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April, 1990

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CSM's Geology and Geological Engineering Department moves into mainstream computing.
by Dr. Robert Bruce

Dr. Fred Niemann: An oil industry pioneer whose interest in people is legendary.
by Ellen Glover

Colorado's Clean Air Fight: Mines files up a specialized engine lab, by Ellen Glover

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Cover: Come by balloon, arrive on horseback, but come to the Reunion! (photo by John McMillin)
Closing a Gap

Geology as a science is becoming more closely aligned with computers to deal with massive amounts of data, and to test and explore scientific principles. Professionals still need to know what is on the ground, still need to understand the basics. Yet the School of Mines has been caught in a computing gap in the last few years, which has hindered faculty, staff, and students from achieving the best results from teaching or research.

Five years ago Mines did not have a computer science program, now has 70 undergraduates pursuing a program which is not specific to one discipline, a degree which can be applied to a variety of engineering and scientific fields. Students receive a degree in geology, physics or any other subject offered by Mines with a computer science minor. The minor represents three upper division computer science classes.

Mines is making progress toward a full degree in computer science, but lack of equipment and software has made it difficult to keep up with advanced computing in the ever-changing world of computers. The effect has been felt across campus, and the campus has sought to rectify the situation.

Under the direction of Dr. Sam Adams, head of the Geology and Geological Engineering Department, a network of computer systems has been installed in Berthoud Hall which links special computer laboratories with faculty and staff offices, and to the campus computing center. To further shift the transition, the department hired Dr. Bob Bruce (PhD '88) to coordinate the purchase of equipment and software, and to train people to use everything.

With money tight in both the department and the school administration, Adams and Bruce approached private industry to fund the conversion to computers. A number of companies have donated equipment or software to solve the computer deficiencies at Mines, and by doing so, corporations have brought Mines along much faster and with more expertise than could have been done in a less traditional way.

Corporate donations to Mines are new, but with firms like IBM, Amoco, Terraconics, MINisoft and others, Adams and Bruce have been able to coherently configure a system that fits their needs best.

The firms have given generously and the results have been favors far (see story on page 3). If you are a computer user or are at the office, you can understand the position the Geology and Geological Engineering Department faced; they needed it quickly come up to speed on the system that was outdated in a few years. The initial approach they have taken was to expand and distribute the computer network as their need change without being strapped to outdated and outdated systems. To remove support by many alumni to make all the difference.

However, there is the depart somewhat Wheatontran to the idea that it is the earliest cases of future development of the computer system.

The Geology and Geological Engineering Department has taken it as an initiative, but there is still a lot of work to be done across campus for the departments which are still in need of computing facilities. Further comments by private industry could be the switch to better computers, or a video badly needed training for employees and funding for the school's overall and over expanding computing center we go a long way.

If you look at computer as devoting to aid teaching, then it's easy to see the availability of computers would change the way people teach. In the future there will be 25 more tests given at Mines, and more tests given where a student will have to both apply what he or she has learned, even if they use a hand-held calculator. According to Dr. Adams, students are moving from campus to industry and mediately using what they have learned at Mines. Let's hope that is our goal.
Geology is a science that has changed dramatically from a discipline focused on describing the tremendous diversity of earth materials, and processes responsible for their formation, to a discipline that is also exceedingly quantitative, armed with massive data resources and computational tools to test and explore the validity of geologic concepts and predictions. This does not mean for a minute that field and laboratory studies and fundamental geoscientific and geotechnology courses are in any way diminished, simply that we now have new tools to accomplish traditional objectives.

These changes have helped blend the science of geology with the traditionally more quantitatively geological engineering components of the Department of Geology and Geological Engineering at Mines. This evolving ability to solve quantitative problems has arrived at a most opportune time. The rapid increases in personal computer performance and decreasing cost allowed the department to take advantage of the Berthoud Hall renovation project to re-allocate laboratory space and equip specialized labs with new computers and peripherals.

The new computer network that joined DOS and Mac labs with faculty and staff offices has proven to be a wise investment. The network permits efficient use of the department's growing software library, provides ready access to printers, supports file transfers between DOS and Mac computers and improves access to the campus computing center. In addition to the network, four faculty received PCs, four Macintoshes and seven DOV 846 lab computers plus a laser printer and an image scanner were acquired during Spring 1989. The resulting facility has proved to be manageable, easy to use, even by the less computer literate and very capable of supporting the varied needs of both classes and individuals.

I was hired in September 1989 to manage the overall system design and installation, research software solutions, train faculty and students in the use of the network and the software it supports, and maintain the increasingly complicated computing facility. I have studied and used many kinds of computers in diverse settings since the early 70's including my PhD. work at Mines. I have been able to combine my geologic background and computing skills to determine the department's needs, and translate them into solutions that match the developing knowledge base of faculty and students, diverse program priorities and computing resources.

The hydrology program was the first to use the computer labs on a regular basis. Soon classes in diagenesis, geologic data analysis, geographic information systems, exploration geophysics, reaction path modeling, mining geology, and geotechnical engineering were added to the list. By year's end classes in petrology, petrography, structural geology, stratigraphy and paleoecology, field methods, and the introductory program will be taking advantage of the new computing resources.

Graduate and faculty research has also benefited from the improved computing tools. Not only have the analytic, computational, and visualization tools expanded the horizons of what can be accomplished, ready access to capable word processing, spreadsheet data base and graphic design programs have increased the scope of what can be accomplished, tempered and the quality of the resulting product. Improvements in the computing tools and skills of the computer staff, expanded use of electronic mail to communicate across campus and across the world, and automation of the budgeting and collections management processes have contributed to our collective productivity.

Progress and success in this endeavor to expand the computational resources of the department and the computing ability of our graduates suits the efforts of many individuals and companies. Derek Wilson

The Mines Magazine • April 1990

Dr. Robert Bruce works with students in the computer laboratory within the Geology and Geological Engineering Department. A large percentage of the equipment has been donated by corporations and alumni.

(F. Glaser photos)

package during the spring of 1990. Combined with the hardware and software, the data sets and training provided by Arco Alaska amount to a major effort on their part that will make possible equally impressive gains in the school's ability to conduct modern well log research and industrial education programs.

Jim Reed, president of RockWare, Inc., provided the RockWare geologic analysis package to the department at a reduced price and has devoted considerable time configuring the software to operate effectively in a network environment. Jim is making numerous presentations to faculty and students to ensure that all are aware of the systems capabilities and are able to take advantage of them.

Peter J. Varney, of TERRACSciences, is accelerating the transition into using integrated exploration tools by providing DOS and Unix versions of TerraStations. TerraStation facilitates the interactive use and manipulation of well log and map data to characterize and display sedimentary basins in three di-
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Fred Poettmann: Pioneer, Teacher and Friend to Many

by Ellen G. Galt

Although Fred Poettmann had only a technical high school education, he overcame adversity to become an engineer and then a teacher. His story is one of perseverance and dedication to the field of petroleum engineering.

Early research in oil recovery

Poettmann began his career as a chemical engineer at Phillips Petroleum Company in 1946. He later moved on to the University of Michigan where he continued his work in petroleum engineering.

Poettmann also taught at the University of Michigan, where he was a professor for many years. He was known for his engaging teaching style and his dedication to his students.

Overcoming adversity

Poettmann grew up in a poor family and was the first in his family to attend college. Despite the challenges he faced, he never gave up on his dreams and worked hard to succeed. His story is an inspiration to all who aspire to achieve greatness despite the odds.

Poettmann was also involved in the development of enhanced oil recovery techniques, which are still used today. His contributions to the field of petroleum engineering have had a lasting impact on the industry.

In conclusion, Fred Poettmann was a true pioneer in the field of petroleum engineering. His dedication to his work and his commitment to teaching have left a lasting legacy. He will be remembered not only for his technical achievements but also for his kindness and generosity to his students.
includes air (for in situ combustion), steam, hydrocarbon solvents, polymer, and micellar solutions.

"Fred thinks that today's young engineers probably won't have the experiences in research that he and his age group had. Fred is a hard worker, and he always did the right thing. He was with a great manager in research or teaching," says she with a smile.

Teaching has been a lifelong ambition for Fred, according to Mrs. Poet- mann, but teaching didn't pay enough to support a family with three children. June, died of leukemia nine weeks after her daughter, Trudy, was born, one of life's little twists Poettmann refers to.

While Poettmann was at Phillips he taught extension courses for Oklahoma State University in natural gas engineering, thermodynamics, heat transfer, and fluid dynamics. Many of his students were Phillips engineers who were preparing for promotions or higher degrees, and many of them became, and continue to be, friends.

Poettmann never gave up the idea of teaching, and in place of an academic setting, he began to nurture and follow the progression of people he supervised or met through professional associations. He joined the Society of Petroleum Engineers in 1946, and has served as director, chairman, or council member of several professional committees since 1962.

One of the original researchers at Marathon, Dr. Barney Cooper, comments on Poettmann's inspiration to present and publish papers:

"Typical of the way you helped me (at Marathon) was how you saw it when the original Marathon papers were presented and published. You always said that Marathon allowed me to due in SPE by doing it on various committees. You grounded the paper and presented it. I was able to develop the research with Poettmann's help and pursue it further."

Chemical flooding of an oil reservoir

Getting in on the ground floor was a dream come true. "Fred's habit of working hard and for long hours helped me approach engineering design as a method for rejuvenating depleted or nearly depleted oil reservoirs through chemical flooding which was patented under the name "Marathon." Natural fluids such as water and large portions of oil in place are lost over time. These are the best of the best, but it is now possible to change an economic situation to develop a reservoir.

In chemical flooding, Poettmann and his colleagues experimented as polymer flooding, and micellar and oil flooding. Detergent-like chemicals were used to free residual oil trapped in reservoir rock. Synthetic detergents and surfactants have an ingredient that is a surfactant, or surface-active agent. Surfactant molecules are directly adsorbed to water and oil. They adsorb such as a surfactant, and surfactant-wetted oil is injected into a reservoir to release the oil, and then polymer-modified water is injected to push the oil toward producing wells. This is the basis for the Marathopool process.

Launching a new product

Dr. Horstee Kazar, associate director of production technology at Marathon, says he moved from the quartz and unusual flooding process brought Poettmann worldwide recognition for pushing the process. Dr. Kazar believed that the process is a major step in the development of an "unusual trait in a man," Kazar recalled.

Kazar said he began his career in petroleum production research and eventually worked as a research engineer at Mines. Poettmann was called back to the office in Indiana, Ohio to be director and manage the process for several years, Finally in his own, the Denver research center where he retired in 1985. When the price of crude oil changed, and began to outstrip the value of oil discovered. It became hard to market the process because it is expensive to recover the oil. The lack of economic situation to change the process is still valid means of extracting oil from the ground. The situation work done under Fred's direction will be applicable again— it is a natural process.

Kazar explained. "In addition to teaching and research, we published a textbook, "Handbook of Natural Gas Engineering," first published in 1959 and a comprehensive publication since 1962. Kazar said he was later met Fred at that conference where they developed a personal relationship that has been strong and enduring. Fred is a tremendous full of energy, and he loves applied engineering. He and others in a very constructive way, and at the age of 75 he is the same as when I first came to work for him when he was 50 years old. He has also said to me, "You have a big heart. He loves and remembers all the people he has met, and when he sees someone he is bright and capable he stays with the person to the end of his life. Even if it has been more than 10 years since he has seen someone he picks them up and makes them feel comfortable."

"I believe that working with Fred and his colleagues in the past has been good for me, I have learned a lot about business and how to treat people."

Nurturing family, students, and gardens

This brings the prime to his family and other interests as he does petroleum engineering. For many years Poettmann kept a garden in a community plot at Marathon; his was an intensely cultivated garden and he was named by fellow employees for wagon war against the lottos. "We had two plots by the research center and I raised every kind of vegetable. I also had an orchard at our house in the foothills South neighborhood of Littleton, and when we moved to Findlay, we had the sweetest Queen Anne cherries and the prettiest color of peaches," Poettmann recalls.

When Poettmann's daughters, Trudy, and son, Phillip (Mines BSc; CPR 85), took an interest in figure skating and hockey, Poettmann plunged into the local recreation scene and became a member of the South Suburban Metropolitan Recreation and Park District. "Littleton needed open space and parks including a public golf course. I became chairman of South Suburban and took a lot of heat for some of the proposals; people were really angry about buying land for bike paths, parks and setting land aside for the future, but later the same people who called to complain called back and apologized. They liked the way things turned out," he said.

A friend and neighbor from Littleton, Louise Mann, wrote to Fred in December, 1996, thanking him and her community for many of the feelings people have about Poettmann as a friend. "When you first moved into Bow-Mar South and I learned you had a PhD, in some far-off field, I ruled out the possibility of you as a friend. Then you barked at Anna Bell, I thought, well here's a hard-headed Dutchman I'm going to avoid like the plague." How wrong I was!

"Your image suffered a little when Phillip got in a little trouble along with several other neighborhood boys, and you laughed, a little after-sweat, of course. Then I found out you got your hands dirty gardening and even gave away vegetables. However, yours had to be the largest garden in the complex. The perfection was tarnishing a tad.

"The tree house had now cracked and harmonious show through. Conclusion: Fred Poettmann is a marasmallower and the exterior is all bluff. Thank goodness I wasn't too late in getting to him.

Poettmann has retired as a professor at Mines, but he continues to supervise the research his graduate students are completing even though he doesn't receive a salary. "I'm like the head of his home at Littleton for his office on campus, Poettmann expresses concern for one student's thesis which needs attention. For Dr. Fred Poettmann there is still work to be done, still a class to teach, still worth to pursue."

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Dr. Horstee Kazar, friend and colleague to Fred Poettmann

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Dr. Horstee Kazar, friend and colleague to Fred Poettmann

The Mines Magazine • April 1997
Colorado's Clean-Air Fight:

Mines Starts Up a High-Altitude Engine Lab

On a clear day, you can see forever...but if you are stuck behind a diesel truck or bus in rush-hour traffic in Denver the view is less than appealing. The breathtaking view of the Rockies is sometimes choked by a visible brown cloud—the bazy...

Carbon monoxide—the invisible poisonous gas

Carbon monoxide, an invisible and odorless gas generated during incomplete combustion by motor vehicles and wood-burning, has been the main culprit in Denver's skies. The Denver area's air contains about 20 percent less oxygen per cubic foot than air at sea level. Fueled to burn less completely at higher altitudes, releasing extra carbon monoxide into the atmosphere. About 90 percent of the area's carbon monoxide buildup comes from motor vehicles and wood-burning.

During the summer, turbulent weather clears the skies. But during fall and winter, because Denver sits in a basin adjacent to high mountains, air temperatures may get warmer with elevation instead of colder.

The warmer air temporarily traps the colder, polluted air close to the ground in an inversion, causing air-pollution meters to spike, especially at rush hour. Recent studies by Colorado's Department of Health show that levels of carbon monoxide in the Denver's skies have dropped a remarkable 36 percent since 1983. A number of pollution-fighting strategies including the sale of cleaner burning oxygenated fuels, offer vehicle inspection and maintenance programs and wood-burning bars during high-pollution days are helping the metro area.

State officials say the approach is working. They are especially pleased with the oxygenated fuels program.
which beginning in 1987 was the nation's first to require the use of gasoline laced with either methyl tertiary-butyl ether (MTBE) or ethanol. The plan was adopted by other western states this season and is being reviewed by Congress as lawmakers rewrite the federal Clean Air Act.

The success of oxygen fuels has been one factor which has helped the School of Mines bring the high-altitude laboratory to Golden since oxygen fuels demonstrate how new fuels can improve the environment. GREEF plans to work on further oxygen developments in conjunction with the Solar Energy Research Institute (SERI) and the Colorado Department of Health.

**Diesel emissions**

Mike Grahnoski, associate director of the mine site, says one of the first tasks of the lab will be to work on M-diesel, a fuel recently refined by Dr. Reed from waste vegetable oil and methanol (see "French Fries to Fuel" story). Mine researches will compare it to available diesel sold in Colorado, then compare it to other diesel to test relative emissions.

The Environmental Protection Agency (EPA) has recently published a set of stringent heavy-duty diesel engine emission standards which will become effective in the early 1990s. Today's truck and buses operating on conventional diesel fuel cannot meet the proposed standards. Research today is aimed at development of cleaner-burning fuels such as methanol and use of particulate filters to scrub the exhaust gas.

GREEF is working closely with several companies on a variety of "new" diesel fuels lower particulate and VOC emissions which contribute to the brown cloud. The associate director said he expects the downtown heavy-duty laboratory to be functional by the second quarter of 1991, which will be able to make the largest diesel engines on the road—up to 600 horsepower.

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**FRENCH FRIES TO FUEL?**

by Ellen Glover

A school of Mines chemist has mixed common cooking oil and methanol to produce a fuel which has been successfully tested in a Denver Regional Transportation District (RTD) bus.

Thomas Reed, a professor in the Chemical Engineering Department, says 30 percent of the mixture added to diesel fuel will reduce tailpipe smoke, it can be used as a substitute for diesel.

Reed took a gallon of waste oil from a Golden fast food restaurant and mixed it with methanol to form a fuel that is 10 percent oxygen. Reed said he and a partner spent two weeks converting two barrels of waste grease to fuel.

"We added the methanol and cooked it. All the nasty parts sunk to the bottom, and we got the most beautiful yellow oil," he said.

He then contacted RTD which tested 100 gallons of "M-diesel" in its buses by putting a bus in a chassis dynamometer under load conditions.

"Three fuels were tested: ordinary diesel, a blend of 30 percent M-diesel and regular diesel, and then 100 percent M-diesel. As far as the tests were concerned there was essentially no difference in the operation of the engine. We would have a hard time saying whether the engine worked a little better on the M-diesel or a little worse, it's just within a statistical measurement," Reed said.

Reed also said the fuel was tested for opacity, or tailpipe smoke, and it clearly reduced the percentage of smoke.

The professor said he feels they have overcome two hurdles: can they make the fuel from waste fats, and is it as good or better than ordinary diesel? "When you are concerned with smoke and pollution, M-diesel is better than ordinary diesel," he said.

The next step is to produce another 100 or 1,000 gallon batch. Reed is setting up a company to go into business to produce the fuel. He says that eventually he needs a batch plant where 1,000 gallons could be mass produced. He foresees producing the fuel and distributing it around the country so people can test it further. He hopes to develop a continuous process where you "pour in the waste fat, it goes through and out comes the diesel at the other end," something that might be six months to a year away.

Reed says the drive to find alternative fuels came out of the diesel fuel shortages of the 1970s when farmers thought there would be a fuel shortage and when crops had to be harvested. Fuels were made from cotton, sunflower seed or soy bean oil, but these fuels didn't work well because they were too heavy, wouldn't burn and caused dude engines and pistons.

Reed said the introduction of M-diesel in well to the Mines high-altitude engine laboratory to be built in Golden because "it principale high-altitude engine lab is available for automobile and diesel engines, but our perception of the diesel problem in Denver is that it hasn't been solved where the automotive problem largely has been solved with cleaner fuels, and newer engines which meet air quality standards. We haven't done anything about diesel," he explained. M-diesel will probably be one of the first fuels tested in this new laboratory.

Reed has devoted the past two decades at Mines and the Solar Energy Research Institute, also in Golden, to the search for cleaner alternative fuels.
THE IMPACT OF AIR POLLUTION ON YOUR HEALTH

by Franklin D. Aldrich, M.D., Ph.D.

Looking east from atop Table Mesa in Golden you can see the sun's yellow disc break above Denver's high-rises. Between Denver and the city there is haze this morning, thickening by the minute. As solar energy warms the ground and the downtown buildings, surrounding air heats up too, and rises by convection. Cooler upper air descends to replace it. You are watching a thermal inversion forming, which effectively traps a lid over Denver, trapping the myriad ingredients of an infamous "brown cloud," familiar to Front Range residents.

The brown cloud contains a variety of substances, including particulates, hydrocarbons and carbon monoxide from engine exhaust, dust, photochemical reactions and aerosol-scattered sunlight. It irritates your nose, eyes, and throat because it contains nitrogen dioxide, nitric oxide, aldehydes, peroxycarbonyl and ozone (both powerful oxidants and irritants), sulfur dioxide and a complex mixture of other atmospheric species which are harmful to health.

"Anthropogenic" is a seventy-five-cent word used by experts to denote those components of polluted air which originate from people and their activities. Mobile and stationary sources give rise to anthropogenic air pollution. Typical stationary sources include chimneys, "smokestack" industries, power plants, or any fixed generator of airborne contaminants. Stationary sources are outsourced by mobile pollution sources—typically, motor vehicles, aircraft, and trains. Pollutants may be either "primary" or "secondary." The latter arise from atmospheric chemical reactions, while the former are released from point sources, such as a smokestack. Natural sources of air pollution include volcanoes, furnaces, forest fires, soil erosion, ocean spray, and volcanic pollutants given off by vegetation and microorganisms, and by decaying animal and vegetable matter. The combined effect of natural air pollutants is mitrate, however, compared to that from man-made contaminants.

As generators of airborne hydrocarbons, nitrogen oxides, carbon monoxide, and particulates, cars and trucks probably have had more impact on air quality than any other factor in the past century. Although new methods can reduce some automotive engine emissions to legally acceptable levels, they do so only in compromise. Control of carbon monoxide and hydrocarbons, for example, is often a cost of increased nitrogen oxide emissions. Power output and fuel efficiency are degraded by emission control measures used to reduce smoke and noise.

Modern engines are hydrocarbon-based, for reasons of cost and convenience. Methanol fueled engines have been used in race cars, at least air fuel ratios, with good efficiency and lower hydrocarbon, carbon monoxide, and nitrogen oxide emissions than is realized with gasoline-powered engines. Tractof only methanol as an engine fuel include higher fuel costs, lower engine speeds, and formaldehyde in the exhaust stream. Formaldehyde is a noxious chemical because it is a potent resin varnish and a probable human carcinogen.

Catalysis research for methanol fueled engines may lead to ways of eliminating formaldehyde from the exhaust stream.

If this can be achieved, then the advantage of methanol as a low-pollution fuel may outweigh its higher cost.

Hydrogen may prove to be an ideal motor fuel. Hydrogen is 14% less than equivalent by weight and is the only fuel used in hydrogen-fueled engines. The use of solar energy for electrolysis hydrogen production from water, and the coupling of fuel cell technology with electric motors for vehicle propulsion are two areas of current research in hydrogen fuel technology.

The Colorado Institute for Fuels and High-Altitude Engine Research at CSU will be an exciting place to work. The complex challenges of optimizing high-altitude engine efficiency while minimizing, or eliminating, harmful exhaust gases won't be easy or simple, but it'll be fun. It'll be done faster at altitude.

Franklin D. Aldrich is the manager of the health effects research department at IBM Corporation in Boulder, Colorado. For more information contact the Colorado Methanol Company, and associated medical director for environmental medicine at NLTC. Dr. Aldrich is special advisor to the Colorado Institute for Fuels and High-Altitude Engine Research at Mines.

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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 white-washed rocks will stay in place. The cost of the project upon completion will be approximately $15,000.

According to Bob Todd, club president and a senior at Mines, the group has been working on the "M" in three stages. At one point students spent a night with the generator at the site after the wind knocked out the power which dramatized the need for the project. In the first phase of the project, students drilled into the mountain and installed rock bolts as a foundation for a support structure. Todd said the student chapter of AIME brought the necessary equipment from CSM's experimental mine in Idaho Springs; their time and effort was a significant contribution.

Using tubing from chain link fencing, Blue Key Club members built a support system for the lighting which will save the lights from wind damage. During the final phase of the project, which is expected to be completed by Spring 1990, students will encase all the wiring in conduit and place the bulb sockets in weather-proof boxes.

This will eliminate any exposed wiring as there had been in the past. First lit in 1932, the "M" will continue to glow into the next decade with your help. Blue Key is accepting donations toward the cost of the project and future maintenance. For $35.00 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 50 bulbs are available so the supply is limited—act now and reserve your bulb!

A generous donation from the Club of 1952 paid for all the hardware, new wiring from campus to the "M" so this has been a well-supported alumni project from the beginning. This donation has rectified all the wind damage to the power lines leading to the "M." Any additional funds collected will be used for future maintenance.

Jonathan Kneb at the "M."
Spring Commencement—

Join us in May

by Norman Zahr, ’52

Executive Director

We are approaching the busiest, and most enjoyable, part of the year at Mines.

The reason we are all here is to see young men and women finish the requirements for a degree from Colorado School of Mines, and be awarded those degrees. In many ways they become alumni/alumnae of this great institution. They are then entered into the records maintained by the Alumni Association and become a part of the alumni activities of the school.

Until two years ago it was the custom for alumni who had been out of school for 10, 15 and 20 years to hold their reunion activities at Homecoming in the fall. It was decided that these reunion classes should have their activities at the same time as the other classes held theirs, i.e., at commencement in the spring. This way they have more opportunity to mingle with the older classes and, no doubt, gain a great deal from this association.

We have not held reunion activities for classes five years after graduation as it was felt there was much interest in such events. If there is an interest among the association members to be pleased to assist in arranging them.

Union reunion activities include attendance at commencement, class reunion dinners, lunches, etc., and attendance at the all-alumni banquet. Other events, such as tours and visits to departments of the school, are also included.

This year the student/parent/alumni banquet will be held on Thursday, May 10th in the Green Center. All alumni are welcome to attend, but the main purpose of this event is to allow the students upgrade their parents on an opportunity to celebrate on the campus the evening before commencement. The program is carried out by the students and usually consists of a awards program to select for their fellow students and some faculty members.

Many of the awards are humorous and the evening is light-hearted and enjoyable. We ask all alumni to participate in any or more students for the evening. It is not necessary for the alumni to be present to sponsor the host of a student’s dinner. Those who are not sponsored by an alumnae are sponsored by the Alumni Association.

At the Friday night class dinners, the class agents and their committees prepare a program for the enjoyment of their classmates. These programs vary all over the map, depending on the wishes of those attending and the committee. It is important for those who plan to attend to make their wishes known to the committee. The Alumni Association assists in these arrangements as costs are borne by those attending.

The all-alumni banquet on Saturday night is just that—a dinner for all alumni who are able to attend. We have some entertainment, the reunion classes are honored, and a few awards are made by the association outstanding alumni for their services to the association. Special attention is given to the 50-year reunion class, which is also honored by the school at commencement. A new group, known as the "Golden Miners," has been established for those alumni celebrating more than 50 years since graduation. They are seated as a group, as are the reunion classes.

At various times during this weekend it will have become the custom for reunion classes to present a class gift to the school. Each alumni is encouraged to contribute what he or she can to the fund.

In no way, however, does this mean that those who can not, or do not wish to, contribute are excluded from the events. All alumni, whether members of the association or not, and whether they contribute or not, are most welcome at these events. Those who have not contributed will in no way be embarrassed. The important thing is to attend and spend some time with your classmates. That is the primary thrust of the entire weekend.

Some of the classes have registered very high participation rates in the past, and we want your class to be among those. That is an integral part of the life of a Miner—doing better than those who preceded you. Only you can make that happen.

Please do your best to join in May. We want to see all of you and many families that are especially welcome, and that includes widows and other families of graduates who can not be with us. See you in May!

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**SCHEDULE OF EVENTS**

**COMMENCEMENT AND CLASS REUNIONS**

May 9-10, 1990

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**A SPECIAL WELCOME TO THE CLASSES OF**


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**THURSDAY, MAY 9**

- 5:30 p.m. Class Reunion Registration
  - Marriott West Hotel
  - Room 625

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**THURSDAY, MAY 10**

- 9:00 a.m. Class Reunion Registration
  - Marriott West Hotel
  - Room 625

- 11:30 a.m. Guided campus tour with w/Curtis D. Yang, President (emeritus) and Dr. David A. Cramer, ’49, emeritus
  - 15th A Hallway

- 1:00 p.m. Class Reunion Registration
  - Marriott West Hotel
  - Room 625

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**FRIDAY, MAY 11**

- 1:00 p.m. Alumni/Parent/Alumni Banquet
  - Green Center

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**SATURDAY, MAY 12**

- 8:00 a.m. Breakfast
  - Hotel Grant

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**SUNDAY, MAY 13**

- 8:00 a.m. Breakfast
  - Hotel Grant

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**ALUMNI ASSOCIATION NEWS**

- **Spring Commencement** will be held on May 10, 1990 at 6:30 p.m. in the Green Center.

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**THE MINES MAGAZINE**

- April 1990

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**THE MINES MAGAZINE**

- April 1990

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**THE MINES MAGAZINE**

- April 1990
Come Home to Mines!

1990 COMMENCEMENT AND CLASS REUNIONS
MAY 9-12, 1990

RESERVATIONS
Name: __________________________ Class Year: ____________
(Please print first and last name as you would like it to appear on name tag.)
Address: ________________________
City: ___________________________ State: ______ Zip: ______
Daytime Phone: ________________

I will be accompanied by: __________________________
(Please print first and last name as it should appear on the name tag.)

Our host hotel is the Marriott Denver West in Golden. A large block of rooms, single and double, has been reserved for reunion week at a rate of $45.00 per night if reservations are made by April 18, subject to availability. If interested, call 1-800-228-9520 and tell the reservations clerk you want the CSM reunion rate.

PLEASE MAKE MY RESERVATIONS FOR THE FOLLOWING:

THURSDAY, MAY 10
Banquet for Graduating Seniors*

No. of Reservations Amount

[Blank lines for guests to fill in]

I will sponsor seniors(s)__________________________

FRIDAY, MAY 11
Number of use times needed for golf outing

SATURDAY, MAY 12
All Alumni Banquet
Pretzels & Mignon
Chicken Kiel

No. of Reservations Amount

[Blank lines for guests to fill in]

Your cancelled check will confirm your reservations.
Reservations made after April 30 will be accepted only on a space-available basis.

PLEASE MAKE CHECK PAYABLE TO CSMAA AND MAIL TO:
CSMAA, P. O. Box 1410, Golden, CO 80401

For additional information call (303) 772-8295 or (303)772-5290
Outside Colorado call 1-800-446-9498, ext. 326 or 329

Complimentary Full Breakfast Buffet
Complimentary Cocktails 4:30-6:30 pm Complete Health Club with indoor swimming pool
within walking distance of outstanding restaurants that range from casual to classic.

Add to all of this our Special Colorado School of Mines ALUMNI WEEKEND RATE of $65.00 Single or Double occupancy.

A room with a view!

Call us NOW at 1-800-525-3966 — We'll love to add you to our guest list!

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2501 South Perry Street, Denver, Colorado 80222

NEWS FROM THE GEOLOGY MUSEUM
by Ginny Mast, Curator

Cj's Crystal Palace is a small, fault-controlled cave in Pre cambrian gneiss. What makes it unusual, perhaps unique, are its elongate calcite and argonite decorations that are like those normally found in limestone caves. The cave was found during routine blasting in a gravel quarry about a mile west of the first tunnel in Clear Creek Canyon. First opened on May 12, 1990, it was sealed again on May 17, 1990, with its fate unknown. By mid-May, 1990, CJ's will be open to the public in the CSM Geology Museum, thanks to the efforts and support of a group of interested individuals.

Jack Banta, a Jefferson County Road and Bridge Department blaster, located and opened the cave, and named it for his wife. He contacted the Road and Bridge Department supervisors, the Jefferson County Commissioners and County Planners who provided vital expertise and equipment, in the documentation and recovery process. Although the quarry was a Jefferson County operation, it is located on private land. The landowner, C.B. Coltra (Coltra Castings, Golden, Colorado) and his attorney, Thomas E. Young, M.F. '52, managed the preservation of the cave, which otherwise would have succumbed to the quarry operation shortly after it was found.

Mr. Coltra subsequently gave the contents of the cave to the CSM Geology Museum with the charge that the artifacts be used for research and display, thus preserving the cave and making it accessible to the general public. Since CJ's sits in the path of a proposed road cut, and

will eventually disappear, we agreed to document the cave and preserve it by moving it. Obviously, moving a whole cave—even a small one—is a daunting task. We chose instead to mine out as many of the decorations as we could while documenting the rest of the cave through mapping and photography. With the guidance of Dr. Milton Salamon, head of the CSM Mining Department, and under Bruce Carlson's direction, we returned to the cave in June 1989 to carry out these tasks during an intense week of work. Bruce, who is the Experimental Mine manager, and three students (Johnny Blizard, Lisa Oliver and Scott Burke) did the lion's share of the labor, and we recovered 500 or more specimens.

The cave mineralogies have now been catalogued and are ready for either research or placement in the Clear Creek Gave exhibit, a multimedia presentation centered on a reconstruction of portions of Cj's Crystal Palace.

Besides Jefferson County, the CSM Mining Department, Mr. Coltra and Mr. Young, there are other important contributors to the project: Peter Modrak, Karen Wrenich, Earl Verbeck, Jack Read, Brian Van Gent and Hoyt Stutain of the U.S. Geological Survey (USGS) have done extensive and significant scientific and photographic work in the cave. C. Walden from the Bureau of Reclamation did stereo photography in the cave. The Mine Safety and Health Administration supported our efforts, and Dan Kyle of USGS and his wife, De continued on next page

Karen Wrenich of the USGS looking up at formations on the main ceiling. (Denver Museum of Natural History photo)
Come Home to Mines!

Outstanding Alumnus Award

The Colorado School of Mines Alumni Association is proud to announce that Emil “Ted” Benson, B. M. '53, has been nominated as the outstanding alumnus for 1990. Benson will be presented with a plaque at the All Alumni Banquet May 12, 1990, and everyone is invited to celebrate with Ted and his friends.

Though he did not graduate until 1953, Ted showed his support for CSMAA since 1933 when he applied, as a student, for a junior membership in the association, paying the dollar a year that was required at the time. He has been a very loyal and active alumnus ever since, becoming a life member in 1983.

In the early 1970s, while with General Motors Overseas Operation in New York, Ted acted as secretary-treasurer of the New York Mines alumni section.

When he moved back to Denver after retiring from General Motors, he continued attending alumni functions, including the association’s activities. Quarterly Club and section meetings, often accompanied by his wife, Mary.

Ted also helps to raise funds from his classmates and other members of the Melville F. Coolbaugh Class of 1933 Memorial Award that is presented each spring at the All Alumni Banquet. One award is presented to an alumnus, and one, in the form of a $20,000 scholarship, to a deserving Mines student.

The award is for meritorious service on behalf of the Alumni Association and consists of an honorary membership and an engraved plaque.

Young Alumnus Award

Chris Oglesby, BSc. '80, MSc. '88, the 1990 Young Alumnus of the Year, has been the section co-coordinator of the largest Mines alumni group, the downtown Denver section. Together with Dr. Steve Sonnenberg, PhD. '81, the two have hosted breakfast meetings with guest speakers including a number of alumni.

He supports other alumni functions and is chairing the 1990 class gift committee this year as they celebrate their tenth reunion. The Young Alumni Award recognizes the contributions to the school and the Alumni Association of younger alumni. Someone must be under 40 years old, and receive his or her first degree within the last 15 years.

Ted Benson

Chris Oglesby
Honorary Membership

Six people have been accorded honorary membership in the Mines Alumni Association for their contributions to Mines. The honorees are: James K. Applegate, Dr. Raymond "Ray" Biecke, David F. Coolbaugh, Marshall Crouch, III, Michael S. Nykola, and Dr. Craig W. Van Kirk.

James K. Applegate

James K. Applegate received three degrees from Mines (Geol. E. '66, MSc. Geol. '69, PhD. '74), and served the association as secretary, treasurer, and president. He also served as the alumni representative on the CSM Foundation Board of Directors for two years. For his past and continuing dedication to the association, Applegate will receive this honor.

Dr. Raymond "Ray" Biecke has been on the Mines faculty in the Chemistry Department since 1959. He served as department head for several years, and at times he served as an adjunct professor while he managed his company, Biecke Engineering.

E.M. '74, D.Sc. '90, Biecke has been a true supporter of Mines. During his many years of foreign service in Mexico, Korea, and South America, he maintained membership in the association, and was responsible for helping raise our Mines graduates on his projects. Since his return to Colorado, he has been a regular participant in the regular meetings of the association.

David F. Coolbaugh

David Coolbaugh has consistently hired Mines graduates in his business and provided summer work for under-graduates. Two of his sons have graduated from Mines. He has promoted Earth Sciences. He has consistently hired Mines graduates in his business and provided summer work for under-graduates. Two of his sons have graduated from Mines. He has promoted Earth Sciences.

Marshall Crouch

Dr. Michael Nykola has four years ago been active chair of the central committee for the association, as a guide on reunion campus tours and other functions. Coolbaugh's father was president of the Mines Board of Trustees.

Dr. Craig W. Van Kirk

Dr. Van Kirk, Mines, and four members of his family are Mines graduates.

PHOENIX

Dick Richards (Geol. E. 1962), or "Phoenix connection," writes that 15 alumni and guests attended a luncheon for Dr. and Mrs. Annell on January 3. Visiting with the Annells were Ronald W. Clifton '63, Bob Comstock '63, David Conrad '79, Donald Eiches '78, Matt Horton '87, Don Kammertime '71, Michele Kopf '69, Robert Kylmann '89, Alfred A. Lee '59, Kenneth H. Matheson, Jr. '78, Hugh E. Templeton '56, and M.J. Williams '53. Mark Monty, CSM executive director of development, was also at the meeting. This was the first section meeting for the Phoenix alumni, but Dick says that due to the positive response, plans were made for another section meeting in February. For additional information, call Dick at 602/457-3757 (work) or 602/459-0617 (home).

If you have news to share about your section or would like to help us organize an alumni section in your area, please write or call Norm Zeh or me, inside Colorado 1-800/245-1060 ext. 3296 or 3299; outside Colorado 1-800/446-9498, ext. 3296 or 3299. Mary Jo Giddings, Associate Director, Alumni Services.

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EUCALYPTUS SHOWCASE "99

The Mines Magazine • April 1990

The Mines Magazine • April 1990
C O A C H  O F  T H E  Y E A R

Jack Hancock was voted the 1989-90 Colorado Wrestling Coach of the Year at the annual Colorado Col-
legiate Wrestling Tournament on February 3rd. Hancock was selected by college wrestling coaches from around the state to be the first recipi-
ent of the new award.
"It gave me a lot of satisfaction to be picked by my fellow coaches," he said.

Hancock has been at CSM since 1955 and coached in a variety of sports. He is also the tennis coach.

S taffers celebrate 10 years with CSMAA

Glen Frank, a sophomore wrest-
ing for Mines at 134 pounds, earned his Bachelor of Science degree in Geology and was named to the All-SCIAC team. He won the CSMAA national title at 134 pounds and was selected as the SCIAC Wrestler of the Year.

The staffs of the Mines Magazine and the Mines Record have celebrated 10 years of service to the Mines community. In honor of this milestone, the staffs would like to acknowledge the many contributions of the Mines staff and students who have helped make Mines a vibrant and dynamic institution.

T he three staff members celebrated their tenth anniversary with the CSMAA staff and members of the Mines community.

CSMAA officers for the coming year are (left to right): Gary Hutchinson ’80, secretary; J. Paul Martin ’82, president-elect; Vicki J. Knoll ’77, treasurer; and James Johnson, president.

(Photos by M.J. Cuthbert)

(From the Mines Magazine • April 1990)
Men's Basketball team concludes season with 15-15 record

The CSM men's basketball team came close to playing in national competition in March, but Grand Canyon University in Arizona crushed their hopes with a 99-76 defeat. Miner overall record was 15 wins and 15 losses with some good games against some regional teams.

Kappes, Cassidy & Associates
Specialists in the Testing and Field Application of Heap Leach and Cyanide Technology
Since 1972

CSM Materials Science Program Aims for Growth, Graduate Students

The Materials Science Program brings together five departments—chemistry, chemical engineering, engineering, metallurgical and materials engineering and physics—to offer graduate level coursework. Students enrolled in the program can earn either a master's degree or a certificate.

The multidisciplinary nature of the program exposes students to a wide variety of materials and technologies.

Copeland recently served as head of the metallurgical and materials engineering department, chaired the tutorial committee of the Mines Honors Program and was dean of graduate studies and research.

Bill Mueller '88, one of the eleven hole sponsors of the 1990 tournament.
WILL YOU OR YOUR company like to sponsor a hole?

TO: Art Meyer '50
FROM: Dick Van Horn '47
SUBJECT: A more equitable scoring system

Despite the abrasive rictet and "ugly" Kly Kazeaux Knap attemps of last year to unseat me from the oldest and most decpet golf four-some in all Chrisotan, l support his handicap approach to the annual CSMAA Golf Tournament (Mines Magazine, May 98, p. 32). We old PARTS (Fellows All Ballist to Swing) demand fairness in love, war and golf—which the CSMAA is not providing. Last year even the beer cart lost us and we didn't get to see our golf balls until 8:32 a.m.

This year (no fault of Kazeaux) I won't be able to attend the tournament because of a prior commitment to the AMQQA-CAQUAQ Conferance. I offered my spot in the foursome to my wife of 97 years (Golden High '38, Dames Club '47) but she refused on the grounds that discrimination in any form is not her bag. So, be an open-minded, I offer my spot to any non-discriminating Mines student who (1) has a handicap of 60 and is willing to play with the PARTS, or (2) has played golf before and will play in any foursome.

CSM and the Mines Magazine • April 1990
ALUMNI UPDATES

40s

44 Donald W. Roe, Met. E. has retired as special counsel of Security Life of Denver.

48 Richard M. Stewart, E.M. has retired as senior staff assistant with Westinghouse. Donald B. Mellor, P.E., has retired after 31 years with the State of Colorado, 13 with the Water Resources Division and 18 with the Oil and Gas Conservation Commission (OGCC). He retired September 1, 1989 as director of the OGCC. Smith plans to do consulting work from his home in Littleton, Colorado.

50s

50 Charles E. Melbye, Geol. E. was elected chairman of the board of the Colorado Mining Association on February 8, 1990, during the 96th National Western Mining Conference & Exhibition in Denver. He is currently a director of United Mining Corporation, Reno, Nevada and a mining consultant to several other companies.

51 Edmund R, Hall, Met. E. has retired from Mobil Oil (formerly Superior Oil Co.) in Dallas, Texas. John W. Miller, E.E. has retired from the Bureau of Land Management and is now living in Montrose, Colorado.

52 William F. Olline, Geol. E. has retired as vice president of Engineering for Celestis Energy Company. He was employed by the corporation for 18 years. During his nine-year tenure as manager and vice president, the company made significant oil and gas discoveries at the Cutthroat and Harwood Deep Fields in Colorado, the Bug Field in Utah, the Driggs Rook Field in Wyoming and the Bird Field in Nebraska. Bill and his wife, Marilyn, reside in Silt Lake City, Utah.

54 Rachal H. Lewis, Jr., E.M. is vice president and general manager of Ivanhoe Gold Co. (a subsidiary of Galactic Resources) in Winnemucca, Nevada.


57 William D. Jackson, P.E. is a partner with Hubbard, Thurman, Turner, Tucker & Harris - patent and trademark attorneys in Dallas, Texas. Donald R. Van Sandt, Geol. E., is a staff engineer for Conoco, Inc. in Ponca City, Oklahoma.

58 David L. Bowler, P.E. is manager/Anchorage division, exploration and production with Conoco, Inc. in Anchorage, Alaska. Lawrence Ogden, Bsc. Geol. has retired as a professor in the geology department at Eastern Michigan University.

59 Prasert Kubawat, E.M. is a managing director for Thai Pioneer Enterprises Co., Ltd. in Bangkok, Thailand.

60 George A. Holcomb, E.M. is vice president/operations for North Lily Mining Co. in Tucson, Arizona.

64 Thomas L. Hughes, E.M. is a reservoir/resource development engineer Amarc Gold in Golden. Albert R. Geyer, Geol. E. has been promoted to Waddell & Reed financial services. He is registered representative to district manager/Lakewood (Colorado) division.


69 John Schuyler, ‘72, ‘77 process/specialty engineering for Floor Daniel Corp. in Redwood City, California.

74 James J. Gusek, Bsc. Min. is a project engineer for Denver Knight.. Pikesville Environmental Consultant, Inc. in Denver. Ronald W. Prickett, Bsc. Geol. is owner of Resource Projects of Wyoming. Robert E. Kukans, Bsc. Geol., is senior software engineer for Sierra Geophysics in Kirkland, Washington.

77 Michael Flanagan, Bsc. Met. is senior name vice president for the energy banking division of NCBN Texas - Dallas. Douglas L. Beaulam, Bsc. Geol. is owner of BRS, inc. in Colorado. David W. Pass, Bsc. Geol., is project manager/ minerals group for BEI Engineers/Construction Incorporated. William D. Riege, Bsc. Geol., is production engineer for Rosewood Resources in Dubuque, Iowa. Timothy O. O’Connor, Bsc. Min. is an engineer for Associated Electric Cooperative Inc. in Huntsville, Missouri. Douglas M. Ward, Bsc. Pet. has been named vice president/operations of Gold King Petroleum Corporation. He is in charge of the oil and gas activities of the company. Danny P. Sharp, Bsc. Geol. and Bsc. Min., Bsc. Econ. is manager/strategic planning for Union Pacific R.R. Production Co.


80 Robert D. Speeden, Bsc. Met. is a benefits supervisor for Gardner in Ft. Meade, Florida.

82 Robert V. Nuccio, Bsc. B.E. has retired as president of General Insurance Co. of America. Andrew W. Ex- tract, Bsc. Min. is a senior mining engineer for Jim Williams Mining Pty., Ltd. in Applecross, WA, Australia. John E. Watson, Bsc. Min., Bsc. Econ. is chairman for Horizon Gold Shares, Inc. in Golden, Colorado. Lawrence S. O’Con- nor, Bsc. Geop. is a sixth grade teacher at Laugelges Elementary School/ Panama-Bueno Vista Union School Dis- trict in Bakersfield, California.

87 Frank B. Hill, Bsc. Min., Bsc. Met is director of environmental services for Swift-Educators/ Encon in Bethlehem, Washington. John Robertson, Jr., Bsc. Geol. is a graduate student at Colorado School of Mines.

88 Paul B. Reid, Bsc. Geop. is with Digital Equipment in Federal Way, Washington. Douglas M. Nordlander, Bsc. Min. has joined Pincock, Allen & Holt, Inc. in Lakewood, Colorado. He is responsible for mine planning and project engineering, production scheduling, mine capital and operating cost estimates and mining software applications. Tony (Johanet) Samilker, Bsc. B.E. is marketing manager/Latin America, Southwestern United States for Ingersoll Rand/ portable compressor division. Ted J. Timson, Bsc. Chem. is a research associate/RF lab manager at the Univers- ity of Michigan in Ann Arbor, Michigan.
Roger P. Johnson, BSc, BEng, is a gradu- ate metallurgist with Amoco Gold Nevada Gold Co./Nevada Mine in Rhyolite, Nevada. Gregory N. Schmidt, BSc, BEng, is president/owner of Diamondback Oil Co. in Pine- mont, Texas. George Taniwaki, BSc, BEng, is a geologist employed with Canadian Gold Corp. in Houston, Texas. Michael J. Mackenzie, BSc, BEng, is ap- pointed to captain and took command of the 595th Maintenance Signal Company in Singapore. He also resides with his family in Victoria, B.C., Canada. Marianne Brzozovick, BSc, BEng, is a project engineer with Engineering in Los Alamitos, Cali- fornia. Michael E. Burch, BSc, BEng, is a staff geologist for Minco-Mac in Denver, Colorado. Joseph A. Zupan, ScB, BEng, is a construction engineer at the University of Missouri in Columbia, Mis- souri. Mark E. Wolk, BSc, BEng, is a graduate student at the University of Texas at Arlington. Sheldon S. McKitrick, BSc, BEng, is a marine research specialist for the University of Rhode Island in Narragansett, Rhode Island. Douglas S. McGarr, BSc, BEng, is a quality assurance process engineer at Western Forge Corporation in Colorado Springs, Colorado. Nathaniel H. Lencz, BSc, BEng, is a project manager for Environmental Management in New York. James A. Fritsch, BSc, BEng, is a quality control engineer for Acme Oil & Gas Co. in New York. Jerry A. Durrani, BSc, BEng, is a project manager for Project Management in Houston, Texas. Jeff S. Balden, BSc, BEng, is a staff engineer for Arco Oil & Gas Co. in Anchorage, Alaska. Cheryl M. Nykacz, BSc, BEng, is a project engineer for General Chemical in Green River, Wyoming. Rebecca J. (Archer) Reid, BSc, BEng, is a gradu- ate student at the University of British Columbia in Vancouver. Stephen C. Freeman, BSc, BEng, is a reservoir engineer with Apache Alaska, Inc. in Anchorage, Alaska.

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E. Russell Lambert, III, Ph.D., C.P.R. is an chemical engineer for North Carolina State University in Raleigh, North Carolina. Gregory J. Sturtz, BSc, C.P.R. is a chemist with Gates Energy, Inc. in Houston, Texas. Kevin J. D. Jones, MSc, BSc, is a registered professional engineer (chemical) in Prince Edward Island, Canada. His office is in Edmonton, Wyoming. Bradley J. McConaty, BSc, BEng, is a manager/purchasing agent with Tenneco Gas in Louisville, Kentucky. Skelly & Magee, Inc. is an engineer with Westhouse Ford Co. in Richmond, Washington.

Robert P. Johnson, BSc, BEng, is a graduate metallurgist with Amoco Gold Nevada Gold Co./Nevada Mine in Rhyolite, Nevada. Gregory N. Schmidt, BSc, BEng, is president/owner of Diamondback Oil Co. in Pine Mont, Texas. George Taniwaki, BSc, BEng, is a geologist employed with Canadian Gold Corp. in Houston, Texas. Michael J. Mackenzie, BSc, BEng, is appointed to captain and took command of the 595th Maintenance Signal Company in Singapore. He also resides with his family in Victoria, B.C., Canada. Marianne Brzozovick, BSc, BEng, is a project engineer with Engineering in Los Alamitos, California. Michael E. Burch, BSc, BEng, is a staff geologist for Minco-Mac in Denver, Colorado. Joseph A. Zupan, ScB, BEng, is a construction engineer at the University of Missouri in Columbia, Missouri. Mark E. Wolk, BSc, BEng, is a graduate student at the University of Texas at Arlington. Sheldon S. McKitrick, BSc, BEng, is a marine research specialist for the University of Rhode Island in Narragansett, Rhode Island. Douglas S. McGarr, BSc, BEng, is a quality assurance process engineer at Western Forge Corporation in Colorado Springs, Colorado. Nathaniel H. Lencz, BSc, BEng, is a project manager for Environmental Management in New York. James A. Fritsch, BSc, BEng, is a quality control engineer for Acme Oil & Gas Co. in Anchorage, Alaska. Cheryl M. Nykacz, BSc, BEng, is a project engineer for General Chemical in Green River, Wyoming. Rebecca J. (Archer) Reid, BSc, BEng, is a graduate student at the University of British Columbia in Vancouver. Stephen C. Freeman, BSc, BEng, is a reservoir engineer with Apache Alaska, Inc. in Anchorage, Alaska.

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an environmental engineer for the Environmental Protection Agency in Denver, Colorado. Pamela L. Dranek, BSc, Geol., is a geological engineer for Environmental Resources in Bellevue, Washington.

**88 Larry C. Medina, BSc, CIP.** is a facility planning engineer for AECO Alaska, Inc. in Anchorage. David W. Witter, MSc, Geol., is a geologist for Shell Western Exploration & Production in Houston, Texas. Nancy K. Roldan, BSc, Geol., is a geophysicist for Western Geophysical in Houston, Texas. J. Scott Sammons, BSc, Eng., is a project leader in the U.S. Army Corps of Engineers at Jacksonville, Florida. Leonard Wood. Gregory P. Nickel, BSc, Geol., is a geologist for Asarco in Wallace, Idaho. Samuel Chang, BSc, Eng. and BSc, Geol. 88, is working for Schlumberger Overseas S.A. in Thailand as a field engineer. His responsibilities include production logging, perforation, and surface welltest operations.

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**Darlene R. Pauli**

**Mines Magazine**

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**William P. Morris**


Morris stayed with Dural for the remainder of his career eventually serving as president and director. He retired from Dural Corporation in 1972.

continued on next page
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Marshall C. Crouch, III (GeoE '67) served as president of the association in 1985. He serves as a caller for the three Denver alumni sections, and is a class agent. He was instrumental in organizing a well-attended 20th class reunion in 1987, and his dedication and service to the association have been unsurpassed.

Dr. Michael S. Nyikos, former vice-president of student affairs at Mines, served as the CSM president's personal representative to the association. He made a valuable contribution to the operation and advancement of both the association and the alumni in general. Nyikos attended numerous section meetings around the country, and was always available to alumni and students. He left Mines last year to become vice-president of development at Mesa College in Grand Junction. Nyikos' son, Chris, is a 1981 graduate of Mines.

Dr. Craig Van Kirk, head of the Petroleum Department at Mines and a Mines graduate (B.S., Pet. '72) makes it a point to attend student and alumni functions, including the banquet for graduating seniors, and has quietly made a point to sponsor all the graduating seniors in the Petroleum Department who were not being sponsored for the banquet by an alumnus.

Each spring Van Kirk gets involved in the reunion weekend by sponsoring a reception for graduating petroleum engineering students, their parents, and visiting alumni. He has served numerous times as a speaker for alumni section meetings.

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