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Golden, CO 80401
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alumni events calendar

Feb. 9—Alumni Day College, Great
Center, CSM Campus

Feb. 9—FOUNDER'S DAY BANQUET, Den­
er Athletic Club, Denver, CO, 8:00 a.m.

agement for the Mining Industry," Denver,
CO. For further information contact K. M.
Barbour, CSMMA.

March 18-20—Cont. Ed., "Maintenance Man­
agement for the Mining Industry," Key­
stone, CO. For further information contact
K. M. Barbour, CSMMA.

April 8-10—Cont. Ed., "Maintenance Man­
agement for the Mining Industry," Key­
stone, CO. For further information contact
K. M. Barbour, CSMMA.

April 11-13—E-Day

May 10—COMMENCEMENT

June 3-5—Cont. Ed., "Maintenance Man­
agement for the Mining Industry," Key­
stone, CO. For further information contact
K. M. Barbour, CSMMA.

additional reading...

Patricia Curtis Petty

Coal Slurry Sparks Controversy
Leanne Gibson

features

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For those of us associated with the energy industry, the days of the ignoble hostage holding and humiliation at the hands of the Iranian students and government have had a special meaning. As Americans, or friends of the United States, we have been indignant, worried, frustrated and dismayed by the events in not only Iran but other Modern nations. As alumni of the Colorado School of Mines, faculty or other associates of the School, we have been perceiving these uprisings and reactions against the U.S. in another manner, one which fills us with long-term forebodings.

At last, to our sorrow, the prophecies of knowledgeable persons in the petro­
eum and natural gas industries have begun to come true. While just a short time ago the fortunate inhabitants of the United States enjoyed all the benefits of oil and its many byproducts, we are now facing shortages. These were foretold by many of the industry, and result not only from the disturbances and rising nationalism in the predominantly Modern oil producing countries, but from our own governmental policy deficiencies.

For years, the petroleum industry has been urging more new development, secondary recovery, and exploitation of tar sands and oil shales within our borders. These have been slow in coming, heavily burdened with restrictions and priced beyond the means of most companies. Now, we are in the un­
viable position of cut-backs in pro­
duction by even friendly oil producers, elimination of some sources of supply and an inevitable upsurge in petroleum prices.

Other fuels are available to take up the immediate shortfall, but they too are hem­
med about with restrictions on pro­
duction. We are in the midst of a fateful in the wave of the importation of the Three Mile Island near-disaster, and is facing new challenges in every direc­
tion. It is not at present a viable alter­
native to oil-fired power plants, for example.

Coal mining, while being touted as a great short-term savior, is also laboring under difficulties imposed by govern­
mental regulations and the public’s per­
ception of its side-effects.

Let’s take a look at the realities of our situation now.

There are several givens which we must face in the energy industry. The most dramatic of these is the familiar and the dismal prospect for imported oil and gas. If a miracle should occur and an unlikely change of heart take place in the Near East, the damage done by even a relatively short cessation of production and exportation in that area will be sig­
nificant. The very least of the impact which we can expect will be of greatly increased costs, and this at a time when inflation is rising, and projected to remain, double-digit. We are looking, then, at the given which says that not only wholesale but retail prices for all petro­
leum-related products will rise dramatically.

After the recent wave of anger, en­
couraged by such learned oil men and economists as Jimmy Carter and Tip O’Neill, against the oil companies’ “excessive” profits. Little or no understand­ing on the part of the public will be found for these rising prices. The petrol­
leum industry is in for a tough time as these prices and shortages begin to affect the country.

Another given. With the number of constraints on building new installations, opening up new mines, putting power plants on line, there is very little, near­
term relief at hand. How many years does it take to put a new refinery into operation? Five, six years—one the permits are all in hand? How long will it be from the first permit till the new mine is producing coal? Several years—probably a conservative esti­
mate. Lead times for nuclear plants bring one into even more terrifying projec­
tions. We are looking at some real short­
term—hastening—and significant shortages.

The United States has been, for many years, suffering from a downward turn in pro­
ductivity. There are many reasons advanced by those who study these phenomena, including education

factors, the "me generation" syndrome, where individual pleasure supercedes societal needs, and the lack of stimula­
tion of the economy by capital investors. The causes may be many, but the results have been obvious as this country has recorded the lowest rate of productivity among the developed nations. This is a matter of world-wide concern, but affects the U.S. dramat­ically at this time when we are finding ourselves in an extremely tight bind in worker output and worker involvement with productivity. It is not unreasonable to suppose that this low productivity factor, already a matter of deep concern, will be even more depressed by the rise of oil prices and the accom­
pompanying drop in capital investment. This is a given already with us, and one which is likely to become more important very soon.

The list goes on. And on, we fear. What are some of the things which might begin to do, as concerned citizens and as engineers? Too on the list of priorities is the effort to enlist the public on the side of the energy industry. We must forget our intramural differences and pull together as a team to convince people of the United States that we do have the tech­
ology and the will to accomplish much development if that's going to help keep those aside and beat the drums for solar and nuclear power needs—but I'm willing to put those aside and work towards a future for solar development if that's going to help keep a few Americans warm! Compromises will have to be made on many fronts if we are to accomplish all that is essential in the next few years to insure that we do have enough fuels to keep us warm.
SLOPE 24' WIDE X 8' HIGH
SHAFT 23' DIAMETER DIVIDER WALL
FOR A. T. IVIASSEY COAL COMPANY
CONVEYOR
LOADING PAD
1208 QUAIL ST. / DENVER, CO 80215 / (303)234-0273

FOR THE COAL MINING INDUSTRY
HARRISON WESTERN CONSTRUCTED
A MINE SLOPE, A SHAFT, AND
SURFACE COAL HANDLING FACILITIES
AT TUG RIVER COAL MINE
FOR A. T. MASSEY COAL COMPANY

PROJECT DETAILS
SHAFT 23' DIAMETER DIVIDER WALL
SLOPE 24' WIDE X 8' HIGH
CONCRETE BLOCK DIVIDER WALL

SURFACE FACILITIES
CONVEYOR COAL STACKER LOADING PAD SLOPE HOIST

HARRISON WESTERN CORPORATION
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Western utility companies currently receive and consume large volumes of western coal in their existing power plants. They have additional plants committed to using western coal in various parts of the country, and these plants will result in a tripling of their consumption by 1985. Current western coal supplies for existing plants were secured well in advance of the time coal shipments began by means of long-term contracts with mining companies. The only practical means currently available for transporting the large volumes of western coal that the utilities will need for their plants over the long distances between the power plants and the particular mines serving them is by unit train service. Adequate rail transportation is therefore essential to the efficient operation of the committed power plants as fuel suppliers.

The western electric utility companies all attempt to meet the electricity needs of their customers at the lowest possible cost. They chose western coals as the fuel for their plants only after their economic analyses of other possible fuels, including coals from other sources, showed that the delivered price for western coals and the capital and operating costs of burning these coals to electricity in compliance with air-quality and other environmental laws, resulted in the lowest overall cost for producing electricity.

Choosing western coal was by no means a foregone conclusion on the part of these utilities. By and large, they selected low-sulfur western coals over higher-sulfur mid-western or eastern coals to avoid the necessity of installing sulfur dioxide removal equipment to meet the requirements of air pollution laws. Such equipment was perceived as being too expensive to install, too costly to operate, and too unreliable. However, because of the need, available western coal deposits were lower in heating value and located at greater distances from their power plants than the higher-sulfur content coals, they realized that the choice of western coal would result in the need to transport more coal over longer distances to produce equivalent energy. Freight costs for transporting the coal have generally exceeded the price of the coals themselves for each plant using western coal, and make up the most substantial part of delivered fuel costs. The decisions to build western coal-fired plants reflected, in many cases, negotiations with railroads as to what the rates for hauling various coals would be when coal shipments began.

The utility companies which decided to build new plants to burn western coal entered into long-term contracts with mining companies for specific contracts of known characteristics well before plant construction was begun. Their purpose in doing so was not only to secure long-term reliable coal supplies for their plants (one of the many prerequisites for regulatory approvals for construction), but also to enable them to design and build their boilers and other facilities to burn specific coal supplies over their useful lives at the lowest possible cost.

Having contracted for particular coal supplies and commenced construction of power plants to burn them, these energy-intensive facilities are committed to the particular railroad services available to their customers. The railroads have an obligation to deliver the coal on a regular basis and at reasonable rates to keep the utilities operating at a minimum of cost.

The relative cost, and quality, of the rail services available from their mines to the utilities are extremely significant to each of the western coal producers. Mining companies must depend on adequate rail service to meet their obligations to deliver coal to their existing customers. Moreover, they cannot compete effectively with rail services available from their mines if customers perceive that they cannot be assured of receiving coal deliveries in accordance with reasonable service agreements. Mining companies served by railroads which provide poor service or charge high freight rates can do little to compete with other coal producers by cutting their coal prices. Companies must depend on adequate rail services available from their mines if they are to remain competitive.

Interest of Western Coal Producers
Western coal producers must likewise depend on particular railroads' willingness and ability to supply transportation services once they have obtained the rights to mine coal deposits, executed sales agreements, and opened their mines. Their only practical means of making their product available to their customers is via railroad. Indeed, the availability of rail access to a coal deposit at a reasonable price is a significant factor in determining whether a mine can be opened at all.

Adequate Rail Service
Western coal producers and utilities have invested enormous amounts of capital in specialized plant and equipment in an effort to assure that they will receive the rail services they require. Mining companies have spent millions for rail spurs to mines, rail spurs, train load-outs and coal storage facilities so that unit trains can be loaded efficiently.
their increased cash outlays. Electricity to charge higher prices for electricity to other fuels in response to these cost increases cannot switch from western coal if these plants go awry, but they currently may see their fuel cost calculations for these coals keep on hand at the plant. Unit train stockpiling and storage to prevent a mine shutdown if coal mine operators build adequate storage capacity if rail service is interrupted for more than a day. Coal mine operators are also adversely affected by poor rail service. Once a western coal mine's storage capability is full, it must halt various mining operations until trains arrive to haul coal away, thus permitting coal mining to resume. Coal mine operators build adequate storage facilities to permit them to meet reasonably regular train schedules, but because of the enormous daily tonnages produced at most western mines they cannot build enough storage to prevent a mine shutdown if rail service is interrupted for more than a few hours. Coal stockpiling and storage in the pit cannot be used to keep coal mine operators from the Powder River Basin. The other issue is service. The BN has indicated its inability to supply sufficient locomotive power to serve customers which have supplied their own cars. Turn around times, as measured against the freely given times by the BN, have become scandalous. The BN has yet to show that massive rate increases are the cure-all for the problem. A study of the Western Coal Transportation Association (50-60 corporations) member experience in service from BN in the Powder River Basin conducted

This year shows that turn around times experienced versus originally promised times to be typically:

<table>
<thead>
<tr>
<th>Utility movement</th>
<th>% Increase</th>
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<tbody>
<tr>
<td>Utility movement a</td>
<td>-18%</td>
</tr>
<tr>
<td>Utility movement b</td>
<td>+45%</td>
</tr>
<tr>
<td>Utility movement c</td>
<td>+35%</td>
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<tr>
<td>Utility movement d</td>
<td>+140%</td>
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<tr>
<td>Utility movement e</td>
<td>-13%</td>
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<td>Utility movement f</td>
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<td>Utility movement g</td>
<td>+11%</td>
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<td>Utility movement h</td>
<td>+19%</td>
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<tr>
<td>Utility movement i</td>
<td>+24%</td>
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<td>Utility movement j</td>
<td>+40%</td>
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<td>+80%</td>
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<td>Utility movement m</td>
<td>+45%</td>
</tr>
<tr>
<td>Utility movement n</td>
<td>+74%</td>
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</tbody>
</table>

This service record indicates that there is room for a competitive carrier in the Powder River Basin. The recent events on the energy front indicate that this is a trend which has been established by the BN. It has not yet shown that massive rate increases are the cure-all for the problem. A study of the Western Coal Transportation Association (50-60 corporations) member experience in service from BN in the Powder River Basin conducted

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Energy Use in Colorado

by Robert Case

Alternatives Reducing Transportation Energy Consumption

Transportation—of goods and people —accounts for 35 percent of all fuel consumed in Colorado. Much of this concern over saving fuel focuses, then, on conserving energy for transportation.

In general, Colorado's unimproved fuel consumption is considerably lower than that of the nation as a whole. Colorado's transportation energy, in 1975, was 85 percent of the national average. This is largely because the state's transportation system is less extensive and its population is more dispersed than that of most other states.

Attempts to conserve transportation fuel nationwide have been made by improving vehicle design, developing new or alternative fuels, reducing travel needs, and getting the most mileage from each unit of fuel consumed. Experience with air travel, however, has shown that these actions would affect only a small portion of fuel consumption.

There are a few large-scale actions that could affect transportation energy use. The Federal Railroad Administration is already considering alternatives to the 65-mph highway speed limit. If these actions are successful, they would reduce travel time and reduce the need for travel.

The costs of alternatives to reduce energy use vary widely. At one extreme, some alternatives not only save fuel but also produce other benefits as well (quality of life, for example) and total savings accompany the action. At the other extreme, some alternatives have high costs for each gallon of fuel saved because they involve expensive facilities or maintenance and do not yield many related savings, such as safety. These alternatives tend to need large administration and affect many vehicles and operators on a continual basis.

Other Transportation Effects

The travel time effect varies widely among alternatives. Some alternatives, especially those that improve traffic flow, do not produce any increase in travel time. On the other hand, other alternatives increase travel time, including the shift to higher occupancy vehicles, actions to restrict parking, and the measure enforcing fuel efficiency.

A few actions result in "voluntary" travel reduction. This effect typically

"bad ordering" of cars and the removal of those cars from the train. In sight of nine instances, the railroad has not notified the consignee or consignor promptly when a car has, for some reason, been removed from the train. At the end of this long story is the simple conclusion that the lack of expeditiously conveyed detailed information as to our location, condition, availability and spares requires the immediate expenditure of funds to relieve the problem when the management system built through accurate and swift data retrieval and storage system might recover quickly and very well avoid the problem.
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GARDNER-DENVER

The hole kit 'n kaboodle from Gardner-Denver.

Figure 1: Colorado Highway Transportation Energy Use

<table>
<thead>
<tr>
<th>uso</th>
<th>TRAFFIC-CONTROL</th>
<th>COMMUTE</th>
<th>SCHOOL</th>
<th>SOCIAL-REC</th>
<th>AUTO</th>
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<tr>
<td>12.3</td>
<td>13.0</td>
<td>8.8</td>
<td>8.2</td>
<td>8.1</td>
<td>15.3</td>
<td>6.7</td>
<td>6.2</td>
<td>5.1</td>
<td>4.6</td>
<td>1.1</td>
<td>1.0</td>
<td></td>
</tr>
</tbody>
</table>

Note: X = Percentage of Total Energy Use

<ref>Source: Colorado Highway Transportation Energy Use, Transportation Department, Colorado Department of Revenue, Colorado Registration and Receipts Reports.</ref>

Discover Plymouth’s Rock—a mining locomotive that’s built to stay on the job. Year after year. Plymouth builds all of their mining locomotives rock-hard from the best combination of material, componentry, and engineering available. And there’s a Plymouth Rock in a gauge and tonnage to satisfy just about any mining locomotive requirement. Take a long hard look at the efficiency of your own operation. Then take a long look at a hard locomotive, Plymouth.

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Mining locomotives. When they don’t perform, you don’t produce. You need one that’s as tough as the job.

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Plymouth Locomotive Works, Inc

The mines magazine • January 1980
14

1980, Eugene "Buzz" Dewit, Chem., was elected to the post of presi- dient and certificate from Amadas Lodge No. 141, A.F. & A.M. Buzz also claps out to Golden to attend Homecoming and to attend the Class Agent Conference. He wishes that he had an entire day of Homecoming but he wondered why his friend Art Austin wasn't there.

40 Recently elected to a three-year term on the Board of Directors of the American Society for Testing and Materials was William M. Hunsicker, Met. E., M.Sc., 48, BSC., 51, Medallist '72, who is newly-appointed Dean of Equity at RSM.

41 Glenn H. Lancaster, P.E., has been named president of Ocean Minerals Company.

43 The keynote speaker of the SEIG-CSMMA luncheon in New Orleans on November 7th was William C. Kellogg, Met. E. The meeting well attended, including several members of the Society of Student Geophysicists from Colorado School of Mines.

48 George C. Bodine, Jr., Met. E., was in town for Homecoming. George was a member of the 1929-30 undeclared Mines football team.

49 Haskin Research, Golden, has announced the appointment of Robert B. Cowen, Met. E., as Vice President. Charles R. Flech, E.M., is President of Charles Ringar Company.

50 Dr. Rossl B. Shappu, Met. E., M.Sc., Met. E., 50, Ph.D., '53, VanDass Gold Medal '74, has been awarded one of the twelve distinguished member awards for 1978 by the American Institute of Mining Engineers. Mines Grosvenor, E.M., is the newly-named technical representative for Filtrol Corporation in Colorado.

52 Richard P. Reed, Met. E., and Arnold Orange have formed Emerald Exploration Consultants, Inc. Ernest is formerly with Mobil Oil. His new company will specialize in integrated interpretation of frontier areas and will be located in Austin, Texas.

53 Visiting in New Orleans at the SEIG meeting was James F. Huff, Geo. E., Jr. and his wife Ann in Superdel, Texas. George Minick, Met. E., M.Sc., Met. E., '74, recently was named as Vice President of Golden Klawans.

56 Roland G. Hassel, P.E., is working as Manager Asphalt Sales East/South for Amoco Oil Company.

57 Active in organizing CSM Alumni activities in the Arizona area is a R. "Ree" Briggs, P.E., Delbert F. Tolten, P.E., is a technical representative for Filtration Corporation in Colorado.

59 Ernest Berkman, Geop. E., and Arnold Orange have formed Emerald Exploration Consultants, Inc. Ernest is formerly with Mobil Oil. His new company will specialize in integrated interpretation of frontier areas and will be located in Austin, Texas.

62 Congratulations to Dr. Thomas R. LaFalle, Met. E., GEOP. He was recently named as an Honorary Member of the Society of Exploration Geoscientists.

63 Professor Claudio Maguller, E.M., has been appointed to a two-week special committee for the Brazil Minister of Mines and Energy. This special task force was created to strengthen the role of the private sector in the Brazilian mining sector. The members of this task force were selected for their knowledge of Brazilian mining policy and for their previous contributions to the Brazilian mining sector.

65 Keith S. Green, E.M., was on campus October 30th offering new graduate courses for his company. Keith is manager, mine operations, for Dresser Industries.

66 At the recent SEIG meeting in New Orleans, James K. Apolitique, Geop. E., M.Sc., Met. E., 96, BSc., '74, was honored for an outstanding presentation of his 1978 paper, "High-Resolution Seismic Study in the Gas Hills Uranium District, Wyoming."

68 Donald L. Beckwith, E.M., has been appointed manager of operation and planning, National Resources Department, FMC Corporation's Industrial Chemical Group. He will be responsible for the planning and financial functions of the department and has general responsibility for all activities and profits. FMC is a major producer of machinery and chemicals for industry and agriculture.

70 Norman C. Franke, M.P.S., has been appointed assistant to the University of Denver for his work as an assistant for the SIEG meeting in New Orleans.

72 Brian D. Kippen, E.M., has joined the engineering staff of Amoco Production Company in its Montana District Office.

74 Robert B. Liss was recently at Mines recruiting students for his firm, International Harvester.

76 Working as a mine superintendent for Semrock Refineries is James H. Graham, BSc., M.Sc., H. E. N. St. Pierre, BSc., Met. E., who joined the engineering staff of Champlin Petroleum in Rock Springs, Wyoming. He is currently registered as a Professional Engineer in South Dakota.

78 Promoted to Headquarters Company Commander, 561st Supply & Service Battalion is Jeffrey A. Russell, BSc., C.P. At the recent SIEG meeting in New Orleans.

80 Working as a consulting geologist for United States Steel Company, Michael M. Johnston, BSc., Met. E., has been promoted to Lead Auditor for Battelle Memorial Institute.

82 Richard P. Reed, M.Sc., Met. E., was awarded the Department of Mineral Science Medal in late October. The medal is the second highest honor conferred upon an employee for meritorious contributions of unusual value to the Department. The basis for Dr. Reed's award was his major con- tribution to the field of mechanical prop- erties and fracture mechanics of metals, especially at low temperatures. His work is directly applicable to such cold-weather areas as Alaska, and has already been tested in such locations. Dr. Reed has been an employee of the National Bureau of Standards in Boulder, Colorado, Department of Commerce, since 1956.

84 John Read Beers, 53, Librarian, Geophysics, Lehigh University, Pennsylvania, is the new director of the Geological Survey of New York.

86 New York Life Insurance Co.

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89 SOHIO, is looking for an operations manager for its ura- nium mining facility in New Mexico. Candidate will be responsible for planning and managing both underground and surface mining and milling operations for ore concentrations. Strong background in budget operation and forecasting plus long range forecasts for discounted cash flow and return on investment desirable.

91 Position offers high visibility in a major corporation with excellent career growth potential. A degree in mining engineering and financial functions of the depart- ment is necessary.

93 Either underground mining operations or strip mining opera- tions is necessary. A college graduate with a degree in mining engineering and a background in budget operation and forecasting is necessary.

95 Qualified applicants interested in expanding career horizons, sand resume and other requirements to Mr. E. R. Miller, The Standard Oil Company (Ohio), 47310 Milford Building, Cleveland, OH 44141. We are an equal opportunity employer, m/f.
New Orleans
SENG Convention
The CSM Alumni luncheon held in New Orleans at the annual SENG convention attracted one of the largest turnouts during any convention series in the past several years—143 Miners and friends were on hand.
John Petrocco '50 and John Wallace '51, both active members of the New Orleans section, rendered great assistance in promoting and handling administration of the event.
Ken Lamer '50, introduced a visiting alumnus, Dr. Ku Kung Hsu '36, one of the most eminent geophysicists in China. Dr. Ku holds positions equivalent to being president of several of the top geological societies in his country. He was very pleased to participate in the convention as a whole and especially to meet so many Miners.
The program was given by Bill Kellogg '43, who spoke on a question of significance to all geophysicists, the need to evaluate all data with a critical eye. His comments were illustrated with a number of pertinent examples, including some outstanding geophysicists who had ignored too much requirement to the amusement of the audience who overlooked it.
A total of 31 Mines seniors in geophysics who were attending various items of interest in current happenings at Mines were Spencer '44, received a special thanks for his efforts in helping to organize the meeting.
San Francisco
The annual dinner dance of the Bay area group was held at the Treasure Island Naval Officer's Club on November 9. The only business transacted in the evening was the election of J. Douglass Pitts, Chem. E.'68, as president of the group. The Executive committee which will assist Doug in the year is comprised of D. L. Watson, E. M. '60; Mr. and Mrs. Harry M. Conger, E. M. '60; Mr. and Mrs. Richard A. Arterburn, Met. E. '66; Mr. Dusty F. Boyd, Met. E. '52; Mr. and Mrs. Doug G. McIntosh, E. M. '66; Dr. Dale Bingham, BSc. Met. '70 and Terrie; Mr. and Mrs. John D. Bethe, E. M. '42; Dr. Larry G. Hayes, E. M. '52; Mr. and Mrs. Mike P. Cleary, MSc. Pet. '78; Mr. and Mrs. Tom Aude, E. M. '62; Mr. Nancy Money, MSc. Geop. '77; Mr. and Mrs. Curt J. Tempest, Geol. E. '53; Mr. and Mrs. Rich Martin, CPR '74; Mr. Ken Larner '60, introduced a visiting geophysicist who had recently developed the oil well. The meeting on November 8 to coincide with the visit of Executive Director George Mitchell to their city, following the SENG convention in New Orleans.
Twenty Miners and their spouses attended the conference. It is to be hoped that this band, augmented by some other musical virtuosos, will appear again on March 17, 1980.
San Diego
In conjunction with the Geological Society of America meeting in San Diego in early November, the CSMAA members present held a luncheon meeting. Twenty persons heard Dr. Robert Wermer, CSM Geology Department, talk about the new staff and different emphases in the Geology Department. Citing the change in personnel due to retirements, Dr. Wermer gave the group a run-down on the rebuilding phase of the department, which is proceeding very well. He also spoke briefly on the Resource Fund and its implications for the School and the Geology Department in future planning.
Joe Goldhammer, Grad. E. '60, was assisted by Hart Phinney, Chief Librarian, CSM in arranging the luncheon and program. Also attending the event was Gus Kaplan, CSPG '41, who reported on the days of the famous undefeated 1939 football team, which was recently honored at the 1979 Homecoming celebration.
in memoriam

Grace C. Updike McDermut Mulligan
Grace C. U. M. Mulligan, E.M. 1903, died in Washington, D.C. January 1, 1979. Mrs. Mulligan had been featured in MINEES Magazine in November, 1979, as the oldest living graduate of the Colorado School of Mines. The Alumni Association was apprised of her death by her attorney only recently. Mrs. Mulligan's interesting story, excerpted from a MINEES article, was featured in the Jan. 1, 1979 issue of the NBS standards publication, the Boulder Laboratory News. Mrs. Mulligan entered CSM in 1899, a descendant of an aunt who had lived in a gold mine, the Rizzi Dazles, and needed someone to operate the property. By her calculations, her niece would make a good engineer.

Her propensity was to be realized, but not as a mining engineer—by the time the young lady had graduated, the Rizzi Dazles had sold, and Grace McDermut was forced to find work in other quarters.

In 1904, she applied for and was accepted into a position with the National Bureau of Standards, where she remained for 44 years, attaining the position of Assistant Chief, Density and Fluid Meter Sections, Mechanics Division of the NBS. Her work was widely recognized and acclaimed, an achievement she regarded with some amusement, since her original hiring in 1904, the first woman in the NBS, had been considered to be an "experiment."

Grace McDermut Mulligan is survived by her son, Barry, Jr., who makes his home in Washington, D.C.

Theron E. Giggy
Theron "Ted" Giggy died, after a brief illness, on October 15, 1979. He was suffering from cancer, and died at age 72 in Battleground, Washington.

Born in Clearfield, Pennsylvania, Giggy entered CSM in the late 1920's and early '30's, graduating in 1934 with a degree in Mining Engineer.

Giggy was for many years an engineer for Ingersoll Rand, and retired from that company in Arcadia, California. He and his wife Hazel had lived in Battleground only 1/2 years before his death. She remains at the family home. A memorial of ATO and Blue Key, he was an active member of the CSMA and a loyal alumnus of the School of Mines.

In addition to his wife, he is survived by two daughters, Miss Sulley Lowrey and Mrs. Nancy Shelley, six grandchildren and a sister, Mrs. Fries Hanawil.

John Murray Demmer
John Murray Demmer, E.M. 1928, died in Boise, Idaho September 15, 1979. He had been in failing health for some time. The Demmers had lived in Boise six years. Demmer was born in 1913 at Rapidville, Indiana, moving with his family to Denver at age 6. He attended Cathedral grade and high schools, and entered Mines in 1932. He was a lifetime member of Kappa Sigma and a prominent of retiree for CSM. Retired at the time of his death, John Demmer had served in various capacities in the Faculty Alumni administration. At the time of his retirement he was head of this department in Wyngard. Rising as a roadman, his career covered 35 years and many interesting places, including the Cananade and the Albahtia Highway. He also worked for a time as area and design engineer in Colorado.

In 1971, he was selected Civil Engineer of the Year, one of the many awards he received for his professional, civic, church and humanitarian activities. He was particularly active in his church, and served for several years as lay reader at St. Mary's Cathedral in Cheyenne.

Demmer and Angela Giggy were married in 1944. In addition to his wife, he is survived by a sister, Joan Harrigan of Oklahoma City and two cousins.

Memorial may be made to the CSM Alumni Association and to the Dominian Sisters of the Sick Poor, Denver. (Since Mr. Demmer's death, several friends have made contributions in his honor to the CSMA.


This timely study commenced in 1978 and is the third major independent study that Resources for the Future has commissioned by the Foundation in the last eight years. The first study is Time to Choose (1974), focused on the theme that the United States could and should use less energy than is suggested by historic growth patterns. The second study, Nuclear Power Issues and Choices (1977), focused on ways that the country could and should handle nuclear policy. The former study has been criticized because it failed to give sufficient emphasis to the role of market forces, the study of nuclear issues, as the title would suggest, was uniquely tuned to the energy form. By contrast, Energy: The Next Twenty Years examines the broad spectrum of energy and its major constituent forms within the context of public policy concerns given market or economic forces.

For Energy: The Next Twenty Years, individuals in the study group were chosen from a wide variety of professional experience, including engineering, economics, public policy, and the role of science and technology. Background papers commissioned by the study group are to be published as a supplementary companion volume. The published text contains a key reads oriented glossary and a rather extensive index.

The effort behind Energy: The Next Twenty Years brings to the surface seven specific "realities" that the study group feels must be acknowledged and properly handled to avoid utter chaos in the energy arena. Though individuals in the group may differ on minor points of view, the seven realities were unanimously agreed upon without reservation. Specifically, these realities are:

1. The world is not running out of energy.
2. Middle East oil holds great risks, but it is not probable that the world will remain dependent on it for a long time.
3. Higher energy costs cannot be avoided, but can be delayed by letting prices rise to reflect rising costs.
4. Environmental effects of energy use are serious and hard to manage.
5. Conservation is an essential "source" of energy in large quantities.

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Hydrogeology
Engineering Geology
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Construction Quality Control
Construction Materials Testing and Engineering
The CSMAA was represented in Dallas, Texas at the annual communications seminar sponsored by the American Mining Congress by Patricia Curtis Pettry, Editor of the MINES Maga-

Dr. Petty was invited by the AMC to publish her research findings on the institutional and public relations connections of the event. Symposia were held in September in Belgium. She was a speaker, a participant, and included with the Symposia reports a brief condensation of her own paper, presented in Belgium.

In this second workshop, the session is designed to bring together public relations personnel, managers of mineral industry departments, and resource people, skilled in the art of communication. This year's session featured sections on development of good audio-visual materials, corporate communications, crisis response and case histories of public relations situations. There were over 150 par-

The Arthur Lakes Library will have a duplicate book sale, January 21 through January 25, 1980 in the first floor conference room. These duplicate books, journals, government report maps are no longer needed by the Library and are being offered to students, faculty and alumni through a Dutch auction. Prices will start at $2 for books and $5 for journals on Monday, January 21, 1980 and will be decreased each day until Friday, January 25, 1980. Proceeds will be used to improve the Arthur Lakes Library.

Dr. Daniel M. Bass, Jr. has been named the Kerr-McGee Corporation Professor in Petroleum Engineering, a newly established position at the Colorado School of Mines. Funded by the Kerr-McGee Corporation under a four-year, $200,000 grant, the professorship is the first in petroleum engineering at the School. Bass, professor and head of the petroleum engineering department since 1982, will assume the Kerr-McGee professorship in January 1980.

Bass is well acquainted with both academic and professional petroleum engineering. He has traveled extensively in the Near East, studying the technicalities of petroleum production and the social and economic factors that influence that production. He has also served as an advisor to many petroleum firms, including Tenneco Oil Co., Continental Oil Co., and the Northwest Pipeline Co. In 1977, he helped with an extensive review of Saudia Arabia's University of Petroleum and Minerals (UPM) in Dammam, Saudi Arabia.

Bass has received his baccalaureate degree in petroleum engineering in 1950 from Louisiana State University and his master and Ph.D. degrees in petroleum engineering from Texas A&M University in 1955 and 1970, respectively.

Before coming to Mines, Bass was an associate professor at Texas A&M, a consulting editor for "Monitor Magazine," and an industry consultant from 1954-62. He rose from roughneck to district reservoir engineer for Magnolia (Moil) Petroleum Co. from 1950-52, and then served as a research engineer for the Texas Petroleum Research Commission from 1952-54.

Bass is a member of the Society of Petroleum Engineers of AIME, Sigma Xi, Tau Beta Pi, Phi Epsilon Tau and Phi Theta Tau. He is listed in American Who's Who in America and has written or co-authored six books, including the "Petroleum Section" of the 1979 World Book Encyclopedia.

Dr. Daniel M. Bass, Jr., chairman and chief executive officer of Kerr-McGee, said, "As we approach the end of our 50th year as a diversified natural resource business, we are proud to be associated with the Colorado School of Mines and with the Kerr-McGee professorship." Bass said, "The School has been instrumental in providing ongoing talent and knowledge to the development of the petroleum en-

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Fluor Workshop Presentation

Patricia Curtis Petty, Editor of MINES MAGAZINE, presented a report on the Symposiums Conference to a group of top-revenue executives at Fluor Mining and Metals, San Mateo, California, Nov. 28th. The session also included a workshop on media relations techniques.

Fluor participated in a challenge grant instituted by a professor at CSM which funded Ms. Petty's trip to the worldwide public relations seminar in Belgium. The grant was set up with the proviso that groups contributing to it could equally sponsor a report and information on conclusions of Symposiums, upon her return. A group of Mines alumni from the Mining Department of Stephen Roger and Women in Mining were the other direct participants in the grant. Sponsorizing members of Women in Mining, Johns-Manville and Rocky Mountain Energy, assisted the WIM group in their participation.

Symposiums, first worldwide mining public relations seminar, was attended by nearly 100 delegates from 18 countries. The goals of the workshop, as defined in their conclusion that the mining industry needs a more positive public image. They will be active in promoting this image in the media and in the newsmakers wherever possible.

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Wrestling

With but three lightweight returners, and freshmen filling the remaining positions, the Orediggers wrestling team will have to overcome lack of depth and inexperience to have a successful 1979-80 season.

"The upcoming season appears to be rehearsals," said Coach Jack Hancock, "This team will be one of our most inexperienced in recent history." Last year's team, plagued with injuries and suspensions was only a skeleton crew. Leading the squad is 142-pound senior Tom Kuketa, just about to emerge as the stronger of the 126-pounders, with Brian Kennon returning heavyweight on the squad.

Former 190-pound category by second semester, when returning heavyweight Larry Keller will be eligible for competition. Keller, quick and strong at 6-4 and 255 pounds, scored three falls under 40 seconds as a freshman two years ago.

Sophomore Tom Muth, wrestling this year at 150 pounds, is the only other returner on the squad.

Freshman comprises the remaining team members. Mike Modach, Ron Nutrich and Ron Rosenzweig are vying for action at 118 pounds. Ron Nutrich has a very strong return for emerged as the stronger of the 126-pounders, with Ken Kronen providing the depth.

Bill Myrick represents the on-deck returners at 134 pounds and is chairman of the Inter- national Development Forum, a worldwide group of eminent social scientists and scholars, that includes several Nobel Prize winners.

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**Women’s Basketball**

With more depth and more competition for starting spots than last year, Colorado School of Mines Coach Will Meylink expects her basketball team to fare well in the 1979-80 season.

Leadership for the four-year-old team is being provided by seniors Lauri Myers, a 5-4 guard, and 6-1 center Ramona Stash, who will be returning.

Stash’s 13-point scoring and 11 rebounds average was the team’s highest last year, but Meylink notes that even she is being given a run for her money by a starting spot by 5-10 freshman Mary Maugher, from Pomona High School.

Sturm, she said, is working under the basket much better this year and is playing aggressive basketball. "It will be a good year for her if she continues the way she has," says her coach.

Returning Robin Yale is working well in practice, says Meylink, and Junior Sandy Wrobel, a transfer from Denver University, "does very well underneath and is a good team player."

The nucleus of five returners is rounded out by sophomore Sara Tongue. The sister team of Tammy and Pam Crump will also add the team this year, she said. Tammy, a freshman, "is quick and has a nice outside shot, and she will see action in the guard position," Meylink said.

Pam, a transfer from Western State, will be eligible for play in the second semester.

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Men’s Basketball

Just as last year, the Colorado School of Mines men’s basketball team will count heavily on the play of a young returning team led by its bid for a fresh finish in Rocky Mountain Athletic Conference (RMAC) play.

But there's a difference this year. The quickness and depth of last year's young team will be bolstered by an experienced factor. Although the team will be without forwards Paul Glsen and Dave Schiedegger because of pre-season injuries, all five starters will come in with playing experience, hoping to improve on the team's 11-15 season record and 7-13 state in conference play.

Sophomore center Jeff Rhodes, who as a freshman scored on 63 percent of his field goal attempts en route to a 10.6 scoring and 10.4 rebounding average, will lead the returners. Two other players—forward Bert Fleck and guard Tom Hermann—will return with scoring averages of more than 13 points.

Fleck, as a freshman, led last year's scorers with a 14.6 average, and Hermann had 13.7 points a game. Also, in the starting lineup as season play gets underway will be junior forward Greg Lambbee and sophomore Doug Genty.

Coach Jim Darden, entering his 26th year as head coach with a 248-365 record, also expects freshman Darrell Miller to see action, as will returning backup center Gerald Kelton, senior guard Jim Ricotta and returning forward Matt DeMarco. Rounding out the team are returning guard Duane Dombrowski and newcomer forward Ron Quinlan.

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Homecoming 1979

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Woldi Hayden, Junior in Geophysics, HOMECOMING KING

Homecoming photos by John Hopkins.
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This 2 day program is built around the National Western Mining Conference of the Colorado Mining Association and CSM Founder's Day, and includes:

CMA/CSMAA CONVENTION LUNCHEON —
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Sunday, February 9, 1980, Green Center, Mines Campus. 9:30 a.m.-12 noon, 1:30-4:00 p.m.

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Saturday, February 9, 1980, Holiday Inn West, Colfax & Hwy. 40 — Golden. Cocktails 6:30 p.m., Dinner 7:30 p.m.
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ESA New Headquarters
The Society of Mining Engineers of AIME dedicated its recently-completed headquarters building on Nov. 7, 1979, at the Ken-Caryl Ranch near Denver, Colorado. Situated on a two-acre site in the foothills of the Colorado Rockies, the 13,000-sq. ft. building houses operational facilities for 29 executive, editorial, and administrative personnel.

The Society is a 26,000-member professional organization for engineers engaged in the mineral industries. It is heavily involved in educational programs for academic and professional development; conducts two major conferences per year; and has an active publishing program, including a monthly magazine and books for both classroom and professional use.

Over 45% of the building's cost has been raised by the Society's fund campaign, "Build for the Future." Contributions from 584 individuals and companies now total more than $429,000. There have been 17 pledges of $10,000, which the Society has recognized by dedicating a room in the donor's honor.

New headquarters building, Society of Mining Engineers.

"The new headquarters building will give us greater flexibility and the opportunity to expand our involvement in many areas," says 1979 SME President Robert Stappato, associate dean of the College of Earth and Mineral Sciences, The Pennsylvania State University. "The building will be a long lasting asset to the Society and a source of pride to its members, who have raised approximately half the building's cost. This major achievement, possible only through the cooperative efforts of the membership and the mineral industry, will ensure the Society's continued growth and progress."

SME New Headquarters


Miners Tour China
Four Mines alumni were part of a Society of Exploration Geophysicists' delegation, consisting of eleven geophysicists, which toured the People's Republic of China September 12-17, 1979. Purpose of the tour was to exchange technical information on petroleum exploration methods and to visit various PRC exploration facilities.

The delegation visited the Geological Research Institute of the China Academy of Sciences in Peking, the Electronics Computer Center of Geophysical Sciences (largest in the PRG) in Cln, approximately 60 km south of Peking, the Research Institute of Exploration and Development at the Shengli Oil Field (second largest in the PRG) on the Yellow River delta, the Marine Branch of the China Geological Exploration Corporation (Shanghai), and the Southwest Branch (Chengdu and Chongqing) and the South Sea Branch (Canton) of the China Petroleum Corporation. At each location the delegation members presented technical papers and discussed exploration methods and problems with PRC geophysicists.

The China visit was in exchange for a visit by a like number of PRC geophysicists to the United States in November 1976.

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Geology Museum Collections

A lovely 48-piece cut and rough gemstone collection and two large "rock crystal" quartz specimens are among several recent additions to the Colorado School of Mines Geology Museum, 16th and Maple Streets in Golden.

The rough and cut collection, given to Mines by an anonymous donor, features a natural crystal and cutstone of each type of gem, which in many cases come from the gem's classic localities. Purple amethyst from Maine, pink tourmaline from Folsom, Calif., emerald from Columbia, and aurite from South West Africa, are included in the display.

Barry McGinnis noted that the rough stones as well as the cut pieces are of gem quality and often display the termination of the gem's crystal in a complete formation.

In another donation, Joe Peiken of Boulder gave two large "rock crystal" pieces of quartz to the museum. One rock, measuring about 14-by-14 inches, features particularly large quartz crystals. The other, measuring about 8-by-8 inches, is covered with tiny crystals. Both specimens are from Hot Springs, Ark., and are representative of typical quartz specimens from that area.

Beautiful rough stones in a 165-member collection were donated to the museum by Mrs. Helen Bassler of Boulder, widow of long-time amateur gem collector and cutter, D. M. Bassler.

The collection includes topaz, amethyst, and rare crystals and several crystallized minerals, many of which were collected on a 1971 South American trip taken by the Basslers.

"The donation includes many fine pieces of cuttable gem material," McGinnis said of the valuable gift. Much of the collection will be displayed in the museum's "new acquisition" case.

A sample of electrum, an unusual alloy of silver and gold, was donated to the museum by Philip Doerr, a CSM alumnus from the class of 1927, the museum's "new acquisition" case.

Rocks on display will include stibnite and assemblage from the Heads of the World.

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