in May. **Vicky Jackson BSc Pet '92** organized the event and provided the photograph.

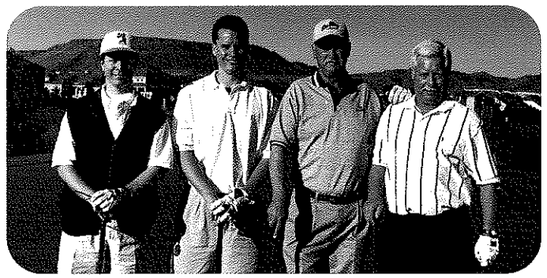
Metro Denver Region

Denver

The 16th annual Art Meyer Memorial Golf Tournament, held June in Arvada, Colo., raised nearly $6,500 for CSMAA's financial assistance program, boosting the total amount raised to more than $95,500 since the event was started.

Ninety-eight people played 18 holes but no one won either of the hole-in-one prizes ($10,000 and a trip). Prizes raffled off at this year's event included a large-screen color television, patron passes for two to Sprint International golf tournament, teeth whitening by a local dentist, a gigantic bottle of wine, dinner at local restaurants and more.

The tournament was named in honor of **Pierrepont "Art" Meyer Geol E '50**, who along with **Ed Warren Geol E '50**, founded the event.



The Millers made the tournament a family affair. From left, Grant, Trevor, Bob Geol E '59 and Doug Phy E '64, MSc Math '69.

Thank you

To all who participated in the Colorado School of Mines Alumni Association's 16th Annual Golf Tournament to support the CSMAA Student Financial Assistance Program.

Corporate sponsors:

Aramark Campus Dining
Coors Brewing Company
CSM Student Life

Patrons:

Candlewood Suites
Denver Marriott West
Liberty Mutual
Ken Nickerson '48
Union Bank & Trust—Golden

Hole Sponsors:

John Bauer III '84, '90
Collins & Aikman Floor Covering
Dick Daniele '60, Daniele Metal Mineral Services
Hugh Evans '49
John Lockridge '52
CSM Professor David Matlock
Chuck Melbye '50, Western Strontium Corp.
McLemore Pump, Inc.
Doug Miller '64, Applied Research Concepts
Mines Annual Fund
Mutual of Omaha
M.S. Patton Jr. '40, Graybol-Patton Co.
Project Assistance Corp.
U.S. Bank–Golden
Wells Fargo–Golden

And special thanks to members of the 2000 golf committee:

John F. Bauer III '84, '90, chairman
Bob Francisco, co-chairman
Lynn Brown '50
Kathy Breit and Janis Strong, CSMAA staff

Prizes and Donations:

Applejack Liquor
Appleton Electric
Banks Insurance Agency
John Bauer '84, '90
Candlewood Suites
Capstone Planning & Control
Coors Tek
CSM Alumni Association
CSM Athletic Department
CSM Special Programs
& Continuing Education
Einstein Bros. Bagels
Enstrom's–Denver West
Foss General Store
Golden City Brewery & Pub
Jackson's All American Sports Grill
Kenrows Family Restaurant
King Soopers–Golden
Walt Kordziel '81
Liberty Mutual
Macaroni Grill–Denver West
Mimi's Cafe–Denver West
Ronald L. Morse, DDS & PC
On the Border–Denver West
Pizza Hut–Golden
Safeway–Golden
Siegel Oil
Scott Siler
Sprint International
Table Mountain Inn
Wendy's–Golden
Woody's

Holiday Inn
Denver West Village

Welcomes

CSM Alumni!

Fabulous New Rooms • Sensational Restaurant
and the renowned West Village Sports Club Lounge.
Serving you with the flair we are so noted for!

14707 West Colfax, Golden, Colorado 80401
For reservations: (303) 279-7611 or (800)729-2830

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

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

Whether attending chemical engineering classes or cheerleading at football games, Traci and Trisha Olson double their efforts at Colorado School of Mines. The twins are juniors this fall.