Gold and other metals—
Where will the metals industry be in the 21st Century?
The Herb Man of Texas, by Ellen Glover. Sol Meltzer ’50 grows herbs on a large scale for Houston restaurants and nurseries.

Metallurgists Celebrate Centennial

Managers’ Success Lies in Training, by Ellen Glover. Training for small businesses proves essential to stay in business.

The Materials Industries in the 21st Century: Trends, predictions and comments by alumni by Ellen Glover

Global Insight: The Return of Yankee Pizarros and Anglo Nitrate Kings: Chile at the Crossroads, by Dr. Eul-Soo Pang. Is the Chilean economy the world’s freest?

Cover
Gold glitters through a sample of quartz, a reminder of its allure. (Royal Gold photo)
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Sol Meltzer is the “Herb Man of Houston”

by Ellen Glover

The "Herb Man" grows herbs on a large scale and sells directly to nurseries, plant shows and health food stores.

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Reading Sol Meltzer's book, Herb Gardening in Texas, is like sitting around a family dinner table and dropping in on a conversation. Even if you haven't lifted a finger in a garden, or can't tell the difference between tarragon and thyme, Meltzer, a Mines alumus and retired geologist, makes growing herbs sound appealing and relaxing.

Meltzer's herb garden measures 60 by 70 feet, and he grows almost every herb he has written about, approximately 100 different varieties of herbs. What started out as an avocation has turned out to be a business supplying Houston restaurants, nurseries, health food stores, plant shops, and other retail outlets with both potted plants and dried herbs.

While he was working for Cities Service Oil Company he would spend his weekends—and often in the mornings before work and in the evenings after office hours—growing herbs. He has talked to garden clubs and school groups about herb gardening, hosted radio and television shows and wrote a monthly garden column for The Houston Gardener and Houston City Magazine. Additionally, he has taught a course on organic gardening.

And in 1977 Gulf Publishing Company brought out his book, one of the few volumes, if not the only one, on growing and caring for herbs in Texas. The book is its third printing.

Meltzer is well-versed in the lore surrounding uses of herbs. He includes a chart of diseases and herbs that can cure them:

<table>
<thead>
<tr>
<th>Disease</th>
<th>Herb(s) That Cure</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baldness</td>
<td>Beets, yarrow</td>
<td>Doesn't work</td>
</tr>
<tr>
<td>Blotches (by lightning)</td>
<td>Parsley</td>
<td>No comment</td>
</tr>
<tr>
<td>Bald Aisle</td>
<td>Mint, rosemary</td>
<td>They both work</td>
</tr>
<tr>
<td>Forgetfulness</td>
<td>Agrimony</td>
<td>I forgot if it works</td>
</tr>
<tr>
<td>Baldness</td>
<td>White mustard</td>
<td>No way</td>
</tr>
<tr>
<td>Last</td>
<td>Hemlock</td>
<td>It's a poison, it'll stop you forever</td>
</tr>
</tbody>
</table>

The book contains more helpful information and more reflections of why herbs keep him in the garden. "Herb gardens have a peculiar charm," he writes. "Many of the plants have an almost fairy-tale appearance. Walking through an herb garden, with its exotic fragrances and rainbow colors, can really be a spiritual experience. Some people think of herbs as dull green, unattractive plants. But just explore an herb garden, you'll find it a sensual delight."

And his humor shines through in the descriptions of herbs where he gives the cultivation requirements and how the plant is used. Under "Lamb's Ear", a hardy perennial that is a foot tall with soft downy long linear gray leaves Meltzer says he has read "that the juice can be used to heal cuts and old sores. I'm old, so I presume it will heal any sores I have."

And under lemon balm, so herb used for tea and a garnish for fish, he says "lemon balm tea, according to one 15th century herbalist, is good for female complaints. If your wife complains, about anything, fix her a cup of tea and advise me of the results."

Meltzer says herbs are easy to grow and offer a rewarding experience.

"I consider myself a knowledgeable grower, whether I'm a worthy author is for you to judge," he says in the preface of his book. "Writing this book was fun. I'm sure you'll find several good ideas, have a laugh or two, and agree with me that herbs make scents in Texas."

While visiting Golden in May for his 40th reunion with his wife, Thelma, he casually mentioned his interest in gardening and how he got started. "When I was at Mines I lived in an apartment unit that had a big garden area and a fellow who lived upstairs from me had a truck garden in the summer to make money. He got me started."

After college Meltzer's geology jobs took him all over New Mexico and West Texas, to Cities Service's headquarters in Bartlesville, Oklahoma, to Calgary, Canada, and finally to Houston. Wherever it was possible he had a vegetable garden.

He got interested in growing herbs shortly after arriving in Houston in 1966. "I don't really know what got me interested in herbs," he says. "I think my first herb was rosemary. It smelled nice and different, and it was a new experience. And it just went from there," he says as he strokes his thick grizzled beard.

Unlike most gardening books which can be dry, stuffy and dour, Meltzer comes through on every page of his book. When he talks about starting seeds indoors he says "Although it is usually recommended that you wait until the seedlings have at least four leaves before transplanting to individual containers, if you are impatient as I am, with a little care you can transplant when the seedlings have a pair of leaves. I have grown and transplanted thousands of seedlings with one set of leaves and have lost very few."

And his humor shines through in the description of herb gardens: "The garden, with its exotic fragrances and rainbow colors, can really be a spiritual experience. Some people think of herbs as dull green, unattractive plants. But just explore an herb garden, you'll find it a sensual delight."

Sol Meltzer with one of his favorite herbs, rosemary.
The Materials Industries Trends and Predictions

by Ellen Glover

Stan Dempsey, president of Royal Gold, spoke on the future of the gold industry.

As part of the Department of Metallurgical and Materials Engineering centennial held in Golden in June a number of papers were presented by alumni and industry representatives. They offer a broad perspective on the mineral and materials industries in the 21st century, and to what extent graduates are going to be working after the year 2000—above and below ground on an international scale with high tech methods, but with an understanding of fundamentals acquired at the Colorado School of Mines.

Gold mining—prices dip, but its allure continues to rise

Stan Dempsey, chairman and CEO of Royal Gold Inc., focused on the history of the gold industry. Dempsey, who is also involved in investment banking and environmental services, says the gold industry is commercially driven, and that research or technical development is for the most part done by industrial vendors and not supported by the producers.

Dempsey spent most of his career in molybdenum and iron ore, and developing lead, zinc, and copper. While a vice president with AMAX, he worked in Australia to integrate the various businesses of AMAX into a commercial enterprise that could be floated on the Australian stock market. He says there are some things about the gold industry that are different from other minerals. For example:

- the technology is basically the same since the 1950s.
- gold provided an easy entry for anyone who could go into the mining business. Dempsey said it was easy to get into gold mining partly because gold is so readily marketable. Most commodities have a market risk, but gold, while it has the risk of price, can always be sold. "A lot of times you’re willing to sell it at any price and glad to get the money," he added.

Dempsey says he has researched the size of mines from the 19th century, and has noticed a lot of the gold mines were really large compared to what they are looking for now. As a comparison, California in 1891 produced 3.9 million ounces of gold while production in the United States didn’t hit that level again until 1987. He added that people don’t realize how really prolific some early production was, whether in California or California.

"If you put the whole gold industry into perspective today, production was about $25 billion in U.S. dollars last year. That’s less than R.J. Reynolds Company and a little over junk bonds. Think about that. . .one tobacco and consumer products company sold for more than the total sales price of all gold produced in the world last year," he said.

Exploration trends

Dempsey says the trends in exploration will be:

1. To find the areas easiest to permit, an environmental theme that underlies many mining decisions today.

2. Exploration will have to work a lot harder on fundamentals. It cited the need for better accuracy in samples or ore reserve estimation, and a concern over fraud in the industry — "it’s awfully easy to steal gold."

3. He also sees companies consolidating; smaller firms will be acquired by larger concerns.

He also sees a trend in exploration to continue in the business," he said.

He recalls visiting with prominent mining companies. Companies are driven now not only to get deposits, but to get those reserves into the proven and probable category. "You have to have reserves if you are going to continue in the business," he said.

The executive stressed the need to return to fundamentals and gave the example of Echo Bay Exploration Inc. which had difficulty in sampling reverse circulation drilling in one of their number of ounces recoverable from that process; a miscalculation of an ore body led to incorrect decisions on the number of ounces recoverable from the deposit, financial decisions, etc. which were all based on the first core sample. Dempsey praised the gold company for being so honest in their annual report, a quality he would like to see more often.

"While we’re awfully interested in all the exotic technology, we need to audit a little bit to make sure we’re doing the basics. Those problems continue to plague the gold industry and, in fact, it has hurt our ability to get gold loans," he said. Gold loans are borrowing a specified number of ounces of gold at current prices and promising to repay it as gold is produced. As a comparison to South Africa, the gold mining is still the "strength of the U.S. dollar, dropping interest rates and renewed confidence in the economy. People are putting their money in other investments besides gold."

"I think the $500-an-ounce level may hurt smaller companies more than larger corporations if it stays at that level for very long," Stell said.

Gold pours at the Fortium Mine in Kalgoorlie, Western Australia.

Production trends: closely tied to supply and demand

South Africa still dominates the gold business in terms of supply: 37 percent of the total in 1989, or 19 million ounces of production last year, but a lot of gold mines in South Africa are under water because of the price of gold at its mid-June level of $350 an ounce. In the United States, gold production rose to 207,000 ounces over 8 million ounces. Homestake Mining Company, one of the country’s largest producers, produced more than one million ounces total as a company for being so honest in their annual report. A gold mine is often an example of Echo Bay Exploration Inc. which had difficulty in sampling reverse circulation drilling in one of their number of ounces recoverable from the deposit, financial decisions, etc. which were all based on the first core sample. Dempsey praised the gold company for being so honest in their annual report, a quality he would like to see more often.

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"The smaller companies have more at risk," Stell said. "They may not have the assets to sustain them if gold prices stay low for a long time." Many small companies rely on income from current production to operate from quarter to quarter, and a drop in gold prices not only affects their current income, but also seriously inhibits their ability to explore, expand or acquire other properties.

Larger companies, as a contrast, have the financial ability to hold their own or possibly even turn a profit through a downturn in prices. These companies have reserves to stockpile and sell their gold when the price goes up, practicing hedging, or buying gold at low prices and selling after the price goes up, Stell said.

Larger companies may also take advantage of the low-cash position of smaller companies by acquiring them. However, although the current gold price is hovering below $350, many companies may be selling their gold at a price closer to the $400 mark reached last year because of a practice known as "selling forward." When a company sells forward, it locks in the current price for a certain number of ounces it produces in the future.

Dempsey says he resists making price predictions, but likes the old saying "The price of gold is the price of man's suit. "The price of running that an ounce of gold is worth the price predictions, but likes the old saying "The price of running that an ounce of gold is worth the..."
McNulty predicts mineral processing to survive despite downturn in economy

Dr. Terrance McNulty, distinguished alumna and a trustee on the CSM Board of Trustees, opened the metallogal reunion with a talk on the future of the minerals industry. McNulty, past president and CEO of Hazen Research, gave a perspective on problems facing the mineral industry, and said that in minerals research and development there has been a decline in commercial commitment.

"I think of the number of people employed and the approximate amount of money spent in 1980 there were 1,700 people working in research with about $135 million worth of work. By 1989 those figures had changed to 300 people performing about $18.5 million worth of work, or about ten percent of the effort in 1989 which means a lack of effort in long-range development of technology."

McNulty covered the limitations of the technology used by the mineral industry, and said research has yet to discover good tools for finding deeply buried deposits with no clear surface indication. He outlined some research in processing including growing interest in electrochemical control of Rota­tion. In process control sophisticated software and computers are managing information. He also said improved approaches toward extraction of minerals, including some new separation tools, holds hope for metallurgists.

The impact of environmental regulations on the minerals industry was a theme for both McNulty and Stan Dempsey (see related story). McNulty said prior to 1990 there wasn't much of a concern about disposing hazardous waste, and the cost of disposing of a barrel of that material prior to 1980 was about $2.50. In 1991 that cost jumped to $100 and continued to inflate through 1998 when it cost $600 a barrel.

"Now it is becoming a question of where you can dispose of it rather than the cost. Various wastes simply cannot be put in a landfill anymore so that kind of thing is not only putting some limitations on how we process minerals, it's also creating some new economic opportunties in the mineral processing field, he explained.

"The subject of mining being excluded from some of the regulatory pressures that have been applied to other solid wastes is important. At some time we're going to be in a fix where we will not be able to produce reduc­tions that contain leachable heavy metals. That is a problem on one hand and opportunity on the other hand. We're finding growing interest in remediation of wastes by processing. So companies like Hazen Research (private research and development company for the mining, minerals and chemical processing industries) and others are finding that a larger percentage of the develop­ment that they do is not on minerals it's on wastes. There are a lot of things that we can do as mineral processors to deal with these kinds of problems," he said.

McNulty says there will always be a mineral processing industry even though "those of us who are trying to find consulting work in mineral processing and those of you who are trying to interest students to enter the field wonder at times if there is going to be an industry.

"There will always be mineral production and where that is done and how it is done is going to be governed by economics at the time, political and so­cial frameworks, and the country in which it is being contemplated. There will continue to be challenges and I think life is going to go on in mineral processing. . . it's easy to be a little discouraged about it right now, I think that we will be seeing things in a few years that will make us feel a lot more optimistic," he smiled.

Metallurgists Celebrate Centennial

In June the Department of Metallurgical and Materials Engineeringwelcomed alumni and friends of the department to a centenary reunion. "Looking back through the old gradu­ating rosters, it appears that the de­partment awarded its first degree in metallurgical engineering in 1980. This seemed like a good opportunity to cele­brate 100 years of awarding metallurgical degrees at Colorado School of Mines and an ideal excuse for alumni, faculty and graduate students to get together," according to Dr. John J. Moore, professor and department head.

Mines is currently graduating 30 to 40 undergraduates a year with a bache­lor of science in metallurgical and ma­terials engineering. This level has been relatively constant over the last few years and is all the more remarkable when one recognizes that student num­bers in metallurgical and materials de­partment have decreased.

"We have found a very high demand for our undergraduates over the last few years and we are extremely pleased on increasing our recruitment through this program. At the graduate level we cur­rently have 25 graduate students in graduate and doctoral programs. Over the past five years or so, 95 per­cent of the students in the undergradu­ate program and 75 percent of the gradu­ate students who have graduated from the department have been American citizens which is remarkable since it is not uncommon for most graduate pro­gress in the United States to have few­er than 50 percent U.S. citizens," Moore explained.

The department currently has 16 fac­ulty who are extremely active in both research and teaching. In 1980 the fac­ulty were successful in attracting almost $2 million in research funding from federal, state and industrial sources, and Moore anticipates exceeding this level in the next year.

Academic programs

With a look to the future, the De­partment of Metallurgical and Materials Engineering has made a strong com­mitment to provide both undergradu­ate and graduate programs in ceramic processing and has broadened its role in processing of materials at both un­dergraduate and graduate levels in the United States. We feel that our new cur­ricular and broadened research pro­gram addresses this area of national importance," said Dr. Moore.

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Research areas

The research areas can be broadly categorized into the four main research centers with activity within the de­partment, The Advanced Steel Processing and Products Research Center is supported by 19 North American companies which are steel producers or steel users. This center has been used as an ideal model in the United States for collaborative competition in the research centers. The research en­compasses processing steel from cast­ ing to finished product. The Center for Welding and Joining Research continues to enjoy an excellent reputation with the respect for the metallurgy of weld­ing and has also extended it's co-op eration to include composite-metallic and advanced materials, while reinforcing its traditional strengths in metallurgy. By broadening the academic base while still maintaining the department's tradi­tional strengths in processing materials,
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Open to the public

11:30 a.m. Annual Joint Golden Chamber of Commerce/CSM Quarterback Club Luncheon;
Presentation of CSM Football Team, Marching Band
and the Homecoming Queen and Beast candidates.
Tickets may be purchased at the door.

4:00 p.m. Homecoming Co-Ed Basketball (Fairfield Gymnasium)
Alumni are invited to participate.

9:00 p.m. Homecoming Competitive Events;
Alumni are invited to participate.

SATURDAY, OCTOBER 20

8:00 a.m. Student/alumni Breakfast at
Buffalo Rose

10:00 a.m. Annual Homecoming Parade down
Washington Avenue.

11:30 a.m. All Alumni/Students Tailgate Picnic
Brooks Field

For additional information call: (303) 273-3290 or (303) 273-3295
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Managers’ Success Lies in Training

by Ellen Glover

Consider this statement for a moment: Successful managers are those who develop their employees to the point where they can either take over the managers’ jobs or are marketable for a similar position in the same industry.

Why would a manager intentionally develop employees to the point at which they would leave the organization that trained them? On the surface it may not make sense, but on closer examination it is a good plan. According to Michael Goeken, publisher of the San Antonio Business Journal, managers cannot develop each and every employee under their supervision at the same level of intensity, but they can discover particular attributes of an employee and work to improve on that individual’s qualities.

Goeken further says that a large training budget is not necessarily what is needed to develop an employee professionally. There are many ways managers can fulfill their responsibilities.

Lucy Beale, director of the Management Seminar Series and author of The Win/Win: The New Approach Transforming American Business and Life, a guide to increased effectiveness in both personal and professional interactions, couldn’t agree more with Goeken. Beale has consulted with both large and small businesses in Colorado over the past eight years and has found a vast need that has gone unfulfilled:

Companies need on-going, consistent and frequent training for their managers without taking their staffs out of the office for days at a time, and without breaking the budget.

Beale has seen what professional development of employees can do for organizations based upon her own experience: she graduated from the University of Colorado with a degree in chemistry during which time she was published in the Journal of the American Chemical Society, and she spent six years as a top computer salesperson for IBM where she was responsible for 30 small- to medium-sized business accounts.

Beale co-founded the popular Win/Win Forums, an informal means of exchanging information that started in her living room and has spread to more than a dozen cities in the western United States, What people most frequently requested was training for middle managers in industry, the same kind of training available to large companies.

“Most small businesses couldn’t afford to have in-house training. They usually don’t train their managers— their managers are trained on the job and hopefully they are good. If managers aren’t good, things can suffer, but they don’t really know how to fix a problem. The Management Seminar Series
There are between 90,000 and 100,000 firms in Colorado. Ninety-seven percent of them are small businesses with less than 100 employees. Eighty-six percent have less than 20 employees. They currently employ 52 percent of the workforce.

- Small business created 49 percent of all new jobs in Colorado in 1988.
- Small business income came to $4.5 billion as of September 1989.
- This income ranks Colorado 36th among states nationwide in the growth rate category.

was designed to provide a full curriculum of all the things the managers need to know to be good, functional managers: professional development workshops with others, team building skills and current management trends.

"One of the biggest flaws in most business training today is that during the classes people are asked to behave differently, but they are not always given the capability of doing that because the material comes too fast. Or they go away for a week's worth of training and they come back to the same old grid—they have all these great ideas, but it's going to take a long time to integrate. That's what training is for, but they are not always given the capability of doing that.

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"If I attend a class where I go for three hours a week for six weeks, I will learn more than if I attend a weekend workshop. It gives me time after each session during the following week to get accustomed to that material, which is a wonderful way to teach management. Management is one of those things you learn progressively, then learn a little bit more and let it integrate over time, she said.

"I was consulting at US West and they call them 'technical avocation,' Beale explained.

"It's so easy to say when we are starting a business, 'Well you know, I'm really a geophysicist, but somebody needs a consultant.' I was consulting at US West and they call them 'technical avocation,' Beale explained.

"A business can be really devastating to a technical person. I was consulting at US West and they call them "technical avocation," Beale explained.

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WHY SMALL BUSINESSES FAIL

According to the Small Business Administration, there are several reasons why small businesses fail. Based according to priority they include:

1. Inadequate front-end planning (no business plan, no feasibility study, no cash flow projections).
2. Inadequate capital for startup and backup.
3. Inexperienced management.
4. Wrong location, low traffic, no expansion area.
5. Inventory management.
6. Too much capital in fixed assets.
7. Poor credit practices.
8. Unplanned expansion.
9. Unwillingness to employ and work with a banker, accountant and lawyer; and
10. Inadequate records and financial knowledge.

With a smile Beale added that she is a consultant, something with which she has a lot of experience. If she consults for someone, she has to know where their consultation is... she says "I can arrange the right service if you say 'Let me arrange it.' In other words, find the niche. Don't go out there and be a generalist because a general business consultant doesn't tend to do very well.

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DEALING WITH DIFFICULT PEOPLE – A Conflict Questionnaire

Proverbs state traditional wisdom. The following proverbs and statements reflect traditional wisdom for conflict resolution. Read each carefully. Using the scale given below, indicate how typical each proverb or statement is of your actions in conflict, and in dealing with difficult people.

5 = Very typical of the way I act in conflict
4 = Frequently typical of the way I act in conflict
3 = Sometimes typical of the way I act in conflict
2 = Seldom typical of the way I act in conflict
1 = Never typical of the way I act in conflict

☐ 1. Soft words win hard hearts.
☐ 2. Come now and let us reason together.
☐ 3. The arguments of the strongest always have the most weight.
☐ 4. You scratch my back, I'll scratch yours.
☐ 5. The best way to handle conflicts is to avoid them.
☐ 6. When one hits you with a stone, hit him with a piece of cotton.
☐ 7. A question must be decided by knowledge and not by numbers (of people) if it is to have a right decision.
☐ 8. If you cannot make a person think as you do, make him do as you think.
☐ 9. Better half a loaf than no bread at all.
☐ 10. If someone is ready to quarrel with you, he isn't worth having to quarrel with.
☐ 11. Smooth words make smooth ways.
☐ 12. By digging and digging, the truth is discovered.
☐ 13. He who fights and runs away lives to run another day.
☐ 15. There is nothing so important that you have to fight for it.
☐ 17. Seek till you find, and you'll not lose your labor.
☐ 18. If you have two in a fight, make two sides.
☐ 19. Tilt for tart is fair play.
☐ 20. Avoid quarrelsome people—they will only make your life miserable.

Scoring
From the scores above place your score next to the appropriate question number.

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Now add your scores under each type. These correspond to the animals described below.

Behavior Styles

Type 1: 
Turle - Someone who wants to avoid conflict, and will give up their own personal goals to avoid a troublesome person. "I'm helpless and there is no way to resolve a situation," they say.

Type 2: 
Shark - Sharks who are well fed can't need to be fed again. Feed 'em! Give them something to resolve a conflict.

Type 3: 
Teddy Bear - With teddy bears the goals of a relationship are more important than personal goals—they want people to be happy. "Teddy Bear" assumes you can't discuss problems without damaging a relationship and tries to smooth over conflicts, a prevalent style among women.

Type 4: 
Frog - Frogs seek compromise, and believe both sides get something through conflict resolution.

Type 5: 
Owl - An owl thinks by getting into a conflict things will be better in the end. An owl will acknowledge a problem, gather data, identify mutually exclusive needs and goals, develop a plan and put it in writing—they won't stop until they have a solution.

Keith Vincent, president of the company (E. Glaser photo)
The Chilean economy boasts the world's freest enterprise system with decided capitalist leanings. It has performed marvels throughout the 1980s, emerging as the fastest-growing economy in Latin America, if not the Hard World, while other countries have lagged in productivity, in living standards, depression, business recession, and even near collapse of economies. Chile's economy in 1980 was an impressive ten percent, three points ahead of the previous year. Its exports quadrupled during the decade, leaving this once copper-dependent economy far more diversified. Nevertheless, copper remains an economic mainstay.

Wheelerwright was vilified as a "Yankee Pizarro," while the Britisher was emblazoned as the king of nitrates. Other Yankee and British investors followed.

Towns such as Iquique and Antofagasta were ennobled as the king of nitrates. Other copper mining accidents, greedy merchants, ruthless foremen, equally repressive priests, and arrogant capitains living in fish bowl compounds. They all became prey to the boom and bust cycles of the mining economy. This legacy was the bitter fruit borne of a free market enterprise system and unbridled international capitalism. The first encounter with the post-industrial age development of mineral economies in the Andes engineered a deep mistrust of capitalism and its attendant social and political systems that fueled xenophobia.

As late as the 1960s, the country's mineral wealth was solely in the hands of North American companies—Anaconda, Kennecott, and Comco together produced as much as 80 percent of Chile's copper exports. The captains of Chilean industry, banking, and mining after 1970, 100 U.S. corporations operated in Chile and 24 of them—all Fortune 500 giants—dominated the country's natural resources of the sector. Landed, both agricultural and pastoral, belonged to the tightly knit upper class, commonly known as the oligarchy. Reform-minded Christian Democrats in the '50s and '60s, fearful of the revolutionary Marxist threat replacing the existing order, made feeble attempts to introduce sundry reforms including the "Chileanization" of the copper industry. That effort, however, was quashed by the military takeover of the national wealth to the poor and working classes. Henceforth, the state intervened massively in the public treasury are rife in Zaire. Political corruption and Judging thefts are devastatingly high costs of production are crippling the copper sector in Zimbabwe. About three-fourths of Chile's copper is extracted from the copper belt, which is one of the most productive copper deposits in the world. The Chilean copper industry is controlled by a few large multinational corporations, primarily Chilean, American, and Japanese firms. The private sector, including Chilean, has benefited from God-sent opportunities that have closed down mines in Papua New Guinea. Inefficiency and ridicu-

Opening frontiers: "savage capitalism" During the second half of the last century, Chile's mineral economy began to boom, thanks to William Wheelerwright, a North American railroad builder, and John William North, a British merchant.

The Return of Yankee Pizarros and Anglo Nitrate Kings: Chile at the Crossroads

by Dr. Eul-Soo Pang
Head of the Department of Global Systems & Cultures
proaches with private sector companies more seriously, thus opening up the tightly clenched monopoly of the copper economy. Already, such U.S. firms as Homestake, Amax, Chevron, Exxon, Cyprus, and others are key players in copper, gold, lithium, and other minerals. No less ubiquitous are Australian, Japanese, British, South African, Korean, Canadian, and New Zealander investors.

It is highly unlikely that even if the current political situation deteriorates, Chile will go back to 1970. No longer is the U.S.-the monopoly capitalist, although its share of investment is overwhelming by any standards and is growing. Nevertheless, there are too many countries which have stakes in Chile's stable democracy and capitalist economy. By coincidence, Chile's political and economic future is a double-edged sword: unlike in 1970, the country no longer enjoys autonomy in political, economic, and social decision making without taking into account potential fallouts from outside investors and markets.

Also, it must convince its 13 million citizens and the international community that the commonwealth of the nation and consumers of Chilean goods is the one and the same. Chile is in an unprecedented economic "roll" and must find ways to keep the momentum while it searches for viable political and social alternatives to the Pinochet legacy which has brought economic, social, and political autonomy. By coincidence, Chile's political and economic future is a double-edged sword: unlike in 1970, the country no longer enjoys autonomy in political, economic, and social decision making without taking into account potential fallouts from outside investors and markets.

Against such a backdrop, Chile's political and economic future assumes a unique momentum while it searches for viable political and social alternatives to the Pinochet legacy which has brought both economic and political autonomy. By coincidence, Chile's political and economic future is a double-edged sword: unlike in 1970, the country no longer enjoys autonomy in political, economic, and social decision making without taking into account potential fallouts from outside investors and markets.

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DOWNTOWN DENVER

Twenty-three alumni and guests met for breakfast June 26 at the Holiday Inn Downtown. Dr. Phil Romig, head of the geophysics department, spoke about the Center for Exploration Geoscience Computing and the initiative between IBM and CSM.

Guests included Mike Declerk '77, Gene Gau '73, Steve Harpham '83, Tim Hooper '79, Gary Hutchinsen '82, '86, Ron Lestina '90, R. Mike Joels '51, Brian Macke '80, '88, Pat Phillips '95; Claudia Rebner '84; Fred Schwartzberg '53; Michael Stude '70; Lee Shannon '89; David Wheeler '86; Jim White '64, and John White '66. CSM staff members Ann Fay and Jennifer White and alumni staff members Laura Robinson and Mary Jo Giddings also attended.

Co-coordinators Steve Sonnenberg '81 and Chris Oglesby '80, announced that the new downtown Denver section leaders (effective in September) would be Claudia Rebner '84 and Roger Hutson '82. Claudia and Roger already have some good ideas for next season's speakers and we look forward to working with them.

Steve and Chris have done a superb job the past two years coordinating this section and we are most appreciative of their excellent leadership.

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Richard Elwingen, '70

The Mines Magazine • June/July 1990

UNDER THE 'M'

Gentry Named Head of CSM Department of Mining Engineering

Dr. Donald W. Gentry has been named head of the Colorado School of Mines Department of Mining Engineering.

Formerly dean of engineering and undergraduate studies, Gentry led the School's academic departments in numerous successful initiatives including curriculum revision and establishment of the Department of Global Systems and Cultures. His reassignment comes as a result of the discontinuance of that office.

Gentry brings a wealth of experience to the mining department. His national reputation, leadership skills and knowledge of the mining industry promise to ensure that the CSM mining department remains among the best of its kind in the world.

Gentry replaces Miklos Salamon as department head. Salamon resigned to return to full-time teaching and researching.

CM SUMMER MINORITY ENGINEERING TRAINING PROGRAM OBSERVES 20TH ANNUAL SESSION

A generation ago, when Colorado School of Mines Professor Dale Foreman became aware of the absence of minority students enrolled in the nation's engineering schools, he realized something had to be done.

So in 1970 Foreman established the CSM Summer Minority Engineering Training Program (SUMMET), an intensive course designed to introduce female and minority high school sophomores and juniors to careers and educational opportunities in engineering.

Twenty years later SUMMET is still going strong at CSM. The four-week 1990 session (June 17 to July 13) hosted more than 55 high-potential minority students from around the nation.

The program focused on a rigorous introduction to pre-engineering problems in mathematics, earth science and computer science. Several field trips, including two days of climbing and rappelling at Camp Hale near Leadville, punctuated the classroom work. Supported by industry sponsors, SUMMET is free to participating students.

"The first year of SUMMET we had just 12 students. We just barely had enough money to buy our supplies and operate," Foreman recalled. "After that we reached out to about 20 to 25 students for the next 10 or 12 years."

Now a professor emeritus, Foreman not only recruited the students, but personally stated local industries seeking support for the program.

"Mostly it was a lot of small, local companies that came through and got this started," he said.

Gradually, the program grew. Beginning in 1987, a series of $50,000 annual grants from Arco helped CSM establish a Minority Engineering Program and double the number of students attending SUMMET. Other current sponsors are Arco, Exxon, Marathon Oil, Mobil, Rockwell International, Shell Oil, U.S. West, Dupont and Hewlett Packard.

"The motivation behind SUMMET is to encourage minority students to consider careers in earth science and engineering, but one of the fall-out benefits is that about 45 percent of the SUMMET students end up enrolling in the School of Mines," said CSM Minority Engineering Program Coordinator Don Velasquez.

Partly due to SUMMET and the School's other minority outreach efforts, CSM has increased its minority enrollment and graduation rates over the past several years. Ethnic minorities now constitute nearly 10 percent of the CSM undergraduate student population, while the percentage of bachelor's degrees awarded to minority students has more than doubled since 1987.

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The Mines Magazine • August 1990
CSMTPartnership Going Strong in '90

A longtime partner in higher education with Colorado School of Mines, Amoco will step up its annual support to the school by 20 percent in 1990.

This year Amoco will provide $135,000 to CSM for a variety of programs, ranging from development of a computer laboratory to an effort to encourage secondary school students to pursue a career in the geological sciences. Last year's contribution total was $113,000.

Among its gifts, the company has slated $25,000 for continued funding of the CSM Center for Potential Field Studies, a consortium studying new methods of petroleum exploration.

Amoco has also dedicated $10,000 for operating expenses of the Department of Geology and Geological Engineering's year-old computer laboratory, a facility designed to help integrate modern computing techniques into geologic education and research. An additional $10,000 gift from Amoco has funded the beginnings of the geology department's Geology and Geological Engineering Information Program, in which CSM geology students have volunteered to visit area high schools to describe career and educational opportunities in diverse earth science fields. Students in the program will cover topics such as petroleum and mineral deposit geology, hydrogeology, environmental and contaminant management and geotechnical engineering. Career opportunities in these fields are projected to exceed the number of qualified graduates during the coming decade.

"Amoco has taken the initiative in helping us introduce these innovative programs and in developing support from the petroleum industry," said CSM Department of Geology and Geological Engineering Head Sam Adams.

Amoco's support of education extends from the CSM campus to its Denver facility. CSM Professor John Warme is teaching a course on sequence stratigraphy to more than 40 of Amoco's technical staff.

In addition, Amoco supports the studies of five CSM students in two doctoral, two master's and one bachelor's degree candidates. The company has earmarked $25,000 for educational training programs and supports an assortment of smaller projects at the school. 

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(303) 424-5578
Corporate Offices, Denver, CO
Colorado School of Mines Professor Emeritus Robert J. Weimer has been named president-elect of the American Association of Petroleum Geologists. Weimer will take over as president-elect July 1 and, after completing a one-year term in that office, will assume the association presidency in 1991. Weimer, who has taught geology and geological engineering at CSM since 1976, is highly respected in the field of resource exploration. He is a past recipient of numerous honors, including the AAPG Sidney Powers Medal, the American Institute of Professional Geologists' Ben H. Parker Medal and a University of Wyoming Distinguished Alumni Award. He has been awarded both the George R. Brown Medal and the Mines Medal by CSM.

While a member of more than 35,000, the AAPG is the nation’s largest geological organization. The association is dedicated to the exploration and production of mineral energy resources.

Charles Boettcher Distinguished Chair Established at CSM

Colorado School of Mines has received a $500,000 Boettcher Foundation challenge grant to establish the Charles Boettcher Distinguished Chair, an endowed professorship in petroleum geology.

Under the terms of the grant, CSM has two years to raise $1 million in addition funds, creating a total endowment of $1.5 million in support of the chair. The school has formed a committee of prominent alumni to help raise the necessary revenue.

The holder of the chair will teach and conduct research as part of the CSM Department of Geology and Geological Engineering, as well as participate in related CSM initiatives such as the Institute for Energy Resource Studies and the Center for Exploration Geoscience Computing.

CHARLES BOETTCHER
Distinguished Chair
Established at CSM

Robert J. Weimer

Mines Receives $3 Million Keck Foundation Grant

The W.M. Keck Foundation recently presented Colorado School of Mines with the first installment of a three-year, $3 million grant to support the school’s Center for Exploration Geoscience Computing.

Foundation representatives were at CSM June 27 to award a $1 million check, to be used primarily for renovating the campus facilities that will house the newly-established research center.

Subsequent funds to be provided by the foundation will include $1.5 million to endow the W.M. Keck Foundation Distinguished Chair in Exploration Geoscience Computing, a permanent position for distinguished visiting professors, and $500,000 to support the center’s initial research and educational programs.

The Center for Exploration Geoscience Computing was established in November 1989, to combine CSM’s expertise in the earth sciences with advanced computer technology provided by IBM. The center is dedicated to fostering a modern, multidisciplinary approach to resource exploration.
Mineral Economics
Department
Presents Coulter
and Risser Awards

The William Jesse Coulter Award, created two years ago to honor the graduating student in Mineral Economics with the best academic record, was presented to Tony Wayne Church. For his outstanding performance in the Mineral Economics Executive Program, Church, who completed the demanding 16-month program with a perfect 4.0 average, works as a petroleum exploration geologist for the Chevron Corporation. He received $500 and a personal plaque. In addition, his name will be placed along with those of former recipients of the Coulter Award on a plaque that hangs in the department's offices.

Church received his undergraduate degree from Yale University in 1975. Before joining Chevron in 1981, he was a minerals exploration geologist with Kerr-McGee. He is married and has three children.

Richard A. Winters has been selected by the faculty of the Mineral Economics Department for the 1990 Risser Award. Winters was selected for his outstanding performance in the Mineral Economics Graduate Program, for his professional potential and promise, for his leadership, and for his demonstrated ability to apply the principles of economics to the mineral industries. Winters entered the Mineral Economics graduate program two years ago. A good example of the quality of his work is his project on gold prices that he wrote for Professor Thomas Kaufmann. The paper, subsequently revised and co-authored with Professor Kaufmann, has been published in the peer-reviewed journal Resource Policy. Winters served as the president of the graduate student association in mineral economics, and was recently re-elected to that position for next year. As the recipient of this year's Risser Award, he received $900 and a plaque.

To the classes of 1939, 1940 and 1941:

An hour-long VHS tape was made of the 1939 football team reunion during Homecoming 1989, and another similarly long tape concerning Spring 1990 commencement reunion, where silver-on-gold certificates were presented to members of the class of 1940, and Ralph Henniensch received an honorary PhD. Between the two reunions approximately 50 copies of tapes were mailed out to people who ordered them to review the activities, friends, and local scenes. Both of the reunions are now on one two-hour tape.

Paul Fillo is making this copy of the reunion available to those who have wanted to have been there but couldn't make it. Consequently, if you are interested in borrowing the tape for a period that their ROTC program was eliminated. The Mines ROTC unit was established in 1919 and has operated without interruption since that time. Mines ROTC has provided approximately 2,100 commissioned officers to the Army Corps of Engineers and other technical branches of the Active Force, Army Reserve and Colorado National Guard during a period including World Wars II, Korea and Vietnam. Mines ROTC is one of only eight Corps of Engineers affiliated programs in the United States. Alumni concerned over the scheduled closing of the ROTC program are urged to contact their Congressional delegations.

The other was at the University of Washington. The Mines ROTC unit was established in 1919 and has operated without interruption since that time. Mines ROTC has provided approximately 2,100 commissioned officers to the Army Corps of Engineers and other technical branches of the Active Force, Army Reserve and Colorado National Guard during a period including World Wars II, Korea and Vietnam. Mines ROTC is one of only eight Corps of Engineers affiliated programs in the United States. Alumni concerned over the scheduled closing of the ROTC program are urged to contact their Congressional delegations.

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Fantastic Golf Tournament Draws Record Crowd and Donations

by Ed Warren '50
General Chairman

I would like to personally thank everyone who helped to plan and run the tournament. Without the help and dedication of the golf committee, the CSMAA staff and others, the tournament could not have been the tremendous success that it was.

The golf committee consisted of chairman Art Meyer '50 along with Ned Davis '52, Ken Nickerson '48, Paul Owen '71, Jeff (Boke's) '80, Steve Sonnenberg '50, Ed Warren '50, Tim Hoops '79, Beth Whittem '79, Bob Todd '79, and Mary Jo Giddings. Our photographer was M.J. Giddings, and CSMAA President Jim Johnstone '48, with Mary Jo Giddings, worked the refreshment cart. All beverages were generously donated by Coors, with Mary Jo Giddings, and CSMAA President Jim Johnstone '48, working the refreshment cart. All beverages were generously donated by Coors.

Working the par-3 holes were my wife, Pat Warren, CSMAA staff members Judy Arbuskke, Kay Alexander, Betsy Myns, Cooke Ruthforsch and Deborah Mooney. CSMAA Executive Director Norm Zehfus assisted us greatly by extending the full support of the Alumni Association office to the effort.

Patrons, hole sponsors, prize donors and other supporters of the tournament contributed tremendously to the success of the 1990 endeavor. All of those exceptional people and companies deserve our profound thanks and gratitude.

Six years ago at the first annual tournament, 65 golfers participated, and this year 131 golfers signed up which was a 30 percent increase from 1989 so we are experiencing quite a growth in popularity. These flights of different handicaps were held in order to distribute the awards in a more equitable manner. Blind drawings of tickets resulted in a number of participants receiving excellent prizes which had been donated by a number of contributors.

On a different note, a few players have complained that certain golfers (and I use that term loosely) should be in a separate "old men's flight" since they seem to be doddering to keep up with all of us young pups. The committee seems to be of the opinion that we could supply canes and wheelchairs or allow free mulligans for those few poor old decrepit golfers! A survey of participants is now underway to address this problem which we hope will be solved by the year 2000.

Again, thanks to everyone involved in this tournament which resulted in a record $6,376 for the CSMA Alumni Association Student Financial Aid Program . . . which is the real winner. See you next year.
THE COLORADO SCHOOL OF MINES ALUMNI ASSOCIATION
SIXTH ANNUAL GOLF TOURNAMENT

A BIG THANK YOU TO EVERYONE WHO PARTICIPATED

A SPECIAL HANK YOU TO COORS BREWING COMPANY FOR OUR LIQUID REFRESHMENTS

THE COLORADO SCHOOL OF MINES ALUMNI ASSOCIATION

A BIG THANK YOU TO EVERYONE WHO PARTICIPATED

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EARL SVENNINGSEN - GOLF PRO AT LAKEWOOD COUNTRY CLUB

COLORADO NATIONAL BANK-GOLDEN - MICHAEL R. GREUNK

TO HELP SUPPORT THE CSMAA FINANCIAL AID PROGRAM

JOHN TRENCK - GOLF PRO AT PINEHURST COUNTRY CLUB

SIXTH ANNUAL GOLF TOURNAMENT

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COLORADO NATIONAL BANK-GOLDEN - MICHAEL R. GREUNKE

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CORE LAB

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TME BRIARWOOD INN

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CORE LAB

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XXX HOLE SPONSORS XXX

XXX TOURNEIMT PATRONS XXX

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August 9

HOUSTON ALUMNI—SIT DOWN LUNCH, Galleria, W. Loop 11:30-12:30; $11, no speaker, RSVP 713/726-9477.

August 11

CSMAA BOARD OF DIRECTORS MEETING—Golden, Wilsey Room/Ben Parker Student Center; coffee 8:00 a.m.; meeting 8:30 a.m.

August 25

DENVER ALUMNI NIGHT WITH THE DENVER ZEPHYRS VS. IOWA CUBS (Chicago Cubs Farm Team) game time 6:45 p.m.; reserved tickets $5.00, $8.00 if over 60 or under 14 years old; Free CSM permit to first 20 alumni who make reservations.

September 10

DOWNTOWN DENVER ALUMNI—BREAKFAST MEETING. Details to be announced, call Roger Huston (BSc. Geol. '80) 303/292-2352 or Claudia Beirne (BSc. Geop. '94) 303/298-2720 for information.

Speaker: Governor Roy Romer.

September 13

HOUSTON ALUMNI—BUFFET LUNCH. At Houston Engineering and Petroleum Club.

September 23-26

AMC MINING-CONVENTION '90, Hotel CSMAA Alumni Breakfast, Wednesday, Sept. 26, 7:30 a.m.-9:00 a.m.; $14; Fairmont Hotel, The Wildcatter Room; RSVP Alumni Office.

SOCIETY OF EXPLORATION GEOPHYSICISTS ANNUAL EXPOSITION, San Francisco, California. Details of alumni function to be announced.

Speaker: Dr. Phil Rorig, CSM Geophysics Department Head.

September 23-28

ORE DEPOSITS AND APPLIED VIGANOLOGY SEMINAR, San Juan Mountains, Colorado. Presented by CSM Alumni. For additional information call Art Pansze 303/279-0172 (FAX 303/278-3611).

October 9

OKLAHOMA CITY ALUMNI—BREAKFAST MEETING, Fifth Season Inn 7:00 a.m.; for information contact Greg Staff (BSc. CPR '73), 405/916-9750.

October 10

DENVER WEST ALUMNI—BREAKFAST MEETING, Sheraton Hotel, 360 Union Boulevard. Breakfast buffet 6:30 a.m.; program 7:00 a.m.; $8.00. Speaker: Fritz Benceke; retired CSM Athletic Director. For information call Section Coordinator Dan Wildscc, (Mst. E. '60) 303/236-5202.

October 19

CSMAA BOARD OF DIRECTORS MEETING, Golden, Middieton Room in the Ben Parker Student Center, 8:00 a.m.
**May 1-3**


**May 8-11**

**DENVER WEST ALUMNI BREAKFAST MEETING**

Sheraton Hotel, 360 Union Boulevard. Breakfast buffet 6:30 a.m.; program 7:00 a.m.; 8:00 a.m. Speaker: Dr. Eul-Soo Pang, Head of Global Systems and Cultures Department and Director of CSM International Institute; for information call Section Coordinator Dan Witkowski, (303) 236-5202.

**May 9**

**10TH INTERNATIONAL PRECIOUS METALS CONFERENCE—The Registry**

May 9; Commencement and Reunion scheduled including Senior Banquet May 11. Class Dinners May 10; All Alumni Gathering May 9; Preconference tour May 8. For more information contact 215/9700. 3290 Resort, Naples, Florida. Theme is Precious Metals in a Changing World—Eagle Gypsum Mine in Eagle, Colorado. Gary D. Miller, Geol. E. is joint interest coordinator for PennWell in Houston, Texas. Thomas M. Monchak, Math. E. and Misc. Math is project manager for Danie Engineering (now Rampart Ventures), and will be remembered in the Wyoming Mining Magazine, August 1990 during Mining Month, as proclaimed by Governor Mike Sullivan. Bryant, with longtime associates from Rampart Ventures, is now exploring through Helena Gold Co. precious metal properties in Montana and over the West, which are suitable for leach-method production.

**May 10**

**1981 ANNUAL MEETING OF THE SOCIETY FOR MINING, METALLURGY, AND EXPLORATION—Denver, Colorado**

For more information call 303/973-9950.

**April 10**

**DENVER WEST ALUMNI BREAKFAST MEETING**

Sheraton Hotel, 360 Union Boulevard. Breakfast buffet 6:30 a.m.; program 7:00 a.m.; 8:00 a.m. Speaker: Dr. Eul-Soo Pang, Head of Global Systems and Cultures Department and Director of CSM International Institute; for information call Section Coordinator Dan Witkowski, (303) 236-5202.

**June 16-18**

**1991 ANNUAL MEETING OF THE SOCIETY FOR MINING, METALLURGY, AND EXPLORATION—Denver, Colorado**

For more information call 303/973-9950.

**15TH INTERNATIONAL PRECIOUS METALS CONFERENCE—The Registry**

May 1-3, 1991; in New Orleans, Louisiana. Theme is Precious Metals in a Changing World—Eagle Gypsum Mine in Eagle, Colorado. Gary D. Miller, Geol. E. is joint interest coordinator for PennWell in Houston, Texas. Thomas M. Monchak, Math. E. and Misc. Math is project manager for Daniel Engineering (now Rampart Ventures), and will be remembered in the Wyoming Mining Magazine, August 1990 during Mining Month, as proclaimed by Governor Mike Sullivan. Bryant, with longtime associates from Rampart Ventures, is now exploring through Helena Gold Co. precious metal properties in Montana and over the West, which are suitable for leach-method production.

**ALUMNI UPDATES**

**50s**

'53 Paul D. Hinrichs, Geol. E. is senior geologist for FWAB, Inc. in Denver, Colorado. G.H. (Jerry) Bryant, E.M. has been nominated as one of the Mining Men of the Century in Wyoming and will be remembered in the Wyoming Mining Magazine, August, 1990 during Mining Month, as proclaimed by Governor Mike Sullivan. Bryant, with longtime associates from Rampart Ventures, is now exploring through Helena Gold Co. precious metal properties in Montana and over the West, which are suitable for leach-method production.

**60s**

'64 Stephen D. Chesebro, P.E. has been named president and CEO of Tenarco Gas, a subsidiary of Houston-based Tenarco Incorporated.

**70s**

'70 Stephen A. Onorofski, E.M. and Misc. Min.'71 is mine manager for Eagle Gypsum Mine in Eagle, Colorado. Gary D. Miller, Geol. E. is a joint interest coordinator for PennWell in Houston, Texas. Thomas M. Monchak, Math. E. and Misc. Math is project manager for Daniel Engineering (now Rampart Ventures), and will be remembered in the Wyoming Mining Magazine, August 1990 during Mining Month, as proclaimed by Governor Mike Sullivan. Bryant, with longtime associates from Rampart Ventures, is now exploring through Helena Gold Co. precious metal properties in Montana and over the West, which are suitable for leach-method production.
An open letter to Mines military men and women.

At a recent party in the remote village of Marzuawerelle, ColdnKli, Germany, I run into no less than five other Mines graduates. As the beer flowed (to include Coors if you can believe that), we began to reminisce about the Ace High, Physics 211, E-Days, and the whereabouts of other recent military alumni. The military is a close-knit organization much akin to the Mines experience, and what we found was that we had run into many fellow Miners serving throughout the world. Just to update you on their varied last known locations.

Maj Jason Hauck, BSc. B.E. 1977, is in Liberia, Africa as a military attaché (with time off the rebuilt). Capt Jay Markham, BSc. B.E. 1982, is an engineer for Chevron H defiantly in Philadelphia, Pennsylvania. Mark J. Olbrieuer, BSc. Eng. is product engineer for Denver Equipment Co. in Colorado Springs, Colorado. Dominick J. Ricotta, BSc. CPR is an associate attorney for Holmes & Owen in Denver, Colorado. George Goddard, BSc. MEng., is a hydrogeologist for Clayton Environmental Consultant Corp. in Edison, New Jersey. Mike C. Wood, BSc. GeoL is an estimator for Landmark Resources of Midcontinent in Fort Worth, Texas.

Wade A. Krueck, BSc. Pet. is a junior engineer with Waste-Tech Services Inc. in Golden. Larry and Jo Elizabeth Wishman are planning a Saturday, August 11, wedding in Los Angeles. Mike J. E. Joseph, BSc. Pet., is an engineering geologist for Southern California Edison in Beaumont, California. Robert A. Pease, BSc. CPR is an attorney for Quicksilver Environmental in Golden, Colorado. Cpt Gary Pease is in Karlshamn, Germany, having just successfully built a large gas pipeline. Robert A. Pease is at Fort Carson, Colorado, with the 4th Engineer Combat Battalion. Capt Jerry Olsen, BSc. GeoL 1986, is also at Fort Carson, Colorado, with the 52nd Engineer Combat Battalion (Hv) and is about to head off to advanced civil schooling. Capt Jerry Olsen, BSc. GeoL 1986, is also at Fort Carson, Colorado, with the 52nd Engineer Combat Battalion (Hv) and is about to head off to advanced civil schooling. Capt Jerry Olsen, BSc. GeoL 1986, is also at Fort Carson, Colorado, with the 52nd Engineer Combat Battalion (Hv) and is about to head off to advanced civil schooling.

With so many graduates serving in such diverse areas, the Colorado School of Mines is continuing to earn quite a reputation. Should Congress ever consider dismantling the ROTC program at Mines, let them look thoughtfully (see pageul 29) at the many past and present military men and women who are serving in the military today. Should Congress ever consider dismantling the ROTC program at Mines, let them look thoughtfully (see pageul 29) at the many past and present military men and women who are serving in the military today.
Dr. George Pimentel

He received a honorary degree from GSW in 1987.

Born in Rollina, California, on May 2, 1922, Pimentel was the son of a building contractor whose schooling ended at the third grade. "My father was an enormous entrepreneur," Pimentel once said. "He used to say that if there's anything you should do it's get a good education so you don't have to work with your hands like me." Pimentel's father also encouraged his sons to tinker with tools, and this willingness to tinker became a hallmark of the chemist's career.

Educated with more than 200 scientific publications and eight scientific books, Pimentel is probably best known for his pioneering work with infrared spectroscopy called "molecular isolation," which made possible the analysis of short-lived reactive molecules. His pioneering work with infrared spectroscopy led to the instrumentation aboard the Mariner 6 and 7 flights to Mars that revealed the possibility of the analysis of short-lived reactive molecules.

Among the many honors Pimentel received for his scientific contributions were the National Medal of Science (1983), the nation's highest science award; the Priestley Medal (1989), which is the highest award in chemistry; the Wolf Prize in Chemistry (1983), and the Robert A. Welch Award (1980). Pimentel was also distinguished for his dedication to service and his efforts to education. He served as director of the National Science Foundation from 1977 to 1980. In 1984, he headed a joint project of the National Academy of Sciences and the National Research Council to produce a comprehensive appraisal of chemistry in the United States. Published in 1985 as Opportunities in Chemistry, the book became known as the "Pimentel Report."

Working with his daughter, Janice Coomard-Ferguson, a high school chemistry teacher, Pimentel put out a version of this report geared to students, entitled Opportunities in Chemistry. Today and Tomorrow. He felt this second version could be even more important than the original if it influenced young people to think about chemistry.

Pimentel won the University of California's Outstanding Teacher Award in 1960 and two national teaching stations in 1970. Pimentel is survived by his wife, Junie, a brother, three daughters, a stepdaughter, a stepson, and five grandchildren.

The family suggests that contributions in the form of gifts be made to the Charles S. Knox Foundation. Contributions will be used to help establish a laboratory in his name.

(From GSW, June 25, 1989.)
He retired January, 1980 at the age of 65. "Bobie Beck," as Merle affectionately referred to his wife of 65 years, and Merle celebrated their golden wedding anniversary in June, 1987 with many friends and family attending. He is survived by his wife, Vivian L. (Beck) Gilbreath. They have four children: Alice Avery, Roy Gilbreath, and Jerry Gilbreath of Houston, Texas and Melanie Jeaneett of Shreveport, Louisiana, and nine grandchildren.

When the company was sold in 1956 he returned to Hastings Field in Texas he met and married Vivian, at the United Methodist Church of Abilene. He was field engineer at Getra Field, Texas, then transferred to the Houston office. He worked for the McCarthy Drilling Co. at Angleton, Texas. During World War II, he reported for active duty as an officer in the first instructors training center at Camp Abbott, battalion commander at the replacement center before the bombing of Pearl Harbor. At the replacement training center he was an instructor under Col. Louis Frentz '21, another Mines graduate. He was installation commander at the replacement training center at Camp Abbot, Oregon and at Fort Lewis, Washington. He was commandant of the Engineer Fire Fighting School of Fort Lewis. Here he was able to use all facets of his 32 years of work in the oil industry.

Here he was able to use all facets of his 32 years of work in the oil industry. 

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