Traveling through Vietnam
A veteran takes a second glance
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For a limited time the Alumni Association is offering a third five ounce silver round in the CSM Commemorative Series. The round, designed by Kimberly Sharp and minted by Sunshine Mining, is of proof quality with a pumping unit on one side and the school's logo on the reverse. Each round measures 2 1/8 inches in diameter.

Only a limited number are available, each individually numbered and boxed. The rounds are valued as a collector's item and will make a handsome gift for a favorite alumnus or for yourself. Each round is $95 plus shipping; Colorado residents will be charged sales tax.

To order your silver rounds, call or write Corlee Rutherford in the CSM Alumni Association office. (NOTE: A few of the 1989 silver rounds are still available.)

Photographs by John McMillin

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PRESS AWARD

Ellen Glover, editor of *Mines Magazine*, was awarded first prize by Colorado Press Women for a four-color magazine from a non-profit association. The magazine is judged by an out-of-state board of journalists on its editorial content, graphic arts and whether it serves its audience. Ellen also won a third prize for advertising.

*Mines Magazine* now advances to national competition in June in Albuquerque, New Mexico, at the convention of the National Federation of Press Women.

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"BS PH RVN"

A MINES VETERAN RETURNS TO VIETNAM FOR A SECOND GLANCE

by G. Clark Davenport '64

We live and work in an environment of acronyms: OSHA, SARA, BUFSW, SWMU and a host of others. Seven years ago my son, Jad, returned from running our dog at the local cemetery and asked me the meaning of "BS PH RVN." I asked in what context he was using this acronym, and he said he had seen a headstone with those letters and that the young man had died the same day Jad was born. With a bit of searching, we were able to determine that the young man had died in the Republic of Vietnam (RVN) and was awarded the Bronze Star (BS) and Purple Heart (PH). Jad became very interested in Vietnam and in particular the impact of war on children. Since graduating from high school he has traveled and worked with refugee children in Peru, Guatemala, Northern Ireland and Thailand.

In January 1990, the heat on the tarmac at Tan Son Nhut Airport was as intense as I remembered in May 1966. This year has been designated as the Year of Tourism by the Vietnamese government, however there are obstacles. The Vietnamese government was extremely interested in Jad's proposal, primarily because this would represent one of the first, if not the first, times a veteran had returned with his sons. One major obstacle was our unwillingness to begin the trip in Hanoi. Another obstacle was our wish to hike through the Iron Triangle, an area closed to Americans since the end of the war.

After three months of negotiation between Jad and the ambassador to the United Nations Mission, we were granted permission to enter the area. Jad was born.

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permission to pick up our visas in Bangkok and fly directly to Ho Chi Minh City (Saigon). During our three-day visit in Thailand, we journeyed to the Cambodian border and spent two days talking to refugee workers, refugees and soldiers. There is still a shooting war in progress on the Thailand-Cambodia border.

Upon arrival in Saigon, as it is still known by the inhabitants, we were met by representatives of Vietnamese Tourism, the government agency that all tourists deal with. We were informed that lodging for our two-week stay would be at a "tourist hotel," at a cost of $60 per night. After some rather serious negotiations, a compromise was reached: we would only spend one night at the hotel, and then move in with a family for approximately $20 per night. We were not able to negotiate the price of the ten-minute drive from the airport to the hotel, $60.

The next morning our guides arrived at the hotel and offered to provide a full-day tour of Saigon, in an air-conditioned minivan for $250 for each person, including lunch. We declined, and obtained directions to our host family's home and checked out of the hotel. We did, however, take most of a day to tour Saigon by pedicab, for a cost of about five dollars each, including lunch.

Saigon is as beautiful as it was during my one-day stay in 1967. The black market is still prospering and the street shops stock a wide variety of goods, both necessities and luxuries such as VCRs, television sets and cameras. The Rex Hotel is still open and catering to tourists, with a beauty shop, curio and espresso bar. The side streets within the barrio area are still the same. A few of the old buildings remain, such as the old French Post Office, the former residence of the French governor, and the area where a large part of the city was destroyed by the invading communists in 1975.

As much as we enjoyed the relaxed atmosphere of Saigon, our goal was to hike through the area I served in, the Iron Triangle, approximately 40 miles north of the city. Vietnam Tourist was adamantly opposed to this part of the trip, with excuses ranging from the proximity to the Cambodian border, the number of unexploded ordnances and the danger from the resistance groups in the mountains (even when we pointed out that there was only one isolated mountain, Nui Ba Dinh, in the area). Permission was not granted. We were able to discreetly arrange for a vehicle and driver, made two trips into the area, and walked into Cambodia.

The contrasts I noted between the Vietnam of 1966-67 and 1990 while driving north to the Iron Triangle were very sharp. The roads are now paved and in fair to good condition; the paddies appear to be more productive; and the countryside is clean. At points during our travels I was certain that I had never been in the same area, however familiar landmarks always seemed to pop up to reassure me that this was the same Vietnam I remembered.

We had two goals in visiting the Iron Triangle: first to locate a school I had built in my spare time in the village of Lai Khe, and second to visit the village of Ben Sue. The school proved to be the most difficult objective.

When we arrived in Lai Khe, we were greeted by hundreds of people, adults and children. I passed around pictures of the school and one lady, who had been a student at the school, became very excited. We were literally taken by the hand on a twenty-minute walk to a jungle clearing. All that remains of the school is one wall bashed white by the sun. The building was destroyed by the invading communists in 1975, and the school yard is now being used as a cemetery. My day pack was full of pens, pencils and assorted school supplies in hopes that we could make a small contribution to the students. Those supplies were left with the village council of Ben Cat, a village ten kilometers away and the location of the closest school. Lai Khe, once a major French rubber plantation and rubber research center, appeared much poorer than when I left in 1966. The rubber trees are not being worked as they once were, and the airfield I helped build stands in ruin. The pierced steel planking surface we had used to walk was torn up, and individual sections are now being used in home construction and to fabricate truck bodies. Unexploded ordnances are evident everywhere, posing grave problems to workers and children. Our visit to the village of Ben Sue was an emotional one. The village had been totally destroyed during Operation Cedar Falls in the fall of 1966. The destruction was carried out to punish the villagers who openly supported the Viet Cong. The village has been rebuilt and by all appearances is prosperous. As with most places we visited, we were initially nobbed by children and curious adults. Everyone seemed very friendly, however members of the military village guard informed us that it would be to everyone's
benefit if we did not take pictures or ask any questions. We left rather quickly. Memories of the war die hard on both sides.

Upon our return to Saigon, I was invited by officials of the Ministry of Labor to spend a day viewing their water well drilling operations. Since 1985, over 800 water wells have been drilled in the provinces adjacent to Saigon. The effort is headed by a young North Vietnamese hydraulic engineer, a very dynamic individual.

In general, it takes four hours to drill to a depth of fifty meters, and another two hours to case, screen and complete each well. The wells are hand drilled, and the cost per well averages $60. This cost may seem very low until one realizes that top government officials in Saigon earn approximately $50 per month. Each drilling team, consisting of three individuals, is housed and fed by the village desiring wells, and the villagers pay for the fresh water used in well completions.

At an afternoon banquet, ministry officials expressed a fervent hope that relations between the United States and Vietnam would soon be established such that we could provide materials and advice to assist in a number of resource related projects.

Although there are some difficulties, a trip to Vietnam is well worth the effort. We were treated well, and basically allowed to see just about anything we wanted. The people are warm and friendly, the food is very good, and living costs can be inexpensive—we averaged $11 per day per person, but on our terms, not theirs.

Perhaps the most surprising thing was the general contentedness of the people, who finally after years of war are now living in peace, although perhaps not under conditions of their choice. I hope to return again, soon—perhaps to rebuild the school in Lai Khe, to develop a team to remove explosives in an area being reforested, and to offer advice in water well drilling operations.

G. Clark Davenport graduated from the Colorado School of Mines in 1961 as a geophysical engineer. Since graduation, he has devoted his career by applying geophysical surveys to engineering, environmental, archaeological and criminal investigations. He has lectured and taught courses in Spain, France, England, Saudi Arabia, South Africa, Mexico, Peru, Iran, Canada and the Dominican Republic. He is currently the manager of remedial investigations for Rocky Mountain Operations, Ebasco Environmental Division.

Highlighted quotes are by Jad Davenport.

Clark Davenport, left, asked people in Saigon to direct him to a village in an area closed to outsiders since the war. The Vietnamese government opposed this part of the trip, but Davenport and his sons discreetly arranged for a vehicle and driver and made two trips to the Iron Triangle. (Photos by Jad Davenport)

A s I look out the windows of my hotel room in Bogota, Colombia, where I have come for a series of meetings with industry partners and government officials, I am not only reflecting upon the last 15 years in the oil industry, but also trying to peer into the future and make a guess at what role Mines will be playing in it. This article will necessarily be a brief, subjective, qualitative look backward, and forward, at primarily the upstream end of the oil business.

So to understand my perspective, a brief biography is required. Upon graduation from Mines in 1975 with two degrees, a BS in geophysical engineering and a BSc in geological engineering, I joined Texaco, Inc. in their Denver office in May 1975 as a geophysicist. In November, 1977 I left Texaco and joined Diamond Shamrock (successor to Maxus, Inc.) as a geophysicist. I transferred to Houston in July 1980 as district geophysicist for the offshore district.

In March 1983, I moved back to Denver and became exploration manager for the northern division. After a brief stint in Dallas (10 months), I became an officer of Maxus, Inc. (April 1987), and was named vice-president and general manager of the northern division in Denver, with responsibility for all exploration and operations functions. January 1989 brought a move back to Dallas, as vice-president of exploration for North America. In September 1989 I was named vice-president for international exploration, the position I now hold.

WHERE HAVE WE BEEN

As is all too familiar to everyone, the late 1970s and early 1980s saw the boom, the middle, and in the late ’80s, the bust of the oil industry, while the last 18 months have been a relatively stable period.

As a graduate in 1975, I interviewed with six companies and had four job offers. The good times were just beginning. But were they? As prices climbed and companies’ revenues increased, the pressure was to find more oil and gas quickly and the emphasis was put on quantity of work, rather than on quality. As a result, the efficiency of the oil industry in finding and developing new reserves (measured in dollars/barrel) slipped. This was caused not only by a huge rise in the cost of goods and services, but by fewer reserves being found per foot of hole drilled. The work force was unstable, with people changing companies often. Technological advances were being made in drilling, evaluating, and completing wells and the first generation of personal computers was beginning to appear.

As prices peaked and then started their downward trend in the mid- and late ’80s, the rig count declined, many companies went under, and enrollment in petroleum and related sciences declined at a number of schools. Many people lost their jobs and left the industry. But interestingly enough, the in-

"Almost from the moment we set foot on the streets we were constantly engaged in friendly conversations. University students wanted to practice their English and discuss the latest news from Prague and Berlin, former soldiers and POWs of the South Vietnamese Army wondered where my father had served and told us about life after the fall of Saigon, shopkeepers with relatives in the States asked what San Francisco was like and gave us letters to post. Everyone, it seemed, was doing their best to ignore the government and forget their present situation."

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The use of personal computers in day-today work stations became commonplace. Technology continued to advance. New geologic thinking opened many areas to exploration. Well logging continued to become more sophisticated

WHERE ARE WE GOING

This greatly condensed recount of the last 15 years is nothing new. But, it does contain pieces of the answer to the question, "where do we go from here?" I believe we have good indications of where we're going by looking

dustry's efficiency improved. Finding and development costs came down and more reserves were being added per foot of hole drilled than in the previous years.

Technology continued to advance. The first horizontal wells were drilled. New geologic thinking opened many areas to exploration. Will logging continued to become more sophisticated (although nothing replaces a good drill stem test), and geological and geophysical work stations became commonplace. The use of personal computers in day-to-day exploration and engineering grew as the machines became more powerful.

The school must maintain a commitment to providing industry with graduates who are ready, willing and able to contribute from their first day on the job. One very important step has been taken toward this goal with the announcement of the joint CSM/IBM agreement to establish a center for exploration at CSM.

As the personal computer has become an indispensable tool in the oil industry, it will be necessary for graduates to understand how PCs can aid in the search for and production of hydrocarbons. As the disciplines mentioned above become more integrated, the PC will be the tool common to everyone.

The Colorado School of Mines has a reputation worldwide for providing the kind of earth scientists that are needed in our business. A conscious decision to stick to the basics will ensure that this will continue in the future.

We look for explorationists, so if we talk to a geologist, we look for some exposure to geophysics; and if we talk to a geophysicist, we look for a good, strong geologic background.

We look at a number of criteria, the first of them being "smarts." An overall grade point average, and grade point average in major field courses, are key indicators. We also look at the specific courses taken, particularly in their major. We look for explorationists, so if we

Editor's Note: Mines Magazine checked with the various departments on their efforts to integrate disciplines. Dr. Robert Thompson of the Petroleum Engineering Department gave some thoughts on what an engineer's education should include.

"The education of our engineers must, and more so than in the past, include not only sound basic fundamentals, but it must also be broad. The education must be broad in the sense the engineer must be an effective communicator both orally and written and be able to address a wide range of technical issues including our environmental concerns. Petroleum engineers, geologists, and geophysicists must work together to find cost effective solutions to exploration as well as environmental problems, he said.

"Design courses in the curriculum will likely change to meet the challenges of these open-ended problems. The future graduates must be able to "think," he added.

One new course on the CSM campus designed to address these needs is an interdisciplinary course offered by the Geology, Geophysics, and Petroleum Engineering Departments. Integrated Exploration is a graduate-level course open to undergraduates as well as graduate students, and this year the focus is on carbonate reservoirs.

It is being taught by Dr. John Wanne of Geology and Geophysical Engineering, Dr. James Croffon of Petroleum Engineering and Dr. Tom Davis of Geophysics. This important interdisciplinary group will cover a broad range of topics from reservoir engineering, well testing, core analysis, thin section analysis, completion technology, and analysis of seismic lines.

"Aches like this helps bridge the gap that exists in most companies today. The gap is the lack of understanding each group has for the other group. This lack of synergism has, I am sure, cost the industry many dry holes and inefficient field development," said Thompson.
Colorado River and steep canyon walls are backdrop for highway tunnel project

by Ellen Glover

You couldn't have picked a prettier setting to work in if you tried. A number of alumni are working in Glenwood Springs, Colorado on a $67 million highway construction project in Glenwood Canyon. This will divert traffic along Interstate 70 through twin tunnels at Hanging Lake. Once completed in 1993, will be the last link in the interstate highway through Colorado.

The Hanging Lake joint venture is managed by the western office of Frontier-Kemper Constructors, Inc. Frontier-Kemper and its affiliated companies are headquartered in Evansville, Indiana, and is president...
over by CSM alumnus Dyke Howell, president, and Dan McPadden, executive vice president.

The tunnels will be located in the central portion of the canyon near Cunningham Creek, and each tunnel is about 4,000 feet in length, and about 43 feet high and 42 feet wide. Traffic will cross the Colorado River and pass through the tunnels on the south side of the river to create a recreation area at Hanging Lake, a popular spot located above the existing highway nine miles east of Glenwood Springs.

A three-story building in Cunningham Creek Valley will cover the road so motorists will be continuously covered once they enter the tunnels. Viaducts at either end of the project will ease traffic back to the north side of the canyon in a smooth curve.

The atmosphere around the site is very positive: everyone is working for either Frontier-Kemper or the Colorado Highway Department is experienced and requested to be on this project—from the engineers to the blasters and the front end loader operators. Denis McInerny (E.M. '66) is the project manager and Dan Harrison (BSc. Min. '71) is the project engineer in Glenwood, and both say once they learned about the construction project they both requested to be transferred to Colorado for the experience.

"The tunnel excavation sequence is pretty well cookbook, but we have brought in some equipment that is new to the United States—big hydraulic drills, dedicated rock bolters, and the drilling equipment is somewhat unique. This is really just drill-shoot tunnels which people have been doing for years. Some soil support methods we used were new to this area; we did some soil nailing, an innovation which people have never seen before," McInerny explained.

"The really unusual thing about this job is there is no space to move or work—the canyon is very narrow and is constantly under traffic. The open area in Cunningham Creek will be a building foundation in six months for the maintenance building. We have trouble with access into the tunnels and it becomes messier as it is now. We don't anticipate any problems, but it makes it difficult. We probably have a quarter of the space we normally have for a job this size," he added.

Dan Harrison has lived and worked all over the country; he previously worked on the Washington, D.C. metro subway system before looking for a job that would let him return to the western states. "Everyone on this job requested to be here, and every person has several, if not many, years of experience. Everyone likes the challenge of working on a large project in tight quarters and being surrounded by the Rocky Mountains. My family and I bought a house in Glenwood Springs and we enjoy living in Colorado," Harrison smiled.

Harrison counted six other alumni working at the site:

Thane Lindstrom '62, an engineer with the Colo. Highway Department.

Mark Nold '82, an engineer with the Colo. Highway Department.

Ted DePooter '80, a consultant with the state of Colorado inspecting some of the engineering.

Jennifer Hill '85, an inspector with the Colo. Highway Department.

Paul Pendleton '74, Frontier-Kemper employee working on soil stabilization.

Mike Bertoldi '74, a surveyor with Natural Resources Company of Denver.

In addition several students from the CSM Mining Department will be working on the tunnels this summer. Blasting will continue through spring and summer, and construction of the viaducts and maintenance building will go on simultaneously.

Denis McInerny is project manager for the Hanging Lake Joint Venture and says building the tunnels in Glenwood Canyon has been a tight squeeze.
Global Insight

Recently, the United States government invited me to go on a Caribbean lecture tour. For an academic, any opportunity to get to know Third World realities from up close is always welcomed. A good social scientist is perpetually curious to know which discipline offers the best method of unraveling mysteries of Third World misery.

Suriname, with no economic growth, can claim the second highest gross domestic product per capita ($3,420 in 1980 and $6,200 in 1990) of all of South America—well ahead of Argentina and Brazil, the continent's two major industrial powers. I saw more BMWs and Mercedes in Paramaribo than I do in Denver, whose metropolitan population is twice greater than the total population of Suriname. No one is starving, but then again there are no jobs to be had. The young aspire to migrate to the Netherlands to get on the public dole. Two international mining companies produce upwards of 80 percent of the national revenues, and each one's annual corporate sales are greater than Suriname's gross domestic product. In Georgetown, where an average Guyanese makes less than US$1,000 annually, the black market is replete with anything whose metropolitan population is part and parcel of Georgetown's life. Water and chronic power failures are a dire need for food and jobs is readily recognizable even to a short-term visitor. But in both countries, the black market is replete with anything one wants from Evтинude outboard engines to Mont Blanc pens. Who is the consumer? Certainly, no existing economic theories explain the real workings of the Surinamer and Guyanese systems.

In Trinidad & Tobago (TT), the loss of the region's seminal game of the world soccer match against the United States was a more terrible blow to the country than the economic crisis. Low oil prices have hurt the economy, but people do enjoy higher living standards than Guyana and Suriname. Here, people have hopes and dreams, both unknown to the other two countries. In close geographical proximity to each other, all three countries are at once similar and dissimilar. How do I explain the differences? All have similar colonial histories; they were settled by Africans, Hindus, Chinese and other ethnic groups, the first two constituting over 80 percent of the populations of the three. All three have to be prosperous plantation economies, but mining (bauxite) in Guyana and Suriname and gas and oil in Trinidad are now the mainstay activities. The desire to develop industrial economies has resulted in the neglect of agriculture. Guyana, once a breadbasket for Caribbean plantations, now imports food. Suriname no longer has a thriving self-sufficient agricultural base. And Trinidad overspent itself in the heyday of high oil prices and is now forced to import food. Suriname and Guyana are states that have yet to emerge as viable nations. 

By Dr. Eul-Soo Pang
Head of the Department of Global Systems & Cultures

The Other Third World

Where the Sun Never Shines: A History of America's Bloody Coal Industry


A history of America's coal industry—coal's role in industrialization, the corporate entities within the industry and the men who roasted it—is a very broad topic. Where the Sun Never Shines narrows the historical scope to coal in the United States prior to John L. Lewis' rise to power in the United Mine Workers of America (UMWA) in 1902. The topic is then divided into coal development and unionism in the eastern states, particularly Pennsylvania, and the coal industry in Colorado.

Broad themes are skillfully broached without miring the reader down. For example: coal, the energy driving the wheel of the Industrial revolution, and anthracite, the rock which became metallurgical fuel, but not until the discovery of blustering pre-heated air into the furnace for ignition are two subjects covered by Long.

There is an interesting description of room-and-pillar mining. The miner as craftsman was allotted his own room. He cut the coal hiring his own laborer/apprentice to load it. After the rooms in one section were worked out the most experienced miners then mined the columns supporting the roof. "Robbing" the pillars sounded like a twist on the metal mining phrase "picking out the eyes of the mine." Long-well mining slowly replaced the room-and-pillar method. Miners gingerly moved from skilled craftsmen to industrial labor. Ms. Long's writing interweaves quotations and facts in an easily readable style concentrating on the lives and grievances of the men in pits, low wages, scale fraud, irregular work and dangerous working conditions. Some men came to Colorado's precious metal boom towns to mine while others came to mine as miners. Ms. Long states that competition in the coal industry made the closed-market company town a significant source of company profit. Coal in the American West, singularly coal in Colorado, is the focus of this book, which is the result of extensive research into the coal strike of 1903-1904, the intermin period of 1905-1913 and the culmination in the C.F.D.L. strike of 1913-1914. (The citations and bibliography cover 68 pages.)

Interesting contrasts are drawn regarding the ethnicity and conditions between the bituminous fields in the Pueblo-Trinidad area, and the lignite fields in the Louisville-Erie-Marshall area. The Ludlow Massacre is one of the saddest moments in Colorado history, and Ms. Long carefully constructs the information her research has produced.

The book concludes in the post-Ludlow days as the coal industry used public relations as a way to improve the industry's public image.

Reviewed by Harvey N. Gardiner, archivist, Western Historical Collections, University of Colorado.

Book Review

Environmental

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Environmental

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Students Continue Tradition of Lighting the "M"

by Norman Zehr, '52 Executive Director

Commemoration and reunion weekend are over for this spring. You will be reading about it in the June issue of Mines Magazine. I sincerely hope we have sufficient pictures to satisfy all of you. It is the high point of the year, especially for alumni, and we do want to cover it properly.

Another point of great nostalgia for alumni is the "M" on Mt. Zioe. In the April issue of Mines Magazine, an article was about the current project to upgrade the lighting on the "M." I hope that each and every one of you will subscribe to a $32.00 piece of the new electrical installation. The reason for the $32.00 figure is to commemorate the year 1932 when the "M" was first lighted.

If you are too modest to want your own name on the "M" how about subscribing for one with the name of a remembered and loved fellow alumni who may no longer be with us? I intend to do just that, but may decide to donate one in my own name, too. Perhaps I am not as modest as some of you.

My memories of freshman days include a night when my fraternity had the "duty" to guard the "M" from the vandals who were attracted to it. They were usually students from some school we were about to play in football. I guess they thought it would help their team if the "M" was in a dishelved condition. I doubt that had much to do with as Mines' football record was about the same, with minor exceptions, in the '50s as it is today.

Each fraternity supplied a group of pledges to stay on the "M" all night. We had various surprises in store for potential vandals. I will not describe these surprises in detail as they are not in keeping with today's laws and "suit-happy" citizens.

But the methods were effective and some of the more daring offenders were apprehended and made to wish they had not decided on such an evening's entertainment. Their punishment usually lasted through the football game, and was not quickly forgotten by the recipients.

In recent years I have begun to wonder if the desire to protect the "M" had fallen by the wayside with today's students, but when I heard about a recent night the Blue Key Club spent on the "M," running an auxiliary generator to keep the lights on, I realized my fears were unfounded. The current project, which was not provoked by alumni as far as I know, reinforces that realization.

We had a scare a few years ago when some local residents decided to attack the idea of having a lighted letter as another symbol, on a mountain. Their prime target was not our "M" but was in the same category. That effort failed and it was determined that the "M" is not in danger from that direction.

Another event, about which you need to be informed, is the changing of the name of the "Mines Annual Fund" to the "Mines Alumni Fund." It will still be called the MAF; to avoid further confusion.

Last year 2,702 loyal alumni supported the MAF with a total of more than $715,000, means a great deal to the school in terms of scholarship and faculty support. It's worth noting that parents and other friends also show their pride in CSM through their own gift support.

Because MAF is uniquely an alumni fund, and to help avoid confusion with gifts the development office receives from non-alumni, the Alumni Association Board believes that MAF more properly should mean "Mines Alumni Fund," rather than what we've been calling Mines Annual Fund.

What better way to identify the most important single factor in gift support by individuals to the school than by referring to our collective effort as the "Mines Alumni Fund"?

I hope that you understand the reason for the name change and are not confused by it. I also hope you will give this effort your complete support.

Funding for the pilot study is being used to treat wastes at several more locations near Idaho Springs and Central City.

"If all goes well, we'll go into a design phase to build some full-scale wetlands," Weedman said. "What we have now is a pilot plant."

Pumping for the pilot study is from the Environmental Protection Agency through its Superfund Innovative Technology Program.

By winning the state competition, the wetlands experiment qualified for national honors at the American Consulting Engineers Council competition in Washington, D.C.; where it won first place for environmental honor society, successfully meeting the cent's needs, technical value, social-economic considerations and complexity.

According to CSM chemistry and geochemistry Professor Tom Line- man, similar wetlands may soon be used to treat wastes at several more locations near Idaho Springs and Central City.

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By winning the state competition, the wetlands experiment qualified for national honors at the American Consulting Engineers Council competition in Washington, D.C.; where it won first place for environmental honor society, successfully meeting the cent's needs, technical value, social-economic considerations and complexity.

According to CSM chemistry and geochemistry Professor Tom Line- man, similar wetlands may soon be used to treat wastes at several more locations near Idaho Springs and Central City.

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Ronald W. Geason has been named vice president for business affairs at Mines, effective June 1.

Geason, who previously served as associate provost at Northeastern University and budget director at Carnegie Mellon University, will oversee the accounting, budget, administrative services, administrative computing, personnel and plant facilities functions of the school.

"We are extremely pleased to have Dr. Geason join us at Colorado School of Mines," said CSM President George S. Ansell. "His numerous accomplishments at Northeastern and elsewhere speak highly of his talent and dedication."

Dr. Geason brings a broad set of experiences and accomplishments to the school. He has previously served in positions at The Ohio State University, the University of Detroit and the Wisconsin State Budget Office. His principal accomplishments and activities include long-run modeling and forecasting, capital budgeting, planning database development and initiation of various innovative administrative strategies.

Geason holds a master's degree from the University of Michigan, and a PhD. from Ohio State.

"I am looking forward to working with the fine faculty and staff of CSM to establish an appropriate administrative structure for the future," he stated.

Geason is married, and has three children. His wife, Jane, recently received a master's of education in curriculum and instruction from Northeastern University.

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AMOCO Funds Geophysics Projects

Gary Prost, senior project geologist from Amoco's Houston Region Geologic Exploration Technical Service (GETS) group, presented a $25,000 check to Dr. Norm Harthill, director of the Colorado School of Mines, Center for Potential Fields Studies. The check was a donation in support of continuing projects at the center, including studying magnetic alteration over petroleum accumulations and regional gravity modeling.

Also present from Amoco's Denver Region office were Chuck Webb, regional geophysical manager; and James Schofield, staff potential fields geophysicist.

Three geophysical recruiters from Amoco were also present; Jim Rossi, exploration training manager; Toni Harvey, senior project geophysicist, and Betsy Lockhart, senior geophysicist.

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The Mines Magazine • May 1990

The Mines Magazine • May 1990
Dear Norm:

Your venture into political commentary seems mild enough and should not "stir up" too many people. Surely it's safe these days to note that communism does not work. Even Lenin had noted it by 1921 when he brought forth his new economic order, calling for a sharp turn toward private ownership and enterprise.

"Stir up" too many people. Surely it's safe these days to note that communism does not work. Even Lenin had noted it by 1921 when he brought forth his new economic order, calling for a sharp turn toward private ownership and enterprise.

...being a place where one was allowed, yet the whole thing created a lot of nucleus with little death. The people did not support the insurgents.

While sharing your interest in the rise and fall of communism, my own interest is mainly in social justice. It's a negative interest of course. Social justice is a concept which assumes that the world isn't a fair place and that governments at various levels, and individuals outside government, can act in such a way as to make it so.

Every time I turn on the television there are a couple of stories about government actions which will make the world a fairer place, and three or four stories about groups which have decided that there are further actions which will make the world fairer still.

All of this will of course require votes and money. But votes and money have not been lacking. Not for the last 48 years.

My favorite recent social justice story appeared a couple of weeks ago in TV Guide. Young ladies in the Miss United States competition will henceforth be allowed to wear padding in strategic locations. It wouldn't be fair to keep a girl out just because she didn't have the right natural curves.

Keep up the good work!

Sincerely,
Miles Rader, Geol. E. 1948

Dear Ms. Glover:

The article "Mines on the Moon" by Dr. Miller in the October issue was very interesting. As he stated, geotechnology will be one of the most important aspects of establishment of facilities on the moon.

A recent press release of NASA mentioned production of cement for concrete from local limestone. No way! There never was limestone on the moon. The remote possibility of carrying or rocketing it out to the moon would be extremely valuable if found, primarily because of the CO₂ contained.

While car-boon dioxide has a bad reputation currently, it is the second most important gas to life. Another remotely possible source of carbon will be graphite which could also be used as a lubricant. The most likely source of carbon would be from carbonaceous meteorites which may be quite abundant on the ancient surface.

Cement just would not work. It requires precious water which would tend to boil off in a vacuum or freeze and disrupt concrete before setting time. A more feasible building material, if available, would be sulphur. It is stronger than concrete, it can occur in volcanic areas and it is quite easy to handle, setting for maximum strength in minutes. Thus the most valuable materials in the moon will be oxygen, water, carbon and sulphur.

NASA speculates that there may be an appreciable amount of oxygen in the Trinitite in the moon soil. This could be concentrated and used for fueling nuclear reactors. However, it has a half-life of only 12.6 years, so large accumulation is not possible. One of the most productive exploration problems if it is successful would be the location of lava tubes. They might occur in the volcanic areas where the molten lava ran out, leaving the surface undisturbed and the cave possibly several kilometers long. They might be the order of five to seven meters in diameter. They would be essentials on the inside and might be quite tight. It might be necessary to provide a gas tight lining, however.

In addition to finding a natural shelter in a lava tube the volcanic areas would be the most likely for occurrence of sulphur (in native form or as pyrite) and some of the precious and heavy metals.

The surface of the moon is a 356-5609

Dear Norm,

Referring to your Director's Desk column in the February issue of the Mines Magazine, I am certain that you and I could have a most interesting discussion on the socialist/communist movement or on the butter vs. guns problem. But Norm, don't you think these days our brilliance and profundity, the bar at the Golden Holiday Inn or some other suitable oasis would be a far better locale for such a discussion than the pages of the Mines Magazine? After all, our fellow alumnae/alumni are not all U.S. citizens and they may feel that our flag-waving, dictator-smashing talks are outside the scope of the tie that binds us, namely, our past association with the Colorado School of Mines.

Norm, despite my strong interest in foreign affairs, in state and local political issues, I feel, and I'm certain that you do also, that the pages of the Mines Magazine are far too valuable to dedicating issues unrelated to the School or our fellow alumnae/alumni.

Very truly yours,
Bob McMahon '52

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Test your skills and try the Mines Trivia Quiz!

How many questions can you answer correctly? How much do you know about the Colorado School of Mines—formally and informally?

Test yourself before you look up the answers on page 36.

1. How many ounces of gold did it take to regild the dome on Guggenheim Hall?

2. What is the oldest building on campus? The second oldest?

3. How well is the geology museum?

4. What Mines instructor found the first Apatosaurus (brontosaurus)?

5. What field of expertise would you associate with the people for whom the following buildings are named?
   - Hill
   - Allister
   - Spurgeon
   - Meyer
   - Guggenheim
   - Caudle
   - Chauvenet
   - Lakes
   - Boad
   - Randall
   - Berthoud
   - Stratton
   - Meyer
   - Guggenheim
   - Coolbaugh
   - Chauvenet
   - Lakes

6. Who was the architect for Berthoud Hall? And when was it originally built?

7. Who was the first woman to graduate from Mines in what year?

8. How old is the geology museum?

9. A foucault pendulum swings in the lobby of which building?

10. Who was the first woman to graduate from Mines in what year?

11. Mines' football team defeated the Colorado University Buffaloes in a long ago contest. When did they play and what was the score?

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CSM PROFESSOR EARNSPRESTIGIOUS GERMAN HONOR FOR METAL TECHNOLOGY

A Mines professor has become the second American ever to receive the Adolf Martens Medal for contributions to the technology of heat-hardened steel.

Professor George Krauss of the Mines Department of Metallurgical and Materials Engineering will accept the medal October 4 at the Harterei Colloquium. The medal is presented by the Arbeitsgemeinschaft Warmbehandlung und Werkstofftechnik (AWT), a German society for heat treatment and materials technology. Named after the 19th-century German metallurgist Adolf Martens, the award honors scientists distinguished by their investigations into the heat treatment of metals. Krauss' research involves studying the crystal structure of martensite, an important form of hardened steel named after Martens, to determine reasons for its exceptional hardness and unique fracture characteristics.

The AWT presents the medal only occasionally, once every two or three years. The medal was first presented in 1947. Krauss is director of CSM's Center for Advanced Steel Processing and Products Research. A story on the Center appeared in the February 1990 issue of Mines Magazine.

IN MEMORIAM

Louis B. Allen

Louis B. Allen, Met. E. '49, of Evergreen, Colorado, died January 6, 1990 in his home. He was 69.

Allen was born August 3, 1920, in Montrose, Colorado. He graduated from Mines in 1949, and also held a Master's degree in business administration from the Harvard School of Business. He married Betty Henke in 1947.

Allen joined CF&I Steel in Pueblo, Colorado in 1951 where he spent his career in sales and marketing, as well as manager of construction materials. He retired from CF&I.

He is survived by his wife, two sons, Chip, Texas, and Rick, Idaho, and a grandson.

Contributions may be made to the Colorado Heart Association, 1280 S. Pennsylvania Blvd., Denver 80224; or the American Cancer Society, 2255 S. Oneida St., Denver, 80205; or the American Society of Petroleum Geologists and the Geological Society of America.

John H. McKeever, Jr.

John Herbert McKeever, Jr., a petroleum geologist, worked in Alaska during the early days of oil exploration. He was active in geological circles from his arrival in 1956 until his retirement in 1982.

McKeever was 72 when he died November 21, 1989, at his home in Anchorage. His birthplace and childhood home was Aberdeen, South Dakota, where he was born September 8, 1917. He attended Dartmouth College and now is in Anchorage. His birthplace and childhood home was Aberdeen, South Dakota, where he was born September 8, 1917. He attended Dartmouth College and now is in Anchorage. His birthplace and childhood home was Aberdeen, South Dakota, where he was born September 8, 1917. He attended Dartmouth College and now is in Anchorage.

During World War II, he served a portion of his service on Adak Island in the Aleutians. After the war, he returned to college, graduating from the Colorado School of Mines in geological engineering in 1947. He went to work as a petroleum geologist for the Stanolind Co., which later was known as the Pan American Petroleum Corporation and now is Amoco Production Company. His work took him to Canada, Montana, North Dakota, Wisconsin, and Colorado before Alaska. During his career he was active in professional geological organizations of the states in which he worked. These organizations included the Alaska Oil and Gas Association, the American Association of Petroleum Geologists and the Geological Society of America. He was a founder of the Alaska Geological Society, served multiple terms as president of the Alaska Geological Society, as president of the Petroleum Club and chairman of the Alaska Oil and Gas Association Exploration Committee. His technical papers were published several times in journals of the geological profession. In the latter part of his career he was an active spokesman for the oil industry in Alaska.

After retirement from Amoco, he found contentment in remaining well-read. He is remembered for his quiet dignity, quick wit, able leadership and the finely crafted letters he so often wrote.

Survivors are Elizabeth, his wife of 45 years; two sisters, Mrs. Eugene Solliday of Columbus, Ohio, and Mrs. Randi E. Durrett of Belleview, Washington; three sons, Peter of Madison, Wisconsin, and Timothy and Stephen, both of Anchorage; a daughter, Margaret of Fairbanks; and six grandchildren.

The family asks that memorial contributions in Mr. McKeever's name be sent to either Dartmouth College, Hanover, New Hampshire, or the Colorado School of Mines, Golden, Colorado.

Frank E. Johnson

Frank B. Johnson of Denver, Colorado, a retired government employee, died December 19, 1989 at home. He was 90.

Continued on next page
Douglas E. Perkins

Dear Ms. Glover,

The many words of Douglas E. Perkins will be saddened to learn that he is presumed lost while flying a light aircraft, a single engine Cessna with 20 hours, but did not receive a degree. He was bom March 12, 1899, in Denver. He graduated from East High School and attended the Colorado School of Mines, where he received a mining engineering degree in 1922. As head of the Reconstruction Finance Corp. in Denver, he administered government loans during the Depression for mining operations in Colorado. He married Catherine Kelch in Denver in 1936. They moved to Washington, D.C., in 1937, where John led the procurement and stockpiling of strategic defense minerals for the Department of the Interior during World War II. He wrote many government documents and guidelines on asbestos quality and efficient mining procedures. From 1950 until his retirement in 1969, John was the acting director of the Office of Minerals Exploration for the Department of the Interior. He moved back to Denver in 1985. There are no surviving members of the immediate family.

Douglas E. Perkins

Sidney W. Schoelhorn

To the Editor:

Sidney William Schoelhorn, Geol. E., whose obituary appeared in the March 27th issue of the Colorado School of Mines Magazine, was a member of the Sedona Airport Board, a member of the Sedona Historical Society. Raised in Cleveland, Ohio, Perkins was descended from pioneer families in that area, and numbered among his antecedents the Washingtons of Virginia. He is survived by his wife, two brothers and a sister, and both parents. Thank you, sincerely,

C.M. Oldenburg, P.E.

May 1990

Sidney W. Schoelborn

To the Editor:

Sidney William Schoelborn, Geol. E. ’40, passed away April 26, 1990, after a long illness. Sidney was a registered professional engineer in Oklahoma, a member of the Tulsa Geological Society, FAIG, AIGE, and AIGE. What a pleasure to have known and been associated with a dedicated man of science with the delightful attributes of fine character and loving family man. Perhaps his expertise in the scientific world overshadowed his humanitarian qualities, and perhaps he cared for and considered others first. We all knew he placed his inner worth and gave added joy to those who were fortunate to know, love, and respect him. Let us be thankful he chose geophysics as his life work. We will be missed by all who were lucky enough to have known him.

Sidney was survived by his wife, Lillian, his brother, Henry, and two grandchildren.

Fondly,

Howard Brock

J. Melvin Strabala

The Mines Magazine • May 1990

Thomas Allan

Thomas A. Allan, P.E. ’50

Thomas A. Allan, 65, died October 15, 1989, in Houston, Texas. Born March 3, 1926, in Hay, Kansas, he was a long-time resident of Great Bend, Kansas and had lived in Wichita, Kansas for the past year. He was owner of Allan Engineering Inc. in Great Bend. He started Allan Pump Company in 1957. Allan was a member of St. John’s Episcopal Church in Great Bend. He was a past president of the Great Bend Chamber of Commerce and had served on the Great Bend Economic Development Board. He was instrumental in getting Great Bend Industries started in Great Bend. He was a U.S. Army Air Force veteran of World War I, an Army veteran of the Korean War and was graduated from Mines in 1949. Survivors include his wife, Joetta; one son, Mark Allan of Beaver, Oklahoma; three daughters, Kathie Gregory of Sherman, Oregon, and Janet Jannike and Marly Cheff, both of Honsington, Kansas; one stepson, Ron Adams of Wichita; one stepdaughter, Brenda Hammer of Tuba City, one brother, George Allan of Wichita; one sister, Virginia Scrinopskie of Topeka; nine grandchildren; and six stepgrandchildren.

Eugene Jannetti

Eugene Jannetti, Met. E. ’47, died at Lutheran General Hospital, Wheat Ridge, Colorado, February 27, 1990. Gene served in the U.S. Navy from May 1944 until February 1946. After graduation he worked for Electron Foundries and Metal Treating and Research Company in Denver. He was employed at the Rocky Flats Plant from 1952 until his retirement, May 1, 1983. At the time of his retirement he was manager of fabrication technology.

Jannetti is survived by his wife, Mary of Wheat Ridge; two daughters, Nicolette Dunke, Louisville, Colorado and Gina Jannetti of Arcvilla, Colorado. He is also survived by a brother, Louis Guarino; a brother, James Collasscetti (Met. E. 1955) both of Wheat Ridge and two grandchildren, Jon and Joel of Louisville.

J. Melvin Strabala

The Mines Magazine • May 1990

James M. Partridge

James M. Partridge, 52 of Las Vegas, Nevada died February 4, 1990. He was born March 27, 1937, in Great Falls, Montana. A 15-year resident of Las Vegas, he was a manager with TIMET Corporation. Partridge graduated from Mines in 1961 with a degree in metallurgical engineering and joined TIMET in Henderson, Nevada. In June 1965 he transferred to the Toronto, Ohio facility of TIMET where he worked in the techni-

The Mines Magazine • May 1990

James Partridge
Buy a Bulb and Rebuild the 'M'

Mines' Blue Key Club has been busy this year stabilizing and rewiring the 'M' on Mount Zion, a project which will totally renovate the electrical system and assure that the whitewashed rocks will stay in place. The cost of the project upon completion will be approximately $15,000.

For $52.00 you can "buy" a weather-proof box and bulb, and your name will be inscribed on the box. Club members will send you a thank you note and a chart showing which bulb you bought. Approximately 550 bulbs are available so the supply is limited—act now and reserve your bulb!

Buy your bulb now for graduation, reunion, Father's Day—a great gift idea! Buy one or more bulbs for $52.00 each. For more information, call (303) 273-3234 or send your check to Colorado School of Mines, Blue Key 'M' Fund, c/o Connie Casey, Student Activities Office, Colorado School of Mines, Golden, CO 80401.

Under the M continued from page 19

Trefny Named Physics Department Head

Dr. John U. Trefny has been named head of the Physics Department at Colorado School of Mines. Trefny fills the vacancy left by former Physics Department Head Frank Schwengwedt, who was recently named vice president for academic affairs/dean of faculty at CSU.

Trefny joined CSU in 1977 as an assistant professor of physics. He was named an associate professor of physics in 1979, and professor of physics in 1989. He served as acting head of the Physics Department from 1987-88, and was named associate dean of research at CSU in 1989, a position he held half-time along with departmental teaching and research responsibilities. He has been director of the Amorphous Materials Center at CSU since 1990.

Prior to joining CSU, Trefny was an assistant professor of physics at Wesleyan University. He also has served as a postdoctoral research associate at Cornell University, and as a graduate research assistant and graduate teaching assistant at Rutgers University.

The author or co-author of numerous publications and technical reports, Trefny is active in a number of professional organizations, including the American Association of Physics Teachers, the American Physical Society and Sigma Pi Sigma. He is secretary of the CSU chapter of Sigma Xi, and has been on the board of the Colorado Association of Science Teachers since 1986.

During the summer months, Trefny serves as a visiting professor at Wesleyan University. He also has taught an American Vacuum Society short course on the principles of superconductivity since 1987.

Trefny holds a BS degree in physics from Fordham University, and a PhD in physics from Rutgers University.

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ALUMNI UPDATES

40s

49 John A. Riddle, Met. E. is president of M & M Resources, Inc. in Castro Valley, California.

50s

50 Francis P. Mercier, P.E. has retired as consultant for Mission Beverage Co. in California.

52 James A. Montgomery, P.R.E. is manager/international technical services for WF Grace in Maryland.

53 Jerry L. Harris, P.E. is an investment agent for Re/Max Investments in Costa Mesa, California. J. Thomas Reagor, P.E. has joined Colorado National Bank of Denver's energy lending division as senior portfolio administrator.

56 Joe J. Logan, P.E. is president of Control Equipment Co. in Salt Lake City, Utah.

57 Raymond E. Grant, Geol. E. is vice president/engineering for Fulham Management, Inc. in Lakewood, Colorado. Charles Bruce, Geol. E. is executive vice president of Minatex in La Paz, Bolivia.

58 A. Gregory Lickus, P.R.E. is general manager of Eagle-Gypsum Products in Eagle, Colorado. Peter J. Creighton, MSc. P.R.E. is a graduate student at Robert Wood Johnson Medical School in Piscataway, New Jersey. Paul A. Wichmann, Met. E. is professor and chief petrophysicist for Telesco Oilfield Services in Houston, Texas.

59 James L. Payne, Geop. E. is president of Santa Fe Energy Resources, Incorporated. He is also 1989-90 president of the Domestic Petroleum Council, an industry trade association for large, independent oil and gas companies. George A. Dunham, E.M. is vice president/commercial division of Reed-Patterson & Associates in Beaumont, West Virginia.

60s

61 Frank Mayadas, Met. E. is vice president/technology and solutions development for IBM. Robert E. Dugger, Met. E. is project manager for Sheldahl Metallurgical Corp. in Cambridge, Ohio.

69 Mokhtar M. Hamada, MSc. P.R.E. and Dsc. P.R.E. is a principal engineer with Monsanto Co. in St. Louis, Missouri. Hua-Pu Chu, MSc. Met. and Dsc. Met. is head of the compositional section of NASA Goddard Space Flight Center in Greenbelt, Maryland.

64 Stanley E. Dobler, P.E. is engineering and operations manager for Park Avenue Exploration Corp. in Oklahoma City, Oklahoma. Herbert F. Gammons, Geop. E. is vice president/gas projects for Mobil Oil Indonesia in Jakarta. Vernon D. Van Sant, P.R.E. is a process engineer for Hawaiian Independent Refinery, Inc. in Iwaiha, Hawaii.


66 Paul Bremscheke, Met. E. is director/technical services for Goos Brewing Company in Golden, Colorado.

67 Gary D. Snell, E.M. is project controls engineer for Stearns-Roger Division/UB&C in Denver.

68 John H. Reiss, E.M. is project manager for Echo Bay Mines in Juneau, Alaska.

69 John T. McDonough, Geol. F. is general manager of Barrick Goldstrike Mines Inc. in Elko, Nevada.

70s

70 Robert J. Dearinger, Bsc. Met. is CEO of Wright Companies, Inc. in Henderson, Nevada. Terry J. Lavity, E.M. is senior staff mining advisor for Exxon Coal & Minerals Co. in Houston, Texas. James D. Harmon, P.E. is project/manager for Nervo Oil & Gas, Inc. in Vancouver, Washington.

71 Patrick L. Franks, Bsc. Chem. is vice president of American Environmental Consultants, Inc. in Norman, Oklahoma. Stephen P. Antony, Bsc. Met. is manager/technical services for Energy Pools Corporation in Denver. Robert A. Ridge, Bsc. CPR has been promoted to manager/planning and budgeting by Phillips 66.

73 Michael J. Quigley, Bsc. CPR is senior vice president/marketing and operations for Associated Natural Gas Corp. in Denver. John S. Endlich, Bsc. CPR is president of Mark Andy, Inc. in Webster Groves, Missouri.


Cathy芙me, '79
"80s

"80 David M. Johns, BSc. Phy. and MSc. Geop. is a supervising geologist for Colorado Oil and Gas Co. in Littleton, Colorado. Douglas R. Berling, BSc. B.E. and MSc. Min. Econ. '89 is a geologist for Steel International/rod and bar products division of Chevron Chemical Co. in Belle Chase, Louisiana. Leonard A. Zaris, Bsc. CPR is a senior engineer for Cypress Yampa Valley Coal in Oak Creek, Colorado. Eric A. deMontigny, BSc. Min. is an engineer/geologist for Intra Search, Inc. in Englewood, Colorado. Richard C. Jenner, BSc. Pet. is an investment analyst for Torch Energy Advisors in Houston, Texas. Sean P. Kelly, BSc. Geol. and MSc. Geop. '88 is a geologist for Arco Oil & Gas Co. in Midland, Texas. Mary D. Durham, BSc. Min. Econ. is a property taxation manager for US West in Denver, Colorado. Catherine L. Krieger, BSc. Pet. and MSc. Pet. '89 is a reservoir engineer for Conoco, Inc. in New Orleans, Louisiana. Jennifer A. Hill, BSc. Geol. is a field engineer for Panos-Putnichkin in Glenwood Springs, Colorado. Daniel S. Morris, BSc. Geop. is a geologist for Emery, Bsc. CPR is an operations supervisor for William Pipe Line Co. in Topoka, Kansas. Todd F. Dorn, BSc. Met. is an engineer/materials engineer department of Kerr-McGee Corp. in Edmond, Oklahoma. Scott A. Denverbach, Bsc. CPR is a process engineer for Mobil Oil Corp. in Paulsboro, New Jersey. John T. Elder, BSc. Geop. and Jeanne A. Hultzegel, BSc. Math. '87 were married March 30, 1990 in Houston, Texas. Jeff V. Blake, Bsc. CPR is a process engineer for MCM Petroline, Inc. in Malverne, Florida. Martin K. Lange, Bsc. Geop. is a professional geologist with Amsden Hess Corp. in Houston, Texas. Dee Ano (Wiskrom) Erickson, Bsc. CPR is a research chemist for Cabi Laboratories in Lakewood, Colorado. Steven H. Sanders, Bsc. CPR. and Bsc. B. Eng. '85 is a staff engineer with Dames & Moore in San Francisco, California. Stephen A. Erickson, Bsc. Chem. and Msc. Chem. '89 is a chemist for Waste-Tech Services, Inc. in Golden. Gordon P. Watson, Bsc. Eng. is a project engineer for Dells Construction, Inc. in Redfield, Colorado. "86 Dieter K. Letsch, Msc. Geol. is a petroleum geologist for Chevron Overseas Petroleum, Inc. in San Ramon, California. Scott M. Douglas, Bsc. CPR is a pilot in the U.S. Navy stationed at Barbers Point Naval Air Station in Hawaii. Mark L. Peak, Bsc. CPR is a senior air pollution engineer for the State of Connecticut. James E. McDonald, Bsc. Min. is an environmental engineer for the Naval Weapons Center in China Lake, California. Frank G. Feero, Jr., Bsc. Min. is a mine engineer for American Pacific Mining in Honduras. Susan (Dew) McDonald, Msc. CPR, is a PhD.
He and his wife had a son, Alexander David, born on November 14, 1989. They are living in Knoxville, Tennessee. Gary S. Nordlander, BSc. Pet., is an operations manager for Tenneco Gas in Houston, Texas.

David L. Frolich, BSc. Chem. is a sales engineer for USX/USS - Gary Works in Gary, Indiana.

Tobin W. Smith, BSc. GeoL was a production engineer for Shell in the Denver, Colorado area.

Gary S. Nordlander, BSc. GeoL is a shift manager for Woodward-Clyde Consultants in Lafayette, Colorado.

David L. Frolich, BSc. Chem. is a graduate student at the University of Utah in Salt Lake City.

Gary S. Nordlander, BSc. GeoL is a civil engineer for the Federal Highway Administration.

Tobin W. Smith, BSc. GeoL is a graduate student/physics student at Rutgers University in Piscataway, New Jersey.

Gary S. Nordlander, BSc. GeoL is a graduate student at the University of Illinois in Urbana.

David L. Frolich, BSc. Chem. is a graduate student at the University of Georgia in Athens.

Tobin W. Smith, BSc. GeoL is a graduate student at the University of Kentucky in Lexington.

Gary S. Nordlander, BSc. GeoL is a graduate student at the University of Nevada in Reno.

There are several more entries for people with similar names and positions throughout the document.
The total project cost was $10,200 of which $4,500 was for the gold leaf. It took only half an ounce of gold leaf to recover the dome three years after construction crews found the pillars supporting the dome were weak and had to be replaced. A group of students surveyed Denver's Natural History Museum or the Smithsonian Institution in Washington, D.C., to wrap around the dome, scaled the tower from the ground, designed the "ears" to wrap around the dome, scaled the tower and installed the ears which were made of garbage bags. (Oredigger photo)

In the Geology Museum which will be open during the summer. Make a point to visit all the displays in the museum. The pendulum is like those found in Denver's Natural History Museum or the Smithsonian Institution in Washington, D.C., and one of the country's best football teams.

A Correction for the Reclamation and De-commissioning Projects.

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