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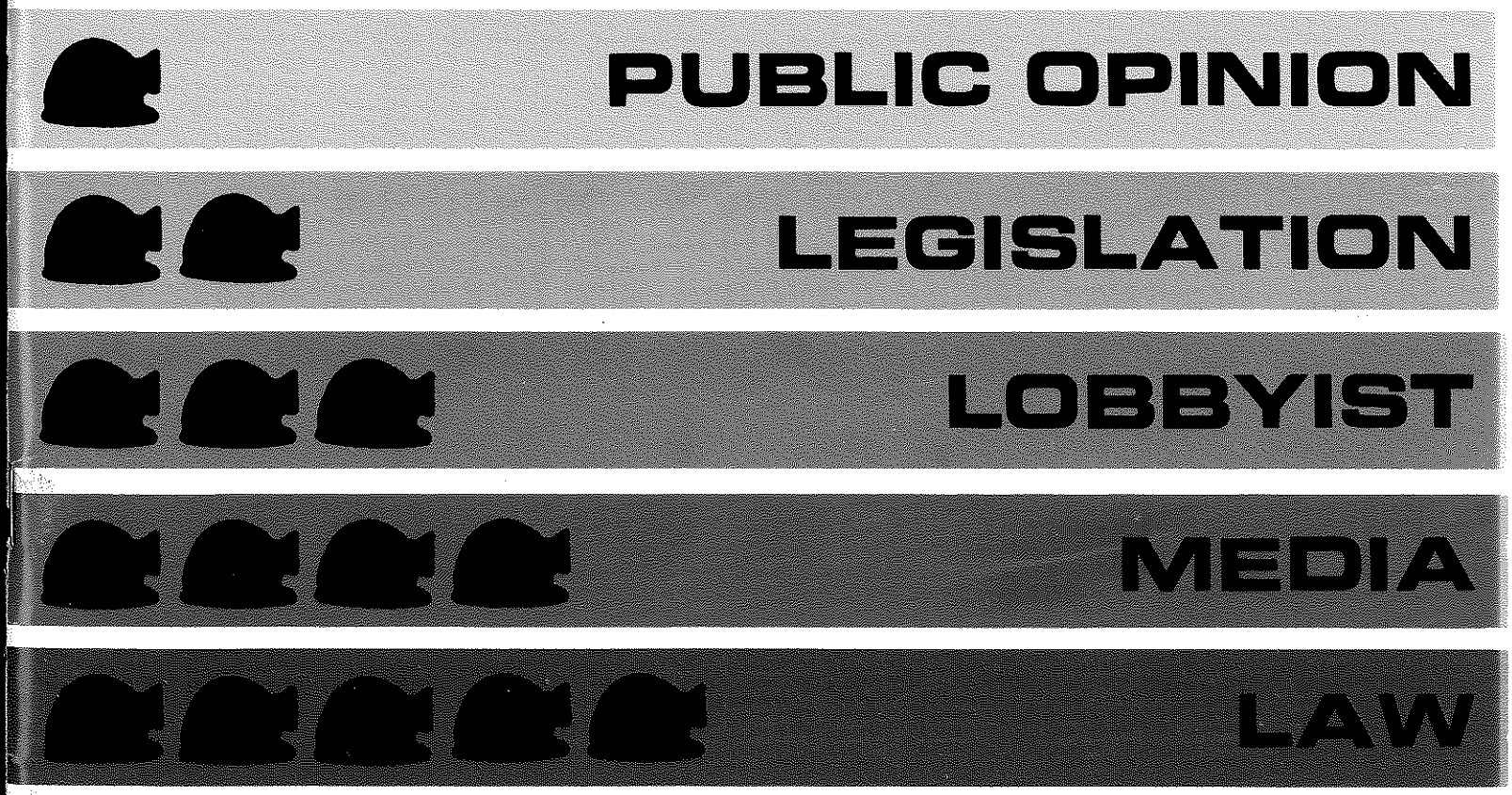

alumni events calendar

Oct. 14-16—Cont. Ed. "Maintenance Management for the Mining Industry," Keystone, CO. For further information contact K.M. Barbour, CSMAA.

Oct. 23—SME Convention, Minneapolis, MN. Luncheon, The Leamington; 11:30 a.m.

Oct. 24-25—HOMECOMING, Reunion classes 1960, 1965 & 1970. Banquet, Oct. 24, 6:30 p.m. Holiday Inn West. Game, Oct. 25—Western New Mexico.

Nov. 4-6—Cont. Ed. "Maintenance Management for the Mining Industry," Denver, CO. For further information contact K.M. Barbour, CSMAA.

Nov. 12-14—Cont. Ed. "Sixth Institute on Mine Health & Safety," Golden, CO. For further information contact H.W. Emrick, CSM (303) 279-0300, ext. 2321.

Nov. 18—SExG Convention, Houston, TX. Luncheon, Sheraton-Houston, 11:30 a.m.

Nov. 19—GSA Convention, Atlanta, GA. Luncheon, Marriott, 11:30 a.m.

Dec. 5—NWMA Meeting, Spokane, WA. Breakfast, Davenport, 7:30 a.m.

Dec. 8-9—AIME-Arizona Meeting, Tucson, AZ. Luncheon to be announced.

Dec. 9-11—Cont. Ed. "Maintenance Management for the Mining Industry," Denver, CO. For further information contact K.M. Barbour, CSMAA.

Dec. 18-19—DECEMBER CONVOCATION; Banquet, Dec. 18, Green Center, 6 p.m.; Commencement Exercises Dec. 19.

Feb. 11-13, 1981—84th National Western Mining Conference & Exhibition, Denver Fairmnt Hotel, Denver, CO, sponsored by The Colorado Mining Assn., 1515 Cleveland Pl., #330, Denver, CO 80202, (303) 534-1181.

Feb. 13—CMA Convention, Denver, CO. Luncheon, Denver Athletic Club, 11:30 a.m.

Feb. 14—FOUNDER'S DAY BANQUET. Dinner to be announced.

Feb. 22-26—AIME National, Chicago, IL. Breakfast to be announced.

May 7-9—1981 COMMENCEMENT, Reunion classes are 1926, 1931, 1936, 1941, 1946, 1951 & 1956. Banquet— May 8, Green Center, 6:00 p.m.; Commencement Exercises —May 9.

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features

departments

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the way, industry could solve all the problems that face us, including the energy problems.

I represent, as the Secretary's Special Assistant, the Department of the Interior in seven Missouri river basin states—Colorado, Wyoming, Utah, Montana, North Dakota, South Dakota and Nebraska.

The "Sagebrush Rebellion" that started in Nevada has spread to some of those states. Although the stated purpose of the rebellion is to regain from the Federal Government ownership of millions of acres of public lands, the real reason behind the rebellion is frustration with federal regulations and especially those regulations relating to land management.

I am also aware of the feeling in some quarters that government, and especially the Federal government, can and should solve all problems.

Neither extreme, of course, is correct, and the real solution, toward which we are moving, lies somewhere in between.

In the mining industry we have seen both extremes at work—the period of a half century or more ago when industry solved problems its own way, to today when government has increased its regulation of the industry many-fold.

The last decade, especially has experienced a rapid growth of laws dealing with environmental protection, industrial safety and public health.

Those laws did not spring full-born from the minds of Congressmen, state legislators and city councilmen. They arose from a demand by the public, which became concerned about what was happening to the environment. The movement grew in the sixties, and ripened in the seventies, and by the end of the past decade, the environmental feeling was as strong as at any time during the ten-year period.

But in the closing years of the past decade, another element had entered into the picture—the energy crisis. Also, there were disquieting forecasts, not loudly heard nor widely broadcast, that a similar crisis might be impending for other minerals and metals; the possibility of OPEC-like cartels causing the prices of some scarce and strategic minerals to skyrocket.

Will this development have any significant meaning during the decade just beginning?

To quote from a recent statement made by Secretary Andrus, when he and a wide variety of other leaders, were asked this question by EPA Journal; "The 1970's were a decade of historic environmental achievement. How will the 1980's compare?"

Here is Secretary Andrus' response:

"The next decade presents a stern test for those who care deeply about environmental values. The American public has signalled many times that it is seriously concerned about our environment and is willing to pay for its cleanup and protection. But we must understand that no one can sign a blank check for open-ended costs. Our national economy and our resilient political system have their limits too. As we struggle to break free of over-dependence on OPEC oil, and try at the same time to maintain high living standards and control inflation, we face growing internal pressures. Public impatience with seemingly endless delays based on environmental purity could lead to a bitter backlash from voters who need jobs and understandably want to proceed toward energy independence.

"Environmentalists must learn to forego the dubious battles for lost causes, and concentrate instead on the big opportunities to win new ground and defend gains already won. Development and technology can co-exist with a clean environment and in fact can help achieve one, if we are wise enough to strike the right balance. Man and his natural surroundings are fated to live together in tension, not perfect timeless harmony. Let us make that tension creative and turn it to worthwhile ends."

If there is one thing to key on in the coming decade to determine the course of future events, it might well be one sentence from Secretary Andrus' comment: "Development and technology can co-exist with a clean environment and in fact can help achieve one if we are wise enough to strike the right balance."

Years Immediately Ahead Critical

I need not dwell upon the need to develop new energy sources in this Nation to overcome our dependency upon foreign oil imports. This, of course, will involve not only stepped up exploration for oil and gas both on shore and off shore, but mining and conversion of energy fuels such as coal, oil shale, tar sands, and uranium. Aside from this need, I would like to emphasize two other points, one of which deals indirectly with the energy situation.

Programs to improve energy supplies and utilization can be expected to have major impacts upon such materials as chromium, cobalt, columbium, molybdenum, nickel, platinum, tantalum and titanium. Resistance to high temperatures, corrosion and erosion is of particular importance in energy-related applications. Coal gasification, coal liquefaction, magnetohydrodynamics, nuclear fission and fusion can be expected to make unprecedented demands upon special-property mineral materials.

Even conventional thermal generation of electricity could make unprecedented demands upon special-property materials if air quality is to be maintained. Today, electric utilities in the United States burn about 500 million tons of coal annually in producing 43 percent of our electricity from coal. It takes at least 15 tons of air to burn a ton of coal. Thus, if we are to clean up stack gas, we will have to handle about 8 billion tons of hot corrosive gases in the process.

Of the metals that are used in connection with energy production, only one—molybdenum—is produced domestically in quantities that make this Nation self-sufficient.

My other point in connection with the criticality of the years immediately ahead deals with the marked tendency of our nation to draw increasingly on overseas supplies of mineral commodities and proportionately less on domestic sources.

The United States is not alone on planet earth, and it must, for economic, strategic and political reasons, develop trade with other nations, particularly those of the Third World. This means importing from them those resources, including minerals and metals, which they are able to produce.

There is, however, a distinction between dependency and vulnerability.

It had been known for years, and industry and government had warned us, that domestic oil production would begin to decline in the early 1970's and that we would be dependent upon foreign oil to an increasing extent. But foreign oil was available, and at a cheap price, and consequently dependency was not a scare word.

But the Arab oil embargo of 1973 changed the word "dependency" into "vulnerability," and Americans were shocked to learn something they should have known for years.

That shock has lead many to equate the situation in oil with the dependency of this country upon foreign supplies of other mineral commodities. This is unfortunate, because the situation is not the same in every instance.

Oil is universally needed, and its source of supply is tightly controlled. While some of the minerals that we require are produced by fewer countries than export petroleum, these minerals do not approach petroleum in economic or industrial importance.

The question then becomes: How do we distinguish between dependency and vulnerability, and who is to make that distinction?

The answer to the second part of this question is obvious: The government must make the distinction, because only the Government has the mechanisms that can alter the pattern of trade—tariffs, quotas, tax credits, and such.

Government programs that are being developed can be grouped under four general headings. They are:

• Refining our ability to forecast production and demand trends;

• Research to develop solutions for the major environmental problems associated with mining and processing metals, nonmetallic minerals, coal and oil shale;

• Research into development and beneficiation of low grade or complex ores;

• Work on sophisticated methods of locating mineral deposits.

The need to differentiate between dependency and vulnerability is a decision which must be made by the Federal government. The decision must involve virtually all Departments and Agencies of the Government. A basic part of that decision making process, however, must be analysis of mineral supply and demand projections.

The Bureau of Mines in the Department of the Interior has just reorganized itself around the concept of becoming the Federal government's central agency for mineral problem and mineral policy analysis. The Bureau is developing the ability to analyze mineral trends and policy alternatives that are suggested for implementation.

As the first step, the Bureau's Minerals Availability System, or MAS, is building a computerized data bank that will contain information on the world's minerals, deposit by deposit. This will permit it to assess the world-wide availability of nonfuel minerals.

The Bureau recently published "Copper Availability—Domestic," that uses MAS data on 73 key domestic copper deposits of either reserves or resources. The Bureau then developed a detailed estimate of the costs of mining and milling the ore from each deposit, including capital expenditures and operating costs for every step from exploration through concentration. The result is a tonnage-price relationship that shows how much domestic copper is available over a range of prices, at rates of return varying from break-even to 15 per cent.

A study such as this will be a building block for the Bureau's Analysis group, which will use the MAS copper study—and future studies—to construct scenarios for possible future developments. These projections and analyses will permit quantitative definitions of "dependency" and "vulnerability."

MAS, however, is only one part of the Mineral Information Systems being developed by the Bureau of Mines. The base program is the Automated Minerals Information System (AMIS). This is an integrated data base system which will include information on mineral production, productive capacity, consumption, industrial stocks, strategic stockpiles, imports, exports, reserves, recycled materials and mineral land classification for 34 selected critical commodities.

AMIS is being developed in two phases in order to meet unique user requirements. Phase I will provide a comprehensive base of minerals information to support problem and policy analysis. Selected data on 34 of the most critical commodities will be incorporated by fiscal year 1983 from individual commodity canvass systems, foreign trade and production data systems, and the Minerals Availability System. By the end of fiscal year 1981, 12 commodity data bases will be in place and 11 additional bases will have been designed, developed and ready for testing. Phase II will develop efficient commodity data systems and AMIS. At the current level of effort a prototype Phase II commodity data system will be completed in fiscal year 1981 and completion of the full 34 systems is scheduled by fiscal year 1985.

In addition, there is the Minerals Industry Location System (MILS) which is a component of the MAS property identification and selection process. This will provide geographic coordinates and other identifying information on deposits, mines and processing plants. MILS data will provide the primary input for computer generated overlay maps with wide application for mineral and land use decision-making. Both MAS and MILS will provide important information to the Automated Minerals Information System.

At the present funding level, the MAS reserve classification will be completed in FY 1987 and supply curve analysis in FY 1983 for the 34 critical commodities.

The need for research to make mining and mineral processing compatible with environment protection, public health and industrial safety is a pressing one.

This is a matter of great concern to the mining industry, and the increasing costs of regulation of environmental, health and safety matters is said to be a significant factor is shifting supply from domestic to foreign sources.

During the 1980's, the Bureau of Mines Minerals Environmental Technology program will continue to develop solutions for the major environmental problems associated with mining and processing metals, nonmetallic minerals, coal and oil shale. Environmental problems arising from conventional surface and underground mining processing will be addressed, as well as the problems of future operations such as in-situ extraction and ocean mining. Major emphasis will be placed on providing the technology to facilitate regulatory decision making and compliance with environmental regulations and performance standards.

The Bureau's Minerals Health and Safety Technology program will continue to develop remedial solutions to the existing, immediate problems of the minerals industry, and, at the same time, will continue to research effort necessary for the design and development of inherently safer and healthier mining and processing systems of the future. Increased emphasis will be given to eliminating or reducing the hazards encountered in metal and nonmetal mining, without weakening the research effort directed at the problems of the coal industry.

In order to encompass the entire minerals cycle, it is planned to expand health and safety research efforts in mineral processing. The Bureau will maintain its role within the Federal Government as the research arm responsible for providing the technological base to support new or improved standards to facilitate mining-related regulatory activities of other government agencies, and to facilitate industry compliance with regulations. The program will strive for a healthy and safe work environment in all phases of the minerals cycle, while ensuring a productive and strong industry that is capable of meeting national mineral needs.

There are increasing concerns with the role of trace or fugitive elements, compounds and particulates in possible air, water and land pollution and the synergistic effects of these on the symbiotic relationships that have developed over time. We know very little of the distribution of the naturally occurring elements and their millions of compounds at parts-per-million or parts-per-billion levels. Only in recent years have we been able to make such measurements.

We need to know more about the natural distribution of such elements and compounds and the precise distribution of such elements and compounds in each phase of the mineral processing cycle. If we don't, we will continuously encounter unanticipated threats to the mineral sector of the economy. A major increase in research on the distribution of the trace or fugitive elements, compounds and particulates may have important direct benefits in the search for new mineral deposits.

Whether or not mineral deposits can be developed economically depends upon a number of economic, technological, political, legal and logistical conditions. My third point under this heading concerns research into development and beneficiation of low grade or complex ores.

The Bureau of Mines Mineral Resources Technology program will address problems affecting the availability of adequate mineral and metal supplies. The major thrust of this research program will be the advancement of basic mineral science and technology, and the conservation and development of domestic mineral resources. Research to advance basic mineral science and technology will seek to expand methods, or develop innovative technologies, for mining and minerals processing, to develop environmentally acceptable processes using alternative energy sources, and to provide technology for efficient recovery of values from orebodies of lower grade.

Research aimed at enhancing the development of domestic mineral resources will seek to develop economical techniques for obtaining currently-imported minerals from plentiful domestic resources, for processing of large, as-yet-untapped resources, and for alleviating the Nation's reliance on foreign suppliers of critical and strategic materials.

Once mineral deposits of economic significance are found, there are possibilities of improved technology to permit treating lower grades of ore and to recover accessory minerals. For example, over the years, the U.S.

Geological Survey and the Bureau of Mines have helped to discover and to assess numerous domestic chromium deposits. The Bureau produced acceptable chrome concentrates from domestic deposits as well as acceptable ferrochromium, chromite refractories, chromium metal, and chromium chemicals. Consequently, presently submarginal deposits could become sources of supply at some future time. Current Bureau research includes recovering chromium, nickel, and cobalt from laterite deposits and also from flue dusts, plating wastes, and other residues.

So far we have been dealing with the known ore deposits, whether they be reserves that can be mined and processed profitably at today's level of technology, at today's level of costs and at today's prices, or whether they are resources—those deposits presently uneconomical but which may become economic to develop at some future date.

But we also know that mineral resources are nonrenewable and are finite, and at some point in history deposits of various minerals will near exhaustion. We are using these resources at an increasing rate, as I have pointed out. The world population has grown from 2.5 billion in 1950 to 4.2 billion today, an increase of 70 per cent; but world energy production in that period has increased more than five fold on a tonnage basis and the value of manufactures, mostly of mineral origin, has increased more than ten times.

These figures are not justification for a "doomsday syndrome." Bureau of Mines forecasts to the year 2000 show that presently known world reserves of most mineral materials should be adequate to meet world demands over the next two decades and that for many minerals the United States itself is in a favorable position.

However, we must keep in mind the dynamic nature of estimates of demand, reserves and resources. Unforeseen uses may stimulate demand, new discoveries may enlarge both reserves and resources, and restrictive actions may move presently proved reserves back into the subeconomic resource category.

We must also keep in mind another important point—the policies of governments vis a vis natural resources. In that respect, I would like to quote from a talk given by Dr. H. William Menard, Director of the U.S. Geological Survey, at the Survey's International Centennial Symposium in Reston, Virginia, in October, 1979.

Dr. Menard said:

"But the signs of scarcity have now been with us long enough to warrant serious attempts to ascertain the remaining stocks of the world's mineral resources— the energy minerals in particular. We need to do this because of the tendency of governments to formulate policies based on perceptions about the relative abundance of vital resources—policies that are aimed at forcing or inducing specific events to happen in regard to exploration for particular resources, substitution of one material for another, conservation and re-use, and other actions that can have profound impacts on resource costs, life styles, and the physical environment—not to mention the relationships between the government and its citizens. The policies can be only as good as the perceptions on which they are based, and the perceptions in turn can be only as good as the estimates of resource availability and cost from which they are formed."

Dr. Menard went on to say:

"Crude and uncertain as they may be, mineral resource estimates are essential ingredients of national policy. There are no substitutes available, and the only responsible action one can take toward them is to continue the pursuit of knowledge that will bring each successive one closer to the truth. It is to this goal that the efforts of the U.S. Geological Survey have been dedicated throughout the first century of its existence, and I can think of no more worthy cause to absorb its energies in the second."

If mineral resource estimates are essential ingredients of national policy, the government must take the lead in improving such resource evaluations.

Some of the exciting geological work the Geological Survey is doing deals with frontier research on the genesis of ore deposits. This will have direct applications to finding mineral deposits.

In conducting its research on mineral resource appraisal in hard rock environments, the Survey is conducting varied field and laboratory investigations. These include the study of mining districts, detailed examination of ores, and experimental work on the physical and chemical properties of mineral and associated rocks. Many such studies are currently focusing on Wilderness and RARE II areas, Indian lands, and Alaska, in order to provide data on mineral resource potential for land-use decisions. In addition, comprehensive geologic, geochemical, and geophysical studies are being carried out in several two-degree quadrangle areas across the country as part of the Survey's Conterminous U.S. Mineral Appraisal Program, or CUSMAP. Much of the latter work is concentrated in the west, in areas that have a high proportion of public land and are also considered to have a high potential for as yet undiscovered mineral deposits.

Excluding the mapping program, the Geological Survey mineral resource appraisal research can be grouped under three headings: Geochemistry, isotope geology and geophysics.

In the geochemistry field, several new innovative approaches leading to the discovery of concealed deposits are being developed by the Geological Survey. Advances in analytical procedures for trace elements in geologic materials made exploration geochemistry practical and the Survey took the lead in demonstrating the feasibility of constructing truck-mounted spectographic laboratories that could be driven to the exploration area.

Although since ancient times observers have noted peculiar odors emanating from some mineral deposits, until recently little effort had been made to identify the components and to apply this knowledge to exploration. In the past ten years an increasing number of sensitive analytical techniques for measuring gases have been developed and a variety of gases have been measured around mineral deposits.

Hydrogeochemical prospecting is another geochemical prospecting technique. When water comes into contact with mineral deposits at or beneath the earth's surface, certain elements will increase in concentration to form a geochemical dispersion halo. Detection and interpretation of these halos form the basis for hydrogeochemical prospecting.

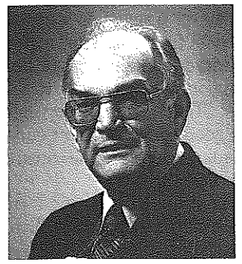
The Survey is using isotope geology to determine the age of mineralization and formation of host rocks; to determine the source of metals in ore deposits and characteristics of ore fluids; and to develop isotopic techniques that can be applied to mineral resource evaluation.

Most geophysical efforts are directed toward field surveys for assessing mineral resources in potentially mineralized areas and toward development of exploration technology. Current research includes development of a variable-frequency, controlled-source electromagnetic system which will be tested over areas believed to contain deep mineralization.

A combination of geological, geochemical and geophysical field and laboratory research and investigations are now required in order to seek out the hidden or buried deposits that cannot be detected through the more conventional techniques employed in the past. The program of the Geological Survey is primarily designed to assist in that purpose.

There is nothing more uncertain than government policy in a democracy—if you attempt to forecast it on a day-to-day basis.

At the same time, there is nothing more certain in a democracy than government policy over a long-range basis.



R. J. Bruning is field special assistant to Secretary of the Interior Cecil D. Andrus in Denver. After his graduation from the University of Missouri in 1936 with a Bachelor of Journalism, he spent the next 36 years working for newspapers in South Dakota and Idaho. In 1973 he became special assistant to Governor Andrus of Idaho. Between 1970 and 1979 he was special assistant in the Energy and Minerals section of the Department of the Interior. He helped found and served as chairman for two years of both the North Idaho Economic Development Association and the Tri-County Natural Resources Committee, and he is a member of the Idaho State BLM Advisory Committee.

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Engineers and Media—Why? How?

by Charles M. Kittrell

Whether your career decision has been slide-rule engineering or administration and management, chances are that sometime during your career you'll be communicating with the public. You'll communicate with other engineers, other professionals, such as lawyers and scientists, and with your own management. Then the general public, some who like what you're doing, others who would just as soon throw tomatoes at you, stockholders, and with government.

How you will *communicate* with government!

Some of this communication is bound to wind up in the newspapers and on TV. Your success in dealing with the press may well determine the success of your industry, your company and your career.

The second reason you'll have to deal with the press is that, regardless of your business you're going to be accountable to the public.

Business, especially the *energy* business, is being called on to account for its actions. The people leading this call for accountability are reporters and editors.

The days are gone when business thought it could avoid public dialogue by locking itself in an executive suite. Any businessman who thinks he can do *that* these days had better update his resume.

The public has a right to *know* what business is doing. How does business behavior affect *lives,* and affect the future?

Far beyond any *legal* requirements for disclosure, business has a moral obligation to respond to the legitimate concerns of the public.

We in the oil business do not do very well in responding to the concerns of the public when they first became concerns. The result is hostility and criticism today.

"Fortune" magazine published an article dealing with this very subject. The article was titled "Why The Oil Companies Are Coming Up Dry In Their Public Relations." The conclusion of the article was that the petroleum industry has *defaulted* on this obligation to inform the public. . .and that because of our stubborn silence, we've done serious harm to ourselves and to the national interest.

My industry *has* been stubborn and silent but we haven't been silent recently. We can't afford to be. Here's an example of what we're doing.

Top management at Phillips, vice presidents and above, have aggressively sought *out* the public and the press in public appearances and interviews. We're not doing it to pat ourselves on the back. We want the public to know *what* we're doing and *why* we're doing it.

Oil companies haven't always been this open. Ten years ago, Phillips top management gave a total of 17 speeches for the entire year. In 1978 that figure was 54 and in 1979, it was 112.

That means that on an average of every third day last year that either the chairman of our board, our president or one of the vice presidents gave a public speech and answered opened-ended press interviews in more than 18 states and three foreign countries.

This year there will be *more* executives on the road. . .*more* speeches to *more* audiences. And *more* interviews with *more* reporters. It boils down to this:

The oil industry has a whole decade of mistakes to live down.

If *we* don't tell our story it's going to be told *anyway* by *somebody* else. And that's unfair to everybody.

One of the industry's first mistakes was the handlng of the Arab oil embargo of 1973. We were unprepared for the crisis in public information that developed as the gas lines grew longer and suspicions grew deeper.

Up to that time, the industry's main concern seemed to be pumping gasoline. Remember the four-corner gas wars ten years ago? We were hustling free glassware, soda pop and double Green Stamps to get you to fill 'er up.

Well, 1973 put us in a whole new ball game. We wound up playing to a capacity crowd of hostile fans.

All of a sudden, oil was *front page news* and we were the bullies. We were the Oakland Raiders of energy, the guys you love to hate. We were called on to answer questions that a month earlier nobody would have given two *hoots* about.

I believe that what resulted back then was a severe case of motor mouth.

Wind us up and we'd tell you everything we knew about the oil business. We went on all *day* about the government's pricing and allocation system and its effect at the gas pump.

We told you about replacement cost and deferred taxes and two-tier pricing and how all this affected our profits.

We passed the crying towel. . .from one end of America to the other and wailed "Aint it *awful*?"

The past seven years have been a learning process for the oil companies. We've made our share of mistakes and we've learned some valuable lessons, too.

One of the *most* important has been how to work *with* the press. We've learned that we've got to be *open*. . .even when it means taking some lumps, and we've learned that we've got to be *prepared.* There's a new breed of energy reporter today. They know more about the business than energy reporters knew seven years ago.

Energy reporting is more accurate than at the time of the embargo and more understandable. And even on such controversial subjects as the decontrol of domestic oil prices, newspapers such as the New York Times and the Washington Post agree, by and large, with the industry viewpoint.

The public has benefited from this new dialogue. The public is beginning to understand the energy business and the energy problem.

For example, the public is beginning to understand that the energy problem is short supplies. Short supplies cause high prices.That's an improvement because even up until a few months ago the public thought the energy problem *was* high prices.

But there's a lot more that needs to be done in our relationship with the press. Part of our challenge in the minerals and energy industries will be making the most of that relationship.

The first challenge will be gaining an appreciation for news—what it is and

why you have to be part of it.

It's difficult to get a consensus on what news is.

Turner Catledge, former executive of the New York Times, told his people: "News is anything you don't know yesterday."

One young journalist I know says news is anything the editor saw on the way to work.

There *is* no concrete definition of news, but John Hohenberg, a journalism professor who has written extensively about this subject, says that even if we can't agree on definition news does have four characteristics.

Hohenberg says that news is *accurate;* that news is of *interest;* that news is *timely;* and that news can be *explained* in terms people can understand.

Using Hohenberg's standards energy certainly qualifies as news. And by two of those characteristics, interest and timelines, energy and the people who produce energy are getting all the coverage they could ask for.

Energy is being reported because it *is* of interest and because energy *is* happening now.

But by two other characteristics of the news, accuracy and explanation, some energy reporting falls short of the mark.

When it does, it's usually because a reporter committed one of what I call the five pitfalls of journalism. Our job in dealing with the press is to help reporters and editors avoid these pitfalls.

The first pitfall is *the inability to comprehend a complex issue.*

More and more, reporters and editors are people with journalism degrees, and people with journalism degrees tend to be generalists. To a degree they *have* to be. There's nothing wrong with being a generalist until the reporter has to deal with a complex issue. That's when he or she starts to generalize.

Most reporters are generalists because they were trained that way. By and large, they have a liberal arts background. Most have never had the opportunity engineers have at Mines to zero in on a specific subject.

Being a generalist is adequate for describing the human condition, but it is usually inadequate for describing a complex issue like energy and resources management in which five or six academic disciplines are involved.

For instance, the wellhead production excise tax on domestic oil, *repeatedly* and *inaccurately* called the *"windfall* profits tax," is not being covered by energy reporters.

It is being covered by *political* reporters because the tax is a political action and is happening in the political arena.

But the *impact* of the tax is on energy development and energy reporters ought to be talking about that development. They aren't. They can't usually, because the "story" isn't happening on their "beats."

Well, it surely is! But, political reporters are covering energy because of the mistaken belief around most newsrooms that a good reporter is a good reporter.

It ain't necessarily so. And this usually leads to the second pitfall of journalism—*inadequate time to develop a complete story.*

This inadequacy of time is caused by deadlines, and deadlines are a fact of life for every reporter and every editor. Deadlines are caused by competition, which leads to shortcuts in meeting deadlines. The most common shortcut is for the reporter to simply take dictation and ask a minimum of questions. As a result, the story comes out sounding like:

He said, she replied—they charged, he denied. It's like a tennis match on paper.

What suffers here is the factor of sufficient explanation. There just isn't time to explain. The reader is cheated, especially when inadequate time is compounded by the third pitfall of journalism, *handling a story in a preconceived way.*

Most reporters are conscientious. Their professionalism demands that they balance a story, but sometimes you'll encounter a reporter or editor whose mind is made up already—a reporter who uses selective facts to arrive at a preconceived conclusion, or an editor who never lets the facts get in the way of a good story.

This notion of preconceived conclusions is apparent in much of the reporting we see about business profits, especially oil company profits.

We have all seen how oil company profits are reported.

"EXXON UP 55 PERCENT"
"CITIES SERVICE UP 72 PERCENT"

It's nothing but a numbers game, and by playing this numbers game, the press is doing a genuine disservice to the public. And it is discrediting itself.

The experience of another oil company last spring is an example of what I mean.

In 1977, Occidental Petroleum reported net earnings of 153 million dollars, about average for that company. But the next year, 1978, Oxy had to halt construction of a refinery in Great Britain. It had to take a 122 million dollar write-off on another refinery in Belgium. It was plagued by three months of strikes in the rail and coal industries. And the Libyan government seized some of Oxy's assets.

So Oxy's profits were down in 1978. *Way* down. Down to less than five percent in 1977. Down to 6 million dollars.

But 1979 was different. Oxy bounced back. Net earnings were 561 million dollars. *That* should have been good news.

That kind of recovery means new capital. It means faith in management—investments—jobs and opportunity. Renewed profits mean the system is working, that something is going *right.*

But how was it reported? Someone at the Washington Star whipped out a pocket calculator and came up with this headline:

" '79 PROFITS ROSE EIGHT THOUSAND TWO HUNDRED EIGHTY-THREE PERCENT . . . FOR OCCIDENTAL PETROLEUM."

Eight-*thousand* percent?

That headline was over a three-paragraph story. You'd think that a story like that would rate more than three paragraphs. What this story lacked in specifics it made up for in bias and implication.

The implication was that Oxy's profits and *all* oil company profits are ill-gotten gains that must be compared to the previous year, or the previous quarter.

Not much is said about the reinvestment of oil company profits in the search for more energy. And you don't see or hear much about the profits of other industries, includng newspaper chains or TV networks.

This is because it's not yet fashionable or faddish to report on the profits of other industries. And, besides, the publishers and network managers very seldom consider themselves part of the news. That's a polite way of saying they don't want their profits aired.

It is expected of all journalists to focus on oil companies. That's because they perceive the public to be interested in oil companies and their profits. And because newspapers and networks are competing with one another, they had better stay on top of that story. If they don't someone else may get the story they missed.

That may imply that I think journalists are followers—part of the herd. Nothing could be farther from the truth. In fact, this brings me to the fourth pitfall of journalism. But it's a pitfall for only those who can't handle the responsibility.

I am speaking about the Fourth Estate's role as a *gatekeeper of issues* and *information.* This is a fact of life in a free society. If we don't understand it now, we'd better learn to understand it. Journalists exercise this gatekeeping role—some call it power—in deciding what you're going to read in your morning newspaper and hear and see on the evening news. As part of this responsibility, they will decide the issues that will be explored in depth or with a lick and a promise. The press will give or take away credibility to news sources by the amount of space or time allotted to their cause.

The pitfall enters the picture only when those with this responsibility cannot handle it. That can take the form of not doing enough gate-keeping or it can take the form of doing too much. The problems generally accompany too much gate-keeping. Or, put another way, trying to influence the news, the issues, and the world.

As engineers, we might not be able to identify with this gate-keeping role. Engineers are practical people. We deal with things. . . mechanical forces and physical pressures.

Journalist on the other hand, deal with people. They respond to social forces and human pressures, and, in dealing with complex energy issues, they tend to simplify them to black-and-white human confrontations.

Uniformed reporters see "oilmen" and Arab sheiks on one side of the issue, and they see the common man, the "consumer" on the other. They see the high prices and they hear the politicians mumble about people freezing in the dark, and they tell themselves, "Hey, this ain't fair!"

When a well-meaning but uninformed reporter reaches this stage, two things can happen. First, he can become an idealist. He sees himself as an agent of change. He sees that he has a *power*—the power of instant access to the public, so he tells himself, "Hey, if I

can get people's attention and rouse their opinion things change."

Something else can also happen. The reporter's ego can take charge. The reporter looks back on other reporters who have been agents of change—reporters like Woodward and Bernstein, who developed the Watergate stories—or Neil Sheehan, who broke the Pentagon Papers story.

The reporter's ego sees these other agents of change—and sees how *their success changed their* lives—and made them rich and famous, by the way, and the reporter says, "*I* can change things too."

The zeal of some uninformed, unsophisticated reporters to change things can get out of hand. When it does, it leads to the *fifth* pitfall of journalism. . .*the Watergate syndrome.*

On the energy scene, we see the Watergate syndrome at work in coverage of nuclear energy. The Watergate syndrome says "aha!" The government didn't banish nuclear energy after Three Mile Island. Government must therefore be in bed with the nuclear industry. *I'm* going to *prove* it.

The Watergate syndrome says, "gasoline prices are up, oil company profits are up. There *must* be a connection. *I'm* going to *prove* it."

Pseudo-conspiracies—pseudo-investigations—pseudo-journalism.

This all must sound critical of the Fourth Estate, but these pitfalls of journalism are the *exception* today, *not* the norm.

And on this score, newspapers are way ahead of television. Possibly this is because newspaper reporters have more time to develop a story. Certainly most newspaper reporting on energy today is getting better.

Good reporters have picked up the energy story. Reporters like Anthony Parisi of The New York Times, Linda Grant of the Los Angeles Times, Stan Benjamin of Associated Press are excellent examples.

There are two promising energy reporters in Denver; Bill Ritz of the Denver Post and Mike Rounds, who has joined the Rocky Mountain News.

The same can't be said for much of the energy reporting on television. Maybe that's because television is the victim of the twin tyrannies of time and pictures.

How do you discuss the promise *and* the problems of a coal slurry line in 30 seconds? How do you make a *visual* out of a need for a common-sense national energy plan?

Tough problems for television, but they become the energy industry's problems, too, because for all the faults of the press, a lot of blame for the lack of inadequate communication must be laid on the *industry* people who are the sources of these stories.

Most energy industry spokesmen today are engineers. Engineers aren't accustomed to dealing with the public. They speak their own language, and they have their own sense of what is important.

An engineer confronted by a reporter—particularly if a camera and bright lights are shoved in his face—probably will produce some uncomfortable moments. Experience will help, but in the meantime, here are some pointers:

(1) The best way to deal with the press for your *industry*, for your *company* and your *career* is to be prepared, and to be open.

(2) *Know* your subject, and know how to communicate it in common-sense English. And be prepared to tell the public, through the press, just what it is you're *doing* to solve the public's problems.

(3) I have found that the public doesn't care about the magnitude of oil company profits so much as how those profits are being spent. If you're put in the position of having to answer questions like that, then talk about your projects but you'd also better talk about how those projects will serve the public, not just the company.

I can't over-emphasize openness—the obligation of business to respond to the legitimate concerns of the public. When you're discussing your projects, *and* your companies, *and* your profits with the press, *don't* spend the whole time criticizing those who make your job more difficult. I realize it's tempting to take a few licks at Washington—I've done it myself. There's more to be said, however, other points to make.

There's a lot of *good* news about energy, and *that's* what people want to hear. They want to hear about how we're going to *solve* the problem.

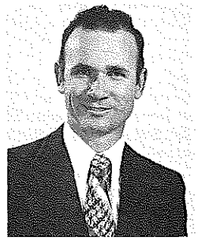
Charles M. Kittrell is a Vice-President, Phillips Petroleum, Bartlesville, OK.

—mm—

formerly a partner in Mountain Petroleum Ltd., is now working independently. **Montie C. MacMurrough, Geop.E.,** has moved from Depco and joined Chevron-Calco as division geophysicist.

'53 Ed Ziolkowski, E.M., currently vice president and general manager of Energy Development Company, has been elected president of the Rocky Mountain Coal Mining Institute. **James E. Curzon, P.E.,** has been transferred from Bartlesville, Oklahoma to Stavanger, Norway, as project development director for Phillips Petroleum Company's Enhanced Oil Recovery operations in the Ekofisk area.

'54 Philip H. Halstead, Geol.E., formerly geologist and geophysicist for Halstead Exploration, has joined Energetics, Inc. as vice president of exploration. **William H. Lang, Jr., Geol.E.,** previously regional well log supervisor for Union Oil Co., is now senior explorationist petrophysicist. **Daniel W. Richardson, Jr., Geop.E.,** has been promoted to exploration superintendent for



Stewart W. Towle

Mobil Oil from processing supervisor. **Stewart W. Towle, Met.E.,** has become president and chief executive officer of Apache Powder Company. He was formerly vice president for that company.

'56 John D. Stockton, E.M., has moved from Mountain States Engineers and is now with Pincock, Allen & Holt in Tucson, Arizona.

'57 Mark K. Waltch, MSc.Min. formerly president of Waltch Assoc. Inc. is now vice president of the Boston Company Real Estate Counsel. **Francisco A. Dos Reis, Met.E.,** would like to offer his sincere condolences to the family of Professor Paul Bartunek, who died in December of 1979.

'59 George S. Rogers, Geol.E., has been appointed manager of the geological department for the Dallas-based AA Energy Corp. and the AA Development Corp. He has over 20 years experience in petroleum exploration with major oil companies and as a consultant to independent oil operators.

'60 William R. Morgan, P.E., has been elected as vice president-corporate services for Central Illinois Public Service Co. He had been manager of the company's eastern division operations since June 1978.

'61 Gary L. Leighton, E.M., is currently assigned to Queensland, Australia, where he is helping construct an aluminum shelter for Comalco. **Bruce B. Harshbarger, P.R.E.,** is now a process engineer for World Wide Construction Services Inc.

'62 Stephen J. Force, E.M., formerly mining engineer for ARCO, is now supervisor-engineering for Thunder Basin Coal Co.

'63 Darrel D. Lemon, Met.E. and MSc.Met. '70, is process engineer for the Aerospace Systems Division of Ball.

'64 John A. Ferris, Geop.E., who was with MAPCO as a field projects manager, is now with Amerada Hess. **Lawrence J. Gralla, E.M.,** formerly general manager-western division for AMAX Coal Company, is now that company's vice president-western division surface mining.

'65 James R. Larsen, Met.E., is currently a production engineer for Johns-Manville Sales Corp.

'66 H. E. (Gene) Sebastian, P.R.E., has been named marketing division manager in the Aromatics Department of Exxon Chemical Americas. He was formerly department head for the Chemical Technical Department of that company. **Ralph Johnson, Jr., Met.E.,** now a production superintendent for Kaiser Aluminum & Chemical, was previously senior metallurgist for Alcoa. **Renan O. Jauregui, MSc.Met.,** is currently senior process engineer for Pincock, Allen & Holt in Tucson, Arizona.

'67 Joseph D. Stewart, Jr., P.R.E., has joined Consolidated Oil & Gas, Inc. as division production engineer. He had been with CIG Exploration, Inc. as production superintendent.

'68 Richard P. Crist, Geop.E., formerly a senior geophysicist, is now exploration supervisor for Superior Oil Co. **A. D. Zierold, E.M.,** is currently a self-employed consultant. He was previously chief-Bureau of Minerals, Department of Lands in Boise, Idaho. **David R. Peterson, P.R.E.,** left

ARAMCO, where he was senior superintendent, to attend graduate school in the CSM Mineral Economics Department. **Robert C. Munson, MSc.Geop.E.,** associate director of the Office of Fleet Operation of the National Ocean Survey, was recently reelected president of The Hydrographic Society in London. **Jay Manning, P.R.E.,** is project manager, Centennial Engineering, Inc. **Kenneth N. Walker, E.M.,** is currently business development manager for Brown & Root.

'69 Gary Williams, E.M., with his wife and family, visited the Alumni office recently while in Golden. He has now returned to his position with Thailand Barite Co. Ltd. in Bangkok, Thailand.

'70 Terry J. Laverty, E.M., is now operations staff engineer for Exxon Minerals Co., USA, in Spring, Texas. **Anton W. Bosch, E.M.,** formerly mining engineer for Kerr-McGee Coal Corp., is currently working for Smith Tool in Oklahoma City as regional engineer. **Robert J. Dearinger, BSc.Met.,** has joined California Target Enterprises, Inc. as vice president. He had been an engineer for Shell Oil Co. **James S. Herb, Met.E.,** left Acme Tube, Inc. where he worked in S.W. District sales, and is now with Copperweld Tubing Group as product manager. **Allan F. Tittes, Met.E.,** has been named manager of smelter operations for Inspiration Consolidated Copper Company. He was previously project manager of smelter development for the company.

'72 Roger L. Olsen, BSc.Chem. and PhD.Geochem., has moved from Rockwell International as a senior geophysicist, to D'Appolonia Consultants as a geochemist. **Robert G. Cuffney, BSc.Geol. and MSc.Geol.,** has been promoted to professional geologist in the Denver exploration headquarters of Exxon Minerals Co. He has been with that company since 1976.

'73 Kenneth B. Cummings, BSc.Min., is currently M.S.H.A. at Denver Technical Support Center. **John S. Eulich, BSc.CPR,** has left The Pace Co. Consultants & Engineers. He is currently senior partner of Mark Twain Consulting Group. **Terry C. Huff, BSc.Pet.,** has joined Worldwide Energy Corporation in Lakewood, Colorado. **William R. Holman, BSc.Min.,** formerly assistant superintendent for Lady Jane Collieries, is now assistant superintendent for Windsor Minerals in Vermont. **Bruce C. Davis, BSc.Pet.,** is service sales engineer for Halliburton Services Sales. **Danny P. Sprouse, BSc.Geol. and MSc.Min.Econ. '77,** is employed by Exxon Minerals Co., USA, as senior planning analyst.

'74 Kenneth P. Fuchs, BSc.Met. and BSc.Chem.'74, is currently senior process engineer for Intel Corp. **Donald L. Presenkowski, BSc.Pet.,** has joined Marathon Oil Co. as district drilling engineer. **Patrick A. Ley, BSc.Math.,** is computer applications engineer for Dames and Moore. **Timothy J. O'Connor, BSc.Min.,** formerly staff foreman, is now senior project engineer for Consolidation Coal Company. **Dennis Gertenbach, BSc.CPR,** has been appointed senior research engineer in the Hazen Research, Inc. coal group.

'75 William A. Warfield, BSc.Min., previously a sales engineer with Ingersoll Rand, is now national sales manager for Domeq Mining Equipment Ltd. **Roberta Fleckenstein, BSc.Math. and MSc.CPR '77,** has left Exxon Chemical Co. and joined Shell Oil Co. as programmer/analyst. **Jess D. Lee, BSc.Geop. and M.Eng.Geop.,** is now with Chevron, U.S.A. as geophysicist. He was previously a geophysicist for Marathon Oil. **Kay L. Lee, BSc.Phy.,** formerly with Marathon Oil as a geophysicist, is currently petroleum geophysicist, SG, for Amoco Production Co. **James Dillie, BSc.Geol.,** was with Martin-Trost Associates as a geological engineer. He is now geologist for mid-continent at Ladd & Lukowicz Inc.

'76 David R. Spedden, BSc.Met., formerly with Swift Chemical Co. as a Metallurgical engineer, is now plant superintendent for Estech Chemicals. **John E. Watson, MSc.Min.Econ.,** is president of Centennial Silveo Co. He had been with Gulf Oil Co. as a cost analyst. **James P. Schmid, BSc.Min.,** has joined the CSM Research Institute as a research engineer. He was formerly with AGRICO Chemical Co. as mine foreman. **Brett A. Coulter, BSc.Math.,** left Harrison Western Corp. to become a civil engineering graduate student at Texas A & M University. **David M. Skelton, BSc.Pet.,** is currently a drilling engineer for Sohio Alaska Production

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EQUAL OPPORTUNITY EMPLOYER

Donohoo Remembers "Dutch"

It never occurred to me in 1932 that the handsome, debonaire, radio sports announcer I worked with at WHO, Des Moines, Iowa, might one day be the President of the United States.To me, he was just "Dutch" Reagan. This was before he became Ronald Reagan, actor, or Governor Reagan, or Ronald Reagan, Republican nominee for President of the United States.

This was the Depression, and I was a student at Drake University in Des Moines, where I literally sang for my tuition. I was top tenor in the Drake Quartet and we often made radio appearances on WHO, at the time the most powerful station (50,000 watts) west of Cincinnati.

The quartet, which usually included some soprano soloists, travelled throughout the midwest from Chicago to Omaha, "advertising" Drake. Students were hard to get in those times since tuition was almost $50 per semester. Drake is a Christian school, affiliated with Texas Christian University in Fort Worth, Eureka College in southern Illinois and others.

Eureka College is where Dutch Reagan starred in football. I believe he was a guard. But frankly, I had never

Van Donohoo, retired executive vice president of Texasgulf, once worked with Republican candidate Ronald Reagan.

heard of Eureka College or Dutch Reagan for that matter until I met him at WHO late in 1932, where we both worked for the program director, Peter McArthur.

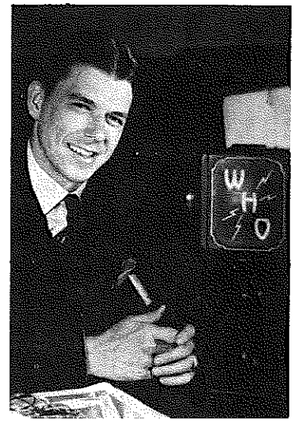
For all his good looks and personality, Dutch was first a real professional. He was probably most famous for his broadcasts of the Drake Relays, the nationally famous track meet which rivalled the Penn State Relays in those days. But I think I was most intrigued by Reagan's broadcasts of out-of-town baseball games.

Dutch would sit in a cubbyhole of a room with a curtain as the door. He wore a headset on which he received an abbreviated teletype account of the ball game, say from Chicago. Close to him was a turntable with a crowd applause record, the volume of which was manipulated by Dutch with a foot pedal. He reconstructed the game instantaneously using the teletype and some of his own imagination, dubbing in the applause by foot.

It was so realistic that most people believed he was sitting in the broadcast booth at the stadium. Why go to all that trouble? This was 1932, the Depression, and low budgets stimulated resourceful minds. Dutch may not have actually invented this technique, but he could have. In any event, he was a great practitioner.

At just about this time, the Drake Quartet landed a broadcasting job on the Iowa Barn Dance Frolic, which was very much like today's Grand Ole Opry. We called ourselves the Pine Holler Four and got $4 each for the performance—and we were glad to get it in those years. In addition, the baritone and I formed a duo that sang popular love songs on what were called "sustaining programs," which meant that we sang when nothing else was programmed. Dutch Reagan was our announcer.

That's when I got to know him a little better. And so did Norma. (Norma Stegmann, the future Mrs. Donohoo, was also a student at Drake.)



Ronald "Dutch" Reagan as he appeared in 1932 when he worked as a radio announcer for WHO radio.

Recently Norma told a story about those times 40 years ago, and she has given me permission to repeat it here (I think).

She used to come to the station to watch us broadcast, but perhaps not

The Pine Holler Four was the singing star group of radio WHO's sustaining programs. Donohoo, the top tenor, is on the right.

just to see me exclusively. The baritone was a pretty good looking fellow, and then, of course, there was Dutch. She used to sit in an upper room looking down through a large glass window into the soundproof studio where she could see almost everything.

It occurred to Norma during these sessions that Dutch seemed to spend an inordinate amount of time glancing up in her direction. Naturally she was flattered at the attention the handsome young announcer seemed to be giving her. Fortunately for me, her chances at being First Lady were diminished later when she visited the recording studio itself. Just below the observation window, where she would watch us, was a large clock. That's what was getting the major portion of Dutch's looks!

And what was Dutch like during the 16 months that I knew him and called him a friend? He was a helluva nice fellow, that's what he was like. He was friendly with everyone (even through Norma and I were younger than he). He had personality. He was honest, a real "straight from the shoulder" man as well as an excellent sports announcer. This was the impression of him that I've always carried with me through the years. He left Des Moines for Hollywood in 1936.

Much later (1955) when I was prospecting in Nevada, I saw Dutch on the stage at Las Vegas. At the close of the show, I rushed backstage to say hello. But I was not as fast as Dutch. He was gone. Later I wrote him a note of congratulations when he became governor of California, and for several years I received Christmas cards from Governor and Nancy Reagan.

Our most recent encounter was at Stamford's Italian Center earlier this year when Reagan spoke at a luncheon. At that time, Dr. Charles Fogarty, E.M. '42 and DSc. '52, chairman of the Board for Texasgulf Inc., made it a point for us to meet. He seemed pretty much like the old Dutch to me. I think it was a little too much to ask him to remember the association of the "good old days" in the early Thirties.

But I was proud to work alongside him from 1932 to 1934, and it was a thrill to shake his hand as a presidential candidate in 1980.

H. Van W. Donohoo retired last year as executive vice president of Texasgulf. His distinguished career spanned some 22 years. But this piece, written by Donohoo as a reminiscence, concerns his friendship with a presidential candidate whom he knew as an Iowa radio announcer in 1932.

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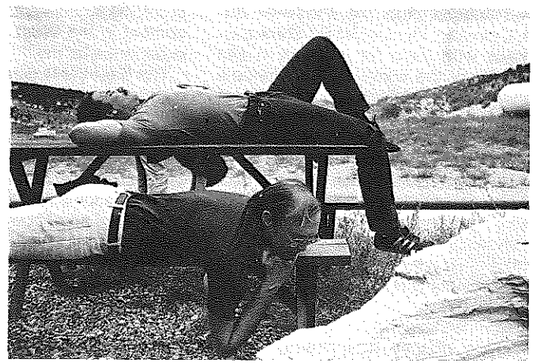
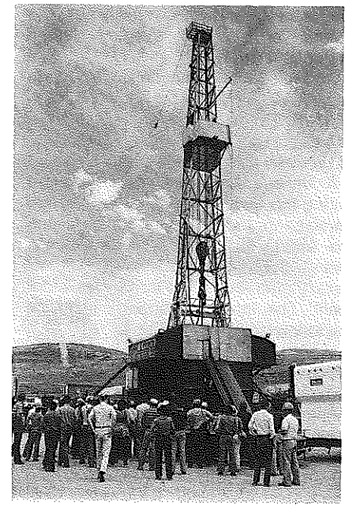
Energy Institute '80



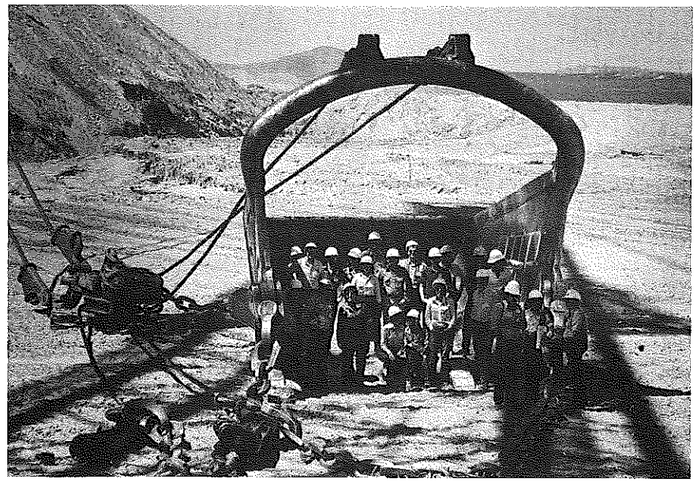
Barry Hold, Congressional Budget Office, above, and Tim Glidden, House Interior Committee, during a brief break at Rio Blanco's C-a oil shale tract in the Piceance Basin of Colorado.



Participants view Amoco drilling rig in southwestern Wyoming's Overthrust Belt.

Bob Sayre, EM '34 and Medalist '78, became a folk hero of the aides after relating the story of his discovery of the Mt. Taylor uranium deposit now being mined by Gulf near Grants, N.M.

Aides listen to a presentation at Kemmerer Coal Co., which included a firsthand look at government-required forms and reports.



Congressional energy aides don't have to squeeze into this dragline bucket used for removing overburden in a Wyoming surface coal mine.

Western energy issues cannot be resolved without considering the scale, capital costs and site-specific nature of energy development.

That key observation was made by 40 Congressional and executive aides from Washington, D.C. after five-and-one-half days of participation in Colorado School of Mines' third Energy Field Institute. The institute, which stresses the same types of hands-on exposure to issues that CSM boasts for its mineral engineering students, took the participants more than 1,500 miles by bus and chartered plane to surface and underground coal and uranium mines, a uranium mill, oil and gas fields and oil shale facilities.

David Tundermann, director of policy planning for the Environmental Protection Agency, said of the program, "Lectures and briefings simply cannot replace direct observation of the size and complexity of the energy projects

Jim Jensen, House of Science and Technology Committee, left, inside a dragline with Mark Bricker, MN '78, an assistant mine engineer at the Jim Bridger surface coal mine near Rock Springs, Wyoming.

we visited, and the fragility of the natural and social systems these projects strain."

Added Mark Berkman, associate analyst with the Congressional Budget Office: "There is no substitute for on-site exposure in grasping the magnitude of Western energy development."

A three-state area was covered during the August 11-16 institute, when participants had the opportunity to see the energy sites, as well as discuss them with operating personnel and local people affected by the energy development. The intensive itinerary included the following sites:

—Monday, Aug. 11. Rock Springs, Wyoming. Jim Bridger power plant and 6 million ton-per-day surface coal mine. Dinner meeting with Rock Springs people to discuss energy growth and impact on local services.

—Tuesday, Aug. 12. Kemmerer and Evanston, Wyoming. Kemmerer Coal Co.'s open pit coal mine Amoco and Chevron exploration and development of oil and gas discoveries on the Overthrust Belt.

—Wednesday, Aug. 13. Craig and Meeker, Colorado. Texaco's Wilson Creek secondary oil recovery. Panel discussion on oil shale in northwestern Colorado.

—Thursday, Aug. 14. Piceance Basin, Colorado. Occidental Oil Shale's C-b tract, with plans for modified in situ recovery of the shale oil; Rio Blanco's plans for either MIS or open pit mining of oil shale on the C-a tract; Colony (Tosco and Exxon) room-and-pillar mine and expansion plans on Parachute Creek.

Friday, Aug. 15. Grants, New Mexico. Kerr-McGee uranium mill; Gulf's Mt. Taylor underground uranium mine; Anaconda's Jackpile open pit uranium mine. Dinner with local people, including discussion of energy development on Indian lands.

The participants, who advise Congress directly or indirectly about energy issues and legislation, appeared most impressed at week's end with the scale of individual energy projects—both on-line and planned—as well as high capital costs and the need for both legislation and regulations to consider the site-specific nature of, for example, mining and reclamation processes.

Many of the aides had not been previously exposed to Western energy development. Noted Jennifer Robison, project director with the Office of Technology Assessment: "Having previously visited and studied energy development sites and issues in the eastern United States, understanding the different problems faced—and posed—by development in the West was an invaluable experience for me."

The East-West differences were also addressed by William "Larry" Miller, chief of the U.S. Bureau of Mines' Research Directorate Staff, who said in his assessment, "The special interests of West versus East are compelling, yet for the nation's economic and strategic well-being, somehow they must be put aside."

The Energy Field Institute is directed by Dr. Janice C. Hepworth and is part of the CSM Mineral Economics department.

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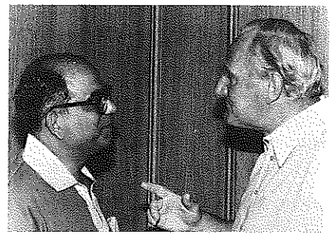
Humanities Faculty Institute

A unique experience in study and planning was held at the Air Force Academy by the Humanities Department. The program, which took place the week of August 17-22, dealt with the Honors Program now being implemented at Mines, and offered, in addition, an exciting challenge to the faculty members present.

The Honors Program at CSM is the result of the grant to the Humanities Department from the National Endowment for the Humanities. It enables selected students to participate in a widely-ranging course of study, designed to expand their knowledge of world literature, events in the political arena, and philosophical attitudes. Based upon the premise that all of these studies are essential for today's engineer, forced into different kinds of interactive relationships with many hitherto unknown publics, the program has attracted a large number of highly motivated students.



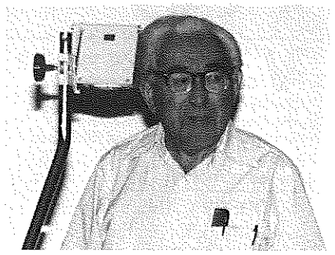
Sir Huw Wheldon, London School of Economics, and Dr. Thomas Philipose, CSM, deep in discusion at the Institute.

A tutorial committee screens applicants for the program and recommends qualified people for the experience. It was this committee, together with certain invited guests, who participated in the recent seminar.

Professors from the faculties of Engineering, Sciences, and Humanities and Social Sciences met for study and review of readings from the great philosophers and authors of world literature, for a period of two days. Leading this phase of the seminar was Dr. Bruce Mazlish, MIT historian and scholar. Dr. Mazlish's reputation rests on such works as *Kissinger: The European Mind in American policy; The Revolutionary Ascetic; James and John Stuart Mill: Father and Son in the Nineteenth Century; In Search of Nixon; The Riddle of History; The Railroads and the Space Program: An Exploration in Historical Analogy, and The Western Intellectual Tradition.* He aided the faculty in re-examining the cultural and intellectual heritage of the west. The participants thus reviewed the base of materials which is taught and discussed in Honors Seminar One.

Dr. Joseph Sneed, Atlantic Richfield Professor, CSM and Mr. E. Paul Mortimer, Senior Vice President, Exxon Minerals Company.

The second half of the program was designed to explore the challenges future engineering graduates aspiring to positions of leadership and management will confront. This exercise, under the direction of two distinguished engineering education consultants; Dr.



Dr. Daniel Rosenthal, engineering education consultant, illustrates some of his remarks by projection.

Photos: Courtesy Dr. Don Dickenson

Myron Tribus and Dr. Daniel Rosenthall, was held to allow the committee to prepare a program fitted for these graduates future needs.

Dr. Tribus currently directs the Advanced School of Engineering at MIT. Dr. Rosenthal, Professor Emeritus at the University of California, Los Angeles, is widely recognized in the United States and abroad for his efforts to establish an important and viable role for humanities in professional engineering curriculum.

The highlight of the Institute proceedings was the Roundtable session on August 21, attended by President McBride, Vice Presidents Mueller and Wells; Ralph Cox, President of the Anaconda Company and Executive Vice President of Atlantic Richfield Company, Dr. Lee Kerschner, Executive Director of the Colorado Commission on Higher Education, George Lambert, Vice President Atlantic Richfield Company, E. Paul Mortimer, Senior Vice President of Exxon Corporation's newly announced company, Exxon Minerals, Monte Pascoe, Executive Director of the Colorado Department of Natural Resources and CSM Trustee, Kenneth Richards, Vice President, Kennecott Minerals Company, and Sir Huw Wheldon, Chairman of the Court of Governors of the London School of Economics and former Managing Director of the British Broadcasting Corporation.

The Roundtable grappled with questions such as: Liberal education and professional preparation: how much and to what purpose? What challenges lie ahead for future engineering graduates and what qualities of head and heart will assist in leadership and management roles? How best to prepare the talented future graduates to acquire the ideal attributes within the constraints of time and curriculum. How best to integrate the study of humanities and social sciences with the study of science and engineering to aid personal and professional development without impairing the integrity of the disciplines.

Following a day long discussion, Roundtable guests commended the CSM Honors Program as an opportunity to exploit the "renaissance in mining." The industry and academic participants agreed that humanistic learning is vitally important in the careers of future business leaders.

Among the CSM participants at the seminar were: Dr. W. R. Bull, Dr. Richard S. Culver, Prof. Donald I. Dickinson, Dr. S. Dale Foreman, Dr. JoAnn Hackos, Dr. Graham Hereford, Dr. Michael S. Nyikos, Dr. Thomas Philipose, Dr. Oded Rudawsky, Dr. E. Dendy Sloan, Dr. Joseph Sneed, Dr. A. Keith Turner, Dr. Roger Wescott, Dr. Thomas Wildeman, and Dr. Karen B. Wiley.

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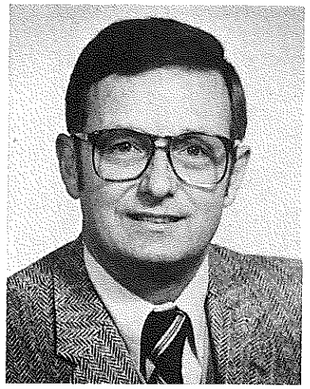
New Head for Basic Engineering



Dr. Harry Emrick has been appointed acting head of the department of basic engineering at Mines.

Dr. William Mueller, vice-president for academic affairs and dean of faculty, has announced the resignation of Dr. Richard F. Dominquez as head of the basic engineering department at Colorado School of Mines. The resignation was effective September 10. Dominguez will continue as a faculty member in the department.

Dr. Mueller appointed Dr. Harry W. Emrick as acting head of the department. Emrick, 47, has been an associate professor of basic engineering at Mines since 1976. Since 1978, he has also served as director of the school's continuing education program for professionals. He has taught graduate courses in geodesy, photogrammetry and cartography.

Emrick retired with the rank of colonel after 21 years in the U.S. Air Force. He was a professor and chairman of the geography department at the U.S. Air Force Academy, a visiting professor of earth science at the National War College, and a combat, rescue and transport pilot.

After graduating from the U.S. Military Academy in 1954, Emrick received his master's degree in engineering and a doctorate in geodetic science, both from Ohio State University. Emrick is currently involved with research and education projects with the Office of Surface Mining and Martin-Marietta Aerospace.

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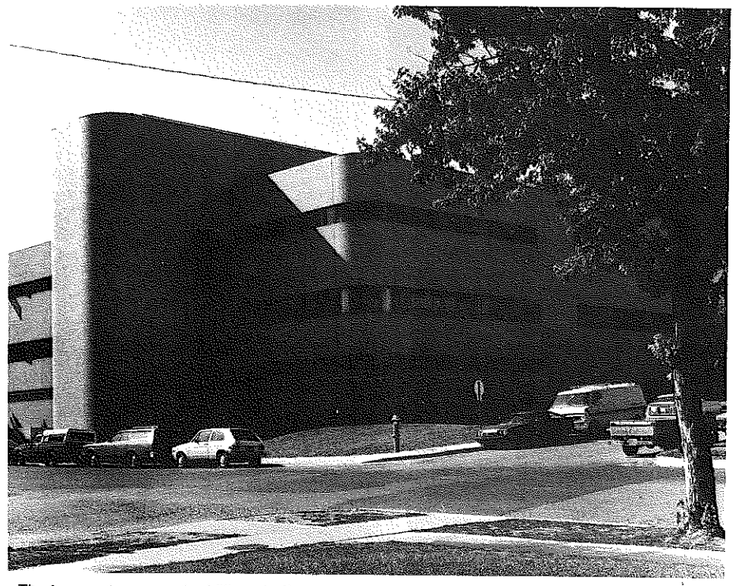
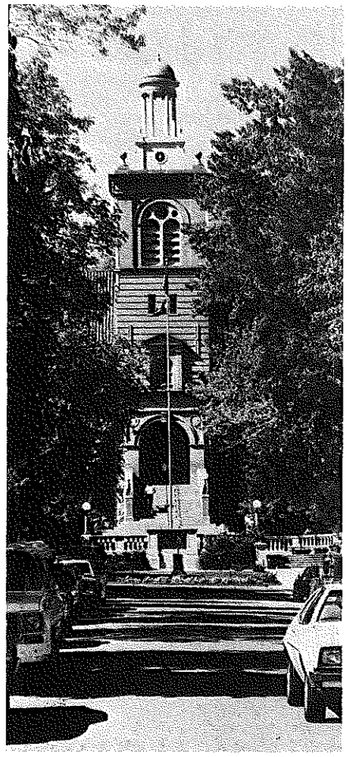
Newest Expansion Almost Complete

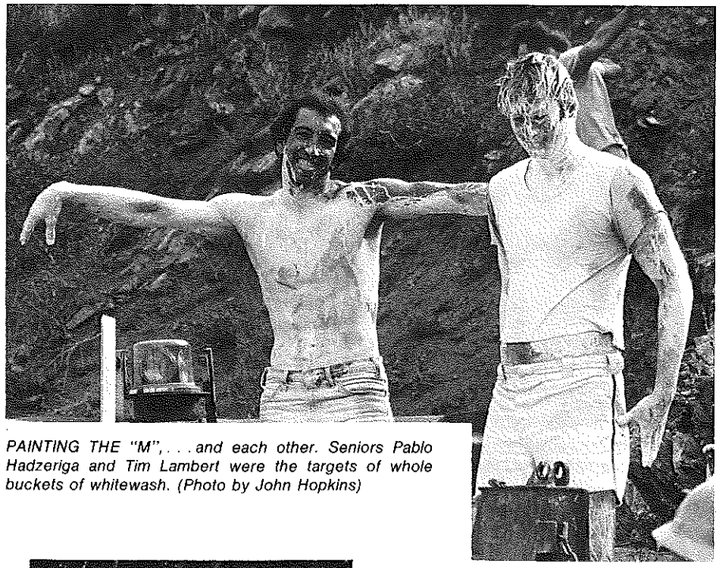


The impressive newest additions to the campus at CSM—Brown Hall. THe structure will house both the Mining and Basic Engineering Departments, and is nearing full completion. Arthur Lee Photo.

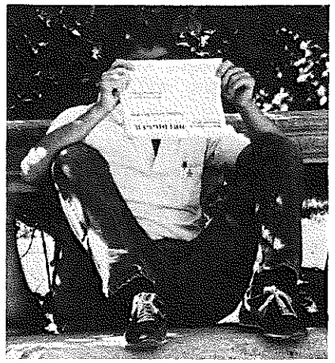
Back to Mines in 1980 Is . . .



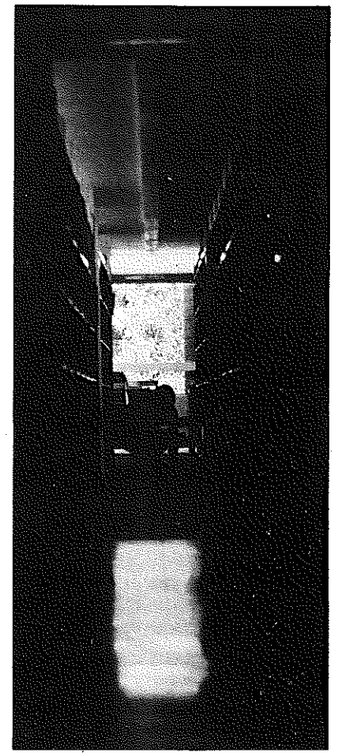
A BEAUTIFUL campus, and still no place to park. The campus grounds have never looked so good, nor has parking ever been so tight.



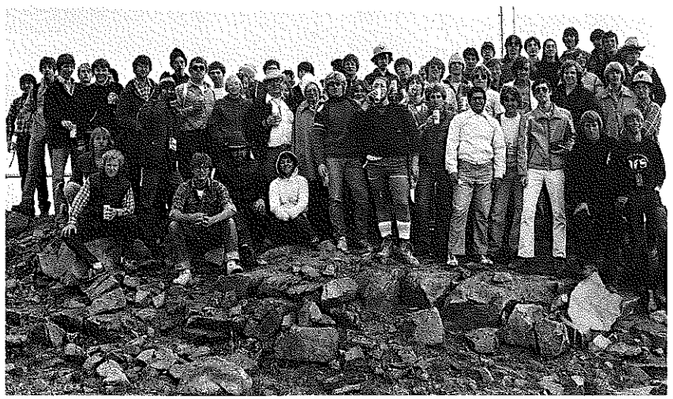
PAINTING THE "M", . . .and each other. Seniors Pablo Hadzeriga and Tim Lambert were the targets of whole buckets of whitewash. (Photo by John Hopkins)



CATCHING UP with all the latest news in the Oredigger.



STALKING THE STACKS for that elusive homework material.



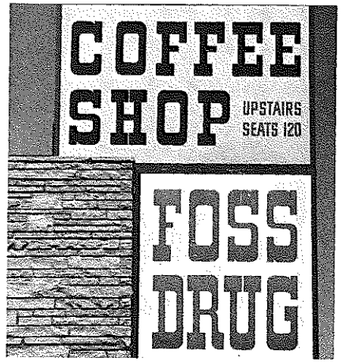
CLIMBING MINES PEAK and drinking Coors at the top. This hardy crew made it up to the top. (Photo by Steve Gallington)

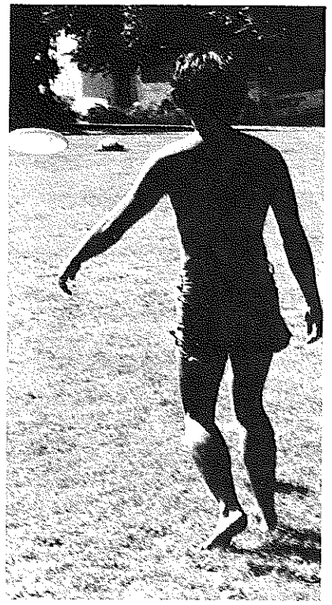
CHECKING IN WITH PEGGY in the cafeteria line. After a while, she knows your number by heart.

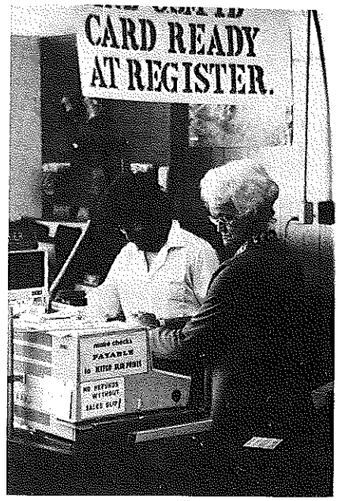
And SO Much More . . . .

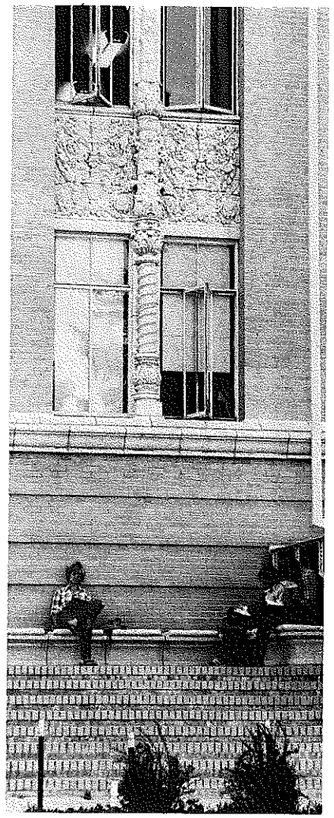
by Brodie Farquhar

A COFFEE BREAK AT FOSS', maybe with a Danish and a place to bone up on Basic. (Below right) BUYING BOOKS, LOTS OF BOOKS at Jeffco Blue Prints. (Below) FRISBEE THROWING on the rugby field, on a warm, fall afternoon.









STUDYING IN THE SHADE of Berthoud Hall. These students won't be able to do that this winter, when ice and snow cover the benches.

Book Review

Hydrogen Technology by Brodie Farquhar

In the 1980's, hydrogen may replace the word "solar" as the energy buzzword; hydrogen energy eclipsing solar energy as the glamorous answer and alternative to OPEC and nuclear energy.

Yet like many other forms of alternative energy sources, hydrogen technology is still in its infancy. A concise view and analysis of this promising youngster was recently published by Colorado School of Mines *Mineral & Energy Resources* entitled "Hydrogen Technology" by Ted Huston and Thomas R. Wildeman.

Huston, a former CSM chemistry student, and Dr. Wildeman of the CSM chemistry/geochemistry department examine the prospects of a hydrogen economy, where homes, industries and mass transit systems would run on this plentiful, clean-burning fuel.

Yet it will not be a simple matter of waving a magic wand over the ocean to produce cheap, inexhaustible energy. Currently, most of the world hydrogen production is a spinoff of petroleum refining and natural gas. As these hydrocarbons become harder to find and use, the pressure will build to find an inexpensive production source of hydrogen.

Right now, that production method does not exist. Virtually all methods of "cracking" hydrogen out of water, such as electyrolysis, call for more energy than you can get out of the resulting hydrogen. According to Huston and Wildeman, this makes hydrogen a secondary energy carrier, ideal for nuclear reactors out in the ocean, or massive banks of solar collectors. The reactors or solar banks would provide the energy used to crack the water molecule, and the hydrogen would be piped off to users many miles away, farther than electricity could be economically distributed.

Huston and Wildeman explore the advantages and disadvantages of a hydrogen technology and economy. Their conclusions are surprising and encouraging. All in all, Huston and Wildeman have provided the public with a good primer on one of our most promising energy alternatives.

("Hydrogen Technology" by Ted Huston and Thomas R. Wildeman; published by CSM Press Mineral & Energy Resources, Volume 23, Number 2, March 1980).

Philipp Brothers Professorship In Mineral Economics

The Colorado School of Mines and Engelhard Minerals & Chemicals Corporation have announced the establishment of the Philipp Brothers Professorship in Mineral Economics, funded by the company's grant of $50,000 annually for five years. Philipp Brothers, a major division of Engelhard, is an international marketer of ferrous and nonferrous minerals and metals, ferro alloys, crude oil and oil products, fertilizers, petrochemicals, sugar, grains and other raw materials.

CSM President Guy T. McBride, Jr., in announcing the professorship, said, "The contribution of Philipp Brothers will permit current and future mineral engineers, with technical skills second to none, to acquire economics attitudes and managerial talents that will enhance their abilities to work effectively and succeed in an international free market system."

The search is underway, he said, to attract a mineral economist of international standing and prestige to fill the professorship.

The Mineral Economics Department at CSM, a graduate degree program, is one of only a handful in the U.S. and is the largest in the nation. Organized in 1969, the department's goals are the training of mineral economists to do the analysis and feasibility studies necessary for mineral pricing, development, trading, distribution, and utilization, and the preparation of graduates in corporate leadership and responsibility.

Dr. McBride said the school has recognized that it is time for a professor in mineral economics to provide a focal point for the international aspects of minerals and energy requirements in a free enterprise system.

"I congratulate Philipp Brothers and Engelhard Minerals & Chemicals Corporation for making the professorship possible, Dr. McBride said. "It represents a giant step toward our shared objective of providing the best people possible to help the minerals industry of our nation in the challenging years ahead."

The grant was made to The Resource Fund of the Colorado School of Mines, a ten-year program which seeks $63.5 million in private gift support and to date has produced in excess of $25 million.

Galbraith Memorial

The Seventh Annual Wine and Cheese Tasting Party, to benefit the Den Galbraith Memorial Scholarship Fund, will be held Saturday, October 18 in the Green Center from 7:00-9:00 p.m. Proceeds from the event provide a scholarship to help support the best qualified Golden High School senior who is accepted at Mines. Tickets at $5.00 each, are available from any Golden Kiwanis member, or David Olson (ext. 2787) and Jerry Jones (ext. 2414).

eMbers

The regular readers of this column will not be surprised to see that our October emphasis is on engineers and policy. The subject of world and national politics is addressed here so often that it has begun to trouble some of my readers. The question arises, "Is MINES Magazine really the proper format for discussion of political matters? Should this be even part of the Magazine?" An editor historically has the privilege of sharing convictions, personal/political/philosophical, with the readers. It is not my intent to abuse that privilege, merely express those things about which I feel very strongly—the future of extractive industries and, most importantly, the future of the United States. That these are my own opinions is, I believe, always clear. That they do not necessarily agree with the opinions of some of my readers is to be expected—and desired. Contrary opinions are invited, of course. I'm always delighted to receive responses, pro or con! Your thoughtful discussions on the material covered in eMbers would be most welcome.

Particularly interesting to me, in the light of my convictions that engineers are going to have to expand their fields of operations, is the Honors Program in Humanities at CSM. The whole concept of this imaginative program is designed around this very thesis. Conceived by the Humanities Department and funded by the NEH, the idea is enjoying wide acceptance among the students. Competition is keen for places in the program and it will be most interesting to follow the participating students along to watch not only their progress in Humanities, but their abilities in their chosen options. I would predict that most of these people will be particularly valuable to industry or government upon graduation.

Thinking about graduation brings up another aspect of School happenings, the new method of financing being implemented this year. The CSM Alumni Association Board of Directors has voted to solidly support the School in its determination to upgrade the quality of education and opportunity available to every student at Mines. The support goes beyond the mere verbal commitment—far beyond. The Alumni Association will, for the first time as an organization, be directly responsible for a massive fund raising effort which will provide money for many students to meet the increased tuition costs under the new plan. Since the inception of the Resource Fund, individual and small groups of alumni have worked hard to bring needed cash resources to the School. They have been very successful, and we are proud of their efforts. Now, in the broadest sense, the membership of the Association and other graduates will have an opportunity to participate in this exciting plan. Each person, each section, each small social group will be able to feel a part of the challenge of the future of the School. It's a big job—but who ever said that Miners were afraid of the big ones?

Supporting the School and its students is more rewarding than is immediately apparent, when one thinks only of surface reasons. It doesn't take many Homecomings or Commencements, when old friends gather to spin their tales and exchange up-to-date information, to realize the depth of involvement most Miners have with the School. Curse the professor who gave you a "D"? Sure, that's happened, and will happen again. Groan in painful memory about that chemistry quiz? Of course—why not? Somehow, however, those things seem to be forgotten when old friends meet. The glow of remembered companionships, remembered adventures and scrapes, and, always, remembered support, wipes out a lot of the tough memories and brings back most of the good ones. Homecoming this year, October 24 and 25, will be no exception, I'm sure—and I'm looking forward to hearing some of the adventure stories, along with meeting old friends and welcoming them to campus!

When reunions come along, the inevitable accompanying thought, "How could it be so many years?" is always there—voiced or unspoken. The measurements we apply to time vary so widely, according to the state of mind, the good or bad feelings about one's own advancing years, the outward views which remind us that time has passed. Coming back to campus is like that—especially if one has not been here for many years—there are many changes.

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Time is beyond our control. How we use those days and years of productive time is another story. If we spend hours and days in trying to make life better, then we are accomplishing what most of us feel should be done. Here at Mines, with new programs, new challenges, it seems as though time is being well spent. I'm not so sure about that in *other* areas—in industry, where confusion still exists as to the wide role forced upon it by society, for example. In government, also, time is being wasted, while resources are left undeveloped and available sources of energy decrease. Engineers are trained to cope with finite problems, and, recently, to confront societal, political, and moral problems with equanimity. We need to take a good look at whether the time of those people chosen to represent us in our government is being spent wisely—and, if not, to confront that problem with the appropriate action. The expertise and time of America's engineers is too valuable to waste—let's be sure the new administration of this country knows what the issues are, and let's try to have a hand in solving the problems deriving from those issues!

Patricia Curtis Petty

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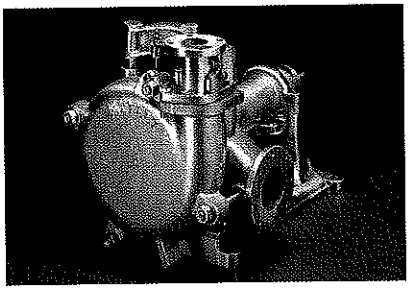

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