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Berkeley, California

Western Mining in the Twentieth Century Oral History Series
Knoxville District/McLaughlin Mine Project

# William A. Humphrey

## MINING OPERATIONS AND ENGINEERING EXECUTIVE FOR ANACONDA, NEWMONT, HOMESTAKE, 1950 TO 1995

With an Introduction by
Jack E. Thompson, Jr.

Interviews Conducted by
Eleanor Swent
in 1994 and 1995

Since 1954 the Regional Oral History Office has been interviewing leading participants in or well-placed witnesses to major events in the development of Northern California, the West, and the Nation. Oral history is a modern research technique involving an interviewee and an informed interviewer in spontaneous conversation. The taped record is transcribed, lightly edited for continuity and clarity, and reviewed by the interviewee. The resulting manuscript is typed in final form, indexed, bound with photographs and illustrative materials, and placed in The Bancroft Library at the University of California, Berkeley, and other research collections for scholarly use. Because it is primary material, oral history is not intended to present the final, verified, or complete narrative of events. It is a spoken account, offered by the interviewee in response to questioning, and as such it is reflective, partisan, deeply involved, and irreplaceable.

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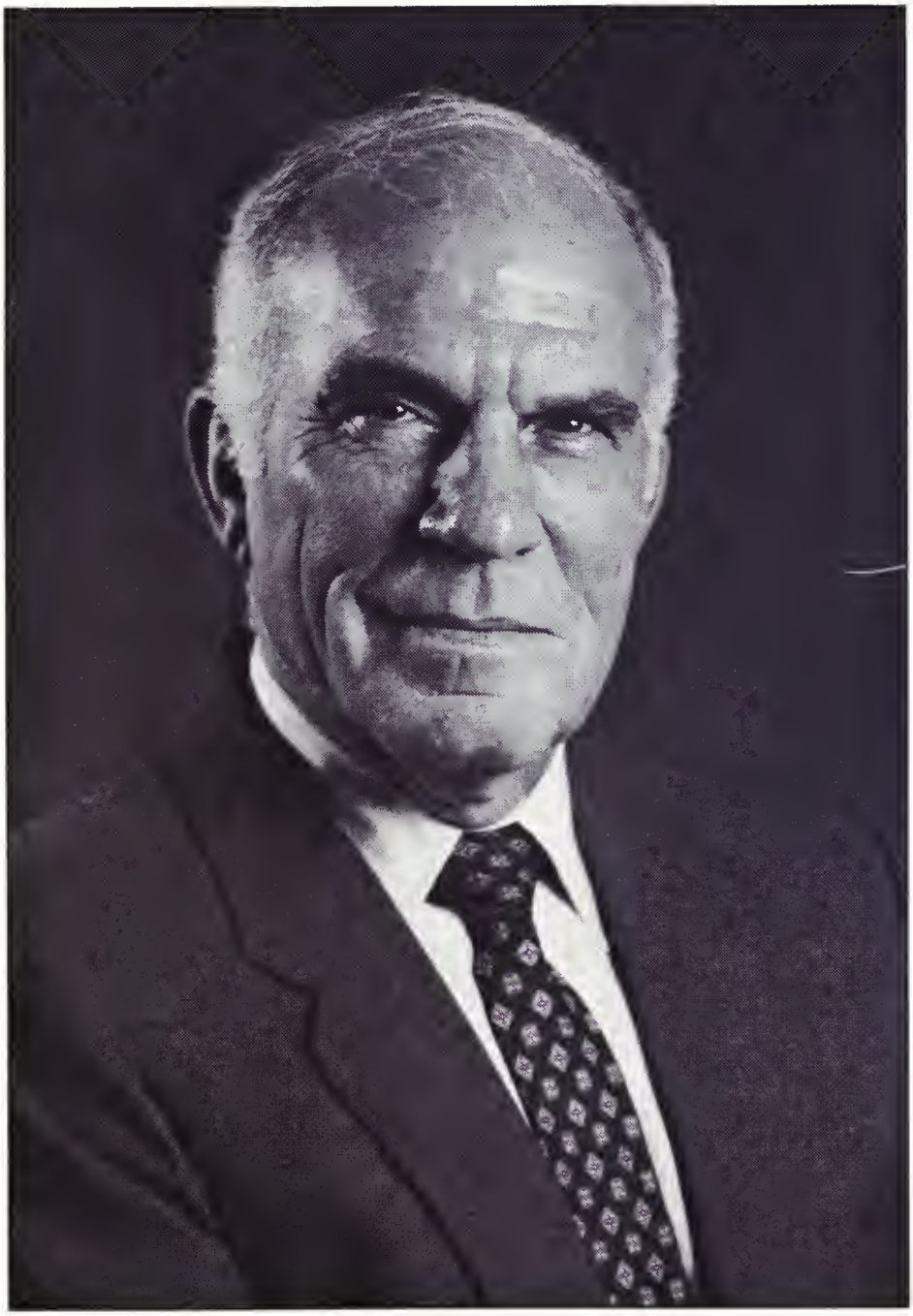

William A. Humphrey, 1991.

Cataloging information

HUMPHREY, William A. (b. 1927) Mining engineer

Mining Operations and Engineering Executive for Anaconda, Newmont, Homestake, 1950 to 1995, 1996, xvi, 225 pp.

Childhood in Potrerillos, Chile; education, University of Arizona; Anaconda Co., 1950-1975: junior geologist to executive vice president, Cananea Consolidated, Mexico, planning vice president, Butte, MT; discusses mine mapping, open stope mining system, solvent extraction, electro-winning, bacterial leaching, silver and gold payrolls; Newmont Mining Company, 1975-1981: vice president operations, mines in Canada, U.S., Africa, Peru; Homestake Mining Company, 1981-1995: executive vice president, president, vice chairman, discusses McLaughlin Mine development, management during construction and operations; Australian, Chilean subsidiaries; Doe Run Company, 1987-1990: chairman, chief executive; chairman, hazardous waste committee, Western Regional Council, legislative advisory group; Armand Hammer, oil shale project; comparison of corporate executives, management styles, mining philosophy.

Introduction by Jack E. Thompson, Jr., President, Homestake Mining Company.

Interviewed in 1994 and 1995 by Eleanor Swent for Knoxville District/McLaughlin Mine Project, Western Mining in the Twentieth Century Oral History Series. Regional Oral History Office, The Bancroft Library, University of California, Berkeley.

DONORS TO
THE KNOXVILLE DISTRICT/MCLAUGHLIN MINE PROJECT OF THE
THE WESTERN MINING IN THE TWENTIETH CENTURY ORAL HISTORY SERIES
1993-1996

The Regional Oral History Office, on behalf of future researchers, would like to express its thanks to the following corporations, organizations, and individuals whose encouragement and support have made possible this oral history project of the Knoxville District/McLaughlin Mine.

Corporations and Organizations

Chemical Lime Company
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Homestake Mining Company
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One Shot Mining Company

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Rosemary and Harry Conger
Margaret and Douglas Fuerstenau
Launce Gamble
Edna and William Humphrey
James H. Jensen
Eleanor Swent in memory of Langan Swent
James William Wilder

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PREFACE

The oral history series on Western Mining in the Twentieth Century documents the lives of leaders in mining, metallurgy, geology, education in the earth and materials sciences, mining law, and the pertinent government bodies. The field includes metal, non-metal, and industrial minerals. In its tenth year the series numbers thirty-five volumes completed and others in process.

Mining has changed greatly in this century: in the technology and technical education; in the organization of corporations; in the perception of the national strategic importance of minerals; in the labor movement; and in consideration of health and environmental effects of mining.

The idea of an oral history series to document these developments in twentieth century mining had been on the drawing board of the Regional Oral History Office for more than twenty years. The project finally got underway on January 25, 1986, when Mrs. Willa Baum, Mr. and Mrs. Philip Bradley, Professor and Mrs. Douglas Fuerstenau, Mr. and Mrs. Clifford Heimbucher, Mrs. Donald McLaughlin, and Mr. and Mrs. Langan Swent met at the Swent home to plan the project, and Professor Fuerstenau agreed to serve as Principal Investigator.

An advisory committee was selected which included representatives from the materials science and mineral engineering faculty and a professor of history of science at the University of California at Berkeley; a professor emeritus of history from the California Institute of Technology; and executives of mining companies. Langan Swent delighted in referring to himself as "technical advisor" to the series. He abetted the project from the beginning, directly with his wise counsel and store of information, and indirectly by his patience as the oral histories took more and more of his wife's time and attention. He completed the review of his own oral history transcript when he was in the hospital just before his death in 1992. As some of the original advisors have died, others have been added to help in selecting interviewees, suggesting research topics, and securing funds.

The project was presented to the San Francisco section of the American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME) on "Old-timers Night," March 10, 1986, when Philip Read Bradley, Jr., was the speaker. This section and the Southern California section of AIME provided initial funding and organizational sponsorship.

The Northern and Southern California sections of the Woman's Auxiliary to the AIME (WAAIME), the California Mining Association, and the Mining and Metallurgical Society of America (MMSA) were early supporters. Other individual and corporate donors are listed in the

volumes. Sponsors to date include seventeen corporations, four foundations, and ninety-six individuals. The project is ongoing, and funds continue to be sought.

The first five interviewees were all born in 1904 or earlier. Horace Albright, mining lawyer and president of United States Potash Company, was ninety-six years old when interviewed. Although brief, this interview adds another dimension to a man known primarily as a conservationist.

James Boyd was director of the industry division of the military government of Germany after World War II, director of the U.S. Bureau of Mines, dean of the Colorado School of Mines, vice president of Kennecott Copper Corporation, president of Copper Range, and executive director of the National Commission on Materials Policy. He had reviewed the transcript of his lengthy oral history just before his death in November, 1987. In 1990, he was inducted into the National Mining Hall of Fame, Leadville, Colorado.

Philip Bradley, Jr., mining engineer, was a member of the California Mining Board for thirty-two years, most of them as chairman. He also founded the parent organization of the California Mining Association, as well as the Western Governors Mining Advisory Council. His uncle, Frederick Worthen Bradley, who figures in the oral history, was in the first group inducted into the National Mining Hall of Fame in 1988.

Frank McQuiston, metallurgist for the Raw Materials Division of the Atomic Energy Commission and vice president of Newmont Mining Corporation, died before his oral history was complete; thirteen hours of taped interviews with him were supplemented by three hours with his friend and associate, Robert Shoemaker.

Gordon Oakeshott, geologist, was president of the National Association of Geology Teachers and chief of the California Division of Mines and Geology.

These oral histories establish the framework for the series; subsequent oral histories amplify the basic themes. After over thirty individual biographical oral histories were completed, a community oral history was undertaken, documenting the development of the McLaughlin gold mine in the Napa, Yolo, and Lake Counties of California (the historic Knoxville mercury mining district), and the resulting changes in the surrounding communities. This comprises around 120 hours of interviews with nearly forty people.

Future researchers will turn to these oral histories to learn how decisions were made which led to changes in mining engineering education, corporate structures, and technology, as well as public policy regarding minerals. In addition, the interviews stimulate the deposit, by

interviewees and others, of a number of documents, photographs, memoirs, and other materials related to twentieth century mining in the West. This collection is being added to The Bancroft Library's extensive holdings. A list of completed and in process interviews for the mining series appears at the end of this volume.

The Regional Oral History Office is under the direction of Willa Baum, division head, and under the administrative direction of The Bancroft Library.

Interviews were conducted by Malca Chall and Eleanor Swent.

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Regional Oral History Office

Eleanor Swent, Project Director
Western Mining in the Twentieth
Century Series

November 1995
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* Deceased during the period of the project

PROJECT HISTORY--Knoxville District/McLaughlin Mine Oral History Project

The development of the McLaughlin gold mine in the Knoxville District of Napa, Lake, and Yolo Counties in California in the last quarter of the twentieth century was a historically significant event. The mines of the district had been major producers of mercury since 1861. In 1888 an official report by G. F. Becker on the quicksilver deposits mentioned the presence of free gold which could be obtained by panning. It took almost a century before this knowledge could be acted upon when Homestake Mining Company signed an agreement with James William Wilder, owner of the Manhattan Mine, in 1978.

Advisors to the oral history series on Western Mining in the Twentieth Century who were also Homestake directors, Professor Douglas Fuerstenau, principal faculty advisor, Clifford Heimbucher, and John Kiely, all urged the Knoxville/McLaughlin oral history project, as did advisor Sylvia McLaughlin, widow of the Homestake chairman for whom the mine was named. It was decided it should be a community oral history, in contrast to the previous volumes in the series which documented individual careers.

The five historically important aspects are: the history of the Knoxville mercury mining district, with its periodic booms and busts; the effects of a large industrial development and influx of technically trained workers in an economically depressed rural area; the efforts to obtain permits to develop a mine near a center of environmental activism; the continuous pressure oxidation system which was pioneered at the McLaughlin processing plant; the reclamation of the mine site. The life of the McLaughlin mine was projected to be about twenty years, and most of the key players were available for interviews. It is a nearly unique opportunity to document the discovery, development, and closing down of a mine while it is happening.

The chronology of the McLaughlin Mine is as follows: in 1961, following publication of a Professional Paper by USGS geologist Ralph J. Roberts, Newmont geologists John S. Livermore and J. Alan Coope found a major deposit of micron-sized gold on the Carlin trend in Nevada. It was economic to mine because of technological advances in explosives and earth-moving equipment, and development of new methods such as heap-leaching for recovery of gold from ore. This led other mining companies to search for similar deposits of "invisible" gold.

In 1969, the National Environmental Protection Act was passed, followed in 1970 by the California Environmental Quality Act.

In the 1970s, "Bill" Wilder, principal of the One Shot Mining Company, was reclaiming batteries for Mallory Company in the furnaces at the Manhattan mercury mine. Environmental concerns had made mercury

mining unprofitable, so Wilder was crushing the beautiful colored rock on his property and selling it as decorative stone. An assay from several years before had showed gold was there, but at that time mercury at $75 a flask was more valuable than gold at $35 an ounce, the official price from January 1934, when the United States went off the gold standard, until 15 March 1968.

In August 1971, President Richard Nixon terminated the convertibility of the dollar into gold, and the price climbed to $700 an ounce in 1980. In 1977, Homestake Mining Company underwent a restructuring and embarked on a program to find a world-class gold mine. Their search revealed geology reports in their files from the 1920s which encouraged exploration at hot springs near the Knoxville mercury mining district of northern California. In 1978 Donald Gustafson, Homestake geologist, visited the Manhattan Mine at the place where Napa, Yolo, and Lake Counties meet.

The history of the Knoxville District begins in 1861 with the incorporation of the Redington quicksilver mine, also known as the XLCR or Knoxville mine, then employing as many as 300 men. The town of Knoxville had thirty or more buildings, including a store, hotel, postoffice, Wells Fargo office, school, and cemetery. In 1872 the state legislature transferred prosperous Knoxville Township from Lake County to Napa County, although it is separated from the Napa Valley by mountain escarpments. Lake County was compensated with a one-time payment of $3500.

In 1869 Knox and Osborn opened the Manhattan Mine on the same lode as the Redington. The Oat Hill or Napa Consolidated Mine was opened in 1872. A report on the metallurgy of quicksilver issued by the Department of the Interior in 1925 says, "In 1874, the Knox continuous shaft-furnace for the treatment of both fine and coarse ores was first used in California." [Bulletin 222, p. 5] The Knox-Osborn design was further augmented by a fine-ore natural-draft furnace developed by mine superintendent Charles Livermore. The district prospered until 1905, for a decade around World War I, and from 1927-1936. Demand for mercury rose during wartime because it was used as a detonator for explosives.

Knoxville was linked by road through Sulphur Canyon with the town of Monticello in fertile Berryessa Valley. Farmers descended from early Scots settlers grew pears, prunes, wheat, and barley and occasionally worked in the mercury mines. After World War II, when California's population was growing rapidly, a dam was built which by 1956 flooded the valley to create Lake Berryessa. It attracted vacationers, and for most of them it was the end of the line. The unpaved road from Lake Berryessa to Knoxville was impassable when rains filled the creek bed. In the other direction, from Knoxville to Clearlake, there was a similar little-used road through Morgan Valley.

Although it is only a few miles from the densely populated San Francisco Bay Area, in 1978 Knoxville township had few telephones, surfaced roads, or bridges. Populated by ranchers, miners, seasonal hunters, and outlaws, it was one of the most economically depressed regions in California, with high unemployment. In 1991, Napa historian Robert McKenzie called it "truly the last frontier of Napa County."

Mining companies are familiar with developing mines in remote and rugged locations, with the attendant logistical problems. In this case, there was the further challenge of obtaining permits to develop a mine in the jurisdiction of three counties, regional and state water quality districts, three regional air quality districts, various state agencies, and the Bureau of Land Management. It took more than five years and cost millions of dollars to secure the 327 required permits which made a stack of paper more than eight feet high. In addition, the ore itself was finely disseminated, fairly low grade, and as it turned out, highly refractory. Traditional methods of beneficiation were ruled out by environmental concerns, so Homestake metallurgists developed a high pressure oxidation system, incorporating technology from South Africa, Germany, Canada, and Finland, which has now been widely copied.

The eventual design was for a mine pit with adjacent crushing plant and a five-mile pipeline to conduct slurry to a zero-discharge processing plant using a variety of technologies, including autoclaves. Reclamation in the mine and on dumps began almost immediately, and at the end of the mine's life, it was to be a part of the Nature Reserve system of the University of California, for research by scholars at both the Berkeley and Davis campuses.

In 1991, the Regional Oral History Office began to explore possibilities for funding the Knoxville/McLaughlin oral history. A four-year project was outlined to include about thirty-five interviews averaging three hours each, for a total cost of $100,000. The initial plan was to schedule and begin interviews with key Homestake and community personnel in the first year, and to transcribe and edit these interviews concurrently with continuing interviews through the second and third years. The fourth year would be devoted to the final editing tasks. The product would be a set of three volumes covering the mercury mining, the gold mining, and the resulting changes in the surrounding community.

The Hearst Foundation granted $20,000 to document the gold mine, and the Mining and Metallurgical Society of America gave $6,000 to document the earlier mercury mining. Homestake and Chemical Lime Company each donated $2,000, which enabled interviewing to begin in March, 1993.

The best laid plans, however, can be spoiled by circumstances beyond control. One of the first names on the list of interviewees was John Ransone, Homestake's construction project director. He sent helpful

background documents in preparation for a scheduled interview; however, before it could be held he died of lung cancer. The project manager for the construction company, Klaus Thiel, in the meantime had been assigned to work in Brisbane, Australia, so he could not be interviewed. Several of the other Homestake people had scattered: James Anderson to Denver, Jack Thompson and John Turney to British Columbia, David Crouch to Salt Lake City, Donald Gustafson to jobs in Namibia and Kazakhstan, Joseph Strapko to Maine. William Humphrey and Richard Stoehr both underwent major surgery.

Similar problems occurred on the list of community leaders. Some died and others moved away. All of this led to a revised plan to use the available funding to press ahead with recording all the interviews, and to leave the processing of the tapes for later.

There is a perception that the former mercury miners are all dead, killed by mercury poisoning. In fact, Dean Enderlin, a geologist at the McLaughlin Mine and also a Napa County native and historian, helped to locate some who were remarkably healthy, and who were interviewed. Elmer Enderlin in his eighties spends summers working at his tungsten prospect in Idaho and winters in Lower Lake. Anthony Cerar, also in his eighties, actively maintains several historic mercury mines, including La Joya and Corona. William Kritikos, operator of the Oat Hill Mine, was nearly 73 when he died following a stroke, but was in good health at the time of his interview. Ed McGinnis, who worked around the Reed Mine as a boy, is still active in his seventies. Bill Wilder, who owned the Manhattan Mine, is a relative youngster in his seventies and in good health in Upper Lake.

By 1996 a number of members of the local communities had been interviewed: a county supervisor from each of the three counties involved, Napa County planners, the Lake County school superintendent, community historians and pioneers, merchants, and ranchers. Some of the most vocal opponents of the mine were also interviewed. Interviews were conducted with most of the Homestake employees involved in the discovery and development of the mine. More interviewing is still needed, and transcribing and processing has hardly begun, stalled by the need to raise further funds.

Two of the interviews were completed in 1996: William Humphrey, who was Homestake's executive vice president of operations in charge of the mine development, and William Wilder, owner of the Manhattan Mine. The oral history of Langan Swent also contains relevant information.

We are grateful to all of the interviewees for their participation. There are many others who have helped also. Homestake Mining Company has cooperated with the project, lending the Regional Oral History Office a computer and printer, and making available for research the archival video tapes and files of newspaper clippings and news releases, as well

as the environmental studies, the environmental impact report, and the environmental impact statement. Early on, a day tour of the property and box lunch were provided for a van load of ROHO staff, interested students, and faculty from the University of California at Berkeley. The conference room at the mine and the San Francisco offices at 650 California Street have been used for interviewing.

James Jensen made available his extensive files on mercury mining and processing and mercury poisoning. Anthony Cerar led a vigorous hike around the Knoxville mine site, identifying foundations of long-gone buildings and workings. John Livermore conducted a tour by jeep of the Knoxville district, and suggested the importance of the Morgan North papers at The Bancroft Library. Staff members gave help at the Napa Register, the Napa Museum, the Sharpsteen Museum in Calistoga, and the Lake County Museums in Lower Lake and Lakeport.

The tapes of all the interviews are available for study at The Bancroft Library. The completed volumes will be available at The Bancroft Library and in the Special Collections at UCLA.

Eleanor Swent, Project Director
Knoxville District/McLaughlin Mine
Oral History Project

February 1996
Regional Oral History Office
The Bacroft Library
University of California, Berkeley

INTRODUCTION--by Jack E. Thompson, Jr.

William Shakespeare once said "To be honest as this world goes, is to be one man picked out of ten thousand." I have known Bill Humphrey for about twenty years and can say Bill is one in ten thousand. This is so not only for his reputation for being honest and straight forward but also for the way he has conducted his life in the everyday ways that define a person. He has always been unassuming, modest and never ostentatious. He is a great believer of striking a balance between work and family; always placing a strong emphasis on family values and high moral standards. He is a straight-shooter always willing to stand up for what he believes. He is a man of strong character and persistence in overcoming adversity. In short, he is a great role model.

I first met Bill in the mid 1970s while working in a remote mining camp in northern British Columbia. He had joined Newmont Mining as vice president of operations and began making regular trips to our mine. It did not take me long to realize that Bill believed that a good manager is a man who is not worried about his own career but rather the careers of those who work for him. His advice: do not worry about yourself. Take care of those who work for you and you'll float to greatness on their achievements. He was always on the lookout for talent--especially among the young engineers and geologists in the organization. When he found it he worked hard at developing that talent in any way that he could. This involved everything from finding challenging assignments to the development of their minds. I was fortunate to have him as my mentor and still recall the many books and articles I received over the years from him, not just on mining; in fact, most were not about our profession but rather books on anthropology, philosophy, psychology, etc. I now find myself doing the same.

At a certain age some people's minds close up and they then live on their "intellectual fat." This was never the case with Bill. He understood that flexibility and willingness to challenge the old way of doing things without sacrificing one's ideals is very important in the success of men, companies and society in general. I remember well the difficulties we had at a uranium mine located on the Spokane Indian reservation. The late 1970s was a period of transition and turmoil on the reservations, both from a political and environmental standpoint. Bill showed amazing flexibility in accepting the changes required in the new environment in which we were operating. Another example was his support and defense of the radical changes proposed in the design and development of a new state-of-the-art gold mine in Napa County, California. The project pioneered many technical innovations mostly to make the McLaughlin mine as environmentally benign as possible. Given the $287-million-dollar investment required, Bill showed courage in making the changes in his thinking when necessary. The mine has gone on

to many successes and has been the recipient of many environmental awards over the years. It is safe to say that under Bill's guidance, the mine set a new standard for environmental excellence in the industry.

Just as he looked for new talent throughout his career, he has also been a great supporter of new technology. At the mines, he constantly challenged management to seek new mining methods, equipment, etc. in order to do what we do better. His support for the pioneering use of autoclave technology in the processing of gold ores at the McLaughlin mine is probably the most visible of the innovations made under his tutelage. This process has now been widely copied and is in successful use around the world. Bill believed in cross fertilization of ideas. Over the years he constantly arranged for technical exchanges with other mines and he actively encouraged mine visits to stay current in technological advances.

Bill continues to stand up for what he believes and remains active in national politics supporting talented individuals who will do what is right for America. He is active in the Western Regional Council--a group focused on educating our western governors on issues that impact our region.

The world is divided into people who do things--and people who get the credit. It is fitting and appropriate that we have recorded Bill's oral history so that others can appreciate what can be accomplished in a life time. Bill has shown what one can do when one has the strength of character, strong convictions and the motivation to go out and do what's right.

Jack E. Thompson, Jr.
President, Homestake Mining Company

February 8, 1996
San Francisco, California

INTERVIEW HISTORY--by Eleanor Swent

William A. Humphrey's oral history is part of the documentation of the Knoxville District and the McLaughlin Mine in the series on Western Mining in the Twentieth Century. Humphrey was hired as executive vice president of Homestake in 1981 and took charge of development of the McLaughlin project.

Bill Humphrey is a second generation mining engineer, born in Potrerillos, Chile, where his father was smelter superintendent for Anaconda. After schooling in Chile and New Jersey and service in the navy during World War II, he studied geological engineering at the University of Arizona under the G.I. Bill, graduating in 1950 with distinction. His alma mater granted him the honorary degree of Professional Engineer in 1965. He has a good sense of mining as a historic profession in its international and domestic aspects. He also has the distinction of having been an executive of three major mining companies: Anaconda, Newmont, and Homestake. He is thus qualified to compare as he does in his interview the corporate culture of those companies and the executive style of their presidents Clyde Weed, Plato Malozemoff, and Harry Conger.

He went to work for Anaconda in 1950 as a junior geologist at Cananea, Sonora, Mexico, south of Bisbee, Arizona. He became interested in the operation of the mine and transferred to the planning department. Later he voluntarily took a cut in pay to become a shift foreman in order to gain better experience in operations management. Ultimately he became general manager and executive vice president of Cananea Consolidated Copper Company and then after Mexicanization, of the Compania Minera de Cananea. He transferred to Butte, Montana, as planning vice president of Anaconda Copper Company.

In 1975 he was hired by Newmont as vice president of operations, with responsibilities primarily in British Columbia, Colorado, Nevada, and Washington State, but also experience in North Carolina, South Africa, and Peru.

In 1981 he was hired by Harry Conger as executive vice president to head Homestake's new division of mining operations. The McLaughlin project was under development and Humphrey drew on his long experience in planning and engineering major mining projects to build the staff for construction and operations. He was personally involved in Homestake's pro-active campaign to get community support for the mine and processing plant and obtain the more than 300 permits required from three counties as well as several regional, state, and federal jurisdictions. He was also responsible for approving the revolutionary autoclave system to treat refractory ore in an environmentally sound manner. He was chairman

of the management committee for Homestake's partnership interests in the Viburnum lead district in Missouri, and from 1987 to 1990 was chairman and chief executive of Doe Run Company, formed by Homestake and St. Joe-Fluor. He became a director of Homestake in 1982 and in 1991 was named president of Homestake Mining Company. He continues to serve as vice chairman of the board, a position he has held since 1992.

The introduction to the oral history was written by Jack Thompson, Jr., president and chief operating officer of Homestake Mining Company. He was recruited from Newmont by Humphrey in 1981 to direct the McLaughlin Mine feasibility study; he became manager at McLaughlin, then president of Homestake's Canadian subsidiary, before assuming his present position.

Interviewing was delayed for a time when Humphrey learned that he had a rare blood condition which caused clotting in his leg, which had to be amputated. This obviously put him in a contemplative frame of mind for the interviews which were held, after a planning session on 13 September 1994, in his offices at an executive suite in Walnut Creek, on 28 September, 12 October, and 16 November 1994. The transcript was sent to him for review, and he returned it promptly with almost no changes except to suggest that we add the period of his chairmanship of Doe Run Company. An additional interview was conducted on this subject on 28 August 1995. Again, he returned the transcript promptly with only minor changes. He also checked the final transcript for accuracy.

He rallied from his surgery, diligently pursued physical therapy, and now walks well. He continues to travel both for business and pleasure. Before he leaves home for Australia, he sets his watch for the time of the destination, arriving without feeling jet lag, and ready for business.

Humphrey is married to his high school sweetheart Edna. They have four grown children and live in Alamo, California.

The tapes of the interviews are available for study at The Bancroft Library.

Eleanor Swent
Interviewer/Editor

February 1996
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## BIOGRAPHICAL INFORMATION

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Father's full name THOMAS ZENAS HUMPHREY

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Mother's full name ETHEL KATHARINE KOLBE

Occupation HOUSEWIFE Birthplace CHICAGO, ILL.

Your spouse EDNA LILLIAM (JOULE) HUMPHREY

Occupation HOUSEWIFE Birthplace BROOKLYN, N.Y.

Your children PATRICIA ANN STEVENS, NANCY JOULE CARTER, KATHARINE ELIZABETH FERNANDEZ, WILLIAM ALBERT HUMPHREY JR.

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Other interests or activities LOBBYING AND MINE DIRECTORSHIPS

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| 1981-1991 | Homestake Mining Co., Ex. V.P., Operations, Director |
| 1975-1981 | Newmont Mining Corp., V.P. Operations |
| 1975 | The Anaconda Co., V.P. Planning |
| 1971-1975 | Cananea Copper Co., mem. Exec. Comm., Ex. V.P. and Gen. Mgr. |
| 1968-1971 | Cananea Copper Co., Asst. Gen. Mgr. |
| 1968 | Cananea Copper Co., Gen. Supt. |
| 1965-1968 | Cananea Copper Co., Asst. to Gen. Mgr. |
| 1959-1965 | Cananea Copper Co., Planning Engineer |
| 1956-1959 | Cananea Copper Co., Underground Mine Division Foreman |
| 1955-1956 | Cananea Copper Co., Leaching and Precipitation Plant Foreman |
| 1954-1955 | Cananea Copper Co., Planning Engineer |
| 1950-1954 | Cananea Copper Co., Chief Geologist, Geologist/Asst. |

**Member:** Tau Beta Pi Engineering Honor Society; AIME; AMC; Registered Professional Engineer, Arizona

**Director:** Homestake Mining Company; Homestake Gold of Australia Limited.; YMCA of San Francisco; National Mining Hall of Fame and Museum; Board of Trustees, Western Regional Council; Member Management Committee - Round Mountain Gold Mine; Member Management Committee - Kalgoorlie Consolidated Gold Mines Pty Ltd.

**Awards:** Hon. Degree of Professional Engineer, University of Arizona, 1965

## WILLIAM A. HUMPHREY

Vice Chairman
Homestake Mining Company
San Francisco, California

William A. Humphrey (b.1-12-27), Vice Chairman, began his career with Homestake in 1981 as Executive Vice President, Operations, with overall responsibility for Homestake's domestic operations, engineering and new project development. One year later, in 1982, he was elected to the Board of Directors of Homestake.

From 1984 to 1992, Mr. Humphrey served as Homestake's representative on the Management Committee of the Round Mountain Gold Mine, in which Homestake holds a 25% interest. Round Mountain, located in Nevada, is the largest open-pit heap-leach operation in the United States. Mr. Humphrey is also Homestake's representative on the Operating Committee of Kalgoorlie Consolidated Gold Mines Pty Ltd (KCGM), the management company responsible for managing and operating Australia's largest gold mining and milling complex at Kalgoorlie-Boulder in Western Australia, which is 50 percent owned by a Homestake subsidiary.

In 1987, Mr. Humphrey was appointed Chairman of the Management Committee of The Doe Run Company, North America's largest fully integrated primary lead producer, a position he held until May of 1990 when Homestake sold its 42.5% interest to Fluor Corporation. Mr. Humphrey also served on the Homestake Board of Directors' Executive and Finance Committees. In May, 1991, he was elected President and Chief Operating Officer of Homestake Mining Company. In July, 1992, following the merger with International Corona Corporation, Mr. Humphrey resigned as President and COO and was named Vice Chairman. He remains a director of Homestake Mining Company and Homestake Gold of Australia Limited, Adelaide, South Australia.

Mr. Humphrey began his career as a mine engineer in 1950 when he joined the Cananea Consolidated Copper Company, a subsidiary of the Anaconda Company, in Sonora, Mexico. He remained with Cananea for the next 25 years, rising through various positions to become Executive Vice President, General Manager and a Director. He returned to the United States in 1975 to become Vice President, Planning for Anaconda's Butte, Montana operations. Immediately prior to joining Homestake, Mr. Humphrey was Vice President-Operations, Newmont Mining Corporation, with responsibility for the Dawn Uranium Mine in Washington, Carlin Gold Mine in Nevada, the Idarado Mine in Colorado, and for Newmont Mines Ltd. in Canada. He was also a director of Sherritt Gordon Mining Company, Magma Copper Company and Idarado Mining Company.

Since 1985, Mr. Humphrey has served as Chairman of the Western Regional Council's Hazardous Waste ad hoc Committee. The Western Regional Council (WRC) is composed of chief executive officers of many of the leading industrial, financial and mining companies with operations centered in the western United States. The WRC represents western interests in the development of legislation, regulation and government policy which may have a substantial and unique impact on industries in the western states. In February of 1992, he was elected to the Board of Trustees of the WRC. In April of 1991, Mr. Humphrey became a Director on the Board of The National Mining Hall of Fame and Museum, a federally chartered, non-profit corporation organized to honor individuals who have made outstanding contributions to U.S. mining and to disseminate information about the industry. Mr. Humphrey also serves on the Board of the YMCA of San Francisco.

Mr. Humphrey's professional memberships include American Mining Congress, Mining and Metallurgical Society of America and Society for Mining, Metallurgy, and Exploration (SME). He is a registered mining engineer in Arizona. He is also a member of the World Trade Club of San Francisco.

Mr. Humphrey, born in Potrerillos, Chile, of American parents, attended Rutgers University of New Brunswick, New Jersey and holds a B.S. in Mining Geology and an honorary professional engineering degree from the University of Arizona, where he is a member of the Tau Beta Pi Engineering Honor Society. He served with the U.S. Navy in World War II.

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# I CHILDHOOD IN POTRERILLOS, CHILE, 1927-1936

[Interview 1: September 28, 1994] ##[1]

Humphrey: I was born in Potrerillos, Chile, in a mining camp, at an elevation of about 9,000 feet.

Swent: And what company was it?

Humphrey: This was the Anaconda Company that my father worked for. He was smelter superintendent at Potrerillos. The day I was born, which was January 12, 1927, was the day they poured the first copper at the smelter. So it was an exciting day for my dad. The problem was, he didn't make it to the hospital; he was too busy watching the casting machine on the smelter dock. So I heard about that most of my life from my mother. [laughter]

## Father's Difficult Childhood

Swent: Where was your dad from?

Humphrey: My dad [Thomas Zenas Humphrey] originally was from Washington state, and had gone to Washington State University as a young man. Actually, he was orphaned at an early age. Both he and his brother were raised by a lady he called Aunt Naomi. I really don't know whether she was a real aunt or just a lady that took them in. He lived on a wheat ranch, and worked, and he said it took him until he was twenty-two years old to finish high school. He'd work a little while, and he'd go back to school, and then work.

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[1]## This symbol indicates that a tape or tape segment has begun or ended. A guide to the tapes follows the transcript.

So when he got out of high school, this gal, this Aunt Naomi, gave him--I forgot whether it was either $300 or $500--and said, "This I've saved for you and you've got to go get an education. That's all I have, and so you're on your own." So he did.

His first job, I guess, when he got out, was with the Anaconda Company at the smelter. He took mining; mining covered metallurgy, mining, and pyrometallurgy.

Swent: Was he able to graduate from college?

Humphrey: Oh, yes, he graduated. And then the war came along, the First World War. So I don't think he spent much time at work. He went, served in France as an officer in the field artillery, and then came back out as a captain.

Swent: Which smelter was this?

Humphrey: This was at the Anaconda smelter.

Swent: At Anaconda?

Humphrey: In Montana, yes. Came out and worked there, and I don't know what year that was, whether it was 1918 or '19. I think he worked around in some small mines waiting to get a position there.

But my mother [Ethel Kathrine Kolbe] had come out as a young schoolteacher from Chicago, where she went to the university, to teach school in Anaconda. So that's where they met. I think they were married in 1923 or some such thing. My brother [Thomas Frederick Humphrey] was born there, and then my father was transferred to Chile in 1925.

Swent: Go back just a bit. Do you have any idea how the grandparents died, what orphaned your father?

Humphrey: Oh, my father's father was the only one of many sons that came west in a covered wagon from Missouri. I don't know whether he was a well man as a young man, but he died at an early age, in his thirties. My dad thinks it was what they called consumption, so it might have been tuberculosis. He taught school in Oregon and then Washington state. So they came all the way--in fact, they came all the way out to California and then went north.

So his mom had these two little boys, and she took in wash. She was a washerwoman and raised these two kids. I have a picture of the house; it looks like a chicken coop. But then

she died, and left them orphaned at a--I think my dad was eleven.

Swent: And she died of an illness too?

Humphrey: Illness which--I have no idea what it was.

Swent: Perhaps also tuberculosis.

Humphrey: Overwork maybe, I don't know.

Swent: Oh, isn't that a touching story.

Humphrey: But she was a strong woman. And the boys did well; both boys went to college. One was a civil engineer, and my dad was a mining engineer.

Swent: Was there a town near where they lived?

Humphrey: The town was Pomeroy, Washington.

Swent: Well, that's kind of a classic American background, isn't it?

Humphrey: Yes.

## Fond Memories of Maternal Grandmother

Swent: Lots of hardship.

Humphrey: And of course, the family was an original old farming family from Missouri. My mother's side of the family was all German, and both her father and her mother were immigrants. Her father, whom I didn't know, my grandfather, who died before I came along, came over as a young boy with his mother and father and other siblings. My mother's mother came over when she was thirteen years old to be a seamstress in a house in Georgia, I think, one of these with a wealthier family, and they needed somebody to make clothes for the kids and watch the kids. She wasn't a nanny particularly, but I think she did more sewing for them. I guess they made their own clothes.

Swent: They probably needed a full-time seamstress.

Humphrey: Yes. And then she had some relatives in Chicago, and she'd go there on vacations. I guess that's where she met my grandfather, who had been married, married a widow with

children, and then had children, and then that lady died, so he was stuck with a bunch of kids. Finally, my grandmother married him and had my mother.

So it was a long story. But my grandmother never saw her parents again. She never saw her family in Germany. She came over to the New World as a thirteen-year-old kid, and tough.

Swent: That was it.

Humphrey: Yes. She lived with us until she died. Of course, she spoiled the hell out of me. So I have very fond memories of her. [laughter]

Swent: She went even down to Chile with you?

Humphrey: Oh, yes.

Swent: Your grandmother? And this was your mother's mother? How nice.

Humphrey: Yes. I'm sure it was tough for my dad to have another woman around the house, but they seemed to work it out. I never saw any semblance of stress or strain because of that.

Swent: Isn't that nice.

Humphrey: But she was a woman that would--she had her own room, so she'd go, she'd get out of the way, so that Mom and Dad could have some time together.

Swent: Probably nice for your mother, to have the companionship.

Humphrey: Oh, sure. One thing I regret is that they would talk German to each other, except when we came into the room, they'd stop, because they wanted to be Americans. I could have learned German right from the cradle on up, which was too bad.

Swent: You didn't.

Humphrey: No, I didn't. They were so anxious to become Americans.

Swent: Of course, your mother was born in America, so she was an American.

Humphrey: She was born in Chicago, yes.

Swent: But she did still know German?

Humphrey: Oh, sure. So that was interesting. That's too bad--but they would stop talking in German. Oh, I knew a few words, but--. So that was kind of a unique life for me, with being raised in the mining camp up in that Atacama Desert. You had a different viewpoint of the world than I knew anything about.

Swent: Your brother was older, then?

Humphrey: My brother was born in Anaconda. He's three and a half years, four years older than I am.

Swent: Were there younger children also?

Humphrey: No, just the two of us.

Swent: And while we're speaking about the German, you might talk about the exposure to Spanish, whether the American people learned Spanish.

Humphrey: Yes, we lived in an enclave. We had a maid that came once in a while, but I don't remember having a maid for very long, because I think they ran her off, probably. With my grandmother and my mother there, and they did the cooking--they might have had a lady come in to help with the cleaning, but I don't remember.

Swent: Or washing, perhaps.

Humphrey: Yes, washing. But we lived in an American enclave, really, and didn't have association with Chilean people.

## Life in an American Enclave

Swent: That's interesting.

Humphrey: We had a little two-room schoolhouse that had eight grades in it. The teachers were all American teachers.

The hospital had an American doctor, and some of the nurses were American. Some of the nurses were Chilean girls, but they lived apart. We had our own little living area, which was the way they did it in those days. Too bad.

Arizona-style Houses

Swent: What sort of house did you have?

Humphrey: We had a house that was almost an exact replica of the houses in Miami, Arizona, that they built in Inspiration. The floor plan was the same, except the houses were built of adobe. Some were built of concrete and some were adobe, but not the burnt adobe, just the regular adobe, and plastered over. Such a dry climate, it didn't--I saw rain once in that first ten years of my life. I think there were a few flakes of snow fell maybe three or four times. So it was extremely dry.

So the construction--the only danger was earthquakes there, which they had. I remember one when I was small, and my mother grabbing me and rushing out of the house. But it wasn't serious. But later, after we left, they had a very serious one, and destroyed most of the houses except ours. Except ours and one or two others.

Swent: They were one-story houses?

Humphrey: Yes, one-story houses. I think there were three bedrooms, living room, a little sun porch, dining room, and kitchen.

Swent: What kind of floor?

Humphrey: They were wooden floors.

Swent: And the roof?

Humphrey: The roof was a corrugated iron roof. Some of them were tar paper, with tar filling the seams, the black tar. I remember as kids climbing up on those roofs and taking a piece of the tar and chewing it, because we couldn't get chewing gum there. [laughter] So that's what we did for chewing gum.

Swent: And it was hot enough that you could--

Humphrey: Sure. [laughter]

Swent: Good memory. What about electricity and water and--

Humphrey: Water, we had to use very sparingly. There were no swimming pools. The water came from, as I remember, something like twenty-five miles away, up in the snow, in the higher elevations, the mountains. So we had a good water supply. No gardens. I think the manager had a little lawn, and the

assistant manager. We had one pepper tree that grew by the house, but that's all. There just wasn't enough water for anything like that.

Swent: How did they ration the water? Just voluntarily?

Humphrey: Oh, yes, just you didn't do it.

Swent: You just knew there wasn't enough.

Humphrey: Yes.

Swent: Did you have showers or bathtubs?

Humphrey: We had bathtubs. The heat in the house, because it did get cool at that elevation, we had a big potbellied stove in the living room, and a big coal and wood range in the kitchen, one of those big iron things with a back on it, where they kept warming ovens on top. And an icebox, just an icebox. Eventually, we replaced the potbellied stove with a furnace downstairs with a grate, just had one grate coming up like they did.

Swent: A floor furnace.

Humphrey: Yes, it was coal-fired.

Swent: That's what I was going to ask next. You burned coal in the potbellied stove too?

Humphrey: Yes.

Swent: And in the kitchen?

Humphrey: And in the range, yes. So we had coal scuttles, the little pails with the mouths on them, so you could pour the coal. Then finally, we got a refrigerator. That was a big day.

Swent: And the icebox--where did you get ice?

Humphrey: They must have had an ice plant up at the company pulperia, where all the produce came in.

Swent: And that would have been manufactured ice?

Humphrey: Yes. Manufactured right there from the water source. Came every day.

Swent: I wonder what they used for power to make the ice?

Humphrey: Power? Ninety miles away down at the coast, they had a power plant that ran on bunker "C", I think, heavy fuel. They piped all of that electricity over ninety miles up to the camp. I don't know if they had any auxiliary power up there; I doubt it. They might have had some emergency power at the mine and the plant.

Swent: You had electricity in your house?

Humphrey: Oh, yes, we had plenty of electricity. It was just like a house here today.

Swent: Lights and so on.

Humphrey: Lights and plugs and--

Swent: But no refrigerator until later?

Humphrey: Yes, because they didn't have refrigerators. The first one was one of those ones with the big round top on it.

Swent: When we started out in Mexico, we had one 15-amp fuse for our house.

Humphrey: Yes. Oh, I didn't know about this. Of course, as a kid, you don't know about the fuses. Of course, there were no other appliances. There was a washing machine. It was a Maytag, I remember that, with a hand wringer that you twist--

Swent: Was that electric?

Humphrey: The wringer wasn't, but the agitator was.

Swent: You could get radio?

Humphrey: We got radio at a certain time of the day. I think it was on--it was at odd times, and it seems to me I remember my father listening on weekends, there was a special program he could get of the stock report for the week. He'd sit, and we'd all have to be quiet. He'd sit in the sun porch, and there would be a lot of static, and he'd listen to that report. But otherwise, I don't remember listening to the radio at all.

Swent: You don't know where it came from?

Humphrey: I have no idea. It came from the United States somewhere. It was a shortwave. And there were some people that were ham radio operators down there, some of the men, but I didn't know much about it. I was too small to be interested in it.

Swent: That was a wonderful link to the outside.

Humphrey: Yes. It was the only link.

Swent: Right. Were there telephones to the outside?

Humphrey: No.

Swent: Was there an internal telephone?

Humphrey: There was a telephone up at the plant, just a plant to the--I think the telephones were to the superintendents' houses.

Swent: So your communication with the outside was by mail entirely?

Humphrey: Mail, yes. And of course, that all seemed normal to me.

Swent: Where did things come up from? Santiago? Antofagasta?

Humphrey: They brought the produce on the railroad, because the road at that time--there was a road, but it was almost impassible. Of course, no pavement; there was no such thing. So it was all rail haul up that ninety miles, from a place called Barquito. And Chañaral was the port that was there, but Barquito was the port the company built so they could load the copper out to the ships. The swells were so bad, and I guess the tide, that they couldn't bring a ship in to a dock. So they built big docks, and had lighters; they loaded the blister copper onto these lighters with cranes, and I don't know how much a lighter would hold, but they looked tremendously big to me, but they probably weren't.

Then they'd haul them out to the ship and load them onto the ship. He'd anchor out--you could see them, he'd be out maybe--I don't know how far it was. Looked like a long way to me, but it was probably a quarter of a mile or something.

Swent: And you were taken down to the coast to see this at some time?

Humphrey: Oh, yes, we went down--my dad was on a two-year contract, and I think every two years, they could come to the States for two or three months. But every year, they'd go down for two weeks to Barquito--and they had guest houses, or houses, down at Barquito. They had a swimming pool at the power plant, because they had pumps and everything down there, so they built a pool right inside the power plant. There were wires all over the place, and we could go down and swim. It wasn't very aesthetic looking. There weren't any trees or anything. You'd just go down and swim.

But there was a lot more water down at the coast. I guess they had some deep wells, so the houses had gardens, and there were rose gardens.

Swent: So that was exciting.

Humphrey: Yes, it was a treat, to get down to the lower elevation. For my folks, it was.

Swent: What's the elevation again?

Humphrey: The elevation of course at Barquito was sea level--

Swent: Right, but up at Potrerillos?

Humphrey: It was 9,000 feet.

Swent: And was it all at the same level, or was the mine higher?

Humphrey: The mine was higher. And I drove by the mine not so long ago. It must have been ten or fifteen miles away. But probably at 11,000 or 12,000 feet.

Swent: So it was important to get out of that once in a while?

Humphrey: Yes. The town was at nine; the plant was at about nine and a half.

Swent: That's awfully high.

Humphrey: But there were just big pampas, just not a blade of grass anywhere. I didn't know there was such a thing.

Swent: Yes. And this was a fairly new camp, then?

Humphrey: Yes. I think it was started right around 1922 or so, and the first copper was poured in 1927. So they did some drilling and development work before, and then built the plant, and had both an oxide and a sulfide plant, and a smelter. That I remember.

Swent: And your father was the--

Humphrey: Smelter superintendent.

Swent: The food, let's talk more about that. You said food was brought in by train.

Humphrey: Yes. They had what they called a "pulperia", which was just a big produce store, and every week, I guess, the produce came in.

Because I'd go up with my parents. And of course, I remember the smells of all the different kinds of things coming in. You know how a market smells; it was a very distinctive smell to a little boy. They could get some fresh vegetables. I remember the ones I didn't like, because [laughter]--the carrots and cauliflower particularly. They'd get lettuce once in a while, and cabbage, and potatoes, peas, flour, and I suppose sugar and salt and that, which I didn't pay much attention to.

Of course, my mother and grandmother baked bread, so that was a big staple in our house.

Swent: What about meat or fish or chicken?

Humphrey: We had meat and chicken. Fish I don't remember. We had canned fish; we had canned salmon and canned tuna. We did eventually get butter in tins from Holland that was unrefrigerated. It would come in a round tin like an Almond Roca tin. It looked almost like Almond Roca. You could shake it and then put it in the icebox, and it would harden up, and then you'd open the tin and you'd have butter.

Milk was all KLIM--milk spelled backwards. I was raised on that and when I got to have fresh milk here when we finally came to the States, I didn't like it. I wanted to go back to the powdered milk.

Swent: Who made KLIM; I've forgotten? Was it Mead Johnson?

Humphrey: I don't know. I have no idea. It came in kind of a yellow can.

Swent: You were obviously very healthy.

Humphrey: Oh, yes. And I have only one cap; I don't have any fillings at all. I have perfect teeth, but my brother doesn't. I just got this cap about a year ago. I have never had any problem with my teeth. My brother's teeth are bad--well, not bad, but he's got a lot of fillings.

Swent: But it sounds like a nice healthy place to live.

Humphrey: It was. One strange thing that just comes to my mind: we had this KLIM, and we could get this butter once in a while. My dad got a machine. It was a little machine about as big as a quart jar. It was metal, I don't know whether it was aluminum or steel. Had a big long handle on it, maybe three feet long. And you put the butter in, and you put the KLIM in, the milk, and you pumped this thing, and a fine little stream of cream would

come out. It reconstituted it. And then we could make ice cream!

Swent: Oh! [laughter] And that was a big treat.

Humphrey: That was a big treat. I've often wondered about that machine, because I've never seen anything like it again, and of course, we left it down there.

Swent: Do you think he made it in the shop or something?

Humphrey: No, it looked like it came from a factory, maybe in Europe somewhere.

Swent: For heaven's sake.

Humphrey: But you'd pump this thing, and the cream would come out in a little tiny stream.

Swent: Oh, that must have been a wonderful treat.

Humphrey: Oh, yes, that was a lot of fun, watching him do that. So anyway, I had a real nice young life.

Swent: Were there other children to play with?

Humphrey: There were other children. There was one other boy my age; we had two in our class.

Swent: What was his name?

Humphrey: Bob Forsythe. He had an older brother.

## Four Years With an Unfair Teacher

Swent: And your schooling: how was that?

Humphrey: The schooling was two-room. We had I guess the first five grades in one room, so you sat in your class in the room with the other four grades. You'd be assigned homework to do while the other grades were going through their oral recitations. So it was confusing a little bit, but it worked.

Swent: You also had a chance to learn, overhearing, probably.

Humphrey: Yes. There was one teacher for the five grades. Then when you got up past the fifth grade, the last three were in another room. They were the big kids. I never got that far.

Swent: Was there quite a turnover of teachers?

Humphrey: No. We had one that I disliked intensely, because I tangled with her the very first day of school.

Swent: Do you want to name her?

Humphrey: Sure. Kitty Vines, her name was. God rest her soul. Boy, she was--I thought she was not fair. I'll tell you what happened. The first day we were in there, she had the alphabet across the top of the blackboard, and she had the capital letters on top, and the lower case just under them. But by the time she got to N, they were offset, so that the capital N wasn't over the lower case N. I forget which way it went. So she explained it to us, and I said, "But that's wrong." And she never gave me a chance to explain what was wrong, she just blew her stack, at this smart little kid telling her it was wrong. I got sent home the first day. [laughter]

Swent: Oh, my! Oh, that's terrible!

Humphrey: So after that, we were not compatible at all.

Swent: Oh, that's awful!

Humphrey: In fact, it got so bad that my folks thought I was retarded. I just wasn't doing well in school. They thought I was anemic, and then I started going home at recess, and they'd give me some beef broth that my folks had rendered down, to try to get me back up into the swing of things. All the time, it was this damn teacher.

Swent: Oh, that's a terrible story!

Humphrey: [laughter] I survived it.

Swent: Yes, but how awful.

Humphrey: But I'll never forget her. I don't know whether I'll see her in Heaven or Hell again, but--[laughter]

Swent: Oh, my. That really is heartbreaking. And you had to put up with her for all those years?

Humphrey: Yes, she was it.

Swent: No recourse.

Humphrey: No recourse.

So anyway, I learned my multiplication tables, I learned how to read and write--

Swent: And you've done all right in spite of Mrs. Vines. [tape interruption]

## The Parents' Social Life

Swent: Well, you certainly had a lot of special opportunities there. What did your parents do for a social life? Was it pretty busy?

Humphrey: I think they had a very nice social life. They had built a golf course on these flat pampas, and of course, all they did was rake the rocks out of the way. The greens were oiled sands, and then they had sweeps kind of like a rake without the tines on it, just to smooth out the sand so they could putt. That was their big weekend--of course, they worked six days, so they only had Sunday off.

Swent: That's right.

Humphrey: They played bridge, I remember, had bridge parties.

Swent: Your mother had had education.

Humphrey: Yes. We had a piano in the living room. Sunday afternoon, some of the people would stop in after golf and have a few drinks, and they'd start playing the piano and singing around the piano.

Swent: That's nice.

Humphrey: Yes. So that was a real treat for a little kid, to sit and listen to that.

Swent: Yes. I'm thinking of your mother particularly, because it might have been pretty boring or confining for her, but she coped well?

Humphrey: She did well with that. And they had some tennis courts up there, and people played tennis. So there was golf and tennis, and then they entertained at their homes, had these parties, dinner parties, and quite formal. Two or three times a year, it

seems to me they had a very formal party with tuxedos and long gowns and--

Clothing

Swent: I was going to ask what they wore. Of course, they didn't wear shorts in those days.

Humphrey: Oh, no. My mother always wore a dress.

Swent: Did she make her own clothes, or send to the States?

Humphrey: I don't know.

Swent: You don't know.

Humphrey: We had a sewing machine, and there was a lot of sewing going on. My grandmother was a good seamstress, so I suppose they made a lot of the clothes.

Swent: And your clothes I suppose you bought when you were out on vacation?

Humphrey: Yes, bought the shoes for two years ahead, so they had to get bigger sizes so we could grow into them.

Swent: They had to plan.

Humphrey: They had to plan. And of course, I wore--the uniform that I wore was knickers with long socks.

Swent: What were they made out of?

Humphrey: Corduroy. I forget what kind of top I had, but I wore a little --kind of like a golf cap. That was how Billy was dressed.

Swent: And shoes?

Humphrey: Shoes were leather shoes, of course.

Swent: Laced?

Humphrey: Yes. But I didn't think--when you graduated to get long pants, you were really grown up. I don't think I got long pants until we came to the States, so I was ten years old or more.

Swent: What about religion? Were there any kind of church services?

Humphrey: There was a Catholic church in the Chilean section of town. That was all, so that--

Swent: And your parents were not Catholics?

Humphrey: No, my mother was Lutheran--

Swent: Lutheran, I would assume.

Humphrey: I think Dad was raised a Methodist. But I was baptized Episcopalian, because that was the first minister that came through. They had some itinerant ministers who came to town after I was born, so that's what I was baptized as.

Swent: You took what you could get. [laughter]

Humphrey: But every Sunday, we had a Sunday school. Two of the mothers--I think it was Mrs. Forsythe, and I think the single schoolteacher, and my mom played the piano--had Sunday school for the children in the school house. So we had to go to that. Saturday afternoon we got to go to the movies in the Chilean section of town. They had American movies with--I don't think they had subtitles in Spanish; they may have, but they were all in English, so it was neat. We saw "The Invisible Man" and--do you remember those movies?

Swent: No, I don't.

Humphrey: The hero would press a button, and he became invisible for an hour or something.

Swent: No, I don't remember that. [laughter]

##

[Something missed in the tape change]

Swent: --the weather had nothing to do with it.

Humphrey: No. The children formed activity seasons so that for a week or two, or whatever it was, we'd play with our bicycles. We all had bicycles, and we would draw kind of a race course through town, through the houses, and this would be what we did until we tired of that. Then it would be marbles, and then it would be spinning tops. We played King of the Castle, and Andy-I-Over. The school house had some slides and stuff. I don't remember all those games.

So there was always something that we did, and I think that the older kids probably had been started on those games by their parents. Then they taught the little ones. So we always had something to do that was really fun, besides school. I remember wagons; there were lots of hills there, you could really go fast--and then at one stage of the game, we wanted to build an underground clubhouse.

So my dad got wind of it, and he said, "You can't do that, but what you can do is, you dig a hole and make your house, and then I'll help you put a roof over it and cover it with dirt," so it would be like a cave underground, so things like that. Just great.

Swent: Were the days about the same length, or did you have shorter days in the winter?

Humphrey: I can't remember that.

Swent: I'm trying to think--you were a long ways from the Equator.

Humphrey: Yes, we were about as far as Cananea is from the Equator.

## Remembering the Smelter Layout

Swent: So it would get dark earlier in the winter.

Humphrey: Yes. But I don't remember that part of it at all. I do remember the part on Saturday afternoons, when Mother had--well, maybe it was one other day, but it seems it was Saturday--my mother had a bridge club. My dad would take me up to the converter aisle in the smelter and sit me on the foreman's desk where he could look out at the whole array of cranes and the furnaces, the converters, and the roll crushers at the end of the aisle. He told me not to move; gave me some peanuts and an apple or something, because he had to go out. I could sit there and watch all this going on. So I really got an education. It was just fun, but I could remember it years later. Years later.

Swent: Tell about when it was tested.

Humphrey: When it was tested, that must have been in about 1931, because I had those experiences. In maybe 1960, thirty years later, we were redesigning the converter aisle in Cananea, in Sonora, Mexico. They said, "Well, you ought to follow the design that

they used in the original Potrerillos smelter, because it was very practical."

I said, "Oh, is that so? I'll tell you how it was laid out." I got a piece of paper and I drew just how it was laid out, where the reverbs were and where the converters were and where the roll crusher was, and how it worked, which was amazing. It amazed me, because I had no idea that I had soaked all that up.

Swent: And you could remember it exactly.

Humphrey: Yes. I didn't know the exact dimensions, but I knew the spatial relationships. So that just tells you, little children can really absorb stuff.

Swent: They really do.

Humphrey: You sure ought to pile it on them. [laughter]

Swent: Did your brother go into engineering also?

Humphrey: My brother Tom went into a lot of things. He was a very capable guy. He started in engineering, and then switched--that was really before the war, Second World War. Had such a good time that he had to drop out of engineering and took journalism, which was a cop-out. Then the war came, so he went back to really studying hard, and got into the Coast Guard Academy. Then that was slow going for him, because he was afraid the war would be over.

So he resigned that; he got out of that, I don't know how, and got into the navy air corps, and became a pilot in the navy during the war.

Then he came back and took mining, and decided he didn't like that, and took law and became a lawyer, passed the bar in Arizona. Then got into corporate law in California. And then finally did well in that, and quit, and bought his own business, Culligan Softwater, a service business, up in Woodland, just close by here.

Swent: Oh, that's nice. So he lives near you?

Humphrey: Yes. So we still see each other.

So he just drifted away from engineering. But he's a very creative guy, and loves mechanics, and loves people, so it was a

natural for him to get his own business going. He has a good analytical mind.

Swent: What else should we say about Potrerillos?

Humphrey: That went on, of course, until 1936, on one of our regular vacations, after one of my dad's contracts was over. We came to the States, we came to the East Coast--

## Vacation Trips to the States

Swent: Where did you come on your vacations?

Humphrey: My mother had these stepsisters in Connecticut and in New York, so we'd come to visit them. I remember in 1931, one of my uncles, who had married one of these gals, who had died, came to meet us in New York with a brand-new Pierce Arrow. I don't know if you ever--

Swent: Oh, I remember. I had forgotten about those.

Humphrey: And the whole family piled into this Pierce Arrow, and we drove all the way to California. In fact, we went through South Dakota. I remember that's one of the first stops, and they were still working on the Mount Rushmore, and you had to drive up the canyon. There was no road when you went up the wash. We drove up to look, and this guy came off a cliff, had a big curly-headed guy full of dust, came down and wondered what we were doing there--

Swent: Must have been Borglum.

Humphrey: Yes, I think so. So he explained it to us. I don't know if he was alive that year or not, but he certainly had a bushy head of hair. So that was a real neat trip.

Then we went on from there, the next thing I remember is coming down to California and driving through one of the redwoods, or one of the sequoias, I don't know which it was, with this Pierce Arrow, and we went right through it. And then down south and seeing the orange groves. I can remember that as a little--I was only four or five years old. That was a real eye-opener to me, to have trees with fruit on them like that.

Swent: You came up by boat?

Humphrey: We came up by boat on the Grace Line.

Swent: Through the canal?

Humphrey: Through the canal, yes. That was an exciting thing, too.

Swent: Long trip.

Humphrey: Yes. Once we went back--we came up once and went on a German liner and went over to Cuba, and then changed ships in Cuba and came back over to New York. And I do remember going into Havana, in the capitol, and they had that big--I think it was a diamond set in the floor in the capitol building. I think it was a diamond. That was impressive for a little guy.

But normally we came up by boat, freighters with maybe thirty passengers or something like that. They took the hatches off the hold and put a canvas liner in there, down maybe fifteen feet or ten feet, and pumped sea water in, and that was the swimming pool on the ship. So you could swim, but of course, it was steep. So they had to watch us like hawks. I sank once, and somebody hauled me out of there.

Swent: Oh, dear. [laughter] Yes, you didn't have much chance to learn to swim.

Humphrey: But those were exciting trips for the kids. I can remember stopping where they were loading the bananas at Barranquilla, Colombia. And then off the coast of Ecuador--what was that? Maybe it was Guayaquil. Where they came out in big balsa barges, big rafts, the Indians came out, and they let them come to the ship. We were anchored out from shore. They let them up on the deck, on the first deck, and they laid out all the things they wanted to sell. They had these masks that they make in the highlands, the Bolivians and Peruvians make, that are covered, just have the eye slits, that are wool. You've seen those I'm sure.

So they'd come up, and they'd have hardwood spears, and some shrunken heads from the headhunters, with quite long hair on them. And of course, the heads had been shrunken down to about the size of a softball. They'd line them up on the deck and sell them. Of course, we'd want--

Swent: Those used to be tourist curios.

Humphrey: Of course, my brother and I wanted a head. My mother just about had a fit. We didn't get our heads. [laughter] So those were interesting trips, too. So there were just lots of things.

Swent: Really special memories.

Humphrey: Special, yes. And then getting to New York on those piers, walking through the piers with all of the produce coming off, and the smells in there again were something special, that I can remember the smells. Because there was a lot of coffee unloaded, and you could smell coffee, huge sacks of coffee in these big warehouses.

Swent: And the excitement.

Humphrey: The excitement.

Swent: Oh, yes.

## II YOUTH IN NEW JERSEY

### A Very Different World

Humphrey: So that was just great. The last time we came, in 1936, on this freighter, they discovered in New York that my mother had a heart condition, and shouldn't go back. So they advised my dad that maybe he could still go back, and she could stay with her sisters. He said, "Nothing doing."

Swent: I suppose that was part of your vacation always, was a medical check-up too?

Humphrey: Yes, I think so.

Swent: Dental or--

Humphrey: Yes, I think so--

Swent: Probably.

Humphrey: I think before you went back each time, they made sure, I don't know, that everyone went through a medical check just to be sure that everything was okay. Although we had a good hospital in Potrerillos.

Swent: Were Anaconda's offices in New York?

Humphrey: Yes, 25 Broadway.

Swent: And when you went on this California trip, did you go back then across the country in the Pierce Arrow?

Humphrey: Must have.

Swent: That's quite a trip.

Humphrey: I don't remember every other part of it. I was just a little guy. That must have been around 1931.

Swent: That was really something very special, across the country in those days.

Humphrey: Yes. We have some pictures still. Of course, I got carsick a lot of the way, so I remember--[laughter] But it was a real experience.

Swent: So then when they found out about your mother's--

Humphrey: Then my dad said, "Well, I don't think so, I'll start looking for another job." So they transferred him to the refinery in Perth Amboy, New Jersey, which was where the blister copper from Potrerillos came at that time to be refined. So he went down, and I don't think he headed the refinery, but he was one of the supervisors there in New Jersey. We lived in New Jersey, at Woodbridge, and I was in the fourth grade. That was 1936.

Swent: That was a big change.

Humphrey: Oh, boy. It was like coming into a different world for a little guy.

Swent: Well, it was a different world.

Humphrey: You could buy chewing gum, and there was ice cream in the stores, and all of that stuff, and Coca-Cola. Gee, we never had any of that. So it was exciting, that was really exciting.

Swent: Lots of children in your class at school.

Humphrey: Yes.

Swent: Were you homesick, though, for Chile?

Humphrey: Not really.

Swent: You just took it in stride.

Humphrey: It was such an eye-opener, I was just awakened to all of these new things, and all these cars. We didn't have a lot of cars in our mining town. Just a great world. Movies, you could go to the movies, and there were four or five different movie houses; you could go on the bus. Gee, it was just great. So it was exciting.

So that's where we went, and I--

Swent: And nicer teachers?

Humphrey: Nice teachers. [laughter] Yes, no more Mrs. Vines, no Kitty Vines. I wonder what happened to that lady. She was bitter about something. Didn't like me, anyway. Well, the feeling was mutual, I guess.

## Meeting Edna Joule

Humphrey: But anyway, then that's where I met Edna, in high school in Woodbridge, New Jersey. We were fifteen years old.

Swent: Started going steady right from the start?

Humphrey: Not really. We went out a few times, and then we had a tiff or something, so I had three or four other girlfriends for another year or so. But by the time I was sixteen, I guess we were--I was pretty well convinced that's the girl I wanted to spend my life with.

Swent: That's wonderful. And you have.

Humphrey: And we have. It's been great.

Swent: That's really nice. And your mother was happy to be back in New Jersey?

Humphrey: Of course, she had come from Anaconda right when she got out of school, and originally was from Chicago, so she didn't know too many people. But she was fairly close to her sisters.

Swent: How was her health?

Humphrey: Her health held up pretty well until her late fifties, and then she became ill again. I don't know how old she was when we came up, but she must have been--oh, gosh--I guess Mom must have been forty-five when we came, or somewhere between forty and forty-five. And that helped, being at sea level. I think she did have a heart condition, that they didn't know much in those days about how to treat the darn stuff. But we had a nice home and--

Swent: Your grandmother was still alive?

Humphrey: Still alive. She didn't die until 1942 or something, after the war started.

So we settled down there. It was a swell life for a little boy. Got into sports, and the group activities that I wasn't able to previously. The high school was a real coeducational experience. We had football teams and band, and lots of hype and rallies and things that just make a kid's life interesting.

Swent: How far were you from New York?

Humphrey: We were about forty-five minutes on the train.

Swent: So you could go there.

Humphrey: We could go, so we did go. We went to the Radio City Music Hall, and an occasional play, and some of the baseball games at the Dodgers Stadium, and Giants. But New Jersey at that time was really the country. There was grass and trees and things that I had never seen before, and fruit farms and all of this. We'd stop by the roadside and buy fresh corn. I didn't know what it was until--because it always came out of a can. So that was really a nice time of my life, and it got better, of course, after I met Edna.

## Service in the Navy

Humphrey: Then the war came along, and I quit high school and joined the navy.

Swent: Oh, really? I didn't know that.

Humphrey: I never finished high school. They gave all the veterans their diplomas whether they finished or not, I guess.

Swent: So you were what, seventeen, eighteen--

Humphrey: Seventeen.

Swent: --when you joined the navy?

Humphrey: Yes.

Swent: And where did you go then?

Humphrey: I went into the navy, and immediately I got in, I got scarlet fever, after I went to boot camp outside of Chicago. So I was very ill for a while, and then I got mumps after that, so that slowed me down a little bit.

But then I went from there through their radar and radio technician school, an electronics school that they had devised to train young men to be able to repair all of this electronic gadgetry that was coming out at that time. It was a good school. It was about a six-month or more course, maybe more, maybe a year.

Swent: In Chicago?

Humphrey: There was one school in Chicago, and then I went to Gulfport, Mississippi, and then back to Bethesda, Maryland, to the Naval Research Lab to finish up. I think that was three months, the last one. It was probably seven months total, something, of schooling. Then you got credit for two years of electrical engineering, which was great. I learned a lot.

Swent: I'm sure. Sonar, radar--

Humphrey: Yes, sonar, radar, gun control, power plants, electrical power plants, big huge rectifiers, how to transmit power, and how to trouble-shoot all of this equipment. That was really what our main job was, try to keep it operating.

Swent: Good training.

Humphrey: It was good training. In fact, Berne Schepman went through the same course. Last week when we were down in New Orleans, he and I, and our wives were along, drove out to this base in Gulfport, Mississippi, where we had been stationed, to try to find it. We found it, but it had radically changed. They had torn down all the buildings and built new ones, and the only thing I could recognize was the swimming pool that was near the recreation center. So that was kind of fun. But anyway, that's what I did in the navy.

Edna, of course, stayed back in Woodbridge--

Swent: You weren't married, though, were you?

Humphrey: No. We were just sweethearts. She graduated, of course, got a job. Then I was discharged and went to Rutgers for a year. That's when I went to Rutgers.

## Geography Student at Rutgers

Swent: What did you study there?

Humphrey: I studied geography. I got there in August, and there weren't many courses left open for that semester. It looked interesting, and it had an OSS [Office of Strategic Services] officer who was the head of the department, took a liking to me. He was an amazing guy. Geography is a very fascinating subject.

Swent: What was his name, do you remember?

Humphrey: Andy Clark was his name. But he had been through it, had been a professor, and then he'd been called into the OSS to do some work in Europe during the war. They used those guys because they knew the customs and the economy and the language of the people, so they could work behind the lines pretty well.

But I got about halfway through that year and decided there probably weren't many places I could make a living doing that, even though it was fascinating business. So the first vacation, we came out to Arizona to visit my folks, who had then moved to Inspiration, where my dad worked in the smelter there. That happened during the war, they transferred him. And visited the school, and I think both my to-be wife and my mother were in cahoots. We made a trip down to the University of Arizona, and they were trying to con me into going down there, which I did.

## III UNIVERSITY OF ARIZONA AND ENTRY JOBS, 1947-1950

### Engineering with a Geological Option

Swent: So you transferred after one year from Rutgers to Arizona.

Humphrey: Yes.

Swent: At Tucson.

Humphrey: Tucson. And finished there. It was a good school.

Swent: Were you married during--

Humphrey: No. Then the first year I came out, which was the second year of schooling, Edna came out at Christmas vacation, and we were married. Then everything started sailing smoothly.

Swent: What did you study then in college?

Humphrey: I took engineering, with a geological option. So I got my bachelor's of science in geological engineering, which was basically the same as the mining engineering option. I think the only thing I missed was the design of headframes. So that was good, because I--.

And in the summers, I worked in the mines around there.

Swent: Yes. What was the timing on this? What was the year when you were at Rutgers? Did you enter in the fall of '45 at Rutgers?

Humphrey: I must have, yes. Fall of '45, '46--

Swent: The war ended in the summer of '45, but you might have had to stay in a while--

Humphrey: Yes, I did, so it must have been 1946 in the fall I went to Rutgers.

Swent: Okay. And then '47 you went out to Arizona.

Humphrey: So I graduated in '50; that's about right.

Swent: And you were married in Christmastime of--

Humphrey: Forty-seven.

Swent: Forty-seven. So did you work the summer of '47?

## Summer Work in a Hollow Tile Plant, New Jersey

Humphrey: The first summer, when I went to Rutgers, I worked in a hollow tile plant in New Jersey. I didn't want to be too far away from my girlfriend. That was a plant that dug clay out of these clay deposits, and then put it through a pugmill, and then extruded the clay--I don't know if you've ever seen these tile.

Swent: No.

Humphrey: They're about eight inches long and eight inches high, and six inches wide, and have holes through the middle where you've extruded this clay. Then you fire them by putting them in big kilns. They had big beehive-type kilns that you put them in to make building bricks out of them. Hollow tile. You've seen some of those old buildings.

Swent: Oh, yes. I guess I have.

Humphrey: And if you run into them with a car, you'd crack into those--they weren't all that strong, but they used them a lot in the East in the parts where we lived instead of regular bricks. And they were lighter weight, so you could build a lighter-weight--it was easier to put up.

Swent: What were you doing in this plant?

Humphrey: I was just a laborer. Worked first in the pugmill and then on the carts where you charged these bricks into the kiln.

Swent: What did you learn from that?

Humphrey: I learned that I didn't want to do that the rest of my life, that's a cinch. [laughter]

Swent: That's kind of valuable, too, isn't it, learning what you don't like?

Humphrey: But I learned how they made brick, and I learned that a lot of manual labor was unnecessary. They could have automated the thing a lot better. So I did learn maybe some negative things, but it was good experience.

## Learning to Study in the Navy

Swent: You probably learned some of that in the navy, too.

Humphrey: Oh, yes. The navy was excellent training and taught me how to study really, because you had to; if you flunked out of one of these three schools, they'd send you out to be a cook's helper or something, scrubbing pots and pans. So there was a lot of incentive to stay in this program. It was hard work; we had--going back to the navy schools, they get you up at six in the morning, and you'd have classes until probably six in the evening. I think we had some time for exercise. Then you'd have two or three hours of homework, and go to sleep about eleven, and then get up at six again. This went on every day.

When you got to the third school, every two weeks you got a weekend off. You could leave at noon Saturday and come back at six o'clock Sunday night, and that was your weekend leave. But it was a very intense course, and very competitive. No monkey business. If you didn't make your grades, out you went.

So that really taught me how to study. I really got in and learned, because I desperately wanted to pass that, and once you graduated, you got the equivalent of what would be a sergeant in the army. So you had some status.

Swent: That helped.

Humphrey: Yes.

Swent: You haven't said anything about pay. Do you have any idea what your father was paid when he worked in Potrerillos?

Humphrey: I don't have the foggiest notion, but I know in today's dollars, it wouldn't be much. I have no idea.

Swent: You didn't discuss that in those days.

Humphrey: No, they didn't. I have no idea what he--

Swent: Of course, housing and everything was provided.

Humphrey: Yes. I do remember when we went to New Jersey in 1936, and they shopped for a house. We lived in a couple of rentals, and my mother was so anxious to have her own house, that we finally got a very nice house, a two-story house with four bedrooms and a living room and a big sun porch and dining room and kitchen and utility room and a basement where we could have a ping-pong table, and the laundry and everything else. It cost $8,000. That was quite a luxurious house in those days.

Swent: Yes, it was.

Humphrey: So that was big time. So I guess he made enough to buy that $8,000 house.

Swent: How much did it cost you to go to the movies? You probably remember that.

Humphrey: Thirty-five cents.

Swent: And an ice cream cone was a nickel?

Humphrey: Yes, a nickel. And then if we went to the movies at night, we could get a hot dog from the little vendor on the corner. He had a little cart, little Italian guy, for forty cents or something, hot dog and something else with it.

## The G. I. Bill

Swent: So then after you were in the navy, did you go to college on the G.I. Bill then?

Humphrey: I did.

Swent: They paid your whole college?

Humphrey: Yes. I think it was--seems to me it was ninety dollars to start with, and then when I got married, it was $120 each month. They paid everything. Bought your books, and paid you that amount of money. In Arizona, they had veteran housing, which was half of

a quonset hut that had two tiny bedrooms, a bathroom, had a living room and a small kitchenette. That was great.

Swent: Did you pay for that?

Humphrey: We paid twenty-four dollars a month or something like that. And that was with the utilities included. So that was a--

Swent: That was wonderful.

Humphrey: Yes, sure was. And of course, Edna had done so well with the Bell Telephone of New Jersey while I was in the service that they transferred her out to Tucson. She worked as a service representative, which was a front office job dealing with the public about dissatisfied customers and new connections and more of a P.R. thing. She was lucky to get transferred. So she had a job while I was going to school.

## Contractor's Helper at the San Xavier Mine

Humphrey: I remember the first year, then I worked underground at the San Xavier Mine, which was an Eagle-Picher mine. It was an underground mine with cut-and-fill stoping, and they assigned me as a helper to a--apparently, this fellow who had a contract to run the stope was--

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Humphrey: The miner's helper that they assigned me to had either gotten sick, or quit, or wasn't there, so I was assigned to help this contract miner work in this cut-and-fill stope, which was great experience, because I learned about cut-and-fill stoping, and I was just the helper.

Swent: Was that sort of new at that time?

Humphrey: No, it wasn't new, but it was someplace I had never worked before.

Swent: Right. And this was a copper mine?

Humphrey: No, it was a lead-zinc mine, and silver. So that was good experience for me. Of course, it was shift work. You had to change shifts. That was one of the first years we were married, and Edna was working days, and then I had to work shift work. So we didn't see much of each other on some of those occasions.

Swent: Do you remember how much you were paid?

Humphrey: No, I sure don't. I don't. I probably still have some of the check stubs around the house just for laughs, but it wasn't a heck of a lot. But it was a lot to us at that time. So I worked that whole summer. Fortunately, Edna wasn't pregnant yet, so we had that income of mine as well as hers, and we thought we were in pretty good shape. I think we were making more then than when I finally graduated and went to work for Anaconda, and we were just making my salary, which was at that time $300 a month. So we were making more than that with Edna working and my working in the mines, so we must have--she was probably making--gosh, I don't know, $240 or $250 a month, and I must have been making about the same in the mine. So we were way ahead of ourselves. When we got to Cananea, we had to pull our horns in. [laughter]

Swent: What did you wear when you worked in the mines?

Humphrey: I wore Levi's, boots, and an old shirt of some sort. And of course, hard hat, and we had electric lamps. We had electric lamps at that mine, and hard hat; no gloves, no glasses. That's all. I guess I took a jacket, because it got cool sometimes.

Swent: Was it wet?

Humphrey: No. It wasn't a wet mine.

Swent: Were you given safety instruction at all?

Humphrey: No, not at that time. You learned from the lead miner. No, there was no safety instruction, there was no--you didn't carry a canister in case of fire. It was pretty crude. Even the grizzlies were wooden, if you can imagine.

Swent: Did you have to have a physical exam before you were hired?

Humphrey: I don't remember having a physical. No, I don't remember that at all. I may have had to sign a waiver or something, but I don't remember taking a physical.

Swent: Did you join a union?

Humphrey: No, didn't join the union. In fact, I don't think there was a union there.

Swent: Maybe not.

Humphrey: So I worked there that first summer. It was good experience. The shift work was bad because we were newlyweds, but we got by it all right.

## Summer Work in a "Picky-Poke" Mine

Humphrey: And then the next year, I had become friendly with one of my professors who had an interest in a small mine out of the same district that was a lead-silver mine, that was a little vein type thing. So he asked me if I'd want to work there--

Swent: What was it called? Or did it have a name?

Humphrey: It was called the Great Western Mining Company or something. It was just a little dinky--

Swent: Who was the teacher?

Humphrey: Harry Krumloff. I don't know if you knew him. He taught mining at the university. So he went out, and he worked out as a miner, and I worked out as a mucker and a helper to one of the miners. There, we used the carbide lamps. We didn't have electric lamps. It was just a little mine that you'd go down in a bucket. He was trying to make some extra money.

Swent: You drove out there from Tucson every day?

Humphrey: Yes, drove every day. Of course, when I'd worked the previous year, when I'd worked at the San Xavier Mine, they had a bus that ran out, so I was able to take the bus. But I rode out with this professor who had a home in town. I think he had a couple of Mexican guys working with him.

Swent: Just a very small crew--

Humphrey: He had about four or five people running this little picky-poke. Which is a different kind of mining.

Swent: Picky-poke? I haven't heard that expression. [laughter] Okay. But a good way to learn the basics, I'm sure.

Humphrey: Yes, it was. Then I did learn how to drill. I set up the column-and-arm drills, those big Leyner type drills as they call them, that you crank them in; had a screw feed, but you had to crank it. It wasn't mechanized. I learned a lot about hand-mucking.

Swent: Oh. [laughter] Again learned that you didn't like it, I presume.

Humphrey: Yes. Well, we put plank down before we blasted, and used a square-pointed shovel, a square shovel, and with a short handle. Of course, starting out it was terrible, but I got so I was really mucking fifteen or sixteen tons a day--

Swent: Good heavens!

Humphrey: I learned how to muck. I knew how to do it. I learned how to drill--

Swent: There wasn't room enough or money enough for a mucker machine?

Humphrey: No. I guess probably money.

Swent: Probably money.

Humphrey: And then we'd fill a one-ton car and take it out, dump it in the bucket, and then hoist the bucket out.

Swent: You trammed it by hand?

Humphrey: Yes. No little mules or anything. So that was good experience. Then the next--see, that was three years--so I guess then the fourth year I was out, and went to work for Anaconda.

Swent: So you graduated then in--

Humphrey: Nineteen-fifty.

Swent: Nineteen-fifty. Your parents were still living in Inspiration?

Humphrey: In Inspiration.

Swent: And you were living in Tucson.

Humphrey: Tucson, yes. And by then, Edna had become pregnant, and we had our first child.

Swent: Before you graduated?

Humphrey: Yes. So that fouled her Bell Telephone job up, because there was no more work.

## The Artillery Peak Manganese Project

Humphrey: So I went to--oh, the next summer I went to work for the Bureau of Mines out at a place called--up in Arizona, it was a manganese deposit that they were doing some extra work on, because manganese had become a strategic mineral that we couldn't get. So the government had delineated this orebody--Artillery Peak--which is up near Salome, Arizona. Up near Kingman, up in that area of the state.

So I went to work one summer out there. Edna with the baby went up and lived with my folks, and I went up and worked. We lived in a big tent in the desert, and drilled a little well for water where one of the local people knew we could get enough water. We had a hand pump and we got some barrels with holes in the bottom of them so we could take a shower, pump the water up and take a shower every day.

But we worked from first daylight, which was four-thirty or five or so in the morning, until noon. It got so darn hot. It was out in the middle of the desert. And we had a big tarp over our cots. We had these wooden cots with canvas bottoms. And then we had an air space and then another tarp over that, so we had a cooling-down effect, and it was all open on the sides. We'd work until noon, and then we'd wet the cots down with water and take most of our clothes off, if not all, and then lay on cots to keep cool. [laughter]

Swent: Oh, my.

Humphrey: And then when it cooled down when the sun went down, we'd have supper, and then we'd get ready to get up early in the morning again. We were surveying is what we were doing. The sampling had been done on this deposit. We were surveying to make sure that the delineation of the ore reserve was properly done, or at least as far as the measurements went.

Swent: You weren't drilling?

Humphrey: No, surveying. But we drove the truck up from Phoenix, and it was a big five- or six-ton truck. I had never driven a big truck before, so I learned how to drive a big truck with the double shifting and all of this, with a load of pipe or something that we had to fix up for some reason--I can't remember all the details. So that was a good experience.

When I took the truck back for a load in Phoenix, I could leave it and get the bus up to Inspiration where Edna was

staying, so I got to see her a couple of times that summer. [laughter]

Swent: And your baby was just little?

Humphrey: Yes, she was just a little tyke. Pat [Patricia Ann] was born in 1949, so she was just less than a year old. So I really missed my family.

Swent: Of course you did, and they missed you, I'm sure.

Humphrey: But it was good, because my mother and Edna got to know each other without me being around, so they got to be very good friends. Of course, Mom was nuts about the baby. So that was a good experience for Edna.

Swent: And good work experience for you.

Humphrey: Sure. Then it was the next year I graduated, then we went to--.

## Good Teachers Krumloff, Chapman, Butler

Swent: Do you have any particular things you want to say about anything that you studied at Arizona, or any teachers that particularly interested you? You mentioned Krumloff.

Humphrey: Krumloff was good. I thought some of the--God, I don't remember all their names--some of the guys that taught the more pure engineering courses, like hydraulics and strength of materials, I thought were exceptionally good. And of course, the dean of the College of Mines, Tom Chapman, was a very good instructor, and a very good man to make you enthusiastic about mining. I don't know if you knew him or not.

Swent: No, I've heard so much about him. I don't believe I ever met him. I might have.

Humphrey: He was a guy that looked a lot like Plato [Malozemoff]. He was a little wiry guy, small stature, but a lot of energy.

Most of the courses were good. I had B. S. Butler, who was an economic geologist. He was good. I took some graduate courses, even though I wasn't in the graduate school, from him on--I think they call it economic geology, which was evaluating things and determining what minerals--and what the value economically was of minerals and mineral deposits. He was very

good. He's a noted economic geologist, or was at the time. He must have been in his seventies when I had him, but very astute old man. I learned a lot from him.

Some of the younger professors at the college I didn't think were very good, good at teaching. They might have been proficient, but they couldn't teach very well. So I took exception to some of those guys. Because I always figured that they were working for me, I wasn't working for them. If they weren't able to teach me--and I was anxious to learn--that was their fault, it wasn't mine. I guess I let my feelings be known, because I got crossways with a lot of them sometimes.

## A Really Focused Student

Swent: I think this frequently happened with the G.I.s that came back. They were more mature sometimes than their teachers.

Humphrey: Yes. [laughter] That's true.

Swent: You knew what you wanted.

Humphrey: I knew what I wanted. So anyway, but it worked out. There was only one course that I took for two days that I dropped out of, because I thought the teacher was just horrible. I don't even remember his name. Then I had to make it up. And of course, Pat, our first child, was born right at final time in May. So I missed a couple of finals. I had to make them up the next year, and boy, talk about scrambling to remember what I was supposed to know! [laughter]

Swent: Cramming after a year, yes. Did you get good grades?

Humphrey: Yes, I got good grades. I graduated with honors. I don't know, I think it says distinction. But I had good grades.

Swent: This also happened to a lot of the G.I.s that came back; they were good students.

Humphrey: Yes. Well, I really learned to study in the navy, so I knew how to go at it. That's all I had in my mind; I was really focused. I had this young family; boy, I had to--

Swent: So you weren't doing a lot of social life, I don't imagine.

Humphrey: No, we couldn't afford to. I think we had beer once a week, we could afford a few beers, maybe two or three beers. Boy, did we eat a lot of tuna casserole! I don't ever want to eat another one of those as long as I live. [laughter]

## Recollection of Social Drinking in Chile

Swent: Something, just a quick aside--I wanted to ask about drinking in Chile, in camp, and then let's not forget to go back to where we are here too. But we should mention that.

Humphrey: Drinking, I can remember--there seemed to be two groups of adults there. Of course, I was just a kid looking in on them, but there seemed to be a big party group, and my parents' group. There wasn't any animosity, but socially, we used to go peek in the windows at this party group, because they'd really tie them on on the weekends. They were the really heavy drinkers.

Swent: Yes, there was a lot of that.

Humphrey: And whoopee-making. I don't know if there was any immorality going on, but I think there was some wife-trading and so forth that went on at that time. And we, of course, peeked in the windows and watched all of this, what we could.

There were probably, I would guess, maybe a dozen, maybe eight or nine couples, and eight or nine couples that were wild. But my parents' friends would do what I told you: they would play golf and sing around the piano and have dinner parties with nice place setting. They were kind of dressed up to it. And the other guys would just raise holy Ned.

Swent: Did your parents serve drinks at your dinner parties, for instance? Did you have cocktails before dinner at that time?

Humphrey: I think so. I don't remember that. I don't remember anybody getting falling-down drunk at our house, though. And they did at these other places. We'd see people falling down coming out of the houses and so forth.

Swent: Yes. This was kind of a hazard sometimes in those places.

Humphrey: Yes. But they had drinks, and I don't know what it was at our house, whether it was just wine or whether they had hard--I think they must have had hard liquor.

Swent: Did the *pulperia* sell it?

Humphrey: I don't know.

Swent: Well, it doesn't matter. But anyway, I thought this was something to mention, because this was often a hazard in these foreign camps.

Humphrey: Sure. And of course, in Cananea, where we went to live, there were some pretty wild times.

Swent: And the stories grow in the telling sometimes.

Humphrey: Sure! [laughter]

Swent: But it was one of the risks of going overseas.

Humphrey: Yes. Well, when you're in an isolated spot like that, and you make your own fun, a lot of people think the fun is to be drinking a lot.

Swent: Right. It was alcohol--were there any other drugs? Was there cocaine--?

Humphrey: No. Never. Not that I knew of. I don't think so.

Swent: I think probably not.

Humphrey: We had this one guy that lived next door to us--

Swent: In Chile?

Humphrey: In Chile. My dad told me later on that he'd drink and drink, and get drunk, and then he'd go into the bathroom and stick his finger down his throat and get rid of it all, and sober up. Then he could start over again.

Swent: Oh, my.

Humphrey: That's what he thought, anyway. I don't know whether you can get it out of your system that way. [laughter] Terrible. So there were some wild times; I probably didn't know all that went on.

Swent: No. But children are aware of those things.

Humphrey: Sure.

Swent: But your college life was kind of quiet.

Humphrey: Yes, it was very quiet. So it was a real treat when we got invited somewhere where you could have a drink, and afford it. But we had beer maybe once a week, on the weekends, a couple of beers. That was big time.

Swent: Did you form any friendships that have lasted?

Humphrey: Oh, yes. There were some people that lived in the other end of the quonset hut, and then some of the people that I was in class with that were in the same boat, who had a family and lived in that area. Yes, we did.

Swent: Have your careers paralleled each other at all?

Humphrey: Yes, a couple of the boys, who are dead now, were from Miami, Arizona. Their dad was a mine superintendent at the underground mine that Miami had.

Swent: What was their name?

Humphrey: Still. Bob Still and Art Still. They were lasting friendships. In fact, both those boys became godparents to our children. Just a lot of people in the engineering school that we got friendly with. So we still have correspondence with them, sure. We don't see them much. But as time goes on, you get farther and farther apart.

Swent: Right.

Humphrey: It was a very limited social life, though.

## Working in the Bureau of Mines Warehouse

Humphrey: What I was going to tell you, once Edna had to quit working, I, after working at this Artillery Peak that summer up in the desert, when I came back to school that fall, they had a warehouse in Tucson where they kept all this stuff that I had been carting in the truck. They had all kinds of things; they had drills and wheelbarrows and shovels and everything they'd need on a project, because at that time, the Bureau of Mines actually developed some of these ore bodies, drilled them and did the preliminary work, and then supposedly turned them over to private enterprise.

So they gave me a job in the warehouse, taking inventory, actually, and putting it in order so that they could find things

when they wanted stuff. And I worked about thirty hours a week that last year. They were very good to me; I made my own hours, because I could go over when I didn't have a class. So that was very helpful.

Swent: You were busy then.

Humphrey: Then of course, that worked out, because we needed the money. Fortunately, the warehouse was within walking distance of our quonset hut. I think we had a car then, I'm not sure--yes, we had a 1936 Chevy that had belonged to my dad, and I guess he let us use it. Once we went to Mexico, we gave it back to him. Then we didn't have a car for a couple of years. Boy, that was hard. [laughter]

Swent: So you graduated in '50?

Humphrey: Nineteen-fifty.

Swent: And you got the job at Anaconda right--

Humphrey: I got a job right then.

## IV WORKING FOR THE ANACONDA COMPANY, 1950

### Applying for the Job

Swent: How did you get that?

Humphrey: I got it, I had written to [Richard S.] Dick Newlin, who was the vice president of Anaconda. He had married a gal named Saunders, and her mother was from one of the old Anaconda families, and she was my godmother, Dick's wife's mother, Ann Saunders. Her maiden name was Hobbins. So I wrote to Dick, because I had known him. When he was a young man, he was a superintendent of mines at Potrerillos. He had come home from work one day, and his wife wasn't there, and the maid was cleaning the floor with gasoline. It caught on fire, and he had tried to put it out, and it had just burned the heck out of his leg. They thought that he was going to lose it.

So they sent him down to the coast, to this Barquito, there was a hospital there, to recuperate. While he was recuperating, and we went down on one of our two-week stays, he would draw mazes for us, the kids. He'd draw them and then give them to us to work on. So I got to know him pretty well. He was a young guy, maybe thirty-five.

By the time all of this came around and I was graduating from college, I wrote him and said, "I wonder who I should write to to apply for a job."

So he got hold of Vin Perry.[1] Vin came out to Tucson with a guy named Alex McDonald; I don't know if you knew Alex.

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[1]Vincent D. Perry, *A Half Century as Mining and Exploration Geologist with the Anaconda Company*, Western Mining in the Twentieth Century Series, Regional Oral History Office, University of California, Berkeley, 1991.

Swent: No.

Humphrey: Alex was an operating guy who had been a mine superintendent and knew a lot about operating. Vin got him to help him evaluate some of these prospects that Vin was interested in, so that he'd know that--didn't want to waste any time on something that couldn't make a mine anyway. And Alex was a rough, tough old guy.

## An Interview with Vincent Perry and Alex McDonald

Humphrey: So they both came out and said I could come down to see them at the Pioneer Hotel in Tucson one afternoon at two o'clock, I remember. I got my best duds on and went down, and I was nervous. Vin asked me about what I'd been doing, and what I'd like to do. He said, "Why do you think you want to work in mining? And why us?"

I said, "Well, in the first place, I need a job because I've got to support my family. In the second place, I think mining is very romantic."

This old crusty guy looked at me and he said, "Kid, that romance can get to be a big pain in the ass after a while." [laughter]

Swent: Vin said that?

Humphrey: No, Alex McDonald.

Swent: That doesn't sound like Vin to me.

Humphrey: And I saw that twinkle in Vin's eye, and I thought, Oh, boy, I blew it now. [laughter]

Then Vin said, "Well, there's a need for you in Cananea [Mexico] in the geological department. Would you be interested?"

I said, "Sure."

He said, "But there's some problems with immigrating or with getting working papers, so would you be willing to go to work up here for a while with a guy named Jim Kelly?"

I said, "Well, sure."

Jim Kelly was one of the young geologists they had looking around Prescott at some of the old mines up there. So I went up. I guess Edna again went up to stay with my folks, and I went with Jim up looking around Prescott, Arizona, at some small properties. That was in May, so it was only a couple of months.

## Going to Work at Cananea, Mexico

Humphrey: Then in July, they sent me down to Cananea for an interview with Roland Mulchay, Ruben Velasco, and Albert Mendelsohn, who was the manager. Mendy was quite a guy. I learned a lot from him. I don't know where Mendy was raised--I think he was a Jewish guy from New York who went to work at the White Pine copper plant. That's where he met Clyde Weed, I guess, up in Michigan. Mendy was a bright young man and full of vim and vigor. So when this opening came up in Cananea, and Clyde had gotten up in the hierarchy in Anaconda, they sent Mendy down there, because they needed someone that wasn't an antagonist. He was a guy that would get people together, and there was some antagonism between I think the Mexicans and the American staff. So they got Mendy in.

Anyway, I went down for an interview when Mendy was the manager. Roland Mulchay was the chief geologist, and Ruben was the guy that was going to take his place. I guess they thought I could do the job, so they wanted me to come down single status. They wondered if I'd do it.

I said, "Well, I'll do it, but not for very long."

Mendy said, "What do you think very long is, Bill?"

I said, "Oh, a month." [laughter]

He said, "How about three or four months, or six?"

I said, "That's too long for me."

So I went down single status, and they made no commitment. I figured, Heck, I'll try it.

Swent: You had a regular work permit, though, for Mexico? What sort of papers did you have?

Humphrey: Well, no. To start with, I went down on a tourist--

Swent: They were very touchy about that.

Humphrey: They were touchy. So I couldn't get paid. They would pay me in New York my $300. So they were working on these papers, and I got some temporary work papers that were good for six months after I'd been there a month or two. And then eventually, my "imigrado" came through, and Edna was able to come down. She came down with the baby before we had our permanent working papers, so we couldn't bring any of our stuff. We didn't have much stuff anyway.

## An Isolated, Old-Fashioned Camp

Swent: Where did you stay?

Humphrey: We stayed in an apartment. They had apartments there.

Swent: I've never been to Cananea; I don't know what it looks like.

Humphrey: That particular apartment burned down after a while. But the buildings, the hospital at Lead [South Dakota] looked exactly like the hospital in Cananea. It was two stories, brick, with kind of a dumbwaiter elevator in the thing. Do you remember that?

Swent: Yes.

Humphrey: In the Lead hospital.

Swent: I'd forgotten, but I do. Old-fashioned.

Humphrey: Old-fashioned, yes. With big heavy linoleum on the floors like a battleship on land, remember that in the hospital up there?

Swent: Yes.

Humphrey: We had the same stuff. I think the same kind of people built it. And our general office was a lot the same. So those were the kind of buildings they had. They built next to the mine, they had these two-story apartment buildings.

##

Swent: And they were built of brick too, I suppose?

Humphrey: Brick, yes, and with a flat roof kind of, and little cornices up around the edge. These apartments were one room, and a kitchen and a bathroom with bathtub. By the time we got there, they had made some of them--they had made one apartment out of two. But the beds were Murphy beds, and they were big closets that were double beds that would fold--the door would swing out and you'd let the bed down for the night, and swing it back in the morning.

Swent: And the company provided the furniture, did they?

Humphrey: They had furniture--yes.

Swent: Dressers and tables and chairs.

Humphrey: Yes. The first night we got there in Cananea, we went into this apartment, and we jumped into bed, and the bed collapsed. [laughter] Edna said, "My gosh!" The lights were just bulbs hanging on cords.

Swent: Was there a staff house where you ate when you were on single status?

Humphrey: There was not a staff house, there was a little restaurant run by the company with a Mexican cook. The food was passable, but that's about all. So I was glad when Edna was finally able to come, and get some good cooking.

Swent: Cananea is not far from the border?

Humphrey: Forty miles.

Swent: Just forty miles, so you could go back and forth and get things?

Humphrey: Well, we had--

Swent: No, at that time, they didn't allow you to, did they?

Humphrey: They didn't allow it, but you could do it. They had built this new copper open pit and plant when we got there that had been built by the Reconstruction Finance Corporation, which was part of the war effort, where the U.S. lent money to Mexico and in turn lent it to the company to build this plant, and then it was paid back out of the earnings. I think the capital cost was $33 million, and we had paid it back by the early fifties. So it was a pretty good deal for the company.

Swent: And this was copper?

Humphrey: All copper. Very little precious metals with the ore, although there had been in the past in some higher-grade portions of the orebody. But because of that war effort, they had what they called the candy wagon when we first went down there. They'd send a car out three times a week, a truck, actually, and you could put a grocery order in for the staff.

Well, it finally got so that people were abusing it terribly, so they had to cut it out. So when we first went down, we could get milk and things from the States.

But then the local pharmacist, who was an American, in the hospital, had cows, so he would--so we got fresh milk from him after that got stopped. So we were able to get our produce. But there were no paved roads to the border. Cananea was very isolated. There was a railroad line from Cananea to the Arizona border, but there was no rail line connecting to the south. So all our blister copper went out and came all the way to Perth Amboy, New Jersey, actually, where my dad had worked previously.

So there were dirt roads, and we didn't go out too much. In the summer particularly when we had flash floods, I think we had to cross seven washes, and sometimes you'd get stuck between two and you'd have to spend the night on the road. So those were experiences, too.

Swent: Yes. Were there trees and grass and--?

Humphrey: Oh, yes. It was high country, 5,000 feet, so it was very good cattle country, good range grass and live oak, some juniper, and then higher up, just above 5,000, you got into the pine country which was very pretty country.

Swent: So it was an attractive camp.

Humphrey: Well, yes. These buildings that had been built around the turn of the century, I guess, and looked just like the Lead buildings, were all snuggled up against the smelter and the work area. So that wasn't too attractive, because you got all of the sulfur smoke, and there were no trees that would grow around the place. But farther out of town, out into the town, away from the smelter, yes, it was quite nice. We pumped--had our own water supply, so we had plenty of water for gardens and lawns and trees. We supplied the town with power and water.

Swent: What was your source of power?

Humphrey: Source of power was natural gas. There was a gas line that came in from Naco, Arizona. It was El Paso natural gas that came in. It was the only gas line from the States into Mexico.

Swent: And you could get it from the States?

Humphrey: They put that in--

Swent: That would be the RFC connection, I suppose.

Humphrey: I think that's about the time it went--it might have gone in earlier, though. It was the only gas line into Mexico from the United States. So that was good. Then we generated our own power and had our own pumping fields, supplied the town, made good electrical power costs with it. That made things a lot nicer, when you could have gardens and plenty of water. We had a very nice recreation area down near the pumping station, with big lawns and big trees, big cottonwood trees, and barbecue pits and swimming pool and everything.

Swent: How big a camp was it when you went there?

Humphrey: The town was about 20,000, and we employed right at 2,000, 2,400, if I remember, when I went down there. There were about --I would guess 500 Americans.

Swent: Now, when you say town, was there company housing apart from the town?

Humphrey: There was company housing. We had company housing for the--we had a silver payroll and a gold payroll. We had company housing apart for the silver payroll, which were houses, four- or five-room houses, well-built houses, for the silver payroll, and then there were ten houses in one section for the gold payroll, and then there were houses scattered throughout town that had been gold payroll houses previously. So I guess there was--

Swent: These had been built by the company?

Humphrey: Yes, built by the company, or built by somebody and owned by the company, because some of them were houses that looked like they'd been built around the turn of the century. They were wooden framed houses, and the ones that had been built at this Reconstruction thing during the war were brick houses, and more modern layout.

[tape interruption]

Swent: We're continuing after a little break. You were talking about the housing. Some of them had been built at the turn of the century and were right by the smelter, and then later they built houses--

Humphrey: Yes, and then there were some others for the superintendents scattered throughout town.

Swent: So it wasn't just one--

Humphrey: Wasn't one enclave like I'd been raised in. So that was nice.

## The Greene Cattle Company

Swent: Did the whole town depended on the mining?

Humphrey: Oh, sure. Well, the Greene Cattle Company was also headquartered there, and they had a large ranch. It must have been--oh, gosh, 250,000 acres or something like that. It was approximately twenty miles long and twenty miles wide, and covered lowland and highland. Beautiful cattle country. And of course, Bill Greene, Colonel Greene, as he was called, was the guy that really promoted that thing at the turn of the century, although the mining had been going on since 1776 or something when some Jesuits went in there looking for silver. But the big play came when this guy Greene got New York money interested in building the first smelter and establishing the larger-scale mining.

So his cattle company was headquartered there. They provided a lot. Actually, when we went down there, there was what they called a packing plant, where they slaughtered the animals, and actually made frankfurters and canned beef. It was a processing plant, quite a large plant, and very good quality products that they had made, I guess, as part of this war effort also. So it functioned for quite a while before they shut it down. It was competitive, and they exported a lot of their canned products. So that was a considerable number of people, too.

## Silver Payroll and Gold Payroll; a Turning Point

Swent: You mentioned silver payroll and gold payroll. What was the difference between those?

Humphrey: Gold payroll were the expatriates or the Americans, or some Germans and some Englishmen, that had the higher-paying jobs. They were paid in dollars. Then the Mexicans who were part of the staff and had supervisory positions were paid in pesos, and that was the silver payroll. And it persisted for a while.

Swent: Was this actually structured, or was this just terminology?

Humphrey: No, it was structured.

Swent: It was really part of the structure.

Humphrey: Yes. And when I first went there, I was on the silver payroll, because I didn't have any working papers, and what I was getting paid to make my $300 was in New York, and a part was on the silver payroll--it was about 1,200 pesos--

Swent: So they were depositing $300 a month at a bank in New York for you, and paying you there on a silver payroll?

Humphrey: Silver, but it was just a cosmetic thing, the silver payroll, because it was--maybe I got $100 in silver, and $200 in New York, something like that. It was a total of $300.

Swent: Now, the gold payroll people, were they all paid in the States, in American money in the States?

Humphrey: I believe so.

Swent: And then housing was provided in Mexico?

Humphrey: The housing was provided, but at a rental fee.

Swent: And you had to buy your own food.

Humphrey: Oh, yes.

Swent: Was there a company store?

Humphrey: By the time we got there, there was not, but there had been.

Swent: But things were changing.

Humphrey: They had had an ice house and the company store, which no longer existed when we got there. And that's why this so-called candy wagon ran back and forth, because there was no company store.

Swent: And most of the higher staff were expatriates?

Humphrey: Yes.

Swent: Well, Velasco--was he a Mexican?

Humphrey: Yes, he's a Mexican. He's a graduate of the University of Arizona, and worked his way up. So there were some. The secretary of the company was a Mexican guy.

Swent: But this was kind of a new thing?

Humphrey: It was an exception rather than the rule. The head nurse was a gal from Mississippi; the doctor, the chief surgeon, was American. Telephone operators were American. [laughter] We had a World War I field telephone system that required operators with plug-ins. So we were just at the turning point of this whole thing.

Swent: Did some of the higher staff have Mexican wives?

Humphrey: Some did, not many. But a lot of the lower staff members had Mexican wives. Like the shovel maintenance foreman.

Swent: Who was an American?

Humphrey: Yes. Who had a Mexican wife. That particular guy I remember. And there were others like that. A guy that was the shift foreman in the smelter named Hillman had a Mexican wife. And a guy that was the bucking room foreman named Fuller had a Mexican wife.

Swent: These were lower staff jobs.

Humphrey: Yes.

Swent: Did any of the upper staff have Mexican wives?

Humphrey: No.

Swent: Was it sort of frowned on, do you think?

Humphrey: No, it wasn't frowned on; they just brought their wives with them; most of them came, married people, and the people that had

been there, like the controller, the chief accountant, had come down as a single young man and married one of the nurses.

Swent: But she was an American.

Humphrey: Yes. But they had been there since the beginning, practically. So there wasn't much of that going on until later, as the younger people came. But by then, it was so tough to get an American in, not many came. And that was a great opportunity for me, because I was utilized in a lot of different places.

Swent: You were there right at a pivotal time.

Humphrey: Yes. It was right at the turning point.

Swent: As I recall, Mexico had put an embargo on imports of materials, and about when was that, '46 or '47 I think.

Humphrey: Yes, I think it was, but they had started to build this plant under this plan, so they relaxed those conditions until we got there, and then they were very tough. They had high duties on everything, because you had to buy Mexico first. And of course, the quality wasn't there in many cases, nor the parts that we needed.

## Manager Mendelsohn Kept the Pot from Boiling Over

Swent: That was a hard time.

Humphrey: It was a hard time for foreigners. There was some animosity, so that--this manager that they had did a lot to smooth that over, although--

Swent: This is Mendelsohn?

Humphrey: Mendelsohn, yes. He never became proficient in the language, which was a drawback. But he was there for the first ten years, at least, that we were there, and was very good politically, and did a lot to keep the pot from boiling over, so to speak.

Swent: Were you ever given any overt guidance in personnel relations or public relations or international relations? Was this ever discussed with you?

Humphrey: Not to start with, but once Mendy left and Donny [Curtis Donohoe] got in and then Bob Weed became manager before I was,

somewhere in there, we had--and I guess Mendy was still there--the manager and assistant manager were sent to charm school, which they had in Long Island, for all Anaconda managers. Part of that was how to act in a foreign country, what your obligations were, and what the issues--

Swent: This was spelled out.

Humphrey: They started to really be more active--

Swent: But this was the first time?

Humphrey: Yes.

Swent: Do you know about when that was?

Humphrey: When it started?

Swent: Yes.

Humphrey: Well, I went, I was assistant, or I was general superintendent, I went to--gosh, it must have been 1960--

Swent: You went to the charm school.

Humphrey: Charm school, yes. And that was a big step forward in your career. In the late sixties sometimes, I had been there since 1950, so I'd been there fifteen years, probably, before--

Swent: And the charm school--

Humphrey: I was in my early forties.

Swent: And was the charm school new when you went there?

Humphrey: It was pretty new in Anaconda. Because when I went there, they had no retirement program. You saved your money to retire on. There was no such thing as retirement. No such thing as assistance for sending your children away to school. So a lot of things. Then we got some kind of a policy where you could get some medical care in the States instead of depending strictly on the company hospital.

Swent: That was when you first went there, there was that.

Humphrey: There was not.

Swent: Oh, there was not that. You were--

Humphrey: So that came along after I had been there a while.

## Benefits: Low-Rent Housing, Medical Care, and School

Swent: So what was provided when you first got there? Three hundred a month, and medical care--

Humphrey: Three hundred, and pretty cheap rent, medical care.

Swent: There at the company hospital.

Humphrey: They thought it was adequate, and it was very good. Eventually, the American doctor retired and left after we'd been there maybe ten years, and his assistant, who was a Mexican, took over, a guy named Jesus Gonzalez. Very good doctor, very smart. In fact, I transferred over to him before the American doctor left, because the old doctor was a tough old codger that had been down there during the last American invasion that we made of--he was with the army. He was an old army doctor, that American.

Swent: The time of Villa, probably.

Humphrey: Yes. Tough old guy, and didn't have very much of a bedside manner. He'd get angry if he came to see you if he thought there was nothing wrong with you. [laughter] One of those guys. So it was good care. We overused it, everything from aspirins to appendectomies. So you'd call on him for the slightest illness. So that's all there was, really, and no retirement program.

Swent: No retirement. Was there some sort of insurance if you get killed on the job?

Humphrey: Yes, they did have insurance.

Swent: Or injured.

Humphrey: Yes.

Swent: There was that.

Humphrey: There was that.

Swent: And the medical care, of course, covered your family.

Humphrey: Sure.

Swent: Was the school provided free?

Humphrey: School was provided free for employees. There were a lot of outside people that wanted to get their children in, and they paid a nominal fee of $30 a month or something.

Swent: But it was free for you.

Humphrey: Yes. And it was a very good school. It was an excellent school, and eventually went up through the ninth grade. We built some new structures. The first structures, they looked like chicken coops. They were very simple wood frame buildings that were adequate. They had corrugated iron roofs, and they were painted white, and they had good blackboards and good heating, good ventilated heating, but nothing fancy. Wooden floors, and that's about it. We had thirteen teachers for 120 children.

Swent: Pretty good.

Humphrey: A good portion of them were mothers. Some were teachers that had been brought in. Some were Mexican gals who had been educated in the States.

Swent: What sort of temperatures do you get in Cananea? What's the weather like?

Humphrey: It's very--winters can get cold with snow and ice at that elevation, and summers, we didn't have any refrigeration in our homes, we didn't need it. There were some days that got up to the mid-nineties, maybe last for three or four days. So it was bearable. But it would get to freezing in the winter, so we did have to have a change of seasons.

Swent: Not too different from Tucson, I guess, is it?

Humphrey: No, it's quite different, because it's higher. It doesn't get as hot, and it gets colder. So we had winter weather, snow occasionally. Snow quite often. But a lot more moisture: we had about thirty-five inches of rainfall a year.

Swent: You said the first couple of years you were there, you didn't have a car. So was there a bus service or something?

Humphrey: Fortunately, we lived in this apartment building which was next to work--

Swent: You didn't need it--

Humphrey: --I was two doors from the office where I worked, the geological office. They had a truck to get to the underground mine.

Swent: But I was thinking of going back to the States, if Edna wanted to go.

Humphrey: No, we were pretty well isolated for a while, you could--

Swent: You just didn't do that.

Humphrey: --there was bus service out--

Swent: But you didn't do this.

Humphrey: No, we didn't go out much. Finally, there was a used car that came along. I guess it wasn't two years; probably a year that we were without one. And we'd take a taxi to parties or to functions or something, or people who had cars would be good enough to pick us up.

But I remember, there was a used car that came along that was going to cost $2,500. I didn't have any money. I called my dad up. I said, "I'd like to borrow $2,500."

He said, "What for?"

I said, "I want to buy a car."

He said, "You know, your mother's been sick, and I just don't have that kind of money for a car. If it's something serious, I could do something. You'll just have to figure it out on your own."

So boy, the light went on then. "Billy, you're on your own here. No more Pop to--" [laughter] So we didn't get that car. Finally, another one came along, and we had saved enough for a down payment. It was a 1947 car, which was a pretty good car for us. So we struggled with that, and made our payments, and that was a big time. By then, we were a little more solvent. By the time the children--there were two--it was a coupe--it wasn't big enough for our whole family by the time all the kids were born, so we were able to trade it in for another used car.

## Adventures Getting to Tucson for a Baby's Birth

Swent: You had four children, so were three of them born there?

Humphrey: No, we went back in every case to Tucson. Edna had had a tough time with the first baby, so I was concerned that if something went haywire again down there, we would be stuck. Because the roads weren't too good out, and her delivery time happened to turn out to be in August when the big rains were. I remember with our third kid, we were having a visiting Mexican geologist to dinner, Alberto Terrones--

Swent: Oh, Alberto Terrones.

Humphrey: Do you know him?

Swent: Yes.

Humphrey: So Alberto came to have supper with us, and Edna prepared everything. She wanted to have--she set the table nicely, and it was August. The rains were there. About halfway through the meal, Edna said, "You know, I think--I don't know if we can finish this party. I've been having pains." I guess she was spotting or something.

So I went--and we had phones by then--I called the doctor in Tucson and explained what was happening. He said, "I'll give you about six hours to get here if you can make it."

So we started out. It was raining, and this road was a slippery little muddy road, and the washes were running, and my car wouldn't start. This car that we had scraped for. So Don Ashe, who was a friend of ours, had bought an old one of these Chryslers that looked like a big bubble--I don't know if--the early days, forgot what they called them now. But he had just had it rebuilt, the engine rebuilt, so he said, "You take my car."

So we did. We got to the border by midnight. Took us that long. It was usually an hour trip or something, took us three hours.

Edna stopped on the American side to go to the bathroom. She said, "You know, I think you better hurry, because my pains have been about three to five minutes apart."

I thought, Jeez! We had to go to Tucson, which was another hundred miles. So I determined I'd try it and speed to see if I could get a highway patrolman to stop me, so he could escort us in somehow. That was my idea. So I did, and nobody, nobody. We got to a little place called St. David, which is about fifty miles from Tucson, and I knew the road pretty well. By gosh, we came around this curve, and there was a car parked across the

way. It was a green 1949 Ford sedan, was parked square across the road. And we went right through it. I must have fallen asleep, and that image woke me up. It wasn't there at all, but I could see it just as plain as day. I must have fallen asleep just before that curve, where the car was parked across the road. So the Good Lord was watching over us, I guess.

But we got to Tucson, and I couldn't find the darn hospital. It was St. Mary's we were going to in Tucson. The other kids had been born out at the medical center. We finally got some help and found the hospital, and by then, Edna was really well along. They got a wheelchair out and wheeled her in, and she stopped. She stopped, and she stopped. About an hour later, they said, "You've got to take this lady home. You're not going to have a baby tonight."

Swent: Oh! [laughter] Oh, my.

Humphrey: So the Mulchays, this was one of the guys that interviewed me--Roland Mulchay. They lived in Tucson at the time, so I called them up, and they said, "Yes, sure, come on over." So we took Edna to their house, and we no sooner got settled back there, we were there a couple of hours, I guess, and she started up again. We made it this time. [laughter] So that was quite an experience, from Alberto Terrones to Roland Mulchay's and St. Mary's Hospital.

Swent: Oh, dear. One more social question, and then we'll go to your work. But you mentioned the dinner party. Did you have a lot of household help?

Humphrey: We had a maid. Once we got our first house, which was where Alberto came into the picture. When we lived in the apartments, we didn't. We were there maybe a year, year and a half. Then the house came up, and we got this house. It was in town. It was a small little house, two bedrooms, and bath, and kitchen, and dining room, and a living room, and a little alcove. It was nice.

We were able to get some furniture by then, I guess. I guess my papers must have gone through, so we had some stuff. That was a company house in town. Now, what was your question?

Swent: Help. I was wondering about household help.

Humphrey: The question--we had a maid by then. We had a full-time maid.

Swent: Did she live in?

Humphrey: She lived in that house, we fixed a room in the garage for her that had the toilet in it, and washing facilities. It was a wash room that we converted. So that was a big help as the kids started to come along.

Swent: Right.

Humphrey: But after that, when we moved, then we were able to move down to where the brick houses, newer houses were, we didn't have a live-in, because there were no facilities. Edna didn't like having people around anyway. So we never had live-ins after that, even after we built a house and moved out to the country club. They still came in daily.

Swent: But you did have help.

Humphrey: We did have help, sure.

Swent: That's one of the nice things down there.

Humphrey: And particularly raising a family.

Swent: Sure, it was wonderful to have them.

## V GEOLOGIST, PLANNING ENGINEER, SHIFT BOSS

### Junior Mine Geologist

Swent: Let's go back to your first job. You started in helping the geologist.

Humphrey: I started in as just a junior geologist, I guess.

Swent: Were you working in the mine?

Humphrey: I worked most of my work as mine geologist, yes. We had an underground mine and an open-pit mine. But most of the deeper stuff was in the underground mine, and it was a large mine using big bulk methods, stoping methods.

Swent: So this is where you were working?

Humphrey: Yes. I would go in every day and map the faces, the development faces. So I got to know a lot about the mine and the miners and the system, and I did some projections--

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Humphrey: --trying to determine what the continuation of the ore body was. That was the whole purpose. We were doing a lot of diamond drilling, core drilling, at that time from the surface and underground, too. So I'd go underground in the mornings and map the advances on the faces, and the afternoon, I'd come out and post my mapping on the master plans. Then I would go down and split the core. We had a core splitter, a hand core splitter. Split the core, put it in boxes, and start mapping the core, because we were doing a lot of underground drilling. I got educated on how to do all of that.

## Detailed Mapping; the Anaconda System

Swent: I've been told that Anaconda had its own very special mapping system.

Humphrey: They did, which was developed by Reno Sales. It was a very detailed way that you mapped the core. You mapped every inch of that core, every little veinlet and every little change in texture. Someone had determined what different types of rock there were, so you would identify it as you went along. You would write a description, and along the edge of the paper, you would actually draw in what you were seeing, whether there was a vein or whether there were big phenocrysts in it, or whether it was fine textured. We had a system so you could look at the side of the paper, and it was supposed to be a picture of the core.

Swent: What kind of paper, what size and color?

Humphrey: The paper was just this size, eight by eleven--

Swent: White?

Humphrey: White paper.

Swent: Ruled?

Humphrey: No, it wasn't ruled. It had two columns down where you drew the core in, and then you wrote your little description opposite these different parts of the core. It was a neat system, very detailed.

The problem was that every geologist didn't see the same thing that you saw. So that if you mapped a core or 100 feet of this regular core, and another fellow, Ruben Velasco or even Mulchay or someone else, came along and mapped that same section, it might not look the same.

Swent: Uh-oh.

Humphrey: So that was the weakness in the system. But in general, for the rock types and the general concentration of structures, it would be good enough to make a general picture of it, and that's what the job was.

Swent: This was to some sort of scale?

Humphrey: This in the core was, you'd map almost every inch of the darn thing, so you could--

Swent: It was almost one to one?

Humphrey: Yes, but no. You could get thirty or forty feet on one column, if it wasn't too detailed. You could change your scale. You might map two inches of very high-grade stuff, and then you'd map four feet in the same type of distance for something that didn't have any specialty to it. So that when you came to post it on the big maps, and they had big master maps, you would have to take that into account.

Swent: Adjust your scale then.

Humphrey: Yes. So I did that, and I worked in that department for four years.

Swent: Were you using colored pencils?

Humphrey: No, we didn't. It was just black and white. We didn't use any colors on the logging--we called this logging the core. When you took this over to the maps, you did, because then you would--

Swent: Then you used your colors.

Humphrey: Yes. On mapping the development faces underground we used colored pencils, but not on the core.

Swent: Pencil?

Humphrey: We did colors for ore in ink.

Swent: Colored ink.

Humphrey: Ink on linen. So that was your permanent record. We had different scales for that. We had 50 scale for the underground headings, and we had 100 scale, and we had 200 scale, and we had 500 scale for the regional map.

Swent: And the same geologist did all of this transfer all the way along?

Humphrey: Sometimes. Not always the same, depending on the workload. We had a Mexican fellow there who was a technician who got to know our style, so he could take my notes and actually put some of them on, or take Ruben's notes, so you'd get some consistency and continuity in it.

Swent: It must have taken an awful lot of your time.

Humphrey: It took a lot of time. I worked underground in the morning, and all afternoon on the core logging, and posting. Then when we finally got something that looked like an ore extension, then you had to calculate--delineate the ore body, and you'd get the tonnage and the grade and learn how to do it with sections and plans. It was real basic stuff, which was good for me, because we were developing some new ore bodies on the periphery of this big, intrusive quartz porphyry. So I learned how to delineate an ore body.

Swent: And you had had some of this in theory in college?

Humphrey: Not enough. I went back once after a couple of years and talked to one of the professors, a guy named Cunningham, and said, "You know, you didn't really teach me what I should have known about core drilling, and then logging the holes, and then estimating an ore body."

He said, "Well, you're learning now. When you go back and find out how to do it, you write us a letter and tell us what we didn't do."

Which I never did. I thought maybe he should know, but he was kind of upset about it. But they didn't teach us. And of course, you learn by doing a lot.

Swent: A hard lesson.

Humphrey: Yes. [laughter] It wasn't too hard. It was interesting, and--

Swent: It sounds very tedious, though.

Humphrey: It was tedious, and that's not my cup of tea. But I did do enough various things that I was learning. When I stopped really learning, or had learned 80 percent of what I could, I started thinking maybe I should be doing something else.

So after four years, I had become friendly with this man who was a planning engineer, which was a great job, really a learning job. I asked if he thought there would be any opportunity to get into that line of work. He said, "Oh, go talk to the manager." Mendy was still manager.

I did, and he said, "Well, let me think about it." On some of these new ore bodies, I had drawn some three-dimensional pictures of what I thought the ore body looked like. Because we didn't have any of these computer renditions then. Apparently,

the manager was impressed with that perspective that I had, and maybe some of my creative ability. So he said, "Okay, we'll do that."

It made Vin Perry madder than hell that I quit the geological department. He wrote me a very strong letter, and at the end he said, "Well, these decisions are made by each individual, so it's done now. But I wish you had talked to me about it before."

Swent: He was hurt, probably.

Humphrey: Yes. I knew if I'd talked to him, he'd have tried to talk me into staying in the exploration department, and I didn't want to do that. I wanted to get into the--I liked the way the business worked, how you mined and milled and smelted and made your power; all of that was fascinating to me. And how you organize your people was such a--I was growing away from just the rocks and I wanted to get people-oriented more.

## The Planning Department: Learning About Machinery, People, Rock, and Process

Swent: But you stuck with it for four years. You were in the geological department for four years.

Humphrey: Yes.

Swent: Long enough to know.

Humphrey: I learned a lot. It was a valuable experience, because I did learn about how to delineate ore bodies, which is pretty basic for a miner.

Swent: Yes, it is.

Humphrey: But then I did get this opportunity, and then that opened up a whole new vista to me. I was given assignments on everything from power plants to railroads. We had our own little railroad, and we had two gauges. We had a wide gauge and a narrow gauge, on the same tracks, so you had three rails instead of two, so that the switching was pretty tricky, the switch points. We had steam locomotives, we had diesel locomotives, and we had narrow gauge rolling stock and standard gauge rolling stock. So I learned a lot about railroads. I got into all these--and we had this telephone system that was antiquated.

Swent: This might be a good place for us to stop, Bill, because I think that's going to take more time to go into, don't you?

Humphrey: I do.

Swent: That's worth concentrating on.

Humphrey: I just want to tell you. They had a chief engineer and a whole engineering department to do the conventional type work that engineers do. This was a special department that the management had developed, and I guess Mendy did it, to look into special projects that weren't related to their routine daily work.

Swent: Would it be more like long-range planning?

Humphrey: Long-range, or even short-range, if there was a better way to do something. People were so busy doing what they were doing, to get the rock out and make copper, that they didn't think much about maybe a different way to do things. So it was just a fantastic learning place.

Swent: R and D [research and development].

Humphrey: Yes, kind of like that. It was for long- as well as short-term. So I was lucky to get into that. After I'd been in it a while, the manager told my boss, who was the main planning engineer, "Hey, if Bill's going to do any good in his life, he's got to get out and get some operating experience."

That's when--because I'd done work in the precipitation plant there, and actually worked as a foreman there for a while. But he said, "That's not enough. If he's going to do any good, he's got to get back working as a shift boss or something." So that's when they--.

I said, "Okay, I'll do it." But it hurt, because in this planning engineering job, they had provided me with a pickup truck, and I had an office, and I was looking at the whole broad picture. Went back to work underground for the mine superintendent, and I was just a shift foreman.

Swent: Just one shift.

Humphrey: Yes. [laughter]

Swent: Pretty narrow vision.

Humphrey: It was a small portion of the mine, it wasn't the whole mine. But I learned about labor relations, and I learned about a lot

of tough things, which was good for me. But I lost the use of a vehicle, so that hurt economically.

Swent: Well, that I think would be a good place for us to start next time.

Humphrey: Yes. But planning--I kept, when I came even with Homestake, I had two people working for me as specialists. I called them technical assistants, I think, Kurt Gilg and Gary Boyer. They had both worked as managers and were proficient in their work, but I used them to look at other ways of doing things. So it's a good thing for a management to have, is an extracurricular group that are experienced enough to know that maybe there's a better way to do things than just the routine work. And sometimes your engineering departments don't have that facility. They're too busy getting the production out.

Swent: Do you know whose idea was this at Anaconda? Do you know?

Humphrey: I think it was Albert Mendelsohn's. I think he wanted another set of eyes and ears for this old plant that had been started in 1900, and he came on board in 1940-something, or '38, I've forgotten. Somewhere around there. He wanted to--

Swent: Didn't want to do things the same.

Humphrey: Yes, he wanted to know if there was some different way to do it. So he got this bright young guy, Bob Weed, to do that. Anyway, so I got in on the benefit.

Swent: Goods. Sounds as if your timing has been pretty good.

Humphrey: It's been luck. Just lucky, you know. [laughter]

Swent: Timing has a lot to do with it.

Humphrey: Timing has a lot, and that location was exceptional. I don't think a young man could have asked for a better school than that in Cananea. It had everything. We had everything that you can imagine a mining complex would be. We didn't have an electrolytic refinery, but that's about all we didn't have. So it taught you a lot about machinery, and about people, and about rock, and about process, and what you could and couldn't do.

This particular job, they gave you a lot of responsibility and not much authority, and that was another good lesson, because you learned how to talk people into doing things. Because in this planning job, if you thought there was some better way to run some part of the concentrator or some part of

the mine or some part of the smelter, you didn't have authority to go and say, "Do it." You had to go to the mine superintendent or smelter super and say, "Hey, how about going over this with me?"

If he said, "Get out of my hair, go feed your face somewhere else," you had to use a lot of diplomacy to get some of these things done.

Swent: To make him think it was his idea.

Humphrey: Yes. So that was great. But I happened to be at a place that--there was another young fellow there, American, that would have had the same opportunity, but he didn't choose to get into the operation. Did later on, but he didn't really do as well. So there wasn't much competition, which I guess may have been good or bad, but I had a lot of opportunity. So, a lucky guy.

[Interview 2: October 12, 1994] ##

Swent: When we stopped last time, Bill, you had just been working as a planning engineer, and you had been recommended for transfer into operations. You had said--I thought it was interesting the way you had put it--you said that as planning engineer, you saw the whole picture, and you also had the use of a vehicle. [laughter] And when you opted to go into a training period in operations, then you saw only one small section, and you lost your truck, which was kind of a blow.

You had commented that you had had a wonderful chance to learn about machinery, people, rock, and process, and I liked that phrase that you used. I thought that you really summed up everything there. And that as a planning engineer, you had responsibility but no authority, so you had to learn diplomacy to get things done.

## Solving a Problem in the Precipitation Plant

Swent: Then as we discussed off the tape, you had talked about your experience with the leaching plant, and that was where some of those things came into play.

Humphrey: Yes. Probably one of the first jobs I had was in the leaching plant, which was a plant that took the waste water from both the underground and the surface waste dumps from the pit that we poured water on, actually just poured water on, and generated ferric sulfate from pyrite that was in the dumps.

So one of the first jobs I had as planning engineer, to backtrack a little bit, was to study the precipitation plant. We were getting some tough results, and the precipitation plant was a plant that took the waste water from the mine underground, and also from water we had purposely put on the waste dumps in the pit, to leach the copper out that was left in the rock, and put that water through a plant where the copper sulfate and iron came into contact, and the iron went into solution and the copper came out as a precipitate. That was the basic process, we called it a precipitate copper, and it was fairly pure.

But we were getting a lot of iron buildup in the product, and when we combined this product with a product from the concentrator in the concentrate thickeners, we had a tremendous buildup of a gelatinous iron precipitate. It really plugged up and hindered the process in the thickeners.

So I was given the job of seeing what this was all about. At the same time, we were tearing up the pump lining of the rubber-lined pumps that pumped this product from the precipitation plant up to the concentrate thickeners, so that was another problem. Plus, we thought we could improve on the cost.

So I made a bunch of suggestions about how to get over all of these obstacles.

Swent: Had this been a long-standing problem, or something that just came up?

Humphrey: No, it was a problem they'd had since they started, and they just were fighting it all the time. They really hadn't had time to put somebody in there, or it wasn't getting done, I don't know. At any rate, they said, "Well, here's something to see if this kid can really do the job." So I was given the task of doing that.

I did some time studies, and I did some looking, and gathered all kinds of research information I could from other people in the industry, and came up with some proposals that I thought would solve the problem. Well, I was so emphatic about how good my ideas were that the manager said, "Well, you go do it then, if you're so hot."

So I was made foreman of the plant and did take that on for quite a while.

Swent: What did you do?

Humphrey: What we did was, we put some settling tanks in for the product and washed them actually with a monitor, like a big fire hose, washed the iron out of the precipitate copper. Then that was put into settling tanks, so that we cleaned the product up. Then we flushed it into these pumps after we'd put it through a trommel to get the scrap iron out that was cutting up the lining of the pumps.

And we changed the flow sheet through the plant: we had a series of tanks where this water went through, and of course, by the time the water got to the last tank--or the solution, I should say; it wasn't water, it was a copper sulfate solution--there was not enough copper to pay for the iron that we used up. So I chopped the tail end off of this thing and made a parallel circuit instead of a series. So we made more money even though our tails were higher; we were making more money from the same process.

So all of those things worked. We changed the plant and built the facilities to do all of these things.

Swent: It must have taken quite a while.

Humphrey: Well, let's see. It was about a year that I was there. And it was good experience for me.

That's when they said, "Well, if you're interested in operating, you can't ride on this. You've got to get into the mine somehow."

Swent: But then you went from this to the planning?

Humphrey: I went back into the planning thing, and was there a while. I guess it was in 1956, just a few months back in there.

## Working as a Shift Boss; Appeasing Self-Trained Supervisors

Humphrey: Then they transferred me over into the underground mine as a shift boss, which was great. I didn't think it was so great at the time, because the--of course, the operating guys were just waiting for me. This young smart-aleck kid. And the

superintendent of the mine was a guy, Roland Sheldon, that had had a fourth-grade education, and had just learned everything the hard way. It turned out he was one of my best friends, and I learned so much from him.

But anyway, he said, "Okay, kid. What do you think you're going to do here?"

I said, "Well, I just wanted to learn how to mine."

He said, "What do you want to be?"

I said, "I'd like to be mine superintendent. I'd like to have your job." Here I was in my twenties, I guess.

He said, "Maybe by the time you're forty or forty-five, you'll have a shot at it." [laughter] And of course, they piled it on me the first few months just to see how much I could take. But it was good experience. I was in on the development of one of the main divisions, and then as the operating foreman.

Swent: Let's talk a bit about the educational background, because that's a theme I'd like to pursue a bit. The superintendent had a fourth-grade education. Were you one of the very few with a college degree then?

Humphrey: I was the only one at that time. I think there were some that had been with college degrees before.

Swent: But you were the only one?

Humphrey: At that time, yes.

Swent: And this raises hackles often, doesn't it?

Humphrey: Well, it does. I think it's a feeling of insecurity sometimes with the old-timers that have worked up the hard way, and really taken a long time to make any progress. But by and large, they're very capable people, and if you can prove yourself and don't talk down to them, they'll help you. It was a great experience for me.

Swent: But you do have to be cautious about--

Humphrey: Sure you do. And you have to try to get into their heads to see how they see the world and how they view things. Because after all, they're doing the job, and probably doing it pretty well.

Swent: The staff was all American, I presume?

Humphrey: The staff when I first went there, it was all American--

Swent: Or Canadian maybe?

Humphrey: No. Well, there were some English there. There were some lower echelons in the foreman areas, there were some Swedes, and I guess some other European people. Mostly Swedes, and I remember Louie the Swede was one of them.

Swent: Any Mexican staff?

Humphrey: The chief geologist was a Mexican, but not the operators. The operators were all Americans. Gradually, of course, that changed over the years, so that eventually they were all Mexican staff.

Swent: But you were there kind of at the turning point.

Humphrey: Yes, I was at the turning point. It was a very interesting time. And of course, I was the youngest. They had a hard time getting Americans into the country to work, so I was kind of out there in the limelight as the only one that had working papers to come in. There was another fellow, the other fellow my age, that had come down in the exploration department and did get working papers, and went to work underground, and was a foreman of a division. So there were two of us. But he didn't stay. He went back out to school to get his doctorate, I think, in rock mechanics, and then he left. So that left me as the only one again.

It was an exciting time for me, and I just had stepped along in a learning curve that was fantastic.

Swent: What was the mining method that they were using?

Humphrey: We called it open stope long-hole drilling. We built huge, big caverns underground that were maybe 200 feet high and 800 feet long and 100 feet wide.

Swent: Very hard rock?

Humphrey: It was very hard rock. But in 1952, we had built four of these parallel with fifty-foot pillars in between them. And of course, we had different drilling levels and extraction--

Swent: How deep were they?

Humphrey: We weren't very far; we were maybe 1,000 feet underground.

## Learning from a Mine Disaster

Humphrey: In October, 1952, I remember because it collapsed. The mine collapsed. We had a disaster, really. It happened in the evening, on the afternoon shift. The foreman that was in charge of that shift thought something was wrong, and had the men go outside, that he could find. So most of the men got out of the mine. We had adits in the side of the hill so they could get out.

Swent: You were not in the mine?

Humphrey: No, it was at seven o'clock at night, and I was actually in Tucson. One of my daughters had just been born at that time. But it was a calamity for the company. I think seven men were killed. One fellow in a cage--we had a cage, one shaft that serviced the mine. The cage shot out of the headframe like a rocket, and with the cager inside. The first thing he knew, he was walking down the road outside. He didn't know how he got there. [laughter] Didn't hurt him at all. So he was the rocket man after that.

But it took the haulage down in the lower levels, the haulage train, the haulage was really a big, almost commercial-like railroad. We had fifty-ton locomotives pulling strings of ten ten-ton cars, something like that. So it was a big, heavy train. This air blast just pushed that train out, and of course, both men on it were killed.

It caused a lot of consternation throughout the Anaconda Company, because it was a terrible thing.

We went back in after that and redesigned the mine system with larger pillars and smaller openings, and that worked okay. But it was a hard way to learn. This whole area, it was about the size of five football fields in area, I think, and it just slumped down, just like a big piston.

Swent: No warning, or very little?

Humphrey: Very little warning. There had been some rock falls from the back that we had watched, and the powers that be, the superintendents, thought that that was just a natural arcing over of this big area, and hadn't really thought that the pillars weren't working. But the pillars weren't holding anything up. They were too narrow. They could hardly hold themselves up, we later learned.

## A Good Open Stope Mining System

Humphrey: So that was one of the first times that we'd had some problems with that mining system. But it was a good system, and we made very good cost. Our costs--

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Humphrey: Of course, that date, you remember, was before I really was in the operations there. I went in every day to do the mapping. I was in the exploration department in those years.

Swent: You were not shift boss at that time.

Humphrey: No. But that was the method we used, and it was a good method.

Swent: And they didn't switch the method?

Humphrey: No, we just modified it.

Swent: I see. And what kind of equipment were you using then?

Humphrey: We used diamond drills, actually, to drill the--we drilled big chambers just 200 feet above the bottom of the orebody, and built large chambers which were little stopes by themselves, with actually mounted Leyner type drills, and was a room-and-pillar type thing on the drilling level. We built big, wide, 100-foot-wide rooms with pillars in them, and then set these big diamond drills up in these rooms to drill down 200 feet. The diamond drills were the EX size, which is rather small. It's about an inch and a half, if I remember right, or inch and a quarter. And drilled--

Swent: EX?

Humphrey: Yes. That's just a designation for diameter. And we drilled about 100,000 feet a month, something like that, with diamond drills. So we had a high cost of diamonds.

Swent: You didn't contract this out?

Humphrey: No, we did it ourselves. We did it with big rotary Chicago Pneumatic drills. They howled like banshees; they were noisy, terrible things. So we had five or six running at a time inside this enclosed area, and we were getting some ear problems, hearing problems. We finally devised some mufflers for the darn things and had people wear earplugs. But that was the main machine for this project.

We drilled through to what we called a big bell drawpoint, and these drawpoint bells were fifty feet in diameter. They were little stopes also, on the bottom that we built first. We built by raising up in them, and cutting it out like a pie, leaving some pie slices as pillars in this thing until the last, and then blasted that out. So we had a big funnel-shaped thing. We called it a bell. We called it an "embudo," actually, in Spanish.

Swent: So this was something unique there in Cananea?

Humphrey: Yes, I think so. Nowadays, they have the mobile machinery that they can do that mechanical, and build these undercuts much easier and much more efficiently and much safer.

So we drilled down into these big "embudos," these big funnel-shaped things, and put a raise up connecting the two levels, and then just started enlarging the raise with the diamond drill holes. So that you had a big wide face like an open pit face, 100 feet wide and 200 feet high. They just slabbed this thing off into these big funnels. And then that went through huge grizzlies into these big ten-ton cars, so that it was quite a--

Swent: Your haulage tunnel was under the whole--

Humphrey: Under the whole thing, yes. We had what we called a grizzly level, and then a haulage level. The grizzly level had big wide spacing, two feet between grizzly bars, so any rock two feet or less went through. We had huge chutes that would handle this size rock, because the bigger the rock you can take out of an underground mine, the less it costs you. So we took all of this out to a big primary crusher that was about 9,000 feet from the mine, actually. We had a big 9,000-foot haulage underground.

Swent: Wow. The dimensions are really big.

Humphrey: Yes, it was big. It was big. So we had radio controls on our locomotives, and quite a traffic system, because feeding into this, we had about eight different haulage levels, tributary levels, coming into this main haulage to run down to the crusher. So we actually had a dispatcher for the trains. The empties coming back and the full going out.

Swent: So as shift boss, what was your concern?

Humphrey: My concerns to start with, I was in charge of developing one section of this big mine, putting the haulage levels in and the raises up, and getting the drilling levels established, and the

undercut established, and starting the first mining. Then once that was done, I was put in charge of actually the production from that mine.

Swent: You worked around the clock?

Humphrey: No. I worked day shift.

Swent: Were there three shifts?

Humphrey: There were three shifts. So we'd get called out at night occasionally, and we'd get some phone calls at night.

Swent: Seven days a week?

Humphrey: The mines ran six days. The mill ran seven, and the smelter ran seven, but the mine, we made enough, we had enough storage capacity so we could run six days, and down one.

Swent: But a full six.

Humphrey: The full six, oh, yes. And that was another thing; engineering worked five and a half days. I went to work and I had to work six days--[laughter]

Swent: Makes a difference.

Humphrey: Makes a difference, yes. But it was good experience. So I was there until--

## Improvements in Drilling Equipment

Swent: I just want to interrupt a bit on equipment: Swedish machinery came in about that time.

Humphrey: Swedish machinery came in toward the time we were finishing. We did switch the method to the extent that we first--the diamond drilling was so expensive, and we had--

Swent: These were American-made drills?

Humphrey: The diamond drills were made by Chicago Pneumatic. But we had to reclaim the used bits, and we had a very tight control on the bits with the diamonds in them. We sent them out and had the diamonds that were left in them reclaimed, and then reset, and then brought back in. So it was quite a procedure. At one

time, I was responsible to see that all the controls on that were working properly.

Then we changed the method to what they called long-hole machine stoping--and we used the ones built by Gardner-Denver, they were GD-123's. They were larger machines that you could put extension steel on, and the steel was about four feet long. It had a big tungsten bit on the end. They were percussion machines, regular pneumatic machines. We were able to drill about eighty feet with them. We couldn't drill the 200.

So instead of building one big chamber on top of the mine to drill down to the drawpoints, we put a sub-level in and drilled up and down from that sub-level. So it was a little more development to make openings to drill from, but the cost of drilling with the percussion machine was so much less than the diamond drill that we cut our costs by doing it that way.

The next step to come along were these Swedish machines, the jacklegs. Atlas-Copco came and convinced us that we should use jacklegs for our development work, which we did.

Swent: That was a big step, wasn't it?

Humphrey: Yes. They were much easier to handle. They were lighter machines. A man didn't have to be a Charles Atlas to handle the darn thing, so it made work a lot easier, so you got a lot more productivity out of your people. We did change to the machines at that time, but we did keep these Gardner-Denver percussion drills for the main drill.

## Improvements in Explosives

Swent: What sort of explosive were you using?

Humphrey: We were using a special gelatin originally, and then we finally went to a nitrate when that fad came into being.

Swent: Anfogel?

Humphrey: Well, what we did, we bought the nitrate and mixed it with--we tried all kinds of things, but eventually mixed it with diesel fuel, 5 to 6 percent diesel fuel, and made an explosive.

Swent: Mixed up your own.

Humphrey: Yes. And we had little pneumatic placement vessels that the Mexicans called satellites--"satelites," they called them. You could actually pump this stuff into the holes, which made a great thing for charging the holes, instead of tamping them in with tamping rods in these long holes, particularly up-holes. It was tough; that was one disadvantage to loading these eighty-foot up-holes. So we did start using nitrate all through the mines, and pumping the stuff in. It was like wet snow; it would pack right up in the hole so you didn't have to really tamp it in there. You could just blow it in, and it stuck.

That was what we used up until the end of the underground era at Cananea. That came along until--I forgot which year that was. I came out again into the planning department after several years, and I've forgotten exactly--I guess it was 1959 that I came back out as planning engineer. Our pit mining was coming to an end, it looked like, the pit they'd started as part of the war effort. They'd had another small pit that had looked like it wasn't really going to have a very long life and pay off very much.

Then we had found some other underground ore between these two open pits that was fairly high-grade but wouldn't stand pit mining. The other underground mine that was functioning at the time was reaching an end where we'd have to go to another haulage level, we'd have to take another step down.

## VI PLANNING A NEW OPEN PIT MINE GOOD FOR TWENTY YEARS, 1959-1979

### Looking at the Entire Mine Operation

Humphrey: So they brought me out to study to see if there was something that could be done. What I did was I got some huge pieces of paper, maybe six feet long and six feet wide, and got a big table to put them on, and got all the maps that I could of the whole operation, the underground and the surface, and made a series of level maps 100 feet between levels, just patched them together with tape, and tried to get the same scale, so I could see what we had all together over this large area.

Swent: Nobody had ever done this before?

Humphrey: Apparently not. So then I got all these things piled up, and I started at the very bottom one where there was a little--we had an ore outlined, very rough. I made that the bottom of the pit. I took a pit up at 45 degrees that took the whole country (area) in, and it looked viable. It looked like there was enough ore to sustain a pretty good stripping ratio.

Swent: You had said that this area between the two existing pits wouldn't sustain a pit operation--

Humphrey: Yes.

Swent: Because of the grade of the ore, or because of the mechanics of it?

Humphrey: Too much waste above it. But by including the underground ore that we had, and that we were developing, and the underground mine that was actually operating, it looked as if you could make a big pit--

Swent: One enormous--

Humphrey: Yes, one enormous pit. And I'll tell you, when I first looked at that and thought it was something, it was almost like being drunk. I was just so happy, it couldn't help but make me feel good all over.

Swent: Eureka!

Humphrey: Yes, Eureka. So I went back and really defined this a little more.

Swent: You were doing this with paper, just ordinary?

Humphrey: Yes, just scratch paper. And all the pieces of maps and things I could get.

Swent: Didn't have plastic overlays and all those things then, did you?

Humphrey: No, that came later. This was just paper. Just a bunch of--it was actually waste paper, that we had; a big reproduction machine that was based on mercury arc lamps so that you could make copies. So this was paper that was left over from that process. It was just a big roll of paper like a--

Swent: Like newsprint?

Humphrey: Yes, or like--yes. But anyway, I just laid this out. I had a little room off by myself, nobody was bothering me. I told my boss, who was the general superintendent then, I said, "Gee, this looks almost too good to be true."

Swent: Who was he?

Humphrey: Bob Weed. He said, "Well, you better take a hard look at it, see that you're not kidding yourself." So I did. I really then got a little more refined about defining these limits, and what the ore values were and what it was, and laid it out again, and made a time schedule, time and tonnage schedule, to see what kind of costs we could make. Because I knew what the stripping costs per ton were, and I knew what the rest of the downstream costs that we had that were pretty reliable. And it came out looking very good.

## Selling the Idea to the Management

Humphrey: Then the big thing was to convince the management that this was the thing to do, to shut down the underground mine, with our 700

workmen, and go to completely open pit, and to convince the open pit guys that they should change the way they were planning their future. That was a big step, and it worked.

Swent: How did you go about that? Did you present it yourself?

Humphrey: Sure, yes. I presented it to the management, and--

Swent: You first went to Weed?

Humphrey: Yes, by then I had made these comparative time schedules of what ore we could get at what grade, and what it would cost us by doing it piecemeal with what was left of the pit and continuing the underground on another haulage level, or combining everything and doing it all by pit, and determined what our capital investment would have to be for pit equipment versus what it would cost for developing a new underground level, and then amortizing this over the life of the mine, these different capital costs. So that I could come up with a unit cost, comparative units cost, of one set of circumstances versus another. It came out looking very good for the general pit, so the management decided to go ahead and do that.

Swent: How did you actually go about this? Call a meeting?

Humphrey: Oh, yes, we had several meetings.

Swent: Tell me about them.

Humphrey: Of course, the pit superintendent was not in favor of this, because he didn't want this smart kid coming around telling him how to change his whole pit system. The underground people were a little more cooperative, because I'd worked with them, and I'd worked for them, and so we'd gotten to know each other.

But the big problem was, what do you do with all these 700 men that were underground?

Swent: While you're changing over, or--?

Humphrey: Yes, when you--what do you--do you just fire them all? You can't do that in Mexico.

Swent: Would you eventually employ them in the pit?

Humphrey: What we did was offer an early retirement, because there was a retirement program that was promulgated by the Mexican government. Or, a transfer to the surface somewhere, either smelter or the open pit or the concentrator, if there were

places to go. It might not be at the same level that they were used to. So we had a lot of negotiations with the union to try to convince them that that was the best thing for all of us. I wasn't in on those negotiations with the union at that time. My boss was, and the personnel manager, who was a Mexican.

So those were interesting times, and--

## Investing in New Equipment

Swent: What about the equipment?

Humphrey: The equipment, we had to buy more pit equipment. We had to buy considerably more pit equipment.

Swent: Huge things, I suppose.

Humphrey: Huge things. So I got a chance to go out and visit all the open pit mines in the Southwestern United States looking at equipment, and actually flew up to--and one trip, we flew up to Canada where Harry was running that coal mine--

Swent: Harry Conger.[1]

Humphrey: Yes. To look at the big shovels he had purchased from P&H.

Swent: Was this the first time you had met Harry?

Humphrey: No, I had met Harry before when he worked in Arizona, so we had known each other for a long time.

But anyway, we had to get big trucks, big equipment, and I got involved with looking at all of those different types.

Swent: What kind did you select?

Humphrey: We finally selected Haulpak trucks, and P&H shovels. Much to the chagrin of the pit superintendent at that time, who had always used Dart trucks. So he didn't want to change. Dart hadn't built a big truck like that.

Swent: What size were you talking about?

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[1]Harry Conger, interview in process in 1996, Western Mining in the Twentieth Century Series, Regional Oral History Office, University of California, Berkeley.

Humphrey: We were talking about fifty-ton trucks at that time, which was a big truck, and he had been using thirty-five-ton Darts. We had some tough discussions at that time about what equipment to get. He favored those, and I think--I don't know why--but he didn't want to change. He never did accept--we finally got the Haulpaks--never did really accept that. He finally had to leave after several years, because he just wasn't with it. He wasn't going along with the new scheme of things.

And I think he was just--it was one of those cases where he had figured what he'd do until his retirement, and he had it all planned out, so that was his main agenda. Our agenda was to have a longer camp life and a better mine profit, and it just didn't work.

Swent: Were you wooed by a lot of these equipment people?

Humphrey: Oh, sure, we were wooed. And as a young guy, you've got to be awfully careful, and I learned--

Swent: What form does it take?

Humphrey: What they do is they give you gifts. Like this thing right here, this pen and pencil set, came from Haulpak. Some of the other people would give you trips back to their factory and a ballgame, back in Chicago or somewhere. And I remember one trip we took was up to Phoenix, where they had a proving ground for Caterpillar equipment with these big trucks and big bowl scrapers. I don't know if you've ever seen those bowl scrapers out on highway jobs.

Swent: Bowl?

Humphrey: Bowl. You know the big scoops, and they drag them along, and it pushes the dirt up into the body, and then they go around and let it out the bottom again. Well, they had all this new equipment up there, so they let us drive it, they let us get on and operate it. [laughter] So that--just like a little boy. It was just like playing with toys again. Things like that, and it really does influence you, so you've got to--. I guess we were influenced by a lot of that.

But when it came down to buying, when you have all of these different fabricators coming to you, then you play--

Swent: You develop--

Humphrey: Yes, and you then play off one against the other to get the best price. So when it got right down to it, you could do some real

negotiating on price on this equipment, because they were very competitive.

Swent: Well, yes.

Humphrey: Sure. Very anxious to have your business.

Swent: Of course.

Humphrey: So by going along with all of them for a while, you could have some leverage on the prices.

Swent: Did you have autonomy there at Cananea?

Humphrey: We always had problems with the headquarters office. That's one place I learned that headquarters ought to keep their nose out of the local management's business.

Swent: They have their alliances also.

Humphrey: Yes. Yes, we did have a principal purchasing department in New York that tried to get involved. Fortunately, being in Mexico, we were able to keep them at bay. People in Montana weren't as fortunate. They had to go along with some of that stuff. So we were able to pretty much buy what we wanted, and we did have--the manager at Cananea reported to the vice president of operations in New York, who happened to be a very reasonable guy.

Swent: Who was that?

Humphrey: Dick Newlin, who had come up through the ranks as an underground miner, actually. So he was very reasonable, and we were able to get what we wanted. We didn't always get all of what we wanted, so we learned in budgeting to always put extra in, so that he could cut some and we'd be left with what we wanted anyway. [laughter]

Swent: Everything that you bought had to be imported, I suppose?

Humphrey: All of that equipment did, yes.

Swent: Mexico didn't produce--

Humphrey: No, none of that, none of the big open pit mining equipment, and a lot of the underground equipment they didn't, the drills particularly. But the locomotives--

Swent: What about the explosives?

Humphrey: Explosives we were able to get in Mexico.

Swent: And the fuel?

Humphrey: And fuel, yes. We did buy our explosives for a long time from Arizona, from the Apache powder company up at Benson, Arizona, but after a while, the border was closed, so we bought all our nitrate and fuel in Mexico. And it was good, it was good quality. DuPont had a lot to do with it down in Mexico, so they were very cooperative and helpful.

Swent: But your machinery had to come in.

Humphrey: Had to come in. And there were duties on it, so it became more expensive.

Swent: So you got the Haulpak truck and P&H shovels, and--

Humphrey: And Bucyrus-Erie drills. We did have some Reich drills to start with, and they worked pretty well.

Swent: German?

Humphrey: German name, but it was an American company, and they called it "rich." So those were the basic units we had, and it worked very well. We finally laid the pit out, this big pit, and started taking it in steps. It just worked wonderfully well.

Swent: It must have been a tremendous planning operation.

Humphrey: It was fun, because then we had to set up an ore control system.

Swent: Were you put in charge of it then?

Humphrey: The pit? No.

## Assistant to the General Manager

Swent: What was your role, then?

Humphrey: My role then was to help them establish an ore control so the sequence of mining would be what we'd said it would be on this time sequence schedule. Once that was done, I went back as, I guess, an assistant to the general manager.

Swent: Your planning, you were anticipating the ore grade and the cost of all these things. When exactly was this, 19--?

Humphrey: This was in 1959.

Swent: Okay, so you were anticipating--

Humphrey: --to '65, somewhere in that range.

Swent: So you had an awful lot of variables: price, copper price, what happened outside that you couldn't control.

Humphrey: Sure. But you could control your costs pretty well. You knew what your labor costs were and what the power--

Swent: Once you had the union on board, you could control that.

Humphrey: Yes. And then we knew our power costs, because we were generating our own power, and that was based on the cost of natural gas from El Paso. So we could calculate that pretty well.

Swent: And the ore grade was about what you'd said it would be?

Humphrey: Yes, and the ore grade was good. We had good information on that. So that all worked well.

Swent: Good. What about the prices? What was happening in the world at that point?

Humphrey: The price was something like twenty-one to twenty-two or -three cents a pound, copper. Our costs were something like thirteen or fourteen. So we were doing all right. The ore grade was good; it was about seven-tenths of a percent, fourteen to fifteen pounds per ton. So that was three-dollar rock value, and the mining cost was something like eighty-five cents, and the processing was another dollar and a half or something like that. I've forgotten exactly. So we had a good margin, and with that high volume, the higher the volume, the more we made. So we were doing all right.

Swent: Did you reduce your labor force a lot by going to open pit mining?

Humphrey: We did reduce our labor force, where at one time we'd had something like 1,700 people total, and I think we got that down to right around 1,000.

Swent: That's a big reduction.

Humphrey: Yes. But that took several years. That took many years to do.

Swent: And more highly trained--was this a more skilled job?

Humphrey: Well, no, not necessarily. We found we could take underground miners and bring them out and make pretty good pit miners out of them. You can't do it the other way around; you take a guy from open pit, you can't make an underground man out of him. It's just a different kind of a life. But no, to train them, and then we set up training programs, which I had a lot to do with, with drill operations and truck operations and shovel, and then we had regular tests that they had to take to pass muster to be an operator, both from a technical standpoint and a safety standpoint. Then they got a diploma and a belt buckle and all of the stuff that goes with it. So that was an interesting part of it too, was to set up these training programs.

Swent: The other question I had was about safety. Pit operation is generally safer, isn't it?

Humphrey: Yes, I--

Swent: Or is it?

Humphrey: It is and it isn't. I think that we found underground, we had a very strong safety program, that 80 percent of the accidents underground are caused by things that happen at the surface anyway. You drop something on your foot, get something in your eye, fall down. So those are the things that cause the lost-time accidents. The rock cave-ins and things like that are not really a big thing if you do it right. Of course, we had that one incident in 1952.

Swent: When they do come, they're terrible.

Humphrey: Yes.

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Swent: So this was a five- or six-year project.

Humphrey: Yes, it was.

Swent: Exciting.

Humphrey: Of course, the end result was that we had a program, a mining program and production program, that we knew would last about twenty years. So it made people a lot more comfortable about the future of the company. And of course, that was in 1965, so

that twenty years has long passed. But at that time, it gave us a lot of comfort, and really changed the corporate management's attitude about Cananea and what could be done there. So that was encouraging.

Swent: And certainly a feather in your cap, as they say, too.

Humphrey: Sure, and I had a lot of help on it. I didn't do it all myself. And the boss I had was very supportive and gave me a lot of good ideas of how to go about things. I didn't just devise it all myself.

## Roland Sheldon and Bob Weed, Mentors

Humphrey: The experience that I had with this underground superintendent, who was just a practical guy, really helped me, because I think I learned as much from him as I learned from my father. It was just amazing what he--

Swent: I don't think you told us his name.

Humphrey: His name was Roland Sheldon. He was a self-educated man that just had a lot of practical sense, and had a method of logic that wasn't what you would call conventional. He had devised his own way of thinking about things. So I was able to absorb some of the way he looked at things. It was good for me. We became fast friends. Eventually, he came out and became the general mine superintendent for the whole company and did a good job. That was shortly before he retired. But he always had a way to solve a problem, and it was good.

So he was helpful, and my boss, Bob Weed, was really my mentor, and had been from the beginning, and really set me on the trail to my success in the business.

Swent: Now, Clyde Weed was--?

Humphrey: Was his uncle.

Swent: And he was the president?

Humphrey: Clyde was president and chief executive, and then chairman of the executive committee after he supposedly was out of the direct chief executive position. But being chairman of the executive committee allowed him to still pretty much run the company, which he did until--I guess Clyde was eighty-something

before he finally stopped running things. He was an amazing guy himself, and I got to know him pretty well.

One of the incidents during part of this, sometime in this sequence, I don't remember the years, but Clyde Weed became very ill and had to have his spleen removed in New York. They thought he wasn't going to make it. By then, he was a man in his sixties. They told him to take some time off to recuperate, so he and his wife came to Cananea. He'd been manager there at one time as a young man, and they liked the guest house, they liked the atmosphere, so they came and spent three or four months while he recuperated. So we got to know them pretty well, socially, as well as--and then finally when he got feeling better, he'd start coming around and bothering us at the plant.

Then finally he went back to New York. So that was a help to me, too, in my career. And that was quite a family. Both Bob and his uncle and his father. His other uncle was head of the Inspiration Copper Company, Carroll Weed. So they were quite prominent in the business. Bob and I became fast friends and hunting partners. I learned a great deal from him.

## Hunting Trips in the Mountains

Swent: What did you hunt?

Humphrey: We hunted duck and deer and turkey, at different times of the year. So we had pretty good around-the-year hunting, except in the summer. That was a lot of fun, because we had a lot of area to ourselves. There weren't a lot of hunters, maybe a handful in the whole twenty-by-twenty square mile area. That was fun.

Swent: Yes, and a good way to get acquainted.

Humphrey: Oh, yes. And up in the high mountains to the east of us, they went up to about 8,500 feet, there was good deer hunting, and it was beautiful country. You'd go up in the fall to hunt deer, and the aspen had turned, and there were oak trees up there, and maple trees, and springs, and Douglas fir, and then the ponderosa pine. It was just gorgeous country. We'd ride up on horseback and take a pack train, and three of us would just stay two weeks. Just great fun.

Swent: Wonderful. Who were the three of you?

Humphrey: Jack Lester was one, and Bob Weed, and myself. Jack was probably twenty years older than we were, just an old hunter, an old Texan. A practical guy who worked in the smelter. He actually had worked for my father in Chile, so we knew him from a long time. But he was a good hunter, and that's all he liked to do, was hunt. He was one of these guys that would go out every weekend and not do much else. Not an educated man, but just a good, solid fellow.

So the three of us went. We took three pack horses and three riding horses, and packed a tent in, and our stove, and cots, and one of these little camp tables, and set up camp for two weeks up in this high mountainous country, and hunted deer.

Swent: That must have been most of your vacation.

Humphrey: It was. I guess we didn't--the kids were growing up, and the summers were so nice where we were, we stayed home pretty well. I think the vacation that we did take finally was to--we took one to Tayoltita to visit the [Robert] Morels, and we took one to New York to go to the World's Fair. We drove all the way across at that time, with the kids--little kids. Our kids were small. So it wasn't too much before that that we went down to Tayoltita. I think Billy was maybe four or five years old, and he was born in 1958, so that was in the early sixties. So we didn't take many vacations, although we spent many weekends in Tucson, several trips to Kino Bay on the Sea of Cortez, and Edna did get to New Jersey to visit her family a few times.

We didn't really have a lot of money, to be very frank about it. We were very frugal--Edna, my wife, is the money manager in our house, so she told us when we could do and not do things. She still is the money manager.

Swent: Did you go to Mexico City at all?

Humphrey: No. Not until after I was the in the general management of the company. Our first trip down to Mexico City was for one of the negotiation sessions with the union on a contract renegotiation, and I went when I was assistant manager, which was not until 1970, I guess. No, couldn't have been 1970; by then I was manager. Nineteen sixty-something. So we'd been there fifteen years or more before we went to Mexico City.

Swent: You were really more oriented to Arizona.

Humphrey: Yes. Our big excursion was to Tayoltita that one time. And I think we went down on the train that time, from Nogales. The

Morels met us at the station, and then we flew up in that trimotor, the Ford trimotor.

Swent: La Tortuga?

Humphrey: Yes, La Tortuga. That was quite a thrill for us. And of course, Larry Morel and his wife had a condo in Mazatlán at that time, as well as the place up at the mine. So that was a real interesting trip.

Swent: Yes. Quite a place.

Humphrey: Yes.

Swent: Did you take the children too?

Humphrey: Oh, yes. We didn't go anywhere without our children. We had a real strong family life with the kids. So we had a lot of good times. We grew up with our children, actually, because we were pretty young ourselves, and this made life really worthwhile.

Swent: Well, it was a wonderful place to have children.

Humphrey: Yes. They learned to ride horseback, to swim, and all the things kids ought to do. Open a Texas gate. A lot of people don't even know what it is.

Swent: Did they learn Spanish as well as English?

Humphrey: Oh, yes, they're all completely bilingual.

Swent: Wonderful.

Humphrey: And have retained that. Strangely enough, some of their children aren't, which I keep jabbing them about, because they should. They know two languages; they ought to teach their children two. It's a big advantage.

Swent: It's hard to keep it going, though.

Humphrey: Oh, yes, it is, unless you use it all the time.

## Decisions on Concentrating and Leaching the Ore

Swent: Yes. So you went to the open pit--

Humphrey: I guess where we were with the finally deciding to go to a purely open pit type mining changed the whole aspect of Cananea, and made not only the mining more important but also the leaching. Because that meant we had a lot more waste dumps to leach to make this precipitate copper from. So we had to expand that plant, too, and that was good, cheap copper. That was really very profitable to do. Because our cutoff, if I remember right, was somewhere around .25 percent. So there was lots of chalcocite that went out in the dumps that was leachable.

We made a study then to see what our cutoff should be, because that became a big problem: what grade should you put out on the waste dumps? Because that was most of the work. There were more waste tons than ore tons, and we had a big concentrator. Should we expand the concentrator or what?

Well, the study came back, and I think it was right. It said shut down the concentrator; don't put anything through the concentrator. Just put it all out on the dumps and leach it, and you'll make more money.

Swent: Was that pretty revolutionary at that time?

Humphrey: Yes, it was, so we didn't do it. Even though the study said we should, we didn't do it.

Swent: Who did the study?

Humphrey: I did part of it, and by then we had another bunch of people in the planning department to do studies like that. It was very interesting, because the best profitability was not to run the concentrator at all.

Swent: But that was just too--

Humphrey: It was just too much for us. Finally, what we did, we built a little electro-winning plant for that solution instead of smelting.

## Turning to Solvent Extraction and Electro-Winning

Swent: That had just come in then?

Humphrey: Yes. Solvent extraction and electro-winning. It was brand new. Instead of using tin cans (iron), we could get this solvent extraction plant going, and make copper directly, instead of

smelting it, which was a big thing. Because we had been taking this cement copper and combining it with concentrates, and put it in our regular smelter.

We also tried to make fire-refined copper instead of combining it with our concentrates. We had built a small furnace in the smelter to make fire-refined copper, which we did successfully. But the margin of profit wasn't enough. It was profitable, but we would have had to expand that to take care of all of this increased production, so we didn't.

Swent: You never did any electrolytic refining?

Humphrey: Well, the electrolytic refinery was in Mexico City. We sent our blister copper to Mexico City, and we had an interest in that, which I had nothing to do with, really.

Swent: But you never did it there.

Humphrey: No, we didn't do it at Cananea.

Swent: How did you find out about the SX-EW process?

Humphrey: I guess we found out about it from somewhere up in the States, and I've forgotten where they were--they originally started in Zambia and brought the process over, and I've forgotten which part, where in the United States we went to look at it. But it was a real eye-opener.

Swent: Did you go to Zambia?

Humphrey: No. We looked at it somewhere in the States, and I'm trying to remember where it was. I think maybe it was Bagdad, Arizona.

Swent: The Bluebird mine?

Humphrey: No, I don't think the Bluebird was doing it by then. Someone else had started that. Maybe it was--I don't remember, to tell you the truth, Lee, where it was.

Swent: But you went up and looked at it?

Humphrey: Yes, we did, and came back and eventually--first we thought we'd float this precipitate and clean it up some, to get it purer so we could make fire-refined. That worked okay, but as I say, the margin wasn't big enough.

And then when this solvent extraction came out, with using kerosene and these immiscible liquids and stuff, so you could

separate the different solutions out, so you could get a higher-grade copper sulfate solution, and then precipitate that electrolytically. So we made a little pilot plant there, and it worked very well. But that must have been in the late sixties and early seventies, and by that time, I--they didn't build the big plant until after I left, in 1975. But that was a good, positive step.

But we kept running this concentrator, a regular concentrator, making our blister copper, and making some money. In the interim, we had to build extra power plant capacity. Then we became concerned with recovering the sulfur from the smelter, because we were just letting it go up the stack.

## Beginnings of Environmental Concerns

Swent: There was some concern beginning about that time?

Humphrey: Yes. And of course, the tailings from the precipitation plant were put over in an old concentrator tailings dump, which was the head waters of the San Pedro River, which ran all the way down to Arizona and joined the Gila River at a place called Winkleman, Arizona, near Hayden. It was near the Kennecott operations there. So the Salt River came down and joined that, and then formed the Gila, which came on out. So every time we had a big rainstorm in the summer and washed some of that iron sulfate out of the tailings dam, where we just deposited it, it would wash it all the way down to Arizona. We started getting a lot of static about contaminating the San Pedro drainage.

Swent: How was this expressed? How were you made aware of it?

Humphrey: I think somebody in the Arizona State Department contacted us, when they traced it back to us. So we became very concerned about all of that, and tried to build our dam up to prevent that happening. Then that got into the sulfur business, and out of our stack, and it was just--

Swent: So this was in the early seventies, maybe?

Humphrey: Yes, early seventies, late sixties, the concern about what should be done there.

Swent: So this was at the same time that it started here, then.

Humphrey: Sure.

Swent: Were there health effects on the workers?

Humphrey: Not that we could tell. We had some cases of silicosis from the underground mining over the years that we watched very carefully and did a lot about. We improved our ventilation considerably underground, as to what it had been in the early days. But other than the silicosis, that I think we got under control; we had good records on all of our workmen, and we had a good hospital. We had good health controls.

There wasn't any from the sulfur, and gosh, that smoke got pretty thick sometimes around the smelter, and that wasn't too far from the hospital or some of the houses.

Swent: That usually damages the vegetation.

Humphrey: Sure, it damaged the vegetation right around that area, so you couldn't grow much. But I don't think there were ever any serious health effects from it. At least that showed up. And that was a nemesis for me. When I was a little boy, I would get terrible asthma, because we lived near a smelter. When that smoke came down, I'd just have a heck of a time breathing. I can remember I was just a squirt, hating the darn stuff.

Swent: It didn't bother you at Cananea?

Humphrey: No. I guess I outgrew some of that. Because our first little apartment was right up near the smelter, and it would get pretty thick sometimes.

Swent: Yes, it's awful.

Humphrey: So I don't know if they've controlled--I suppose they've done something about it now, but we hadn't up until the time I left. We had put some sprays in the discharge before it got to the stacks, to knock down some of that sulfuric acid. It was actually sulfurous acid.

## Bacterial Leaching

Swent: Did you do anything with the acid? Did you market that?

Humphrey: No. We hadn't recovered--no. And fortunately, in our leaching program, there was enough pyrite in the dumps that it formed a ferric sulfate, so it became a good leaching agent in itself. We didn't have to add anything. At one time, we found out that

bacteria were working in these dumps to help dissolve these sulfides. It was a thiobacillus ferro-oxidant that you've heard so much about. We found out that they did better if they had some food. So at one time, we put some of the raw sewage from the town up on the dumps, just to feed these darn things. I think it did; I think there was a lot of phosphate and stuff that they got out of that.

Swent: I didn't realize they were aware of those bacteria that long ago. I thought it was just--

Humphrey: Yes, they were.

Swent: Just recently I've heard of it.

Humphrey: Yes. No, gosh, it was quite early. Early sixties that they found out about some of that. And the original research that we got hold of was from the University of British Columbia in Vancouver. There was a fellow up there that was very sharp on it, and came down and advised us on it. So it was quite interesting.

## The Importance of Traveling Salesmen as Educators

Swent: Where do you read or hear about those kinds of things? How were you getting your information?

Humphrey: Well, of course, we had all the trade journals, and we had--

Swent: *E&MJ* [*Engineering and Mining Journal*]?

Humphrey: Yes, *E&MJ*, *World Mining*. Of course, we also had communications from within the Anaconda organization, which was worldwide. And of course, the salesmen. The salesmen brought a lot of information our way as to equipment and processes and reagents, and in those days, we had all these drummers coming down to visit us. You'd have maybe four or five a week coming to see you with all kinds of jokes and tales and little gifts, and lots of information. Of course, in a mining camp like that, you entertained them when they come. So you had social times with them, and you'd just get a lot of information from these fellows.

I think it's a dying breed; I don't know if they go around any more. But these guys were traveling salesmen, and they liked to travel, and they liked to talk, and they liked people.

Swent: You called them drummers? Is that what you called them?

Humphrey: Yes.

Swent: I've heard them called drill peddlers.

Humphrey: Yes, peddlers and drummers.

Swent: I think that their role as educators really hasn't been emphasized as it should be.

Humphrey: I think not. It probably hasn't been documented, so I don't know if they'll ever be able to do that.

Swent: But they really were educators, weren't they?

Humphrey: They were. And not only that, they spread a lot of information. You could find out about equipment, you could find out about reagents, you could find out about other people in the industry, if you were looking for somebody, or they knew somebody that needed a job. You could find out about new processes. You could find out who was doing well and who wasn't, and why was this mine so profitable and that one not. Just a lot of things. It was a good source of information, and it really lent a lot of spice to the business, to have these people come around. And of course, their jokes were fabulous.

Swent: Do you remember any who were particularly helpful to you?

Humphrey: Gosh, yes--the fellows--there was a guy named Murray Head from Ingersoll-Rand, and there was--gosh, I can't remember them all--but Ed Sullivan from P&H, and Jack Taylor from P&H, were always informative people. They've all retired; I think Ed died. But there were some of the older fellows that came around that were guys I remember coming in these high-laced shoes, and with a vest and coat on and tie, and just like you'd imagine an old peddler to be. And stomp their feet, and backslapping kind of a person. Just full of stories and--I'm trying to think of this other guy from Joy Company. I've forgotten his name right now. Oh! Arden Jones.

But they were certainly interesting people, and very helpful. They would have seen maybe an underground haulage car that was working so well, and we were having a problem with--we had a problem with our underground haulage cars where the dirt would build up in the bottom of them and finally fill up with dirt that wouldn't dump. Just a mud kind of packed on like hard concrete. We'd actually have to blast those cars out every month or so.

So they came along with a scheme where they used old conveyor belt in the bottom, so when the car tipped, the belt would come up and flop, and keep the bottoms clean. So little things like that were very helpful to an operator.

## Ralph Kress, a Truck Designer

Swent: You just had to learn about that by word of mouth.

Humphrey: Yes. So that was fun. And some of the fellows from the truck companies, too. There was a guy named Ralph Kress who was a--I think Ralph is still alive, but he's getting close to ninety. He was a truck designer, and he was the guy that really designed the basis of the Haulpak that was so successful at that time. He said his goal was to make a haulage truck that would run at fifty miles an hour with a sixty-ton load and never have to stop. It would dump on the fly, and go back and be back to the shovel.

And of course, he designed a lot of new innovations into the trucks. I remember once I asked him why he didn't put inner tubes into the tires.

"Oh," he said, "I'm just trying to save weight." [laughter] Which wasn't much weight. And the structure of the truck frame, he left hollow, to be part of the air tank, and part of the fuel tank, so that he wouldn't have to hang another tank onto the frame, to save weight. Because he wanted to get the ratio of the weight of the truck to the weight of the load down, so that they would have more load than truck. Usually, it's a one-to-one, and I think it is still. They haven't been able to do much with it.

They got the jet engines in trucks at one time, because they had so much horsepower per unit weight that they thought that would really revolutionize things, because then they could get the weight ratio down, but the trouble was that so much energy went out the exhaust of a jet engine that you aren't able to recover, that the fuel cost went up. So that didn't work too well. Where stationary jets, you can recover that heat in an economizer, and you couldn't on a mobile truck like that.

But he was instrumental on all of these things, and he was quite a guy. He was very helpful to us. I had him come down, actually, and lecture to the whole staff after I got into the management, just about his new ideas about trucks. He had an

idea that the truck could just go fast, and just side dump. Instead of dumping back like trucks do, he had it dumping to the side, so he'd never stop. He'd just come up to the dump and keep going around, and back to the shovel.

Swent: Did they develop that?

Humphrey: I think he did just before he retired. I don't think it ever went anywhere.

Swent: That's what ore cars do.

Humphrey: Yes. Some dump sideways, and some dump bottom.

Swent: So you'd think a truck would--

Humphrey: You'd think it would work. But then you had to get so close to the edge of the dump to have one that would just dump this way. So he had a device that was a big piston that would push the stuff out to the side, so you wouldn't have to tilt the whole machine. Of course, when you did that, then when the piston came back, the piston stuck out the other side, which made it very cumbersome. So there are lots of different things that he had to consider.

But people like that, the salesmen and the--and the guys, just the little fellows that came around selling specialties like the cleaning solutions or special bits. We just had a lot of people. Gardner-Denver was very progressive at that time on drill design, and how to do things better. I don't remember all those names. I suppose I could dig them out of my files somewhere.

Swent: Well, maybe you can fill them in later if you want to. But they were a special breed.

Humphrey: They sure were. And we looked forward to them coming.

Swent: Good party always.

Humphrey: Good party, and they looked forward to coming. And some of them still talk about it, when I see them at--some of the ones that are left, about the nice times they had.

Another fellow was Bud Bauer from the truck company. Bud still lives in Denver.

Swent: So once that got up and going, when your planning was through and it was all going, were you changed to something else?

Humphrey: Yes, I went in then as assistant to the general manager. By then, Bob Weed had become general manager--that's about the time the Chilean government expropriated the Anaconda mines, and the company then brought some of those employees to Cananea.

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Humphrey: One of them who came, came as general superintendent, which I thought kind of blocked me from any further advancement. He was an older man, though, and a fellow that had worked for my dad in the Potrerillos smelter.

Swent: What was his name?

Humphrey: George Morris. George was a good smelter man, and one of the old-timers, and a very conventional guy. He and his wife stayed there until he retired. So I was assistant to the general manager, and he was general superintendent. I had these special assignments on power development, and all of the things that would come up, like our communications system, and just a lot of things that wouldn't fall into the normal everyday routine.

If we built a new power plant, where should we build it, and how much should it be? If we could get rid of our double narrow-gauge and standard-gauge railroad, how should we do it? This custom ore plant that we had, we had a custom ore mill; should we continue with that, or was that profitable enough? Were all of these things--

Swent: You were milling ore from other local mines?

Humphrey: Yes, little miners would bring it in. We had a crusher, and not an actual full-blown mill. It was mostly a crushing and screening plant that we would use for flux in the smelter, because we could use a high silica ore, direct smelting ore, for the silica flux that we needed to make the copper matte and slag combinations in the reverbatory furnace.

So all of those kind of questions came up, just taking a new look at how could we do our business better. That was good experience for me.

## Promotion to General Superintendent, 1968

Swent: Yes. Were you getting into labor negotiations at that point, too?

Humphrey: Yes, I was getting into what the contract meant. I didn't actually get into the negotiations until I became the assistant general manager. So I had to go through another step. When George Morris left, then, I became general superintendent in 1968, and then started to get into some of these other aspects of the company.

Swent: That put you in charge of operations and planning both?

Humphrey: Yes. There were three people in the top management: the manager, assistant manager, and general superintendent. And kind of split up responsibilities. The assistant manager looked after the concentrator and smelter, and the general superintendent looked after the rest. Then the manager looked over all of that, plus the labor negotiations, plus the general office, plus the hospital, plus all of the other things that we had, the water supply and power. But we'd get together every morning and talk over each other's problems throughout the plant, so I got a handle on a lot of other things that were going on.

Swent: Every day?

Humphrey: Yes, every day. First thing in the morning. Usually, right before the meeting, you could ride around the plant and see what was going on, before you got into the box about eight o'clock with the manager and assistant manager. So that was a good lesson.

## VII ANACONDA COMPANY ENTERS A NEW ERA

### Management Lessons Learned by both Good and Bad Examples

Humphrey: Another good lesson was, I realized how important it was to delegate authority, and how important it was to have a group of management engineers that weren't tied down to everyday routine, that could look at special things for you, and help you with making budgets, and help you with devising new ore control programs or new process control things, or new safety programs, that were just a general eyes and ears for management, that you needed something like that.

I also learned that you can't impose your ideas on somebody, you have to convince them it's what they want to do. So that was something I learned. I also learned--

Swent: You had learned that considerably earlier, hadn't you?

Humphrey: Yes, earlier. Oh, yes. Then this all seemed to come together. The other important thing was, don't try to run a property from headquarters in New York or wherever the company headquarters might be.

Swent: Sounds as if you learned some of these things negatively.

Humphrey: Yes, that's true. [laughter] You do learn negatively. But it all--

Swent: You felt they were getting too much direction from New York?

Humphrey: Trying to, yes. It's just a common thing, and I've seen it in all the companies I've worked for since, both Newmont and Homestake. Just that people in the home office think that they should be running things out at the properties, and really the--

Swent: Too far away?

Humphrey: Yes, and if you have a competent manager at a property, give him the guidelines, approve his budget, and make sure he's reporting to you any exceptions, and let him go. Of course he'll make mistakes, but as long as he keeps you informed, I think things work a lot better. I'm convinced that's the only way to run something. I think that's what's wrong with things like General Motors and these big automobile companies, they try to do too much from the central headquarters.

Swent: On the question of delegating authority, did you see someone who delegated authority well, or someone who did not?

Humphrey: I had a good mentor--after Albert Mendelsohn left, his successor had a different style completely.

Swent: Everyone does.

Humphrey: Yes. And maybe didn't delegate authority like he should have. So I could see the difference in the effect it had. So I had both positive and negative examples to follow. My boss and mentor, Bob Weed, was good at delegating authority and did it. That taught me a good lesson, too. People that are insecure usually don't want to delegate authority, because they're afraid they'll lose some of their prerogatives. It's not true. It doesn't work that way, but they don't know that. So that was a good learning experience.

Then after this all got going, we got our pit going, we got our new power system in place. About that time, then, I was pushed up to assistant manager, and had more authority and a lot more to say about decisions. A lot of decisions I was able to make then without consulting anyone. The manager let me do that. I'd advise him of what I'd done after I'd done it. Sometimes he got mad, but most of the time he didn't. But that was the best learning experience for me on the management level, to be able to make decisions without having to ask permission to do it.

But it had taken many years. It had taken almost twenty years, really, to get this kid so he knew how far he should go each time.

Swent: And staying in the same organization for that long.

Humphrey: Staying in the same group, and I guess having that responsibility without authority early on really taught me a lot. Just being boss doesn't give you the right to impose ideas

on people. It usually doesn't work. You have to convince them that it's something that they want to do. So by the time I reached those levels of management, I had been pretty well indoctrinated. The people that had been watching me and coaching me, so to speak, had really done a good job, I think. Without them, I don't think I'd have been able to do what I've done.

So I think every young man needs some kind of a mentor, or mentors, to help him, and I had Bob Weed in particular who inspired me.

## The Degeneration of Anaconda

Swent: When did the Mexicanization come in?

Humphrey: What happened was that Anaconda was in an awful shape by then, generally speaking. But by the late sixties, '69 and '70, by 1970--

Swent: What was going wrong?

Humphrey: Well, what was going wrong was Chile, actually. Chile, I guess that was the Allende years--

Swent: Yes, Allende was elected in 1970.

Humphrey: When that came along--

Swent: But there was trouble before that, of course.

Humphrey: There was trouble before that because Anaconda had depended altogether on the profitability from Chile, and the Montana operations and the Arizona operations were just kind of hanging on, and partly at Inspiration, which they had an interest in, too. The company had become overloaded, overmanaged, and there was too much overhead in the whole company. It was all because this money was flowing in really from the Chilean part of it.

So they degenerated, in a way. They weren't looking for new avenues and new things to do. Or if they were, they weren't looking very hard, because they always had this base to fall back on. I think that was bad for the company. People in the higher echelon got too comfortable. So by the time Allende took over the company in Chile, everything else was starting to collapse.

Swent: I think it was 1972, I think, that--he was elected in 1970, but I don't think the company was taken over immediately.

Humphrey: No, I don't think it was either, but the problems were starting, so it was kind of--they were desperately looking. That's when they started this Twin Buttes project down in Tucson, to try to compensate for it. I don't remember the exact year.

But about that time, they changed the management of Anaconda, the board of directors did, and put John B. M. Place in charge of the company. The lawyer that had been running it was retired early.

Swent: And Place was a financial man, wasn't he?

Humphrey: He was a banker. So he looked around for somebody that could help him with the operational end, and he grabbed my boss, Bob Weed, who was manager at Cananea, and took him up as the operating officer for the company. Bob insisted on staying in the West and not going back to New York, which Place went along with. So he moved his office to Tucson.

## Promotion to Manager of Cananea, 1971

Humphrey: Then I became manager, just like that, which was a step we hadn't anticipated so soon.

Swent: This is when?

Humphrey: In 1971, I guess. Then I was in that position until 1975.

Swent: That involved a big jump, a big change?

Humphrey: It involved a big change, because a lot of things were happening at the time. We were being pressured by the Mexican government to Mexicanize even further. We had changed our name from the Cananea Consolidated Copper Company to Compañía Minera de Cananea, and changed our capitalization a little bit, to try to comply with what they wanted us to do.

Swent: Do you recall the year when Compania Minera was formed?

Humphrey: I don't, but I could look it up. I don't remember exactly.

Swent: But it was about the early seventies?

Humphrey: Yes, or middle sixties. And so that, when I became manager, the lawyer we had in Mexico City, who was a very smart guy, wanted to be head of this new Mexican company that we were forming, and that if we really did Mexicanize and became only 49 percent U.S., Anaconda, and 51 percent Mexican, he wanted to be head of it. So he would do a lot of politicking, and he was a lot better at it than I was.

Swent: Would you care to name him?

Humphrey: Eduardo Prieto Lopez his name was. Very smart guy, but thought he could run a mining operation from Mexico City. Of course, he couldn't and he and I clashed right off. I told him at one point of the game that if I ever caught any of my people reporting to him directly and going around me, I'd fire them. That really made him mad, because that's what he was doing. So we didn't see eye to eye on a lot of things.

I think he sincerely tried to do a good job, but he'd read a lot of books about management and how to manage, and he thought management by consensus was the way we should be running our company. When we did Mexicanize, he was made chairman, and I had to report to him. So that caused a lot of trouble. I didn't believe in management by consensus, and I still don't. As some of my friends say, it works well on Tuesdays in leap year. [laughter]

So that really was the beginning of the end of my life with Anaconda. I stayed in that position for five years, until actually the government--by then we had Mexicanized, and we had our board meetings in Mexico City. The government was very influential in what was to be done with the company. I really became an embarrassment for them, by being a foreigner in charge of the largest copper mining company in the country.

So they asked to have me transferred, which they did. They transferred me to Butte. But by then, Anaconda was really in tough shape world-wide. It was at the time when they were making moves to get somebody to rescue them, and Arco did come in later and do that. I guess rescue is the word, but it was really the end of the company.

## Transfer to Butte as Planning Vice President

Humphrey: So I went to Butte as a planning vice president to see if we couldn't do something with Butte to make it more profitable.

But I was just plunked down there, and that really wasn't--the manager thought that he could do that as well as I could up there. So I didn't have really much to do. We were comfortable enough but--

Swent: Quite a change from Cananea.

Humphrey: Yes, quite a change. Well, I learned a lot. I had to learn a lot about some of these environmental controls, and what OSHA [Occupational Safety and Health Administration] was, and all of these things that I hadn't had to cope with before. The EPA [Environmental Protection Agency], and all of the regulatory agencies that were getting involved now with operations.

And how to try to convince people in that camp how they might look at the world differently. I got the big pieces of paper again, and laid out all of the properties in Butte, and decided that if I made a pit out of it like I'd made out at Cananea, where would--what would it look like, and would it be feasible? I did lay it out, and it's a deep ore body, and the edge of the pit--I don't know if you know Butte at all, but the edge of the pit came right over to the university. I think it was at the monument in front of the university steps or something, so it would have taken the whole town in and wiped everything out, and probably would be viable, because there was good-grade ore there. But it never happened.

But by that time, I'd had an offer from Newmont.

## VIII VICE PRESIDENT OF OPERATIONS FOR NEWMONT, 1975 to 1981

### A Welcome Telephone Call

Swent: How did that come about?

Humphrey: I had a phone call one night from a retired metallurgist that had worked for Newmont who I didn't know, asking me if I'd be interested in one of the top jobs at Newmont. I said--

Swent: Do you remember his name?

Humphrey: Frank McQuiston. You know Frank?

Swent: Yes.

Humphrey: I had never met Frank, and I didn't know him, and--

Swent: He was one of the first people that I interviewed for this series.[1]

Humphrey: Is that so? [laughter] Of course, Frank's dead now.

Swent: Yes. He died before we could finish his interview.

Humphrey: And Frank had been very influential in the development of that gold business at Carlin for Newmont. That was kind of his baby. How he found out about me, I never did find out. I've asked a lot of people. I said, "Did you recommend me to--?" But anyway--

Swent: Just got a phone call out of the blue?

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[1]Frank Woods McQuiston, Jr., *Metallurgist for Newmont Mining Corporation and U.S. Atomic Energy Commission, 1934-1982*, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley, 1989.

Humphrey: Yes, one evening. He said, "Would you be--?"

I said, "Well, I don't know, Frank. I don't know anything about the company. But sure, I'll talk to someone."

He said, "I'll try to arrange an interview for you."

And then Wayne Burt came back from one of his trips to South Africa, I guess, and was out West for some reason. So I met him in Spokane--oh, he went out West to look at their uranium mine that they had started.

Swent: At Dawn?

Humphrey: Yes, at Dawn. So Edna and I drove over from Butte to Spokane when he was there, and had breakfast with him, and talked with him about what I had done and what he needed. What he needed was someone to watch the western United States for him, and Canada particularly in the West, the mines they had in British Columbia, because he was stretched too thin. Wayne was senior vice president of operations for Newmont at the time.

He said, "I need some help. Maybe you should come back and talk to Plato."[1] So I did. Made arrangements to go back when Plato was there, and talked to him. And just in a couple of days, they offered me a job to come as a vice president of operations, which was limited to really the western United States and Canada.

So we did. I resigned from Anaconda and moved back. Edna and I moved back to Connecticut, which was quite a change also, back to where we had started from, that part of the world.

Swent: She must have been very happy about that.

Humphrey: She was. Of course, by then, her family had moved West, part of her immediate family, and her cousins were scattered, so we really didn't get back into the swing of things, as it had been before. We left in 1947, and this was 1975 to '80. It had been a long time. But it was nice to get back, and she liked it. She liked the seasonal change, and it was pretty country.

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[1]Plato Malozemoff, *A Life in Mining: Siberia to Chairman of Newmont Mining Corporation, 1909-1985*, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley, 1990.

## Responsibility for Many Different Operations

Humphrey: So anyway, we went back there, and then I got a new view of things, because Newmont had so many different types of operations that--

Swent: What were your responsibilities? Similkameen, was that still going?

Humphrey: Yes, Similkameen and Granduc, and Carlin, and Dawn. Then shortly afterwards, they put me on the board of the Sherritt Gordon company, and I did some nosing around up in Manitoba at the Sherritt Gordon operation at Rutan, where they had an underground mine. They were having problems.

Then I was called on to go to South Africa and look at some of the Palabora problems that were going at the time.

Swent: Was O'okiep still going?

Humphrey: O'okiep was going, and I went to O'okiep also. Peter Phillips was manager there. So, of course, that's where I met Gordon Parker for the first time, when I went down. He was in charge of the South African interests that Newmont had. Newmont had so many interests around the world.

Swent: There was another--wasn't there a third African--?

Humphrey: There was Tsumeb.

Swent: Tsumeb, yes.

Humphrey: Yes, had--

Swent: Tsumeb, O'okiep, and Palabora?

Humphrey: Yes, those were the principals, but they also had the--

Swent: One on the coast somewhere.

Humphrey: They never developed that on the coast, and I forgot the name of it right now. And then they had the interest in the steel company, and--.

Swent: But you were not directly involved?

Humphrey: I wasn't directly involved. No, I was just kind of an ad-hoc thing that I got to go down there. I went several times. So I

got to know Gordon quite well, and did make some recommendations at Palabora that they followed, finally, which really helped them, I think. So that was good experience for me. Newmont had, as I think I told you before, they had interests in thirty-three different companies and managed eleven of them. So I got to go to Peru to Southern Peru Copper Corporation, where they had an interest, and look at what they were doing there, and make some recommendations there.

## Making an Unwelcome Suggestion at Cuajone, Peru

Swent: Had Cuajone opened?

Humphrey: Cuajone had just opened.

Swent: Toquepala, of course.

Humphrey: Yes, Toquepala was going. Cuajone was the problem, and they were really doing so much stripping ahead, they were using a lot of money that they didn't have to do so soon. They had, I don't know, something like eighteen months of ore pre-stripped before they needed it. It came to something like $24 million over three years that they were spending and didn't have to spend, because they wanted to be sure that they had that ore uncovered. I got into a big hassle with the fellows at the board meeting of the Southern Peru when I suggested that they stop doing that. I lost the battle, but at least I got my say in.

Swent: They didn't pay attention to you?

Humphrey: No. Warren Fenzi--they left pretty much the mining part to Phelps Dodge, who had an interest there, and Warren Fenzi didn't want to do that. He wanted to be plenty safe.[1]

Swent: This was a consortium of Phelps Dodge, Asarco, and Newmont?

Humphrey: Yes. Newmont only had 10.5 percent or something like that. The big guy was Asarco, and then Phelps Dodge had something like 30, I think.

Swent: And they were really the operating--?

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[1]Warren Fenzi, interview in process in 1996, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley.

Humphrey: Yes. Asarco was the operator. But they depended a lot on Phelps Dodge for mining know-how. Asarco really didn't have a mining background. They were smelting people.

Swent: So again, you didn't have the authority--

Humphrey: No. [laughter] Sure didn't. But I sure told them what I thought, and of course, it caused some consternation there. But it was good experience for me. I had a lot of fun doing it. I went down several times.

Swent: Where were their meetings held?

Humphrey: Their board meetings were held in New York.

So that was outside my normal activities with Newmont, and of course, the regular responsibilities I had were at Carlin and Dawn and the British Columbia operations.

## Granduc, a Losing Proposition

Swent: And things were all going on, well established by then?

Humphrey: Pretty well. We had a lot of trouble at Granduc. Of course, by the time I got involved with Granduc, Jack Thompson was up there working, as a young engineer.

Swent: Jack Thompson, Senior?

Humphrey: Junior.[1]

Swent: Oh, that's right. He'd started up at Granduc.

Humphrey: Yes. He started actually at San Manuel, and transferred to Granduc. They were having trouble, they had a system of induced caving for their mine, a sublevel induced caving system for their mining. The cave was coming in too soon and diluting the ore, and they were losing the grade. So they were having a heck of a time making it profitable. And the conditions were terrible up there.

Swent: Is that the place that had the terrible avalanche?

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[1]Jack Thompson, interview in process in 1996, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley.

Humphrey: That's where they had the avalanche, and where they had so much snowfall. They had well over 500 inches a year of snowfall, and some years more. So they had to keep the buildings heated, and the roofs were steep to keep the snow from building up. And they had actually a mortar platoon that would go along the road and shoot down the potential avalanches on this--I think there were something like sixteen or eighteen kilometers of road up to the mine. You had to check in by radio as you went along this road in the winter time to make sure you were still there, I guess. But it was tough mining, and then the mine was under a glacier, actually.

Swent: They did give it up?

Humphrey: They finally sold it. Since then, it's collapsed; the whole thing has collapsed. But they weren't able to make money. It was a pretty good ore body, but there was too much dilution. We thought we had a system devised where we could leave some sill pillars and mine out under, and then collapse the sill pillars, but by then, we had decided to pull out, and had these prospective buyers for it. So finally we shut that down. But I was involved with that, and then also with Similkameen, which was an old mining district on the Similkameen River.

Swent: Were you responsible for making the decision to shut down Granduc?

Humphrey: Yes. Of course, it was a recommendation, and it had to be approved, of course, by Wayne Burt, and then Plato was involved with all of those kinds of decisions. It wasn't an easy decision, but when you're not making money and you don't see any way out, and conditions were so tough, and the ore body wasn't big enough to sustain a long haul to try to change things. And we had these other people that were interested. So that--

Swent: Was that was the first time you had closed something down? Or decided to?

Humphrey: I've lost the sequence now--I was also in charge of Idarado, the Idarado Mining Company. We had to shut that down, too, and I've forgotten which came first.

Swent: That was in Colorado.

Humphrey: In Colorado, near Montrose and Telluride. It was all in that area. Telluride was actually the town where the mine had developed originally, but then the access was from the Montrose side.

Swent: Were the decisions similar in both Granduc and Idarado?

Humphrey: Yes. The basic reason was that we weren't making any money. At Telluride, we had really run out of ore.

Swent: This also was a consortium, wasn't it?

Humphrey: Yes. Homestake had an interest in that.

Swent: Granduc was just Newmont?

Humphrey: Yes. There was a minority in Granduc, 6 or 7 percent of the original owner, something like that.

Swent: But Idarado had more--

Humphrey: Idarado had Homestake, Newmont, and a few private stockholders.

##

Swent: We were just talking about closing down Idarado and Granduc.

Humphrey: I don't know if there's anything more to say about the Granduc mine. We left some ore there certainly, but it wasn't profitable, so we decided to close it and sell it, which we did.

## Problems with the Idarado Mine

Swent: You sold that. Idarado closed?

Humphrey: Idarado closed. We had done some deep drilling at Idarado, trying to develop new ore reserves, and had some sniffs, but we'd never had enough to make an orebody. So we mined out what we knew, and that was that, and closed it down.

There were some environmental liabilities there from the old workings that we were attempting to mitigate, and I think were doing a pretty good job. There was some dust blowing from the tailings dam at Telluride that was bothering the residents, and we tried to cap that with kind of an asphaltic coating. It worked for a while, but then it started to crack up, and it disintegrated and didn't do the job.

That was about the time that I left the company. I don't know what they've done since.

Swent: Did you have any awareness or connection at all with the Henderson mine?

Humphrey: No.

Swent: Of course, that was Amax.

Humphrey: Yes.

Swent: But I just wondered whether you were aware of it at all.

Humphrey: Well, I've visited there, but I had no connections with it, with Amax.

Swent: The reason I was asking is because I ran across a quotation the other day that sort of intrigued me. It was a speech that Alan Born made, and he said that the Henderson mine was the first major mining project to be built with input from leading environmentalists and citizen conservation groups. I just wondered--

Humphrey: Could well be.

Swent: --how influential that was on other mining companies.

Humphrey: No, I didn't have anything to do--

Swent: And that was in 1976.

Humphrey: Yes, middle seventies. No, we didn't have any connection with that at all.

Swent: So when Idarado got in--when you were doing this environmental mitigation, that was later, I guess, was it?

Humphrey: Yes, it must have been later. It was somewhere between '75 and '80 somewhere. We must have shut that down in '76 or '77. So it was right around 1976 or 1977 that we were doing that work. We thought we had it controlled with this spray, we sprayed this coating on the tailings to keep it from blowing, but as I said, a year or two later, it started to crack up and didn't really work. What they've done since I don't know, whether they've covered that with topsoil and planted it, I have no idea. But that would be the logical thing to do. It wasn't a big area.

It was an old, old mine, the Idarado mine at Telluride, and had quite a history, an interesting history, and had had some high-grade ore in the early days.

Swent: Were you using similar mining techniques in all these places?

Humphrey: No. The Idarado mine was using a shrinkage stope system that was labor-intensive and very tough to make money at the grades that we had left. So we tried to develop some open stope mining methods using more load-haul-dump equipment, rather than the trains and cars that they'd used before, with some success. The problem was we didn't have enough ore to get the cash flow right. The system worked all right, and we had some good management there. I changed the management, and we got some good practical management there.

## Pete Loncar and a Lithium Mine in North Carolina

Humphrey: Another fellow, Pete Loncar, I had made the manager. Pete was another practical guy that had learned the hard way, a very good man. And actually, eventually I transferred him to North Carolina to the lithium mine that was operating there, because they lacked some practical sense about how to mine. It was an open-pit mine. Pete had had some experience at Carlin in the early days with the gold project, and then had worked this underground mine, and was very good with people and problem-solving.

So as Idarado faded out, I moved Pete over to North Carolina, to the lithium project that Newmont had an interest in. It was an ore sorting problem again, and very complicated process, to extract the lithium from the silicate ore that was spodumene. Fortunately, there was a color variation between the ore and the waste, so you could--

Swent: That always helps.

Humphrey: We actually looked at this ore sorter that had been developed by RTZ in Canada that would, after you'd crushed the ore to, I think, a four- to two-inch size, you could put it on this belt, and a laser beam and a computer would actually identify the light from the dark pieces, and as it got to the end of the belt, a little jet of air would knock the proper pieces off, so that you could actually--the good stuff, I've forgotten which, would fall into the bin as the belt went over, and the air jets would throw the lighter waste stuff off into another bin. It sounded like a machine gun going off on this thing, but it had a rotating disk that would identify these ore pieces that had little facets on it like little faces, like a diamond almost. It would reflect this laser back to a computer that would say,

"Yes, it's white or black," and it went back down to this disk that engaged the air jet.

It was a fantastic little machine, but we didn't use it. We didn't use it because to build the screening plant to get this material in the proper sizes to get on the belt was so costly that what the people were doing down there, there was a family that had I don't know how many children and aunts and uncles that got out on this belt and picked it off by hand, and it was a lot cheaper to do that than it was to build this big, expensive ore sorting plant. So we let that go. They had a contract, just kind of a piecemeal contract, and we did it that way.

But anyway, the whole mining scheme was bad, so Pete Loncar went over and ran that for us.

Swent: Was that in your bailiwick?

Humphrey: No, I wasn't directly responsible for that; they had other interests. They had other principals in the company, and I've forgotten who now. So they had board meetings, but they needed some help, so I was sent off on that, too. I learned about lithium and what it was used for, and what could it be used for, and why was it so important. So that was another interesting phase.

## Advice for the Palabora Mine

Swent: Yes. You also mentioned that you were able to give them some good ideas at Palabora, but I didn't press you to say exactly what they were.

Humphrey: At Palabora, they had this big, deep pipe they were mining, and it went straight down. They built this big pit, which is a big cone-shaped hole dug down to take out the ore. They were getting down to where they were so constricted at the bottom, and it was such a long haul out, that they thought they'd maybe better build an underground mine under the pit. They had Redpath make a study for them, and some other guy from Norway or Sweden--from Sweden. I've forgotten his name.

They suggested that they make a big block caving mine underneath the pit, underneath the bottom of the pit, and work on both simultaneously. I said, "Wait a minute. You can't be caving the bottom of the pit out from under you, if you're going

to work them both." It was a tremendously huge pit. I've forgotten how deep it was now, but it went down hundreds of feet. It was so deep that they had to build zig-zag roads up the side, two zig-zag roads. They couldn't have one circling down in a spiral, because you couldn't mine. You had to have one way out while you blasted the other side down.

I just couldn't agree with the concept. They had already decided how to put the haulage level in, where to put the shafts for the extraction, and they got carried away with the program. So I said, "Listen, just push the pit back another couple of hundred meters, and that's going to give you enough ore for another--" I've forgotten how many years it was. "And just expand your pit."

They said, "Well, we can't, because there's some living quarters there for the laborers, and the crusher is right on the edge now."

I said, "Well, just move it. Move everything. It's a lot cheaper than building an underground mine and putting a vertical shaft in." Which they finally did. They just had gotten carried away that they didn't want to do that, that they wanted to build an underground mine, but I think it would have been a disaster to have a block cave actively under an open-pit mine. You don't know what's going to happen.

Swent: Doesn't sound logical to me.

Humphrey: No. So anyway, I went back twice or three times to Palabora. And the last time we went, I was able to take Edna, and that's when we went out to Kruger Park on our own. Had a great time.

Swent: That's delightful.

Humphrey: So that's what happened at Palabora. All these things where I was sent on a trouble-shooting mission seemed to be fairly simple. There was no big complicated formula for doing something. It was just practical applications of what I'd learned over the years. So no big surprises. I'm no smarter than the next guy.

Swent: Sometimes it takes someone coming in, though, to--

Humphrey: Yes, to look at it differently, yes. And you know, up at Homestake at the mine, we had a heck of a time convincing the management there--

Swent: In Lead.

Humphrey: Yes, in Lead, that they should put an open pit on top of that old open cut.

Swent: That was the same thing: they didn't want to move the houses.

Humphrey: Well, yes, and they didn't understand open-pit mining, because they'd never really done it. They understood underground mining, and they thought they could go underground and mine the best out of it, and make more money than they could by the open pit. Well, it turned out that they couldn't, but it took a lot of convincing to make them come around to the idea.

## Joel Waterland's Vision for the Homestake Mine

Humphrey: And it was actually Joel Waterland that had the original idea that that could be done. The first time I went up there, he came with his little book and told me all about that, and by gosh, I thought, Holy smoke, this is a real eye-opener. So from then on, I pushed it, but it was Joel's idea originally. He really had some foresight there.

Swent: Also some history.

Humphrey: Oh, yes.

Swent: He went way back.

Humphrey: Yes. But to his credit, I don't know if he has gotten the proper credit for that.

Swent: I don't know either. I'm glad to hear you say that, though, because I know that Lang [Langan Swent] always thought that he was really the one with the idea.

Humphrey: Oh, yes, he was, no question about it. And he had it all documented about what he thought could be there, and how it could make a pit. I don't think he knew exactly how to go about designing a pit, because he'd probably never done it, but he saw the possibility. And of course, Paul was still head of the company, Paul Henshaw.

Swent: Maybe we should interrupt a minute and get you--

Humphrey: Yes, we're getting way ahead.

Swent: Right. But then let's go back to that in a moment.

So how long were you at Newmont?

Humphrey: I was there for five years. Let's see, 197--wait a minute--[thinking]--'75 until '81. So I spent quite a few years, and I got to look around a lot. As I mentioned, I got put on the board of Magma Copper and Idarado Company. At one point, I was president of Idarado after it was practically dead. [laughter] And the Sherritt Gordon board, which was very interesting. That was--

## Director of Sherritt Gordon; Leaf Rapids

Swent: Was Sherritt Gordon a mining company?

Humphrey: Yes, Sherritt Gordon had nickel mines, and then they developed from that the Sherritt Gordon process, which was the autoclave process, to get that ore out of the rock. Plato Malozemoff had a lot to do with getting that accepted. This was a brand-new idea in metallurgy, and Plato was one of the guys that really supported the whole idea and encouraged them to build the plant.

Swent: Of course, he's a metallurgist.

Humphrey: Yes. And that was a good thing. And of course, Newmont had 40 percent of that company, a 40 percent interest. So they had some influence there.

After the nickel mines petered out, they built this copper-zinc base metal mine out at Rutan, at a place called Leaf Rapids in Manitoba. They were having some problems there with managing it. They had an open pit above the mine, and some of the open pit costs weren't what they should have been. Of course, that was a tough place to work. It was so cold up there that you had to actually heat the tools before they could do maintenance on the shovels outside, and a man could only work fifteen or twenty minutes, and then he'd have to go back in a little cubby and warm up again. But you had to heat the tools. Actually, the boom on one of the shovels broke from the cold. It crystallized and just snapped off.

Swent: Oh, my.

Humphrey: I think the last time I was up there, with the wind chill factor, it was minus 113 degrees. And try working outside in weather like that. It's almost impossible.

Swent: And then in the summer, it was flies, I suppose.

Humphrey: Yes, summer it was flies. So I got to visit there not only as a director but as an advisor, at least a recommender for some of the changes they might make to make that more profitable.

Swent: Did they?

Humphrey: They did that, and then they had to go--then the pit had worked out and they went underground. The underground was hard mining, and one of the big problems was that they had blocked out the ore from diamond drill information, and what they didn't realize was that the diamond drills had wandered, actually turned 180 degrees, some of them, if you can believe it. You can't imagine how you can twist steel around like that. They had actually gone down and came back up again. So what they thought was ore down here was really way up here.

They discovered it first in one of the development drifts. They hit a drill hole that wasn't supposed to be there. Nobody else had drilled in that country. So they kept plumbing the holes, and found out that this thing had done this.

Swent: Down and up again.

Humphrey: Down and up. Because it was in this gneiss and schistosic rock, and apparently, the bit would catch on the end of these sheeting planes and it would bend it around. It just kept getting worse and worse. So the whole ore body was cattywampus. They had laid out this elaborate development plan, the drifts and shafts and everything, and the ore actually was somewhere else. So they had to really redo that.

They finally compensated for that, so they knew where the ore was, and changed the mining pattern. It was going to be an open-stope blast hole system, something like we'd used in Cananea, so I was involved with that, too. But they just couldn't make a profit because the grades weren't good enough, and there were tough conditions. Had to heat the ore; it had frozen up into large clumps. It was so cold up there. Just different things you never think about.

Swent: Yes.

Humphrey: They had a good camp. They had spent a lot of money, and I think when they finally shut down, they still had some very big liabilities on some of the bonds they had floated to build the community. The community was built out in the middle of nowhere at Leaf Rapids. Everything was--there were houses, individual

houses through this pine forest, and it was pretty country. But the center, the school and the gym and the supermarket and the movie house and the restaurant and both grade school and high school, and I guess the clinic, hospital, were all under one roof.

Swent: For economy of heating, I suppose.

Humphrey: Yes. So it was kind of like a big mall, but people didn't like it. It was too crowded. You could hear the cheering section on the basketball court while you were doing your shopping, and everybody got claustrophobia. So people really didn't like it, and it was very unsuccessful. Which was surprising. So people didn't utilize the facilities they had. I guess they had a curling rink there, and they had a basketball court. But people got too much--too close. The proximity was too close, which tells you something. Just wasn't enough room, enough space between people.

Swent: But the houses were detached?

Humphrey: The houses were detached, and they were very nice. But of course, in the winter, the whole community was dependent on the electrical supply, because everything, all the fuel to heat the whole complex was electrical. Of course, electricity is cheaper up in that country because of the Quebec system, and they had a system in Manitoba, too.

Swent: You were plugging into a power grid.

Humphrey: A bigger network, yes. But I think that Leaf Rapids was at the end of the line. If you'd ever lost that power, I don't know what would have happened. It would be a real problem. But I thought it was strange, the social thing that didn't work. People were really vociferous about it.

Swent: That's interesting.

Humphrey: And the motel was in there, too. The motel and the restaurant.

Swent: Sounds as if it would be ideal.

Humphrey: Yes, it does, and it was very well done. The architecture was nice, and it was big wooden cedar buildings that you'd expect up in a northern country, quite attractive, and I think the supermarket had nice things in it. Just didn't go.

Swent: Something else you learn.

Humphrey: Yes. But that mine had to shut also, and that was the only mine that Sherritt had at the time. Their big thing then was that they had gotten into the fertilizer business because of the autoclave process for the ores that they had. So they were actually importing phosphate rock from Florida, taking it all the way through the canal up to Vancouver and over to Manitoba to make super phosphates in this plant, because they had the sulfur from the autoclave process, and they had some of the ammonia that they were able to get. So they were making all kinds of fertilizers. They were big in the fertilizer business in western Canada. So that became their principal business rather than mining, so mining kind of died out.

Then while Newmont was still involved with them, they determined that they ought to expand their fertilizer business and spend--it was over $200 million, which was a lot of money then--to build a plant to service western Canada and the western United States. The assumptions were that the fertilizer market would be such and such, and by the time they got the thing built, and by then, Newmont had gotten out of the business, out of the ownership, the market went to the devil, and they just had a heck of a time. I think they're still having problems making it work right.

But that was an interesting phase, too, for me, because I got into a lot of other types of things that I hadn't known about, and got to do some work at that mine, and learned about the autoclave process, which to me seemed to be very complicated. They also made coins for different countries at this plant, because they had developed a process where they could use the nickel to make coins, so they actually struck coins. They had a mint up there. They made coins for some of the African countries, some of the South American countries. I don't remember them all.

Swent: Countries that don't have their own mints.

Humphrey: Yes. That was interesting to see, too, because they used the nickel with a dressing process that they had to envelop the coins. Like you look at our coins, like a quarter, and you can see the copper. But their coins had the nickel on it, and it went all the way over, even though there was copper inside of it. That's the specialty that they had. They put them in a bath, kind of an electrolytic bath, to develop this. So that was an interesting phase.

Swent: Would you like to comment about--maybe we should do it later with the Homestake--but comparing the management of Newmont and Anaconda, and what you were learning from there that you were

able to take with you to Homestake? How to manage or how not to manage, as the case may be?

Humphrey: Yes. Well, as I mentioned before, I learned that you've got to learn to delegate.

## Plato Malozemoff's Management Style

Swent: How was Plato Malozemoff on delegating?

Humphrey: Plato was--he would delegate, but he would always--Plato was a detail man, and he read I think every operating report that was ever written for the company for all of the thirty-three different companies. It was kind of a game with him, to read all of these and try to find out what was right or wrong about them. So he didn't completely delegate. He always kept what he thought was a finger on the pulse of things, which you have to do somehow. But I thought he overdid it on the details. He became so involved in the details that sometimes he couldn't see the bigger reasons for things.

For instance, in all of the companies where we had a majority interest, he was always chairman of the board. Even though it was a wholly owned company, we had boards, separate boards, for each company, and he was the chairman. He was the chief executive of all these eleven companies that we had. Magma Copper was 100 percent owned, yet we had a board, and he was chairman of it. And on the lithium company, he was chairman of everything.

So he didn't give the people under him a chance to really develop like they should. I was a couple of steps down, so it was okay, but the people right under him, like the president, I'm sure had a very frustrating time. He'd read these things. I think he'd go home and take some of this stuff home with him, and read until midnight, and then come back in the morning and ask all these questions. Out of the blue, he'd ask you, "Why is the cost per ton at Similkameen thirteen cents instead of twelve?" [laughter] How do you answer that?

So he was different. He was a visionary, though, and he could see the big picture, too, where the company should go. He kept the company diversified enough so that they always had income. If one thing dropped off, he'd have another, so there was always a pretty good income statement and cash flow statement.

He was a risk taker in that he would get involved with things like Peabody Coal and make a big deal, and if he thought the deal wasn't going to be really terrific, that there was some risk that he wasn't satisfied with, he'd take a small piece of this action with the idea that later on, if it worked out, that he'd get some more percentage of it. That's how he got into things like the Southern Peru Copper Company and some of these other things where they just had a 10 or 12 percent interest.

Swent: And he was also willing to get out, then, when the time was right to get out?

Humphrey: Sure. Yes, he would do that. So he was a very prominent guy and good at his job. He was a little too, I guess paternalistic, about holding the reins in his hands, and not--he was good to people. If you did your job, he was kind of a tightwad on salaries, but he was good to people. He figured he had to save the company money, and acted as if it were his own personal domain. So he had to read everything.

I remember once going--maybe I told you this--

Swent: No, I don't think so.

Humphrey: Going to South Africa with he and Wayne Burt. We usually went on South African Airlines--

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Humphrey: I guess this time we were on Air France from Paris down to Johannesburg, and we had to land in Kinshasa in the middle of the night, midnight or something. There was a thunderstorm and the pilot didn't know where the hell he was. He knew that airport, so we landed. We had to stay on the plane. This was the time when they were having all the problems, and they surrounded it with soldiers. It was late, and I was tired, and we were in this big wide jet. I don't know whether it was a 747 or DC-10.

Wayne and I were sitting over on one side, and Plato happened to have a seat on the opposite side. The whole plane was dark, and I looked around, and there was one light on. I said, "My gosh, Wayne, that's Plato, he's awake."

Wayne said, "Uh."

So I got up and looked, and here was Plato. He had these monthly reports out for the different mines, and he was sitting there reading them. [laughter]

Swent: Couldn't waste a minute.

Humphrey: Couldn't waste a minute. So he did get too involved, I think. But he had a lot of vision, too.

Swent: That's interesting, because sometimes people that are that involved in details don't have the vision.

Humphrey: Yes. And we had a 22 or 27.5 percent interest in the Palabora Company. He and Wayne and I went there, and I was to stay on to study this underground thing that I was telling you about.

We arrived at noontime. They flew us out in a private plane from Johannesburg to the mine. Plato and Wayne were just going to stay that day and then leave the next day, because they had something else they wanted to see. And you know, the management there wouldn't let Plato on the property. They actually refused--they didn't want him to go see something, because they knew he was going to criticize them, I think. So he couldn't go. So he stayed in the guest house and had lunch, and he was furious, of course.

Swent: Oh, I can imagine.

Humphrey: It was very poor politics on the part of the managers to do that, because it was a public South African company, but of course, they had the authority to keep him out.

Swent: But they let you see it?

Humphrey: Yes. So I stayed on and did what he probably would have anyway, and came back and made my report.

Swent: But they wouldn't let him look around?

Humphrey: No. I thought that was so strange. I couldn't understand. I thought, What am I getting into here? Are they going to try to hide something from me? But they couldn't have been more generous, and I got all the information I needed and was able to size up the place. It was a strange trip.

Swent: Must have been. I can imagine he was seething.

Humphrey: Yes. [laughter] All the way over there--of course, he had some other work to do with Hi-Veld Steel, was the other company that they had, and he wanted to see what they were doing. I guess they were going to go over to Tsumeb and O'okiep. But I stayed on and did the work there.

Three Corporation Leaders Compared: Malozemoff of Newmont, Weed of Anaconda, Conger of Homestake

Humphrey: But Plato is a very quiet man, almost retiring. He speaks very softly. He's very proud of his stamina, and he does have a lot of stamina. He's a wiry, slight man. He was very good to me, and I'm very fond of him. He was very considerate of me. I don't know why. But compared to Clyde Weed, his personality was so different.

Clyde Weed was a guy with a lot of vision, too, but he was a roughneck. He'd come to Cananea when we were youngsters there and go to some of these parties, and his big kick would be to get all these young gals around him and tell them dirty jokes, and watch their faces, they'd blush so much. But he was just a rough guy, and of course, everybody knew him so that he wasn't vulgar, but he'd have all these risqué stories to tell. Just that way around the camp, too. Outspoken and--.

Both of them had kind of hooded eyes, both Plato and Clyde, and sometimes they'd ask you a question when they knew the answer, just to see what you'd say. Their eyes would be hooded. You couldn't look them in the eye when you answered them. They were just--[laughter] They were testing you all the time. They were two men, and I think Harry [Conger] does it too, that they were continually analyzing their subordinates to see if they were what they thought they ought to be. They never stopped testing you or analyzing you. They never said, "Oh, here's a good man, we'll just let him go." They said, "Here's a good man, but we're going to watch him."

Swent: Keep an eye on him.

Humphrey: Yes. And to do that, they all had other sources of information besides the regular chain of command that they would--whether they liked it or not. Some of it was covert, just--

Swent: Within the company?

Humphrey: Yes. I wouldn't call it a spy system, but they had other sources they could call to verify what they were getting on their regular chain of command communications.

Swent: These were people that they had worked with long ago that--?

Humphrey: Yes, probably, people they'd worked with, or people that they had promoted to some positions where they thought they could keep a tab on them, and maybe would be confidential about what

they told them. So it was kind of a--people in the regular line work didn't like it much, because they knew something was going on by some of the questions some of these guys asked back. But I think they all did that, and I think Harry does it--I know Harry does it. He gets information from other sources other than the regular communications that are formal.

Swent: This would be through perhaps social functions?

Humphrey: Well, not social so much as maybe just calling someone up that's an underling somewhere and chatting with him, somebody he's known before.

Swent: You have to build up a relationship to do that.

Humphrey: Oh, yes. You just don't do it out of the blue. But you build that up, and you keep those lines of communication open in case there's something really wrong somewhere. I guess it's kind of a way of internal auditing that you do on management to see if the managers are behaving like they should. But I noticed they all do it, and they're all completely different people.

Harry is very much of a people-oriented guy, and he really takes good care and makes a point to make his employees happy and satisfied with what they're doing and feel important. I think he's an outstanding guy. But he uses other sources, too, just like Plato did and Clyde did. I think that's probably part of their strength. They verify at least what's going on in the regular daily communication systems.

Swent: They don't just depend on one line of communication.

Humphrey: Yes. So that was a good lesson to learn, that you should have other sources of intelligence coming in to you.

Swent: But you mentioned also, it does make people uneasy sometimes.

Humphrey: Sure it does. If it really gets out so it's flagrant. These guys are smart enough so that it didn't. But it's a check and balance, too, on the system. When you have a straight line chain of command, it can get out of whack, if there's somebody that has a bias for or against someone in the chain, and it isn't justified, there's no way to find out about it except from another source. So that's important to do.

Swent: Yes. So now, Anaconda and Newmont were both run from New York City.

Humphrey: That's right.

Swent: Running the operations from a long distance.

Humphrey: That's right. Newmont did it a little differently than Anaconda. Newmont had all of these subsidiary companies, some of them 100 percent owned, some not, where they had boards for each one. So there were lots of boards. Aside from the regular daily management, they would try to manage the philosophy and the strategy of those companies from these boards, even though they were rubber-stamp boards, so to speak, 100 percent owned companies. Why have a board? But that was the way Plato set it up, so he could be chairman of that company, and he could get something going in the company without bothering to take the manager on about it. He could do it at the board level. But that worked, to a certain extent.

But at Anaconda, they didn't have that. They had it all centralized in the New York office, and tried to do things. They got top-heavy, just terribly top-heavy. They had the chief safety officer in New York. Well, it just didn't work. Safety has to start way down at the shift boss level, and you have to have a program and managers for it, and it's running, and you can't have somebody from New York doing that.

So that was one of the big mistakes that Anaconda made. Why they did that, I don't know. The company just kind of grew, and I think the people at the top got stale. I think they just got old in their jobs, even though there were some young men there. During the Depression years, they didn't have enough young men coming along, so they didn't have a good succession built up. When guys like Clyde left, there was a big hole, because most of the people that had worked under him were almost his age, too, so there wasn't any young fellow coming along, or women. Women didn't have a place in those days. And they still don't. In the actual line functions of a mining company, you don't see any women at all.

Swent: Newmont had a woman on the board.

Humphrey: Yes. Yes, that's right.

Swent: But she was Colonel Thompson's daughter, and he founded the company.

Humphrey: Daughter, yes. Very nice gal.

Swent: But still, that was--

Humphrey: But then she got off and her husband went on, George Jacobus. She'd come once in a while.

Swent: So that was an exception.

Humphrey: Yes, it's an exception. But I mean in the actual line functions of a mine, a manager, a general superintendent--

Swent: A man's world.

Humphrey: And I think to be successful in a mining company, you've really got to start off and knowing what it is to work as a laborer in a mine. You have to work your way up and find out how a miner thinks and what he does, and live his life for a while. That would be pretty hard for a woman to do, I would think. A young girl out of college, why would she want to go in and start--be cleaning a ditch out in a mine somewhere with a shovel, and muddy, and--? I don't think she could see that that was going to do anything for her.

I think in the engineering parts, that they could go right in and do well as a staff job, but as far as a line function, where you have to deal with rock and people and machinery, you really have to do that the hard way. I don't think there's any easy way to do it. And I don't think you can successfully run a mining company unless you've done that. And that's why these lawyers and bankers have failed, because they've never done anything like that.

Swent: Right. They haven't done that well, have they?

Humphrey: No, they haven't. And when I went to work with Newmont and Plato interviewed me, we had lunch that day, I remember, and he said, "Well, what do you think about working for us?"

I said, "Well, I can tell you one thing: if this company is going to be run by anything but a mining man, I'm not going to come to work for it."

He said, "We have nothing like that in mind for the future." And he didn't.

Swent: And he had certainly a firm grasp of mining.

Humphrey: Yes. I think he and his dad did some mining in Costa Rica when he was a young man.

Swent: Yes. So he knew what hard work was about.

Humphrey: Sure. And so does Harry, and so did Clyde Weed. Clyde Weed had worked as a miner for a while. So all of those men had a lot in

common, but they were such different personalities, all three of them.

Swent: So were you casting about for something different from Newmont? Were you content there?

Humphrey: I was very content at Newmont. Apparently, they had their eye on me, because Edna and I were invited to go on trips with the board several times. One time up through Canada, we went to Banff and Lake Louise and back to Vancouver with the board.

Swent: Nice, and the wives too.

Humphrey: The wives, too. It was very nice. And we were the only ones that weren't board members that got to go along. So that was nice. So I think they had plans for us, if I continued to perform like I was performing.

## Another Telephone Call Out of the Blue

Humphrey: But then out of the blue, I had a call one night from Billy Wraith, who you may know. I don't know if you know Billy Wraith.

Swent: I know the name; I don't know him.

Humphrey: Billy's grandfather had given my dad his first job.

Swent: Oh, really?

Humphrey: Yes. And then Bill's father had worked in Cananea before I got there, and then had gone to Chile into management. Then Bill came to work for Anaconda when he--Billy was younger than I was --and went to work for Anaconda at part of his career. Part of it was with the iron mining company, Marcona, in Peru, and part as vice president of Anaconda in charge of purchasing, which was the centralized purchasing theory. But he was good at this purchasing and warehouse control.

Anyway, so I had known Billy and his family, and he called me one night. We were in Connecticut, living in Connecticut, and he asked if I'd be interested in another job.

I said, "I don't know. I'm well set here, and they're treating me very well, and I'm making good money, and it's very interesting."

He said, "Well, would you be willing to talk with me?"

So I said, "Sure."

So I guess on one of my trips West, I stopped and talked with him.

Swent: Where was he?

Humphrey: He lived down in Palo Alto. I think he met me in the San Francisco Airport, and I was on my way to Seattle or something for the Similkameen mine. So we chatted, and he said, "Well, there are opportunities with Homestake, too."

I said, "Well, that's nice. I know Harry."

He said, "Well, would you like to talk with Harry?"

I said, "Sure, I'd talk with Harry." I'd had some other offers while I was with Newmont, so I talked to several, and I'll tell you about one of them in a minute.

So Harry had business back in New York, and--

Swent: What was Wraith's connection with Homestake at that time?

Humphrey: He was just a headhunter. He'd known Harry, I guess, so Harry utilized him. But Billy was an old Anaconda guy, so I guess Harry figured he knew me. So I did meet with Harry in New York, and he explained what his needs were and what the job was, and it sounded very interesting. Of course, all our children are out West. It sounded like a good opportunity.

So I came out and was interviewed by the board, and took the job, and resigned from Newmont.

Swent: That was '81.

Humphrey: That was '81. Yes, '81. I have not regretted a minute of it, although Newmont was--looking back, of course, Newmont, of the thirty-three companies they had, they ended up with two or three, and the management changed when Plato left.

Swent: Maybe if you'd been there, it might have done better.

Humphrey: Maybe it would have done worse, too, or maybe I'd have been caught in a big crunch back there, too. So I've been very lucky, to be where I am, and I've done what I've been able to do.

## An Offer from Armand Hammer to Mine Shale Oil

Swent: You mentioned a couple of other offers that you'd had?

Humphrey: Yes, while I was with Newmont, I had a call from Armand Hammer wondering if I'd be interested in running that oil shale business that he was trying to get started in Colorado. I said, "I don't know anything about oil shale."

Swent: He called you directly?

Humphrey: Yes, I don't know whether it was his office or he called directly. No, he called directly and wondered if I could meet with him in New York, because he had an apartment there. He was kind of a character. He had converted one of those French Mirage fighter planes to a private plane, taken the bomb bays out of the thing and made it a corporate jet for himself. So he flew back and forth to Moscow and everywhere in the world.

He was coming in from Europe to his apartment in New York, and wondered if I could meet him on Sunday morning. No, he didn't call; the office called. They called us Sunday morning about eight o'clock, and I guess I'd had contact before, and said, "Could you meet with Armand Hammer at ten o'clock in New York at our office on Fifth Avenue?" I don't know whether it was Fifth Avenue--it doesn't make any difference. It was right in town there somewhere, and uptown.

I said, "I don't know if I can get there in time, because I have to drive in. There aren't any trains today." It was Sunday morning.

I remember this young secretary said, "Well, give it a crack, Mr. Humphrey. See if you can get here."

So I said, "Okay." So I said to Edna, "Come on, let's ride in. You can wait for me; we'll just ride in, and what the heck. It will be interesting to talk to the guy."

So we drove in to New York, and we got there about quarter to ten, and were waiting downstairs. The office was up, and you had to get clearance to get through the elevator. Pretty soon we looked out in the street, and here's this old guy walking along with an overcoat down to his ankles and a big slouch hat on, and he had his arms full of manila envelopes just like this, walking through the door.

I said, "I bet that's Armand Hammer." He went in, got in the elevator and went up. Then they called us up. They had a waiting room up there, and I said, "Just wait here. I don't think I'll be a minute with this guy."

So he called me in and explained what he was trying to do. He said, "Was that young lady your wife out there?"

I said, "Yes."

He said, "Well, have her come in."

So she got to come in, and we visited for about half an hour with him. He was quite an interesting guy.

Swent: Occidental Petroleum was his company, wasn't it?

Humphrey: Yes. And he said, "I want to be able to make a fuel to fuel all of these autos." That was the time when we were having all the trouble with the oil source, the petroleum. "To fuel all the cars in the United States. This oil shale will do it. I want you to talk to the president of the company about how you might be able to help us do this. It's a mining problem, we have to mine that shale properly to make this fuel, and I think it will work. I have an idea about burning it underground, but I don't know enough about it." So we had a nice conversation.

Zoltan Marsaelles was his president. He called me and came to New York and we met in New York. I did some studying up on what kind of an oil price you'd have to have to make something like this work, if it could work, but what they wanted to do was build these huge, big stopes underground, leave the rock in them, and set it on fire, and then the oil would melt out and be collected at the bottom, and the gases would go up, and you could use the gases for something else out at the surface.

Well, they needed to mine something like 200,000 tons a day to make the quota he needed to make the cash flow work for the investment, and aside from the fact that you would have 1,000 degree temperatures or something underground, which was unheard of, and if you don't know what rock strength will do under those conditions--. You had to have fifty-dollar-a-barrel crude oil to make it even work.

So I met with this guy and I said, "You know--" They offered me everything, a private plane and a quarter of a million dollar salary. I said, "It's not going to work."

Marsaelles was a real go-getter. But I said, "You better talk the old man out of it, because it's not going to work." I think he did, but he didn't last very long with the company, either. Armand got some other guy. But Armand was a character. He was quite a--so we had some fun with that.

Swent: That was fun.

Humphrey: Yes. And he autographed a book that I have of his that's written by Bob Considine, and it's quite a story. Of course, I think Armand edited it after it was all written, and I think it's probably at home. But it's a real story on an amazing guy. Everything he touched turned to gold, so to speak.

Swent: Except the oil shale.

Humphrey: Yes, except the oil shale. Well, I guess he gave that up.

But you know, he got into the cattle business, and then the feed for the cattle, he started fermentation of the silage to make alcohol.

Swent: Using silage?

Humphrey: Yes, that's right. [laughter] Just got into everything worked--

Swent: Everything.

Humphrey: Yes. And his experiences in Russia were interesting, too. So that was an interesting--and Edna got some fun out of it, too, with our trip in that day.

## IX EXECUTIVE VICE PRESIDENT AND PRESIDENT OF HOMESTAKE MINING COMPANY, 1981 TO 1992

### A Reorganized Operating Group

Swent: But you got tempted away by Homestake.

Humphrey: Got tempted away by Homestake. It just sounded too good, and I'd known Harry for some years, and I knew he was a good, solid guy. What he wanted to do with the company sounded good to me.

Swent: What was that?

Humphrey: He wanted to reorganize so that he'd have an operating group that would have a separate chain of command rather than several that he had had. He had a group that was doing uranium--

Swent: And he inherited the organization from somebody else.

Humphrey: Yes. So we had duplication of effort in a lot of cases, where you had--I think Ken Canfield was in charge of the uranium, someone else was in charge of the base metals, and someone else in charge of the gold, so they each had their own engineers and their own sales, so there was a lot of duplication of effort. Harry thought it would be better if it weren't that way, and that was right down my alley, because I thought it shouldn't be that way either. So that looked like a real opportunity for me to come and help him do some things.

I remember he sketched it out, we were sitting in the hotel room in New York, he sketched out what he thought the organizational chart would be like, and just where I would fit in. And the salary offer was good, and the moving expense and allowance were good, and we'd be coming back West, which Edna didn't really care about. She was happy back there, but we'd be

closer to our children. And probably on the face of it, more opportunity. So we came.

Swent: So the McLaughlin mine was just--

Humphrey: Just discovered. They really hadn't developed the mine yet. It was just brand new.

Swent: So that would be the big responsibility.

Humphrey: Yes, that was the big--.

Swent: Although big things in Lead, too.

Humphrey: Sure. But Al Winters was there, and Al is a terrific guy. Tom Connolly was still on board when I came. He didn't stay very long. He thought he should have had that job, I think. So he left, but Al was running the mine, and Al's a very competent guy.

Swent: And Paul Henshaw was chairman?[1]

Humphrey: Paul Henshaw was chairman.

Swent: What was the state of his health at that point?

Humphrey: Paul was just--his health was great, but his memory was starting to--

Swent: Well, mental capacity--

Humphrey: Yes, his memory was starting to fail. Some days would be good and some bad. Of course, as time went on, it just got awful.

Swent: It was a terrible thing.

Humphrey: Yes, too bad. A really great guy--

Swent: Because before those things are evident, there's still slippage that isn't evident.

Humphrey: That's right. Well, and his wife protected him a lot too, because she loved him dearly, and they were a nice couple together. But eventually it just got to Paul; he couldn't

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[1]Helen R. Henshaw, *Recollections of Life with Paul Henshaw: Latin America, Homestake Mining Company*, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley, 1988.

remember from one minute to the next. But he was, as I mentioned before, he was right there when this idea of making a pit in Lead came up. He was all for that once he--

Swent: You had started to discuss that and you hadn't really finished.

Humphrey: Well, when Joel Waterland finally came up with this idea about building a pit at the open cut in Lead, I came back all excited, and talked to both Harry and Paul. I remember Paul was sitting there. He said, "By gosh, there's something we should follow up on," and Harry did too. But that was one time, Paul was very enthusiastic about things. It was an opportunity to get a little different approach to mining up in Lead, but we didn't have any really open pit men to do that. But we were able to make some projections, and it looked like a going thing, so we appropriated, as you know, quite a few million dollars to do the drilling up there.

And it was risky, because we were drilling in old cave areas, and there was no way to connect the results in one hole to another hole, because you didn't know if it could be correlated.

[Interview 3: November 16, 1994] ##

Swent: We haven't met here for several weeks.

Humphrey: It's been some time, yes.

Swent: It's nearly a couple of months, actually, so we may need to recap a little bit to get ourselves started. When we stopped, you had just come on board with Homestake. You joined Homestake in 1981. And you had already known Harry Conger.

Humphrey: I had known Harry for many years, from our association in Arizona. When I worked in northern Mexico, he had worked in Arizona, and that's where we first met.

Swent: What company was he with?

Humphrey: He was with Asarco to start with. The Silver Bell mine.

Swent: I was just thinking this morning in the car on the way out here that Harry had been with Asarco and then with Kaiser for a long time.

Humphrey: Yes.

Swent: You had been with Anaconda and Newmont. So you were both bringing very different experiences to Homestake.

Humphrey: Yes. Although we both started out in the copper business, which was the copper mining and milling and in my case smelting.

Swent: But Homestake had not ever been involved in copper. So the two of you were bringing new--

Humphrey: Yes, that's true.

Swent: --very different influences into Homestake, I think.

Humphrey: Yes.

Swent: Harry was the first mining person to head Homestake. He was breaking out of the Harvard Ph.D. mold.

Humphrey: And geological mold.

Swent: Yes, and bringing in experiences from other companies, both of you. I don't know whether this makes sense or not, but this struck me just this morning, that many companies at about mid-century were going from being run by practical people, quote-unquote, to being run by Harvard M.B.A.s and people like that, whereas Homestake was going from being run by more theoretical, academic people, to being run by more practical people.

Humphrey: Yes.

Swent: In a sense, going in the different--

Humphrey: It seems to be that way.

Swent: And I hadn't thought of this before.

Humphrey: Although with the other companies I worked for, and of course it was just Anaconda and Newmont, Anaconda had always been run, at least the operational part, by practical people. And of course, by the time I got there, Clyde Weed was the president; he wasn't the chief executive. And he was a practical man.

After he left is when they really got into trouble, because during those Depression years, they didn't have any young people coming along. They weren't grooming anyone. So he lasted and lasted and lasted, and when he finally left, there was really no practical man that they had groomed to take his place. They didn't have foresight enough to see about going outside to get someone. They did have one man who died at a young age, a guy

named John Hoffman, but other than that, they had no one, and you should have more than one choice.

But then they put a lawyer in after Clyde, and that was the beginning of the end. His name was Jay Parkinson.

Swent: Oh, Parkinson, yes.

Humphrey: And then the company got so fouled up. Of course, some of it was bum luck just on the history of the company, because that's when Chile took over. And he was not a--he didn't understand people and mining, and he became very tyrannical and insistent on results that weren't practical. And the company got into terrible financial shape.

Swent: And there was nobody there to tell him that it was.

Humphrey: No. So they took one of these directors, who happened to be John B. M. Place, and made him president. He knew less about it. [laughter] Then he put Bob Weed, who was Clyde's nephew, as the chief operating man, and that's when I got the opportunity to be a manager at Cananea, because Bob left. So they went back and forth, but the company should have groomed some young operating people during Clyde's tenure to take over, and that was a big mistake.

## Only a Mining Man Can Run a Mining Company

Swent: And had you sensed this and been aware of it?

Humphrey: I had sensed, yes. I hadn't when I first started out with Anaconda, but as time went on, I could see where the problem was. And particularly after I became manager, I understood and I still am very avid about it: I don't think you can run a mining company with anyone but a mining man. Or a metallurgist, or a geologist, or somebody that's part of the business. You can't bring a lawyer in or a banker, or an economist, and hope to be successful.

Swent: And there was a period in there, maybe in the fifties was it, when there was the theory that management was management--

Humphrey: Yes, if you managed one thing, you could--if you managed a corset factory, you could manage a mining company, and it's not true. It just isn't true. There are some similarities, but mining is a unique business, and it's distinct, and you should

know it, and you should know it from the bottom up. So you know how the workmen think, what their aspirations are, what their idiosyncracies are, because all the labor that I've seen in mining have customs that they just can't break. It's kind of--you get that way. It's like being a sailor, and I think we talked about this before. When you work underground, it's a home to you. The mine is a home, and you can't treat underground miners the same way you treat people working at a factory, because it just doesn't work.

So anyway, at Newmont, when I went to work, and I think I mentioned this before to you, when I went to work, I was interviewed at Newmont, I asked Plato Malozemoff what his plans were for the future management of the company. He said, "I haven't thought that far ahead, but I have a good president, Jack Thompson, and there are several good operating people in the company."

I said, "I just wanted to let you know, if you have plans to run this company with anyone but a mining man, I'm not interesting in coming to work for you."

"Oh," he said, "I have no such plans at all." But by that time, I had become convinced that it would just be a mess to have some other type of person run it, and I still feel that way. I may be hipped on the subject, but I don't think you can--

Swent: Well, facts seem to have borne you out.

Humphrey: [laughter] So Plato understood that. Of course, he had a mining background, and when he left, he brought Gordon Parker on board, who had been running the South African operations. Then they had a philosophical disagreement, he and Plato, and Gordon sold most of the company off. They made a profit, they treated their stockholders okay, but it's a different company. But it has not been unsuccessful; it's been a successful company. Now Gordon's leaving the end of this year, if he isn't already gone, and they're under a new management philosophy, but I presume--and it's a man that came from the sulfur business, from Freeport, so he's not really a miner.

Swent: Still natural resources, at any rate.

Humphrey: Yes, but it's different. It's different, and it was difficult for Dave Fagin, because he'd come up through the petroleum part of it, even though he was an engineer and understood mining, and then he'd worked for a mining company before, Rosario Resources.

He still had a hard time because some of his background didn't make it easy for him.

## David Fagin as President of Homestake

Swent: When he was with Homestake, you mean?

Humphrey: Yes. I'm jumping around here.

Swent: Well, that's all right. Let's just get this straight: there was this interlude when Fagin was president of Homestake, wasn't there?

Humphrey: Oh, yes. He came as president.

Swent: Soon after you came?

Humphrey: No, I had been here--gosh, I don't know, five or six years, anyway, and then by the time I was sixty or sixty-one, Harry became very concerned about succession, because he thought he would want to retire maybe before he was sixty-five, or at least by then. Here I was sixty or sixty-one, and he was younger than I by three years, I guess. He could see that I was coming up to my time of retirement, and there was no one to replace me.

He got a line on Dave Fagin, who had been working with the Rosario Resources, which was taken over by Amax, and then Amax and Dave's philosophy didn't match, so he was on his own and living in Denver doing some consulting work, and I think some oil well leasing work. So Harry thought, Gee, this might be a--he's a young man--he was a lot younger than Harry. This would be a good guy to have coming along, so that when I go, because Bill's going before I do, and I'm going to go, and--

Swent: There was a Rosario man on the board. Was that how the contact came?

Humphrey: Yes. That's how the contact came. Bob Reininger was the Rosario guy. He'd been president or chief executive of Rosario. So Dave came as president, and I stayed executive vice president. When he left, in 1991, I took over the presidency for a while, and but I was just a--it still didn't solve the problem. But then we were in this merger with Corona.

Swent: Did Fagin leave because of philosophical differences?

Humphrey: No. This merger was coming down the pike, and with Peter Steen as the chief executive of the Corona Company, and Harry as chief executive of Homestake, and Homestake wasn't about to merge unless Homestake would be the surviving company. Peter Steen and Corona weren't about to merge unless he could become part of the top management. So Peter was coming on that trade of Corona, and there wasn't room for all three of those fellows at the top. You couldn't have two presidents. So Peter came as president with the merger, and so Dave left before that happened, because he could see there was no place for him.

And Bill Humphrey, I just was filling the slot between Fagin and Steen, really.

Swent: And this was obvious to you?

Humphrey: Oh, yes. I knew that. I would have liked to have been president for longer instead of Fagin, but I understood why Harry was doing it, because I was older than Harry. I am still older than Harry. [laughter] It's not fair to the company not to have a succession and have younger men coming along. So if I had stepped in, that would have just blocked all the young men that had aspirations, or anyone else that the company thought would make a good chief executive eventually. So I understood all that. I was disappointed but--

Swent: But when you first came with Homestake, you came as--

Humphrey: Executive vice president in charge of operations.

Swent: You came in as executive vice president.

Humphrey: Yes, in charge of all operations. So I was the chief operating officer, but Harry left that hole open, because he knew there was a--and the reason I think that he was interested in me to start with is that they needed to reorganize the company along operating lines with a flatter pyramid. They had several divisions in the company, if you remember, at that time. The uranium division, and a base metal division, and a gold division, and exploration, of course.

Swent: Fiefdoms.

Humphrey: Yes, fiefdoms, and they were all duplicating work. They all had their own staffs, and it was getting to be top-heavy. So Harry thought, Gee, we better flatten that pyramid out and simplify things. That's the reason I think he asked me to come. We did flatten it out. So I had all the mine--

Swent: They had had this same thing before, and then they tried this other thing, and then went back.

Humphrey: Before, yes. And I don't know why they tried that decentralization. I think it would have worked for a bigger company, but Homestake wasn't that big, so there was a lot of duplication.

Swent: I think they had hired a fancy firm to come in and--

Humphrey: I think so, yes.

Swent: Tell them, and that's what they suggested, and it didn't work.

Humphrey: Yes. And the closer you can have your top people to the bottom people, the better off you are. Of course, you can't have too many people reporting to a superior position, because one man just can't handle it all.

Swent: Although at Newmont, they did.

Humphrey: [laughter] That's right. That's right.

Swent: So you had seen that.

Humphrey: Yes. I believe that you can have seven, maybe nine maximum, people reporting to one person. But if you get any more than that, you think you're handling it, but you can't. But anyway, with Homestake, I was able to have all of the mine managers report directly to me, so that cut that pyramid down. And then I reported to Harry.

Swent: And at that time, the operations were scattered in three continents?

Humphrey: Yes. Yes, it was Australia, here, Canada; I don't think we had anything else at that time. But it was spread out several states. Peru. That didn't take much time, because there wasn't much going on there, and there wasn't much hope of anything going on after they had changed their mining law. So I made several trips down, but--. And of course, I had made several trips down for Newmont and their Southern Peru Copper to the same area, so I was pretty well versed on what the Peruvian situation was.

But at any rate, it was convenient to have all these managers report to me at that time. It became a very efficient organization, and I tried to give as much responsibility to the

managers as they could handle. And it worked very well. But I'm still an advocate of decentralization in that aspect.

## X THE MCLAUGHLIN MINE

### With $600 Gold, a Real Winner

Humphrey: So then when all this came along, then McLaughlin was a prospect that had been turned into a viable potential ore body.

Swent: Had they done this pre-feasibility study that you spoke of?

Humphrey: No, they hadn't done that.

Swent: Not yet.

Humphrey: But when I came, the geologists under Jim Anderson had done a very good job of delineating the orebody.

Swent: At that time, the price of gold was high.

Humphrey: The price of gold was high, and of course, when the prices are high, just human nature, a man always thinks they're going to stay high and get better. It's the same thing with the copper business. So there was a big push--

Swent: I think gold was about $600 at that time, wasn't it?

Humphrey: Yes. Well, it was somewhere in that neighborhood at that time. It was 1982. I think gold was maybe not that high, but--

Swent: It had been.

Humphrey: Yes. It had been up to $800, and was coming down, and we figured it would go up again. I remember we were so anxious to get this mine established and operating, because we thought the gold price was going to be between $500 and $600 an ounce. From the size of the ore body and the grade, it looked like it could be a real winner.

## Refractory Ore a Problem

Humphrey: The one problem that had already developed before I came was that the ore was refractory. The molecular structure was such that it wasn't a free-milling gold. You couldn't separate the gold so easily. It had to be oxidized.

Swent: Refractory means it had sulfur in it?

Humphrey: Refractory means that by crushing it, you couldn't liberate the gold to recover by flotation or some other method, or carbon absorption. It was locked up molecularly with the other minerals, so you just couldn't get the gold out.

Swent: This was in addition to its being very fine physically, it was also chemically complicated?

Humphrey: Yes. So you did have this binding of the molecules that the only way to bust that apart was either to oxidize it with a roaster, with heat, or some other way. And the some other way was a process which had never been tested with a gold ore, with an ore. Maybe with a concentrate, but--. And the geologists got onto this, that there was another way to do it besides roasting, besides having just a big roaster with sulfur being given off and--

Swent: Why couldn't you roast it?

Humphrey: Because, of course, by then the ecological restrictions on putting sulfur in the atmosphere were severe. You could have collected the sulfur smoke, the $SO_3$ going off, the $SO_2$, which makes $SO_3$, which eventually makes sulfuric acid. You could have captured all that, but it was so darned expensive to put all of these collecting devices on the tail end of a big roaster that it looked like it would be almost uneconomical. Because the whole ore stream would have had to have been put through that.

Swent: And this had all been gone through before you came with Homestake?

Humphrey: No. They hadn't selected the final process. They knew there was a problem, and they knew--

Swent: They knew that the roasting was impractical?

Humphrey: Yes. Well, they knew the roasting was expensive, and no one had ever tried autoclaving. The geologists had determined that there had been an autoclaving process done on concentrates.

Swent: The geologists were the ones?

Humphrey: Yes. So when I came, the geologists still had control of this project. We had to reorganize so that we could get a more scientific approach to developing the ore body.

## Transferring from Exploration to Operation

Swent: It seems to me, and I'm just tossing this out: it must be a very tricky period when you go from your geologists to your operations people.

Humphrey: [laughter] It gets very tricky and very acrimonious sometimes.

Swent: Please talk more about this.

Humphrey: I've seen it all throughout my career. The geologists have a proprietary interest in a deposit.

Swent: It's their baby.

Humphrey: It's their baby, and they don't want to let it go, because they're sure when the engineers get hold of it, they're going to foul it up so badly that it won't make a profitable mine. And there's just that feeling, that just leave it to me and I'll set it all up.

Swent: The geologist has had to go before the board, I presume, and say--

Humphrey: "This is an ore body, and we think it's an ore body because it can be mined profitably. Well, we're geologists, we're not miners, but we know enough about mining so that we know that you can mine for twelve dollars a ton, and you can mill it for two and a half, and you can do this and that. So sure, it's an ore body. And when we have it a little more well defined and the process a little more developed, we'll turn it over to the engineers so they can operate it."

Swent: And this had happened before you came to Homestake?

Humphrey: They were in that process. They were in the process of doing some test work on the core samples to see if some other process like autoclaving would work as well as roasting. They had several metallurgists working on it, reporting to Jim Anderson,

the chief geologist. Which is okay, and you have to do that to start with.

Swent: Were they using outside people?

Humphrey: They were using some outside people, and of course, they were building their staff that had been established in the Denver office to help. I don't know if Langan was involved in that or not to start with. We by then had had so many problems with the ecology that Langan was spending a lot of his time trying to get the company straightened around on what our philosophy and work should be along the ecological lines.[1]

Swent: I don't want to divert too much, but at some point, I do want to--were you aware of what Homestake had gone through at Pitch?

Humphrey: No, not when I came with the company, I wasn't aware of that at all.

Swent: But you became--

Humphrey: I became well aware of that, sure. [laughter]

Swent: I do want to bring that in, because I think it's relevant to what happened at McLaughlin.

Humphrey: Yes. And of course, John Ransone worked on that, as well as George Simchuk. Well, let's talk a little more about the McLaughlin.

Swent: Let's do the transition of McLaughlin, and don't hesitate to talk about personalities, because I think that's pertinent too.

Humphrey: I could see when I came, because I had experienced this in other companies, that the geologists cling to a deposit.

Swent: Now, you came in, you came out here, you already knew Harry, Harry took you around the office and introduced you to the other people, and you had to feel your own way to find out who was who?

Humphrey: Yes. Then, of course, I was deluged with information. People would bring books as big as this one in front of you, and piles of them, and say, "You better read this, because this will help you understand what we're trying to do." I just--I couldn't possibly absorb all that. I put them all aside and just tried

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[1]Langan Swent, oral history in process in 1996, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley.

to judge the people to see if what they were telling me I thought was what we ought to be doing. And of course, it was a difficult time and a very busy time.

But the big thing, Al Winters was running the main mine--

Swent: That's the Homestake mine up in Lead.

Humphrey: And it didn't take me more than half an hour to realize that he was--I didn't have to--he didn't need my help, he was doing a good job. He really had the right idea about how that mine should be modified to become more profitable.

And the uranium and the Creede mine were pretty well. That (the uranium) was John Parker. And he looked like he had things in hand too. He was a little possessive about his information. He didn't like to tell you what he was doing, but he was doing a pretty good job. I had to squeeze him a little bit to get the information out.

But I could see that most of those things were running pretty well, so I had to concentrate on McLaughlin, because we had to get that coming.

Swent: And it was being run out of the Denver office?

Humphrey: It was being run by the geologists, and of course, Jim Anderson was the chief geologist and my equal on a par.[1] He was an executive vice president by then too. So he was running it, and calling the shots, which was okay to delineate an ore body, but I could see that we weren't going to get anywhere--they had an idea that they wanted to take it almost to a final feasibility and then an engineering study, and then turn it over to the other people to build it and run it. I didn't think that would work. So we had some very tough discussions about that. Harry tried to stay out of it, to try and let us settle it ourselves.

## Hiring Jack Thompson as Operator

Humphrey: But one thing that we did all agree on, that we had to get some operator in early that was to be the manager when the thing did get going, and it couldn't be somebody from the geological

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[1]James Anderson, interview in process in 1996, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley.

group. It had to be a man that was an operator that had had experience.

That's when Jack Thompson came to the fore.[1] I had known Jack for many years. He worked for me at Newmont. He had worked in the copper mine at San Manuel underground, he had worked in the Granduc mine in British Columbia, and the [Dawn] uranium mine in Washington state. I had in fact brought him from British Columbia down to be manager at the uranium mine. So I enticed him to come, and I knew he was a top-notch youngster. He was a good, serious, capable, very people-oriented kind of a guy.

So he came to head up the skeleton staff at McLaughlin. He was then to choose, with my approval, the skeleton staff he wanted to have there as the top supervisors when the time came to do something. We didn't yet know what we were going to do. We knew we had an open-pit mine, we knew we had a difficult process, we had some very serious ecological hurdles to jump, so we had to fill all these key spots with people that could do that.

That's about the time that, after Jack was on board, we tried to separate the functions of the geologists with the functions of the engineering group. Then it became apparent that we needed to have an engineer, construction engineer who had had experience in the construction industry, somewhere in the organization to watch the actual plant construction after we decided what we wanted to do. That's when we got hold of Rex Guinivere.[2]

By then, Langan was so busy with all of the ecology, and he had become a leading expert in the United States on a lot of these problems, and we were glad to have him represent us and the industry on these things. So we had to get another guy, and we got Rex Guinivere, who had had a lot of experience with Kaiser and other people.

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[1]Jack Thompson, interview in process in 1996, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley.

[2]Rex Guinivere, interview in process in 1996, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley.

Rex Guinivere, Construction Engineer

Humphrey: Then we tried to break up and say who was going to be responsible for what. Jim Anderson, the geologist, said, "That's great. Let's bring those people, let's bring Thompson and let's bring Guinivere, and they could report to me until we finish with our delineation."

I said, "Okay, that's fine, but let's determine when that point will be." And of course, we really never did get an agreement. But Jack came, and he was to be in charge of the staff, of public relations, the mining, and the pre-mining stripping, and anything that didn't pertain to the actual design and construction of a plant. So we had that much agreed on, and they were to report--

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Humphrey: They reported to Jim Anderson, with a dotted line to me, which I thought was just backwards. But in the interest of getting something going, we did that.

At the same time, we had to determine which process or what the process would be that would be successful.

Swent: I just--it is staggering to think how--you couldn't anticipate costs really, could you?

Humphrey: No, you couldn't.

Swent: You had so many other things going on.

Humphrey: Yes. We could anticipate mining costs. We knew what it would cost to strip the mine, and we knew how much pre-mine stripping we had to do, so we knew what kind of dollars we were talking about. It was something like $22 million, if I remember. We knew we had to get water, and we knew we had to get power. Now, did we build our own power plant, or did we try to bring power in? And for the water, what in the world could we do? Would we try to drill wells, or should we build a dam? So we eventually had to build a dam.

On any one of these things, we had to go through myriads of hearings to get approval for them from all three counties and the state and then the federal agencies. So that's what started to pile up, all of these hearings.

## Ray Krauss, a Crackerjack Environmental Guy

Humphrey: We needed an environmental guy, and that's when Ray Krauss came to work for us.[1] He and his wife had a little farm over in the adjoining valley. He was an organic farmer by trade, I think.

Swent: Well, she's an organic farmer.

Humphrey: Yes. I think he was something like that.

Swent: Planner.

Humphrey: Yes. He was a planner, but he did have some experience in the agricultural side of it, and I don't know what it was. But anyway--

Swent: He had been with the Sonoma County Planning Board, I think.

Humphrey: Yes. Turned out that he was an excellent choice. I remember interviewing him the first day, and he was very ill at ease and nervous about it. I guess he really wanted the job, and so he didn't make a very good first impression, but he turned out to be just a crackerjack. I don't know what we would have done without him.

Jack interviewed him and thought that he's the guy we need, because he's had experience in California. It turned out that he and Jack got along wonderfully well for the whole period that they worked together, and it was a great combination. Ray knew all of the ropes about how to handle these different committees, these different state and county committees, and municipal committees, and what procedures to follow so that they felt comfortable about it. Jack was just great as the front man explaining what we were trying to do and including-- they both had a philosophy that they had to include the local people in the decision-making process, or at least let them think that they were part of the process, and they were, although they couldn't make all the decisions. So that started out very well.

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[1]Ray Krauss, interview in process in 1996, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley.

## Investigating the Autoclave Method of Ore Treatment

Humphrey: In the meantime, the geologists had gone ahead with work on a process and done some work in Canada with a firm that did some test work.

Swent: Sherritt Gordon?

Humphrey: No, that was before Sherritt Gordon. It was a firm over near Toronto. I've forgotten the name of the darn thing. And it looked as if this autoclaving would be a way to do it, that it could be more economical than roasting. There were a couple of things; it had never been done before on the full ore load. This was like putting rock through a roaster instead of putting the concentrates. Usually you float the stuff off and then autoclave it. Well, this was to put the whole ore stream through.

I remember Plato heard about it, heard that we were doing this. Plato had done work with Sherritt Gordon previously, and I was on the Sherritt board for their nickel recovery up in Manitoba. So he knew a lot about autoclaving, and he got word back to me. He said, "Don't do it, it will never work. Don't you dare do that. It will never work." And of course, he was--you had to take--you had to listen to him.

At Newmont, there was--who had retired since about the same time I left--a fellow named Oscar Tangel, who was the vice president in charge of research, I guess. Oscar was a metallurgist by profession, and he had run the Battelle Memorial Institute for many years, which was a research institute, so he was a very capable and good thinking scientist. He wasn't limited by just what science told him he could do; he had a lot of imagination. Little German fellow who I'd gotten to know at Newmont and thought a lot of. He was just a great guy with a good sense of humor.

So I asked Oscar to come out and take a look at what we were trying to do, to see what he thought of the process, and review some of the information we'd already had that Jim Anderson and his people had gotten together. Then I asked Doug Fuerstenau [Professor Douglas Fuerstenau, holder of Plato Malozemoff Chair in Mineral Engineering, University of California, Berkeley, and a director of Homestake Mining Company] to do the same thing, because Doug had had experience, although not as much as Oscar. So they came out, and I remember we had several meetings. Oscar came out twice.

After Oscar reviewed it, and after, oh, maybe a month or two, he said, "Bill, it will work. It might cost you, but it's going to work, and you have to have an oxygen plant, of course, which is very expensive. But the process will work." So I knew then that there was no question that it would work.

The question then was cost, and how do we contain the costs so that it's an economical thing? So then it was time to get a company in like Davy and to get our engineer on board, our construction engineer, to really examine cost, not only the capital cost but operating costs. What do we have to do to take this kind of tonnage and put it, a thousand tons a day or whatever. We had to determine how much we wanted to treat, and how big a plant is it, and where do we get all the material? So that became a big, big effort.

And it was about then that the geologists realized that that really wasn't their cup of tea, and I think Harry pushed it a little bit, and we finally broke loose, so that I was responsible for that project and not Jim Anderson.

Swent: When did that finally come about?

Humphrey: Gosh, it was probably about eighteen months before we got the thing going, eighteen months or two years, would make it--

Swent: Eighty-three?

Humphrey: Yes, '83, something like that. It was late in the game, and I thought so. But I'll tell you, the people that we brought in, like Jack Thompson and Ray Krauss, and Rex, were very understanding about the problem, so they were doing what they should do, and I was getting the intelligence that I needed to get without upsetting the apple cart, although we did have some pretty good go-arounds, Jim and I, about who was responsible for what and what should be done.

But it worked its way out finally, and we did decide to go ahead with the autoclave process, but not until we were able to make a pilot plant run, at least a miniature pilot plant run, and then that's when we got--we had a contract with Sherritt to use their facilities up in Alberta, Fort Saskatchewan in Alberta, where they had their plant. This is when John Turney came on board.[1]

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[1]John Turney, interview in process in 1996, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley.

Swent: So who finally made the decision to go with the autoclave?

Humphrey: I guess that we recommended that to Harry, and--

Swent: "We"?

Humphrey: Rex Guinivere, Bill Humphrey, Jack Thompson, that this was the process we should use. Then it became a matter of seeing if we could fine-tune it so that it was economical. So we went all out to do that, and John Turney went up to--lived up in--

## John Turney, Metallurgist

Swent: Was John already hired?

Humphrey: John was already a metallurgist in Denver at the time. There were three of them, I think. John Ransone was there, and so they--and they had been reporting to Jim Anderson. So they weren't ignorant about what was going on or what the potential was.

So at that time, we set this--it was really a mini-plant. We weren't treating a large tonnage up there. They set it up in their autoclave plant. We made a contract with them, and of course, they liked the publicity, and I had known those people before, because I spent some time at their mines and at the plant, and was on the board of Sherritt.

Swent: But they'd worked mostly with nickel.

Humphrey: They had, yes. But they knew how to operate autoclaves and they knew what needed to be done and how you controlled them and what the dangers were and what the problem areas were, so that was helpful. We found that the design of the Sherritt autoclave--well, we ran this mini-plant, and it seemed to work like a charm. Everything just fell out. The tailings were good and they drained well, and you didn't have any base metal problems in the tailings that would have been a problem ecologically, so that it all looked like a go.

Swent: All very clean?

Humphrey: Yes, very clean. And Turney did a tremendous job. He's a real scientist. And yet he's very good with people. Sometimes he wants to tie things up in a little bow and get it all neat and done like most scientists are, but then you can't always do that

with--. But he did a fantastic job. He's probably a leading authority in the world, I think, on autoclaving, this type of refactory ore body.

## A World Trip to Make the Pre-feasibility Study

Humphrey: So anyway, that was done. So the next thing that we had to do was the design or pre-feasibility study, and get it to the board so they could approve what we thought the cost would be, the capital costs. We needed to know approximately what the capital costs would be and the operating costs, so that they could see that this could be a viable project. So we made what we called a pre-feasibility study, which there was a lot of factoring work and not firm information, but factored from other known operations.

Rex Guinivere was able to make contact with some of the people in South Africa that had used an autoclaving process on a concentrate, so they knew about what the costs would be and what would be entailed technically with the machines themselves, what you had to do. Then he and John Ransone and I think John Turney took a world trip, and they visited autoclaves all over the world, in South Africa, Japan--

Swent: I think they went to Germany.

Humphrey: Germany, where they made these things, yes. And determined that yes, there was a way to do this, they could make them large enough to handle our ore flow, and came back and put together some kind of what we called a pre-feasibility study, which gave the approximate cost, which turned out to be wrong by about 17 percent, but at any rate, we had something to base this on. It was based on the fact that gold would be between $550 and $600 when the project came in.

The total capital cost that we estimated I believe was something like $196 million to start with, almost $200 million. The operating costs we estimated were to be around $400 an ounce, so that was a break-even. But we thought, Gee, that's still a good margin, if the price is $550 or $600 and it costs us $400, we're going to really make some money. So we did some pro formas, and sure enough, it looked like a real winner. We'd make several hundred million dollars over the life of the mine, by running it at a thousand tons a day, and we had a life of--I think it was fifteen years, or something like that. So it looked good. And the grade was good, so it looked like a go.

So we took it to the board, and they approved. I can remember saying twice, "Now, you realize that gold has to be at $400 at least to get our money back." Of course, everybody nodded their heads, "Yeah, that's right." So we went ahead.

Then we went ahead with the real design of it, and--

Swent: Was there nobody on the board who demurred?

Humphrey: No. John Kiely said, "You've got to run a pilot plant," which we had done. There was no one that demurred except--no, there was no one on the board that demurred. We'd taken the board up there on a trip and showed them the location and the orebody. It just looked pretty good, particularly at $500 or $600 gold.

So then we really got into the detailed estimate, and getting quotes, and where do you buy the autoclaves, and how do you construct them, how do you get the power in, how do you get the oxygen, do you buy it and truck it in, or do you build a plant at the site? Where do you get the water, and how much do you need, and how about tailings disposal, and how can we get permits to do that? So then it all started.

By that time, Jack Thompson was in charge of the environmental issues, the public relations issues, the mining, the stripping, the road-building, and finally the dam-building, and Rex Guinivere then was in charge of the actual design work, making sure that we got the quotes, the scheduling, the actual construction, and working as a watchdog for us on the Davy-McKee outfit [later Davy International].

## Selecting Davy International as Constructors

Swent: When did you select Davy?

Humphrey: We selected, Rex and I--I don't think Jack but Rex and I flew all over the western United States, and actually, I flew to North Carolina. Everybody was after us, of course, to build the plant for us. So we made a lot of trips to look at projects that these various people had built.

Swent: Who were some of the competitors?

Humphrey: There was Bechtel, and there was Brown Root, Jacobs Engineering, Jurgen Construction, and I think Fluor, all of the big companies that came along and tried to entice us that they were the best.

So they'd fly us around in their private planes to look at their projects, which was interesting enough.

But we picked Davy because they had had experience in this type of plant, and the personnel they had seemed to be very much up on pressure vessels and things like this that we knew we needed. The key to the whole process was, of course, the autoclave section of the plant. We knew that most people knew about the cyanide leaching and the carbon-in-pulp and the grinding and crushing and pumping the slurries, and things like that were pretty much common to all the construction firms, but Davy seemed to have more experience on pressure vessels and what you could do with them.

We had determined that we needed to get the vessels built in Germany, and there was a particular type of brick that they put in the lining that you couldn't get in the United States.

Swent: I didn't realize that there were so many other pressure vessels already being used.

Humphrey: There were pressure vessels being used, but never had they been used for the full flow of ore. They had been used for concentrates, which was much smaller.

Swent: And they hadn't been used on gold before.

Humphrey: They had been used on platinum in South Africa, and that's where we got a lot of the technology. The big thing was that you could use autoclaves, but it's a batch process. You put stuff in the tank and cook it up, and then you take it out, because it's under pressure. What we wanted was something that you could do the same thing with a continuous process.

That was tough. Because how do you do that, and how do you let the pressure out at the end of this thing? It's like filling the bathtub and having the drain smaller than the water flow in. Eventually it will overflow. So you've got--and under pressure, you have to have it so that that flow-out just doesn't blow out the whole end of the vessel. So there was a come-down in both temperature and pressure at the end of that thing.

## Vital Technical Advice from South Africa

Humphrey: The South Africans had determined that you could do it by shooting it all through a little tiny orifice, maybe just about

an inch or so in diameter, through a ceramic liner, because this stuff coming out, this hot--it was almost like a copper matte, it's very abrasive and very corrosive, it would wear anything out. So you had to have either titanium or stainless. They had devised a let-down system, as they called it, to take the pressure and temperature out by putting it through little orifices at several stages. The trick was to get it so that the flow was just right so that the incoming flow maintained the pressure and yet didn't let it all go out the end.

And with those high temperatures and pressures, you just couldn't take any chances on blowing something up. Because if you stopped it up too much, you'd have too much pressure built up in that vessel.

So we did get a lot of basic information from the South Africans. I think the key to that whole thing was the let-down system: how do you get this pressure out of that vessel so you have a continuous process. We were able then to design on their basis, and you know, they got most of that information to us gratis, because at that time, we had all these restrictions on South Africa. They couldn't even bill us for some of the information we got. In fact, the fellow that came over was a consultant that had done work in South Africa. He came in through Canada and visited us here. They had to be very surreptitious about the help they gave us, so I don't think we ever paid them for their information. But it was vital to get the thing going.

So that helped us establish, and Davy had some very capable people, so that we could design the size, and with the help of the South Africans and the Germans about the lining of these vessels with lead and brick, how to do it. I remember the German engineer came over to talk to us at one of the meetings we had with Oscar Tangel and Doug Fuerstenau, and Davy, in Davy's offices. I think Jack was there at the time, and Rex. And the Germans explaining how we had to line it, and how we had to operate these things, because they were quite sensitive machines.

Somebody asked them, "How do you protect the outside? You have this steel shell and then you have a lead lining and then you have a brick lining, or a double brick lining. Does the heat get out to the outer shell, and could we wash it down with a hose?"

And the guy just went, "Ach!" [laughter] He said, "Verboten, verboten! You don't dare put water on that thing. It will crack it wide open." So we had some fun with that, but

they did design, to help us in the design, because they supplied the vessels. The vessels came, and we had to line them here. We brought German technicians actually to do the first lining of them.

Swent: And that caused some trouble with the labor unions.

Humphrey: Caused some trouble with the labor unions. Fortunately, we were able to run this whole project without unions, and it still runs in that manner.

Swent: Was that a factor in your selection of Davy also?

Humphrey: No, not really. Most of the construction companies had a labor and a nonlabor wing, so they could go either way. In fact, in some places, they had two gates: one labor gate entering the plant, and one nonlabor gate, or [non]union gate. But no, that wasn't the reason. We picked Davy because we thought they had the expertise to design and build the plant.

## Construction Cost Overruns

Humphrey: And in fact, they did pretty well. They had good people. Where we fell down with Davy was on the estimate of the cost. We started to overrun our cost during the construction, and they never really warned us. They thought they said we'd be back on line, so by the time we finished the project, it cost a lot more than what we thought it would cost.

Swent: Because of construction overruns?

Humphrey: Yes. And we didn't waste any money, but they hadn't anticipated a lot of the costs. And of course, a lot of it, they couldn't. For instance, the reservoir, the dam we built to catch the runoff so we'd have enough water to operate the plant was permitted under the Department of Dam Safety in the state of California which had so many restrictions that it was very difficult.

Swent: This was the Davis Creek--

Humphrey: Davis Creek Dam. We had drilled down, I remember, to test the sub-base where we were going to put the dam. Of course, you have to build a keyway when you build a dam, a concrete keyway, because it was going to be an earthen dam. So you have to key it in with a concrete wedge or slab, vertical slab, down into

the dirt so that when you put the earth around it, you have something that blocks the flow of any seepage at the bottom of the dam, because that's really where most dams fail, is at the toe.

Well, we drilled, we got down and cleaned this thing up and drilled holes down to make sure that what the permeability of this, where this keyway was going. We spent millions of dollars. We got the darned holes drilled down below the keyway, just to make sure of the permeability. And we got all done and said, "Okay, it looks fine," and the state said, "No, sir."

We said, "Why not? There hasn't been any--there's no permeability at all. These holes are spaced sixteen feet apart," or something, if I remember right.

"Oh," they said, "that doesn't matter. We can't be sure what's happening in between the holes. You've got to drill them eight feet apart."

We said, "What do you mean? How do you know that there's nothing between the eight-foot holes?"

"Oh," they said, "we don't. We may have to look at it again." They were just intransigent. It was so frustrating, because this doggone dam overrun was something like $10 million, just because of details that they required of us, which we thought were excessive, and I think they were.

## A Quarter of a Million Dollars to Pump Rain Water

Humphrey: So things like that Davy couldn't have anticipated, and neither could we. So there were many things like that, and even the little dam we had to build to collect the runoff from the stripping up near the pit cost something like $6 million. It was just a dam to retain the water or the runoff and muddy water that would come from rains falling on this stripping operation. It had to be built to specifications for this Department of Dam Safety. I remember the spillway was something like twelve feet deep and twelve feet wide through solid rock. Here again, they wouldn't let us build it without checking the keyway. So this was to catch the water, because they didn't want muddy water running into the creek drainage.

And I think I told you this before, it was just terrible. We built the dam finally with this $6 million, and the first big

rainstorm we had, all the water ran off and filled this dam up. The next day, the state came out and said, "What are you doing with all that water in the dam?"

We said, "Well, we had to do it."

They said, "Well, it's not your water. You've got to pump it out."

Swent: No, I hadn't heard this.

Humphrey: Yes. "You have no right to that water. That water belongs downstream, so you pump that water out." And it cost us a quarter of a million--we had to get some pumps to pump the water out of this dam back down into the creek where it would have gone anyway. Isn't that terrible?

Swent: Oh!

Humphrey: So those kind of costs you couldn't anticipate, so you couldn't blame Davy for that.

Swent: No.

Humphrey: But we got the job done.

Swent: You said there was a 17 percent error in the--

Humphrey: Yes.

Swent: Was this part of that 17 percent?

Humphrey: Yes. And a lot of the cost for hearings and things like that that we hadn't anticipated. We spent something like $3 million on reports and hearings and the permit process. I'm just remembering these numbers, and they might not be exact, but it was in that neighborhood, anyway.

Swent: Right.

Humphrey: And then of course, the power was a problem, how did we get power in. And even the road in, we had to build to state specifications, which the permitting was very difficult on that, and that was much more costly than we thought it would ever be. It's a paved road with the right thickness of asphalt on it to maintain the traffic and so forth. The roads they have around it are just little dinky roads that they've lived with all these years. But anyway, we did it.

We had to bring in some of the posts, some of the high-tension posts for the power line with helicopters, because we couldn't get access roads in to put these power poles in.

## Unexpected Variety in the Ore; Compensating Errors ##

Swent: So you did get it built anyway. Was the ore body, did that turn out to be about what you anticipated?

Humphrey: About, yes. I think better in the long run. But to start with, there were several different types of ore. A silicious phase, and there was a phase that was in the softer rock. We had thought that to feed the plant when we got going, we would mix them all and have an average type ore going through this whole process.

Well, it turned out that there was almost an infinite number of different types of ore, and that mixing wasn't so easy. So we tried to sort it, and at about that same time, the grade on one of the benches wasn't what we expected, where we happened to be mining. The grade had been estimated by a high-grade hole that had wandered, and we hadn't realized it. Everybody got excited and said, "Oh, this ore body isn't what we thought. The grade's not there. So we'd better write it all off, write this whole investment off." There were some people in the company that wanted to do that.

Swent: Who was that?

Humphrey: That was the chief financial guy, Dick Stumbo. I said, "Don't be foolish. Most ore bodies, when you open them up, aren't exactly what you have estimated them to be. There usually are compensating errors, that it's going to come around, and it will be okay."

So after much to-do and head-shaking, we didn't write it off. And sure enough, we got into some better ore later on, in the year or in the following year. We found a lot of ore that we hadn't expected. That's one of the nice things about open pits: you open the whole country up, and you usually get more than you had thought. It might be lower grade, but you get more total metal out of it.

So we got over that hurdle.

We then found out that we could sort the ore a little better, so that we had ore that really required autoclaving, and there was some ore that could be treated without autoclaving. So we decided we would build then another section of the plant where we could directly treat the ore, either by flotation or direct leaching. That worked pretty well, and we're still utilizing that.

## Making Oxygen is Very Expensive

Swent: The autoclaving turned out to be very expensive.

Humphrey: Expensive because the cost of the oxygen, we did build an oxygen plant, and we had very strict training regulations about running that plant that we had to abide by. But the big thing is that it takes a lot of power to make oxygen. You just have to bust the air down into its components, and it's hard to do. It's a cracking process, something like the oil industry process. So it's very expensive, and I forget how many megawatts of power that took, but it was the largest oxygen plant on the West Coast. At least, it was at that time. It took something like four or five megawatts of power just for the oxygen alone.

So our total cost was something around $27 a ton for processing, where normally you would be in the range of maybe $10 for a regular carbon-in-pulp plant or a leaching plant, gold leaching operation. As it was that much more costly, it put our costs per ounce up.

But it worked, and it worked very well, and we were able to contain the tailings like we thought we would. We had very few problems.

## Problems with Lime to Neutralize Acid

Humphrey: We did have a lot of wear on those let-down systems in the autoclaves, we had a lot of clogging up of pipelines in the plant, because the first part of the process was an acid process with the autoclaves. Then we had to neutralize everything with lime so that we could use cyanide, because you can't put cyanide in an acid environment. You get cyanide gas, which is extremely dangerous. So that was costly. We had to use a lot of lime to

neutralize all of that stuff, and when you did that, you clogged the pipes up as well as neutralize the solution.

So we had to get a system where we could clean the pipes out or replace them, which they finally did. A little modification to the plant, putting plastic pipes in.

But the lime was another problem: where do we get that much lime, and it's very costly. You have to bring it from great distances. We looked at building a lime plant ourselves up near Auburn; we looked at a deposit up there, and looked at getting into the lime business with other people. Finally, we were able to get lime from--I think it's coming from Arizona now, northern Arizona. And of course, the freight is as costly as the lime itself, when you truck it that far. We were using tons of it a day. Not like the lime consumption in normal operations. We had to neutralize all that acid.

I guess we didn't anticipate the operating costs properly on what the lime would cost us laid out in the McLaughlin mine. And there aren't any lime deposits close. That one in Auburn was the closest. We actually looked at the sugar mill in Woodland, because they use it in the sugar beet factory, they use lime and have some left over from their process that we could have used, and that didn't work out. So there was another factor that put our costs up.

## XI MANAGING A MODEL MINE

### None of the Investment was Wasted

Humphrey: But our costs did come out right around the $330 mark, so we weren't that bad off. We were far off on our capital costs, because a lot of these other things had come along. But none of the money was wasted. There were no foolish mistakes made about waste of capital money. But the job just cost more than--and most jobs do, you find out as you go along.

Swent: And gold hasn't been at $400.

Humphrey: That's right. [laughter] But now, we still haven't paid our investment back, I don't think, but we're getting pretty darn close. I forget, the last report was, we still were short $30 million or something. The mine has been running like a charm, and with this other system in where we can treat nonrefractory ore, and then being able to treat lower-grade ore, and that part of the process, we really have made a lot more ounces than we thought we would ever make. So we'll probably end up making over 3 million ounces, I would guess, over the life of the mine, and probably get our money back plus some, but it's no big bonanza like we thought it was going to be.

But it's been a good source of gold for us, and the cash flow has been great out of there. We've had a good cash flow. So all in all, it's been quite an experience. The management at the organization proved to be first class, and the mine proved to be a model mine. Environmentally, it's a very sound mine, and a showplace. We started out with just the skeleton group that Jack Thompson was able to put together, mostly of young people. Some of the laborers had never done anything like that before, and we had a regular training program--

Swent: For the mill, you mean.

Humphrey: For the mill, yes.

Swent: The mining was--

Humphrey: The mining was pretty straightforward, yes. And we had enough expertise in the company to go ahead and do that.

## The Challenge to Build the Organization

Swent: I found a quote from you at one point where you had said that there were two particular problems that you faced. I'm not sure whether you were speaking personally; I think you meant generally that the corporation, the company, was facing two problems. One was to decide on this process to treat the ore, and the other one was to build the organization. And that you had to get a number of people from outside for the organization, and also then you brought them in from other Homestake operations.

Humphrey: Yes, that's right. I hadn't seen anyone in Homestake that I thought could really handle the management of the McLaughlin because of the complicated process. The mining was not really a problem, but the process. Most of the people that we had in Lead in South Dakota were expert underground miners, and the big problem in Lead is not the process, it's the mine. So we had developed a terrific group of good underground miners in Lead, but coming down to run McLaughlin, all their expertise couldn't be used.

## Jack Thompson's Political Skills

Humphrey: So we had to get somebody that knew how to run a complicated plant. I knew that this young fellow, Jack Thompson, had come down from a copper mill in British Columbia and was able to run this quite complicated uranium mill and plant that we had in Washington. So I knew he understood processes and was able to handle the technical aspects of a plant that--one step was interrelated to the other in a very precise and almost delicate way. So I had confidence that Jack could do that. That's why he came.

And then of course, by then, the environmental thing had grown and the permitting thing had grown to such proportions that we needed someone that was very politic about dealing with the public and the government agencies, and I knew Jack could do that, because he had done it on the uranium plant--

Swent: That had been an issue at Dawn, also?

Humphrey: Yes, an issue at Dawn, because we worked with a tribe, the Spokane Indians, plus all the other regulatory agencies. The Indian tribe was a real problem with us up there and took constant attention, because they really didn't understand. All they did was want. They thought they had the right. I asked one of the tribal leaders once why they were being so difficult to deal with, that we'd make agreements and then they would apparently back down.

I think I told you this: he said, "Oh, we're just kicking back."

I said, "What do you mean, kicking back?"

He said, "We're just getting back at the white man for all the things they've done to us for the last couple of hundred years." [laughter] And they really believed that. So they would go along and agree to stuff, and then they'd sabotage it, just to kick you back. I hadn't realized that the feeling was so deep, and these doggone Indians were no more Indian than you and I are. I don't know, maybe you are, maybe I am, but they sure didn't look it. And the chief's name was McCoy. [laughter]

Swent: But they gave you a rough time.

Humphrey: They sure did. I think that they were decent people, but they just had this leverage, and they were using it. The government just gave them these rights, the so-called rights that they had, so they utilized them to get--they thought they were getting something for nothing. They didn't care if they sabotaged something. That was your problem. You'd have to come up with some--.

So Jack was able to handle all of this nonsense and do it in a way that he gained their respect, and we were able to keep operating. So it was an interesting time, and Jack came down then and had the same approach to the people in the three counties that we had to deal with, and the local towns, and the state.

Dealing with Community Opposition to the Mine

Swent: You felt they were kicking back also?

Humphrey: I don't know what they were trying to do, and I don't know why they--. The people from the Capay Valley were the most difficult, and they went to every hearing we had and tried to delay things or--. I remember one guy getting up, and I think I told you this before too. He said, "Mr. Humphrey--" I didn't go to all the hearings. I just went to some of them that Jack thought were vital. He was from the Capay Valley, and I think he might have been the heir to the Spreckels fortune or some darn thing, but just one of these gentleman farmers.

He said, "Mr. Humphrey, I'll make a deal with you. I'll build a bronze statue of you and put it up at that site if you just move your mine somewhere else." [laughter] And I don't know if he was serious or not, but it was just a joke. But they were unreasonable people. They would go on talking for hours at these county hearings that we'd have, just go on and on and on, go for hours, with just nonsense about how the dust would bother their crops, and how the blast would damage the foundations in their homes seven miles away, and how we were contaminating the atmosphere, and they were going to get poisoned by the use of cyanide seven miles away, it could come over in this big cloud. Oh, they'd just go on and on and on.

Then the Operating Engineers Union had a representative at most of the hearings too, saying that this project was detrimental to the state and to the people living there, and to the workmen there, and they thought it was a terrible thing to put this project in. Turned out that what they wanted us to do was to agree to take them on as the union. The fellow finally admitted that to me privately, that that's the whole thing they were trying to do. They weren't trying to sabotage the job; they wanted to be the union in on it.

But it made it very difficult, and you had to really control yourself to withstand all of these darned meetings that we had. And Jack was good at that, and so was Ray Krauss. Ray has a little shorter fuse than Jack has, and he would have to be contained sometimes. [laughter] He's not a redhead for nothing, you know.

So that was a big part of it.

Swent: I think it was during the construction phase that the union was mostly a problem, wasn't it?

Humphrey: Yes.

Swent: With Davy.

Humphrey: But of course, they wanted to get in on the operating. They wanted to be the operating union, too.

Swent: Later.

Humphrey: Yes. But they finally, I think we finally took a--I don't think we ever voted on it. The people didn't want it. The people wanted work in Lake County. There was a terrible unemployment problem--

Swent: Lake County was very depressed.

Humphrey: Yes. So they were glad to have that. We agreed that at least 80 percent of the force would be local people, so we had a big training job.

Swent: And then you got into trouble with that, though, didn't you, how to define local people, because people came in--

Humphrey: Yes, sure. People would come and settle there and say they were local. But I don't think we had much--we didn't have a big problem. We had to give about a quarter of a million dollars to the school system, because the schools were becoming overcrowded with all of these--during the construction period. We had several hundred people working there. I think it was something like 500.

Swent: I think it was higher at one point.

Humphrey: Yes.

Swent: So you were able to maintain this high percentage of local hires?

Humphrey: Yes, we were. We actually set up a training school for the local--an artisan school for welders and carpenters and--

Swent: That was through the community college, I think?

Humphrey: The community college, yes, and that worked very well. That was a good P.R. move for us. And we had open houses and invited all of the adjoining neighborhoods to come and see what we were doing, and have picnics for them.

Swent: Whose idea was that? Who was running that?

Humphrey: I think that was Jack Thompson's. He was really the--he knew he was going to be there, living there, and responsible, and he knew from dealing with the Indians that you had to include them in your planning process, and at least give them the feeling that they were part of the whole process. He was good at it. So he did that.

## The Henderson Molybdenum Mine in Colorado

Swent: Were you aware at all of what the Henderson mine had done?

Humphrey: You mean the Henderson mine in Colorado?

Swent: The molybdenum mine, yes.

Humphrey: No.

Swent: The reason I'm asking this is because I've run into references to it a number of times in reading, that the Henderson mine was the first mine in the country that really met environmental concerns.

Humphrey: Oh, I didn't know that.

Swent: It was before McLaughlin.

Humphrey: Oh, sure. I had visited them, the Climax mine in the 1950s to look at their mining method, because we were doing some similar stuff in Mexico.

Swent: But you didn't think of them as an environmental model.

Humphrey: No, not at all.

Swent: No.

Humphrey: They were not unionized, and they had one supervisor for every ten people at that mine when I visited. I thought that was--that was something very strange in those days. It worked pretty well. Of course, the environment was tough up there. It was high altitude and so they had to make a lot of incentives to keep the men working. They had pretty good contracts, and they had mess halls where they could eat without charge. So they were very creative thinkers. They got a little top-heavy later on, so that's when maybe they had a new management.

I remember meeting the mine superintendent, and this was a big underground mine, a block caving mine. His name was Bill Diester. I said, "Bill, this is such a big mine. How often do you get around the mine?"

"Oh," he said, "I haven't been underground for three weeks."

I thought, Uh-oh. [laughter] There's something wrong here. And sure enough, they had to change their whole management later on. It was too easy to sit out and read the reports, I guess. But that's one thing that I also learned: you've got to have managers that get down where the work is. This is one strong point for Al Winters: he goes underground two or three times a week, even though he's got a mine manager and various superintendents working for him. But I had not heard of the Amax or that Henderson mine having any ecological philosophy.

Swent: Of course, now McLaughlin is the model.

Humphrey: Yes.

## The Pitch Uranium Mine in Colorado

Swent: What about the Pitch experience? Did anyone tell you when you came to Homestake to watch out for that?

Humphrey: Yes, they sure did. By then, the deed had been done as far as agreeing to oversight by a local committee on what we were doing. It was almost inhibiting.

Swent: We should say what we're talking about.

Humphrey: Well, I think that George Simchuk particularly, and I don't know who else worked with him, because that was before I came, but there was a lot of concern about disturbing the land surface there with this open pit at Pitch, which was a--

Swent: It was near Gunnison, Colorado.

Humphrey: Yes, near Gunnison, Colorado, and it was a uranium property that Homestake had taken on during the uranium boom as a potential source of additional ore at a good economical cost. And so had to develop the mine as well as build a mill. And of course, when you have a mill and you have tailings, you've got to put

tailings somewhere, and this was in a very pretty part of the Rocky Mountains. So people were very concerned about that.

There had been a lot of environmental groups, and I don't know exactly whether it was the Sierra Club or which groups it were that were against any kind of disturbance on the surface of that part of the world. So George and whoever else was working with them agreed to an oversight group of local citizens as well as state officials on a regular, I think it was a monthly basis, to make sure that they would conform with the plan they had set out to do and to keep from contaminating the environment.

Well, it was almost inhibiting to try to manage something like that. So they started out and wanted to develop the mine first, and then build the plant. They had the mill site selected, and the tailings site. By the time I came on board, they had started the mining with a contractor; Homestake wasn't doing it. They were contracting the mining.

It was going pretty well. It was stripping and piling the waste up on the sides of the pit. But they got the thing opened up, and of course, the whole mountain started to move in on them. It was very incompetent rock. It was full of moisture. It just was like a greased slide coming down that hill. It was just awesome, as the children say nowadays, the way that thing was moving down. It moved several inches a day, so you could almost see it move. It was a big problem, because we couldn't build a mill if we weren't going to have a mine.

So we got all kinds of experts in, and I remember we had a fellow come from Belgium that had a special drill that would drill this soft rock horizontally in order to try to put weepholes in this whole hillside so we would weep the moisture off so it would stop moving. We did that, but when you get such a massive movement, and by massive, I mean it must have been a half a mile to the top of that big slide, and another half a mile wide, and the vertical height was probably something like 700 feet. It was just a huge mass of rock just sliding in.

To get any reference points, it was difficult, because you had to get your points out from your survey points so that they were on solid rock so you could tell actually how fast this thing was moving. We had all kinds of experts come in to advise us about what might be done. The more we mined and the more we tried to drain that, the more it moved. We were able to get some ore out and stockpile it, and we didn't have the mill. By then we had decided maybe we're not going to build the mill. Let's just try to contain this darn thing.

We never did get it contained. It just kept moving faster and faster, and the weepholes didn't work. We finally had to abandon. Didn't have any big mishaps, but it cost us some money. We were able to get the ore and ship it to Grants to treat it, and get some cash flow back. I think the total net result was that we lost something like $2 million on that whole operation; we were lucky that's all it was.

But that mountain moving was something, and there was no one in the world that could tell us how to keep it from moving. It's still moving.

Swent: There was an enormous outcry from the environmentalists.

Humphrey: Oh, yes.

Swent: Terrible opposition.

Humphrey: Yes. So George Simchuck stayed there. By then, John Ransone had gone back to Denver, or maybe he never moved down there. We were just trying to contain it all. Then we just closed it down and kept a skeleton crew there for--. There was still some runoff water that we had to treat that had radium in it. We kept some people there to watch the dumps, keep the road open, and see if we couldn't contain that thing in some way, but it finally filled the hole up that we had dug out.

But that turned into really a non-operation of sorts. It was just a cost to us. It cost us something like, even just to hold it there, $300,000 a year or something. And it's still costing us, as far as I know.

Swent: So what did the company carry away from that in experience?

Humphrey: Well, I guess the experience was that we really didn't take a good look at the mining scene to see what kind of confidence we had in those rocks and what kind of slope we could put on the pit. Turned out you couldn't. You'd have had to take that whole mountain off, which would have been uneconomical. And I think that there was lack of open-pit mining experience in the company. We didn't have any open-pit miners. That's one reason that we brought Gary Loving up to Lead, to try to get some experience in open-pit mining, because most of our miners were underground people and didn't have an appreciation, not that they couldn't do it, but they really didn't have the background. The mine at McLaughlin was a small open pit, which really wasn't much of a problem, although we've had slide problems there also, because we've learned about--.

Swent: But the rock is better?

Humphrey: Yes. Well, the rock is not much better at McLaughlin. It's the serpentine rock which is very slippery, and incompetent. But we did get some open-pit miners. Came up from Arizona to work in that pit at McLaughlin. They were old copper miners. But in general, Homestake didn't have a lot of open-pit mining experience. Harry Conger was an open-pit miner to start with, so he knew that we had to have someone like that. I think they fumbled the ball at Pitch because of that. Some good drill testing of that rock before we started might have told them what our slopes could have been or could not have been. And of course, the original mine there was an underground mine, and it was bad rock and was--

Swent: What I had been so aware of was the conflicts with the environmentalists, and the public meetings and those kinds of things, which were handled differently there than they were at McLaughlin.

Humphrey: Yes, they were handled very differently, and almost to the point where you gave up your management prerogatives, so that some of the management would have been determined by the public rather than by the company.

## George Simchuk and Emergency Response Planning ##

Humphrey: Simchuck was a very good man dealing with people. He was very politic and very polished, and a real nice man. But he didn't realize what he was giving away, I don't think. I don't think he had had enough experience.

Swent: It's a whole new thing.

Humphrey: Yes. To know that he was giving up a lot of the management rights, really. So he kind of fell out of favor. I used George a lot when we had the--part of our dealing with the public was to show that we could handle emergency situations, and we didn't have any emergency response plans in the company. So we established a program that George was put in charge of, that I put George in charge of, so that we would be able to handle emergencies, whether it was a fire or a mine cave-in or an explosion or a flood or whatever it was.

We simulated them, and we formed a group, which George headed up. It would include environmental people like Ray

Krauss, operators, public relations people, and we would simulate disasters. Then this little group would just arrive some night at Lead, maybe a Sunday night at six o'clock, which is just horrible, and tell the manager that you've just had--there's a disaster. You've just had a flood on the 7,000 level, and the men are trapped down there, and not only that, there's been a fire in the ventilation system and it's had to be shut down. What are you going to do?

And they actually got the people that would act as the town mayor, and act as the EPA, and come and pound on the desk and try to upset them to see what they would do. It was very productive. We had actually a couple of the wives came up in Lead, I remember, and started wailing and crying at the manager's office about their husbands hadn't come home and they heard they were trapped in the mine, and they were carrying on and crying, and the sheriff finally came by. He thought it was the real thing! [laughter] They had to explain it was just a show, they were just playing. But they had really caused such a fuss that the town officials got involved in it.

But it was a good--these were good exercises. We did it at Grants, we did it everywhere. They would spring these surprise disasters on people, and George was in charge of that, and he did a very good job. He had a little manual about how you've got to set up a separate room for the press, you've got to set up a separate room for your control center, for actually dealing with the disaster, plus another center for dealing with the public. So we were able to organize a disaster scenario response, which was important.

Swent: Is that continuing now?

Humphrey: I don't think so. When Jack gets settled a little more, I'm going to have to ask him about it, because I think they lost the impetus. When Simchuck left, Dave Crouch took it over. [David Crouch, interview in process in 1996, Western Mining in the Twentieth Century series, Regional Oral History Office, University of California, Berkeley.] Dave wasn't as committed to doing that as Simchuck was. [tape interruption]

Swent: We had a little intermission here, and now we're back. DuPont has done a lot of work with training for response to disasters.

Humphrey: DuPont has done a lot of work, I guess really because they have some very sensitive plants. They make cyanide, and they make a lot of chemicals that could be toxic if they got loose, so they've done a lot of work on disaster control philosophy. We actually went to--Harry and I've forgotten who else, Harry and I

and someone else, went down to, they gave a little seminar and test period down at a place near the airport that they've set up with a disaster that we had to respond to, and had us on television, so we could look and see how we reacted to some of these things. And that was helpful to emphasize to us how inadequately we were prepared.

Then we really started getting serious about these simulated disasters and getting a formal type of setup, so that we had disaster control centers organized at each operation, and people designated to handle that. Because some of the times we went, we went several--we tried to go once a year to each operation. Once we went to Lead, and Al was out of town, so that someone--the next guy in line was out. I've forgotten who he had designated to watch the store while he was gone, but--so that we went way down the list, and of course, these people had no idea what to do when the so-called mayor of the town came up and started beating on the desk about where were these miners that were trapped underground, and gosh, we just caught them flat-footed.

And even we found that some of the people at the gates at McLaughlin, for instance, when an official of the government came or the town mayor came, they wouldn't let him in. They had no idea how to handle a situation like that. So we realized we had to not only train the top people, we had to work through the organization so everybody knew what to do in a circumstance where you had some kind of a problem with the public or the state or the federal government would take issue with.

We had a spill--we did utilize it--we had a spill of cyanide down in Colorado. When we closed that Creede [mine] down, we had some cyanide left over, and we planned to send it up to Lead. It was in the containers. They hired a trucking company to take them, and there weren't many. I don't think it was more than a pickup load or something, but one of the barrels or the containers fell off the truck while it was still in Colorado and sprung open near a creek.

They fortunately called us right away, called Tom Robertson, who was the manager there, and he'd been through this training process. So he got his group together, and they went down and set up a little control center and dealt with the public and the local officials, and cleaned the mess up. So it worked. We did it also at Grants. We had a problem that required some attention to the public and to the state. I've forgotten the particular problem. So we were able to utilize that, and it comes in handy. We had the mine fires at Lead, which Al had already set up to handle that.

So it is an important part of the whole process. I don't know if they've kept it up, but I've been out of that for quite a while now. I'm sure Jack appreciates the need for something like that, but I'll wait until he gets his feet on the ground a little bit.

## Changes in Management Awareness in Recent Decades

Swent: This was part of that whole change in awareness at that time, I think, of safety and--

Humphrey: Yes. Safety and environment and including the public in what you're doing. It's so important.

Swent: The scene was entirely different from what it had been a few decades earlier.

Humphrey: Oh, I'll say. Gosh. When I started out to work with Anaconda, that would be unheard of. You just go do things. You wouldn't ask, you wouldn't include. In some cases, you'd run a little bit roughshod over people. And that was bad. So I think that management, at least in Homestake, has become enlightened.

Swent: It's been a big change.

Humphrey: Yes. And I think it's great. A young fellow like Thompson and the people working for him now, Steve Orr and all of these young guys we've got that are going to run the company, are very aware of all of that. They've been brought up through that. It is important to do.

Swent: And has this affected the unions?

Humphrey: I think so. There's no need for a labor union if you've got good management, and they treat people right, and share some of the profit with them. You've got to do that, whether it's through wages or bonus systems or profit sharing.

Swent: That was how Homestake stayed nonunion for so very, very long.

Humphrey: Yes, right. And the people were very loyal, as you know, in South Dakota, to the company. Still are. Unfortunately, they're very possessive now, so they take issue when you make changes that they don't think should be made. They don't realize that the whole situation has changed. But that's true of any old mining town, or one that's been there for years and

years and years. That happened at Butte. In fact, almost identical, the company could never close, they could never--it was always pushing, they could never fail. They'd go on forever, and all the labor had to do was get the most they could out of them. Well, they found out at Butte that it didn't work, they did fail, closed.

But that's an attitude, and Bisbee, Arizona, was the same way with the Phelps Dodge Company. So I think that there's been a whole change in philosophy in the last ten years or fifteen years from what it was thirty years ago about how to do business for--and maybe all business. I only know about the mining, but you have to take into consideration the people in the communities where you work, and make sure that their concerns are at least addressed.

Swent: To get back to McLaughlin, was there any consideration given to setting up a company town?

Humphrey: No, there was never any consideration. Once we got started, there was no consideration of doing that or of putting up big shops where you would repair your trucks and loaders or things like that. We had by then realized that we were close enough to the community and close enough to facilities for shops for loader and truck repairs, rebuilds, and things of that nature that no, we didn't want to do that. And that's one reason we built the road in, that we were going to have a bus service out to the mine, it wasn't that far.

Swent: Take advantage of the existing town.

Humphrey: Oh, yes. And it would be better for the town, and it was better for the town. I think there was, gosh, something like $9 million a year pumped into that economy from the mine. Which was great. I remember when they built the copper mine at Tucson, Twin Buttes mine that Anaconda built. They built a complete machine shop and facility out there as if they were out in the middle of the Atacama Desert somewhere. They didn't utilize it. It was just wasted really. But that's the way they had done things. It's hard to get people out of a rut and thinking along new lines. Even people that should know better. [laughter]

## XII OTHER ACTIVITIES

### The Western Regional Council

Swent: Let's talk a little bit, Bill, if you want to, about the other things that you've done. Do you want to talk about Australia and about the Western Regional Council and some of the other things you've done?

Humphrey: Well, some of the other things I've done, of course, for the company--

Swent: And outside as well.

Humphrey: Yes, that have been good. The Western Regional Council is a group of companies that started out in the Rocky Mountain West that thought they had issues in common, not all mining companies, but quite a good cross-section of basic industries in the West. There are some banks included and accounting firms and lumbering outfits and railroads and utilities and mines and agricultural companies, that thought that there were some issues that were not being addressed properly that concerned the economy and the well-being of the Rocky Mountain West that need to be addressed.

So a group of men started this organization with the idea that the chief executives and the top management of these companies could get together and do some lobbying both at the federal and state level.

Swent: Who started it and when, do you know?

Humphrey: Let's see. Must have been started probably 1980, probably fifteen years ago, by a group, and one of the founding fathers was the chief operating officer for Phelps Dodge.

Swent: Was that Art Kinneberg?

Humphrey: Art Kinneberg. You know more than I do about this.

Swent: Well, I just remembered you had mentioned that was how you knew him.

Humphrey: And one of the fellows from the utility companies, that was head of the utility--the Nevada Power Company, and I've forgotten his name now. I think there was a guy from Denver, Jim Wilson, who I believe was a banker, and they got together and decided they'd try to do this on a very modest budget.

The thing grew into a group of about forty companies that put in about $10,000 a year each, which wasn't a big chunk. They would get together twice a year to determine what they'd done and what they should do and what the results had been to see if they should continue. So they continued to do that, and at the same time, established the specific issues they wanted to take up that they thought affected all of them. And of course, a lot of those were issues that directly affected mining, so some of the mining companies, and of course, Art Kinneberg was from a mining company, encouraged some of the other people to come in.

Harry saw right away that this was a good way to lobby for mining interests as well as the American Mining Congress, for example, or as well as the local state mining associations. So he became involved himself with this group of men. They established then for these issues (and there were only five or six issues that they thought were important) some ad hoc committees, as they called them, to do some of the grunt work before the top guys went to do their talking.

So they would work with the staffs and develop a position paper, and monitor what was going on in the agencies and the Senate and the House and the state capitals so that they could feed this information back to these top guys so they could have something to talk about. Well, I was chosen to be chairman of the hazardous waste committee, which was an ad hoc committee, which directly affected a lot of the mining things. That was suggested by Harry that I do that.

Harry eventually became a member of the board of trustees of this organization, and then eventually became for a year or two the chairman of the whole organization, so he designed the meetings and the agenda for that period of time.

Then he became similarly involved with the American Mining Congress, so he gradually left this responsibility to me, and I became a member of the trustees of this organization, and still maintained my position as the chairman of the hazardous waste committee, which I will have to give up pretty soon, because I don't think I can--. So Jack now is my alternate at that organization, Jack Thompson. I would think eventually he would work into representing Homestake there.

It's a very effective organization because it's not just one single industry that is represented. When you go to see someone, they listen to you, because it involves a lot of their constituents, not just the mining industry.

Swent: What have you specifically done? Have you gone to Washington?

Humphrey: Yes, once a year, usually in March, they have what they call a Washington seminar, where maybe twenty of the forty top people from the--there's forty members, roughly--would go to Washington for two days, and visit, and have a breakfast with the Western senators, have a lunch with the Western representatives, a visit with the--well, we visited Alan Greenspan at the Federal [Reserve] Bank, stopped at the White House and talked with some of the assistants to the president there about our concerns about some of the things that he could do something about, and we stopped at the head of the EPA [Environmental Protection Agency] to talk with them about what we thought they were not considering but should.

Swent: Like what?

Humphrey: Hazardous waste, and the mining law. In the hazardous waste, they were spending a lot of time on really things that weren't hazardous, and giving them the same priority as things that really were hazardous.

Swent: Can you be specific?

Humphrey: Well, for instance, they were spending a lot of time trying to regulate mining waste from open pits that had minerals in them that if they were concentrated enough, would become toxic. Well, there's a lot of sulfide minerals and arsenic minerals in some mining waste and arsenopyrite, that if you took all of the arsenic out of the arsenopyrite and concentrated it and got it into enough of a mass, it would be a toxic thing. But naturally, that's never going to happen by natural processes.

But there have been some regulations put down that if there was a substance in a waste product that, if it were concentrated

enough, could be toxic, that whole waste pile was considered a toxic waste pile and had to be treated as a toxic waste, which meant either burying it or putting liners under it, and in effect, isolating it from the rest of the environment. Which was kind of ridiculous, when they had things that were really toxic, like some of the waste spills from the chemical plants, and things that should have been attended to, they gave the same priority to, so that they weren't zeroing in on what was really toxic, as opposed to what could be maybe some year, someday. So those are the kind of things we wanted to talk to them about.

And of course, I had several meetings with the EPA. I went back to Washington several times about that. They were very receptive, but they never changed what they were doing. They never changed their policies. So you wonder if you're doing any good.

So we did have that meeting in Washington, and did visit with--we had a separate little meeting with Senator Simpson.

Swent: Of Wyoming.

Humphrey: Yes, and which was very interesting. He came, and there were just twenty of us, so we talked to him about what we thought he could do to help us in the Senate. We had a meeting with Bob Dole, just for a few minutes. We had a meeting with Hollings, I guess he's from the Carolinas somewhere. He's the guy. He came in and started preaching to us about the budget that the government was using, and I finally said to him, and it embarrassed him, I said, "Senator, if we ran our companies like you run the Senate and the budget here, we'd be out of business. I don't see why you shouldn't follow the same guidelines."

Boy, he got red in the face, and said, "Well, you don't understand." I embarrassed him, I guess, but then I got pretty fed up with him.

But anyway, so we had an opportunity to voice our opinions. Then once a year, we meet with the governors, with the Western governors, at the Western Governors Conference. They have an organization themselves, and we usually have a breakfast. We're the only outside organization that's invited to the Western--

Swent: There used to be a Western Governors Mining Advisory Committee.

Humphrey: There is still.

Swent: There is still, but this is supplemental to that?

Humphrey: No, the Western Governors Association has, I think it's sixteen governors, sixteen states.

Swent: But there was a mining advisory group--

Humphrey: To that, to the Western Governors. So we can deal with them, but what we do--now, this is not strictly a mining body.

Swent: No, I understand that, so I say you're supplementing--

Humphrey: Yes. So we have a breakfast with the Western Governors once a year, usually in June.

Swent: When they're meeting.

Humphrey: Yes, when they're meeting. They usually meet in the state whose governor is head of the organization for that year. So Bob Miller [of Nevada] was one year, and the governor of Wyoming was one year, Sullivan, and Fife Symington of Arizona. So we go to these different states, and the governors usually put on a big spread for the other governors, and we are the only outside organization that's included, which makes it nice. So we're able to have a breakfast with just the governors and ourselves, and no press, around a table where we can just voice our views on everything.

Swent: Do you think you've had any effectiveness?

Humphrey: Oh, I think so.

Swent: With the governors?

Humphrey: Oh, yes.

Swent: More than with the national?

Humphrey: Possibly just as much, but Governor Michaelson, George told us, he said, "You know, you guys are right, and I'd like to do that, but I don't have much more effect in Washington than you do, when we get right down to it." But he was very helpful. By the way, Bill Janklow is the next governor of South Dakota. He was governor previously, and we met with him too at one time. But yes, the governors have been helpful. They are able to at least voice another opinion about some of these things, like the fees on rangeland and the coal royalties that really if they change them are going to hurt their states. They understand all that.

I was very well impressed, when you get in private with these governors, they are pretty broad-gauged people and pretty

well posted on what's going on in the world. So they know what the right thing to do is. They don't always do it because of politics. And Governor Romer I think is a pretty sharp cookie too, from Colorado. He's a Democrat, and it doesn't seem to make any difference whether they're Democrats or Republicans. Most of them are pretty capable people.

Swent: Do you think you educated them at all?

Humphrey: Oh, I think some of them are just there for the ride, and they'll bend whichever way the wind blows. I don't think they would make a stand for you. A guy like Sullivan would, from Wyoming, and Romer would. It's surprising, this guy, Cecil Andrus from Idaho, would too. He's a very capable guy, even though he was a terrible secretary of the Interior. He knows what's right, and does it most of the time. So that was good.

So we do that once a year with the Western Regional Council. We go to Washington once a year, and in between, these ad hoc committees go to Washington and visit with the state governments, and the staffs of the Congress.

Swent: Were you involved in the work this last year, or previously to that too as well, for the mining reform? Or so-called reform of the Mining Act?

Humphrey: No. I was peripherally, but there's another committee--one of the issues is the mining law; one of the issues is hazardous waste. Coal leases, Indian water rights, so there were different--and I concentrated mostly on the hazardous waste.

Swent: So your dealings would mostly be with EPA, then.

Humphrey: Yes. Well, and of course, some of the staff from some of the Western congressmen would help on some of the laws that were up for renewal, like--

Swent: There are state regulations too.

Humphrey: There are state regulations, which have to comply in a sense with the federal law, which is wrong, because some states have different conditions in them. One of our big arguments was that there are different physical conditions in the West as compared with someplace like New Jersey. You can't make one law that fits all. It's site-specific, that you have to work with groundwater and with air and with waste, and climate, and it makes a big difference. So you shouldn't inhibit the Western development because of trying to make one law that fits everything. So I didn't get into the mining law.

##

Humphrey: At any rate, with this Western Regional Council, after you've visited around with the senators and congressmen and their staffs and the state governors and their staffs, when you really have some issue that's important and you go back, they recognize you. They've seen you before, and they know something about you, anyway. So it's a very effective organization, much more so than a single industry professional group, like the American Mining Congress or the AIME [American Institute of Mining, Metallurgical, and Petroleum Engineers]. This group has such a broad base that it's much more effective. So I think it's a very important thing that Homestake is involved with.

Swent: So it has the regional emphasis, but not just the single industry.

Humphrey: Yes, right. Now, there's a meeting that Edna and I are going to just after Thanksgiving down in Phoenix, because Fife Symington is the head of the Western Governors this year.

It's such a nice time of year then. But anyway, this meeting, this is just a Western Regional Council meeting where the organization gets together. I just called yesterday about the agenda. Usually they try to get a couple of senators and some representatives and a governor or two to come and talk, and one time we had George Schultz come to talk to us about different things. They have a very varied program, where even some of the Washington analysts come to speak, some of the anchor people, like Cokie Roberts came and talked to us once, and some of the secretaries came. Bob Dole came out once, had supper with us. And they take their wives to this meeting, so it's a very nice social affair.

Swent: Sounds like a lot of fun.

Humphrey: Yes, plus very informative. And you get to know these people and talk with them. So Edna and I are going to that week after next.

Swent: It sounds wonderful. Where do you stay?

Humphrey: We usually stay at the Arizona Biltmore.

## Homestake's Australian Subsidiary

Swent: You also really haven't mentioned Australia very much. I thought you might want to say more about that.

Humphrey: Well, Australia--when I came with the company, Australia, of course, was just a subsidiary of Homestake. It was not a public company. We had a manager there, John Roberts, and he had a small group, and our primary interest at that time was the Kalgoorlie Mining Associates, KMA, in which the manager was the Western Mining Company. They only had about 10 percent of the equity. We had about 45, and then the General Mines of Kalgoorlie had the other 45. That was a public company with varied interests.

So that most of the management was done through Western Mining, and why they've ever set it up that way I don't know, because they were doing really all of the work, and with very little equity. They were good managers. The company was run--the chief operating officer was a guy named Keith Perry, and the chief executive was Sir Arvy Parbo for Western Mining. They had many other interests throughout the world, but really had a good managing group at KMA, so it didn't take a lot of watching.

John Roberts was basically an explorationist, and though he headed up the group in Australia, his main job was to try to find some other deposits that we could work.

Swent: So you didn't really have a very active involvement with that?

Humphrey: No, I went over maybe twice a year. There was no need, because Western Mining was managing, and the underground was a very good mine, well run. They didn't have a surface mine at the time. They had all underground mines. In the southern part of the district, they had some very labor-intensive high-grade little veins they were mining. And it was coming along pretty well, and we were making some money.

As time went on, it became apparent that a similar thing could be done over there that was done in Lead, open-pit mining some of the veins and some of the material between the veins that were still up on top. Those underground miners mined right up to within three feet of the surface with their stopes; you could see them when we finally opened that thing up in a pit, but they didn't understand that they could take some of this new modern equipment and really make a haul. It took some doing, and you had to do some--you had to sort the ore pretty well, which we were able to do.

So we started--I have forgotten what year it was--to do some scratching around on the surface to see if we could make a mine there. It got to be very good, and it grew and grew. About this time, Mr. Alan Bond came along and determined that he was going to be the biggest gold miner in the world, and he was going to start at Kalgoorlie. So he bought a lot of the outlying claims up, and then bought into the General Mines of Kalgoorlie, which was the other partner. Western Mining decided that with that fellow in bed with them, they didn't want to manage any more, so they put up their 10 percent for grabs. And of course, whoever got their--they had 10.5--whoever got theirs would have the controlling interest.

So when all the smoke cleared up, Homestake ended up with 50 percent of the total and Bond ended up with the other 50 percent, so there was no controlling interest. Western Mining was bought out and in effect didn't leave any majority to either one of the surviving partners.

That worked okay, but Bond in the meantime had also taken up North Kalgoorlie, which wasn't part of the Kalgoorlie Mining Associates that we had had an interest in, and made big plans about mining that as an open pit, and building a big mill, and without really having the ore. So they found out that they had to, after they got this thing built, the mill, and they designed it and everything and built it, they had to have the ore, so they came down to see if we couldn't include the KMA part into what they'd done.

So that's when Bond got into the whole act, and Western Mining got out. Bond just bought his way in. He was a guy that would, without any facts, would just jump into something like that. So we did do that, and we made an agreement with him. We did start mining and taking the ore down in the southern part of the district to make this big pit. They called it the super-pit, and it was going to make something like 700,000 ounces a year, so it was going to be a tremendous big thing.

Bond had made so many public statements about what could be done there, and we were dubious about whether all of that could be done or not. We sent some of our people over at that time to look at the ore reserves, because we were--the idea was to mine the portion of the veins that was left, which wasn't much, and really reap the profits from little cross-veins between the main ledges that had occurred that you couldn't map, you couldn't drill to find out. You just assumed they were.

So our guys went over and spent a good bit of time. Kurt Gilg and Norm Lehrman, who was the geologist at McLaughlin, and

I think John Ransone went over to look at the plant that Bond had built or was building, and Norm to look at the ore body, and Kurt to see what the delineation of that ore could be. There was just scant information. There was pretty good information on the old veins, but they had never--I don't know, there had been something like ten different mining companies there, so they had never consolidated all the information into one set of maps, so you couldn't tell what you were looking at.

But they did a pretty thorough job, and they spent several months there, and determined that yes, it looked as if that would make an ore body, if you mined it very carefully. So we went ahead with the project.

By that time, after we decided to go, the plant was built and they started mining, and we were able to sort the ore quite well. They take a tractor with rippers on it, and rip some furrows along the bottom of the pit, or the top of the ore body, and then sampled along at, I think it was two-meter intervals, or something like that. And then you could see where the--you couldn't tell by looking, but you could assay where the grade was along those furrows. And then the next furrow to it, you could assay where it was along, so you could line those up, so we actually put markings with lime, just like you do on a tennis court. We marked that vein along the surface, and they could come in and mine that out with a backhoe, and that was the ore. The rest of the stuff we just tossed away. So you'd see the bottom of this pit with these big lines on it, chalk lines, actually--

Swent: That's really selective mining.

Humphrey: Yes, it was selective mining, and it worked very well. It worked well while we were in the oxide section, but it didn't work very well when we got down into the solid, hard sulfides.

By that time, Bond's empire was collapsing. So he was on the way out, and Poseidon came in with Robert Champion de Crespigny. He was a miniature Bond, because he made all kinds of public statements too about how he was going to make more of this mine than it actually was, and was going to give the community $2 million for social work and improvements around the town. Gosh, we had no--he didn't even consult us. So we were stuck with a lot of commitments that were made.

We finally established a management committee for that entity, of which I was a member then representing Homestake, and we had regular meetings, so I started to go over a lot more at

that time to make sure that Homestake's interests were watched more closely, because those guys were kind of wild.

Swent: When was this?

Humphrey: That must have been--I guess Poseidon came in, must have been 1988 or '89, I've forgotten when that was. So anyway, then I really got involved, and went back several times a year, maybe four or five times.

## A Mining House Philosophy

Humphrey: Then it became apparent that we needed to--we thought it was politic. We had an idea about this mining house philosophy in Homestake where maybe we would establish public companies in different countries and control them through directorships for Homestake, so they would have their own board of directors and have their own management, and we would be just a central core with our core business here in the States, and have foreign public companies which we would have a controlling interest in, something like Anaconda did with Inspiration and some of the other big companies, and something like Newmont did with their--and something like the South Africans did with their mining house philosophy.

That's when we established the public company Homestake Gold Australia Limited. John Roberts stayed on as chief executive of that, and then we established a board in addition to this mining committee that we had with Poseidon. Then I became a member of that board, and so continued to go over four or five times a year. So I got much more involved with that.

Swent: And has that worked well?

Humphrey: It's worked pretty well.

Swent: As an organization?

Humphrey: As an organization? I think we were disappointed that we didn't find more ore bodies to invest in over there. And of course, it's not easy to find an ore body. But we thought maybe then that--just lately, when we reorganized with Corona, when we took the opportunity to really trim Homestake down, the overhead portion of it, we thought we'd do the same thing in Australia, and we did. We had this same group go over and look at it, and determined that probably one thing, we had our headquarters in

the wrong place, and secondly, we weren't concentrating on our core business as much as we should. We were doing more exploration out of Adelaide than we were watching the store at Kalgoorlie on a daily basis, and they recommended we move the headquarters to Perth. Which we did--

Swent: From Adelaide?

Humphrey: From Adelaide. John Roberts and his crew did not want to move, so he actually resigned his job. I think he was unhappy about it, but I don't think he was--he wasn't bitter, he just didn't like it. A fellow named Dick Tastula took over the chief executive spot for that company. He had moved from Perth to Adelaide, and then he moved from Adelaide back to Perth. Dick had been a manager at Kalgoorlie previously, working for Western Mining. So he knew that business, and he knew what should be done, and he's done a very good job.

We've trimmed down that organization, and changed our philosophy on exploration a little bit over there so that we can be more focused and not so generalized. It's an awful big country to generalize in, so you have to pick your targets and go after them. So we're hopeful that we'll come up with another orebody we can make a mine out of over there, or at least get in with someone else who has a good mine.

So that's been kind of fun, and it's been very exciting the last couple of years. I have been involved with that a lot more, although I've gotten off the management committee of the mine itself, because Tastula is there and he's a miner, and right there. So there's no sense in having somebody this far away on that committee.

So that's where we stand now. It needed a lot more attention with people like Bond and de Crespigny who are playing to the grandstands a lot more than we like and making commitments with both the public and the government that we think would be hard to keep. And committing funds to different things.

For instance, there's a group that want to put a gas pipeline down from the northern part of Australia all the way down to Kalgoorlie, all across that Western Desert. Western Mining, of course, who has a nickel smelter down there at Kalgoorlie, would love to have that gas in there to run their smelter on instead of bringing all their fuel in. And other people up in the Iron Range would like to have that come by there.

So Mr. Champion de Crespigny said, "Well, I'll become a part of that gas line investment and be a participating partner there, and we'll use that gas at Kalgoorlie." Well, he didn't ask us about that. We didn't want to use that gas at Kalgoorlie, because to build the size of a power plant on a gas line, there's a minimum size that's efficient. If you get too small, you might as well buy your power from the line. So we've had some fusses with him about that. There's a Western Australia Power Company that's government-controlled, Sweco they call it, that is supplying the power now to Kalgoorlie over a power line. Their prices have been pretty high, but bringing gas in and generating power is not competitive. So we're jockeying around to see if we can't keep the price down on the cost of power out there.

## Working with Partners

Humphrey: So those are the kind of problems that we have with our partners. Whenever you have a joint venture, you're going to have problems like that, because philosophies are different, and your goals are different. Although you both want to work the ore body, usually the other guy wants to work it a little differently.

We've had similar problems with Echo Bay at the Round Mountain mine in Nevada. They had a different approach to things than Homestake is used to, and Homestake is a little more conventional and a little more conservative, and really not--we don't play up a drill hole or a process maybe as much as we should, but we don't publicly make claims to things that we can't be sure of. Some of these other people do. If they get one good drill hole, they say, "We've got another ten million tons of ore at this grade." We don't do that, and I think that's okay. I think you ought to be a little circumspect about what you say, but these guys--the Canadians particularly don't really adhere to that philosophy too much, nor do the Australians. So we have problems with those kinds of partners.

Swent: I think they call them puff pieces in the newspaper.

Humphrey: [laughter] Yes, that's right. But otherwise, Australia is going very well. We're making good money there, the operation is running well. We've had some management changes, and a lot of the Western Mining top people have come to work at Kalgoorlie, because there has been a change in the management at Western Mining and there's been some dissatisfaction, as there

always is when you have a change. So we've been able to get some of that talent to come up to Kalgoorlie and work, so Dick's very happy with that, Dick Tastula. So that's going well.

All we need now is to find another ore body so we can make another mine there.

Swent: [laughter] That's always important.

Humphrey: Yes. [laughter] But there's a good long life to that mine. It will last another fifteen or more years. It's worked out very well, mining this open pit. So we have one big open pit operating and one underground mine. It's a very efficient mine, bulk system. We're right now in the process of expanding the pit, and we're going to have to move the old mill, because it's right on the edge of the pit. So there's always some kind of a problem.

The water is always a problem out in that country. For process water, we use salt water that's something like seven times more salty than sea water. You'd think it would cause a lot of problems with your plant crusting up and everything, but they've been able to control that very well. But it's actually fossil water from some ancient river beds that they drill down into and get this saline water. That's sure dry country out there.

Swent: Yes, it is.

Humphrey: So that's a big problem, water and power.

## Chilean Subsidiary; Sergio Chavez

Swent: And you're also going down to Chile now, are you, once in a while?

Humphrey: No, I'm not going to Chile any more.

Swent: You're not.

Humphrey: No. Sergio Chavez, who was a fellow that used to work for me in Anaconda, heads up the Chilean operation.

Swent: But you were going down there.

Humphrey: Yes, I had gone down there while I was still in the operating end of the business.

Swent: Kind of fun to get back to Chile?

Humphrey: Yes, it was. It was nice to get back and see some of the places I'd seen as a child, and I didn't meet any people I knew particularly from that long ago, but the country hasn't changed. It's a desert country too up in northern Chile--

Swent: Awfully dry.

Humphrey: Yes. So that was kind of fun, getting back. There is a place that I think has a lot of potential, we just haven't been able to pick it up. We had a prospect in southern Chile that we thought was going to be a boomer, and it just bombed out. We didn't find enough there to make an orebody. But Chavez is a good man, and he and Jack get along very well, so I think that that will work.

Swent: Is he a Chilean?

Humphrey: Yes. He's a Chilean whose dad was Chilean consul in Miami when he was a youngster, so he went to high school in Florida. Then his dad was transferred to New York as consul, and so Sergio went to MIT. So he's really been educated as an American, and he's got the American attitude about things. He's a really good man. And a really good, good engineer. Good construction engineer, really. He's a mechanical guy, but knows a lot about mining, and worked for Anaconda at Chuqui[camata] for a while, built some of their expansion on to the plant. Worked for me in Cananea on the plant expansion. Worked in New Jersey on a plant expansion for Anaconda. Went to Denver, and from there to Chile, with Bechtel. Actually quit Anaconda and went with Bechtel, and then I hired him away when we got our Chile operation.

Swent: I see. So this is in northern Chile?

Humphrey: Northern Chile. Of course, his office is in Santiago. So that doesn't take any of my time, and shouldn't.

## Mexican Interests: No Blue Sky for Gold

Humphrey: All I'm doing now really is on the parent board and on the board of Australia. I have been representing the company on our

Mexican interests that we inherited when we got the Corona company. We have a 30 percent interest in the Guanajuato silver mine, which is the old "Veta Madre" down in Guanajuato, which is on its last legs, by the way, and we're trying to sell our interest. There's not much blue sky. There doesn't seem to be. Peñoles is the managing partner down there--Amax still has an interest--so I've been going there for the last couple of years to look after Homestake's interests, but there's not much you can do. Peñoles is very authoritarian about how they run things, and they find it hard to accept suggestions, but--and they're pretty good operators.

The reason they want the mines are to feed their big silver refinery at Torreon. They don't care if they make a profit on the mines or not; they need the feed for the refinery which is where they make their profit, and they charge refining fees to the mine, so you don't have a chance. [laughter] They take the money at the other end.

Lee Graber now is really working very hard to try to sell these darn things. Which is a good idea, I think. I thought there was some blue sky when I first went down, and they have done some drilling around and just haven't found anything. But it's too bad to get out of Mexico, because I think there's some potential there, but really not in gold. Mexico has never been a gold province. A lot of silver, a lot of copper, a lot of base metals. There are still some copper mines, and there's a lot of country that's unexplored in Mexico still, in northern Mexico. I don't know about southern; probably the same thing.

So it's kind of tough to get out of there, but Mexico is Mexico, and I think unless you have something where you can see a pretty fast return, you ought to be very careful about going in there with a thirty-year commitment of some kind.

So anyway, I've been doing that, and that's been a lot of fun too, going down there. But other than that, I'm pretty well retired. I'm still on the finance committee and on the executive committee, which has some work sometimes but not a lot. And I've done some consulting for other people. And I've had some nibbles about getting on other boards, which I may do. I'm going to have to get off the Homestake board when I'm seventy, and that's about three more years. So if I'm still healthy and able, I'd like to get on some other boards that don't require you to get off at seventy, so I can keep at least a little bit busy. I don't have a big desire to do nothing.

## Losing a Leg Changes How You Look at Things

Swent: No. You were saying the other evening that some of your attitudes have changed since your recent illness. Let's mention it, because that's dramatic, what you've been through the last few months.

Humphrey: Well, this year has been--I've had a year.

Swent: You really have.

Humphrey: You know, they discovered that I had a blood clot in my right leg and thought they could do it with a bypass, and when they got in to do the bypass last February, they decided an angioplasty would do the job. They did it, and of course I survived that and came out and was walking around, and apparently the angioplasty collapsed.

They found out that I had a blood disorder that was probably inherited called a protein "S" deficiency, which most doctors have never heard of. In fact, so they determined then that I should go in and get the bypass, because that thing collapsed, so I went back.

Swent: Now, this is not a heart bypass, this is in your leg.

Humphrey: Yes, leg. They take a vein out of one leg and make an artery out of it in the other leg.

##

Swent: You were in the hospital a lot, from February on, weren't you?

Humphrey: Yes, I was in the hospital a lot. Well, after the angioplasty, I got out in February after a couple of weeks, and we went on trips, and I went to Australia. We did a lot of things. Went to Mexico City to the meetings.

But it was starting to bother me again, so then I went back for a bypass that didn't work, so they had to amputate.

Swent: So they amputated just below the knee.

Humphrey: Below the knee, yes. I had to go through therapy and all of that stuff, and finally got a prosthesis. But it makes you stop and think that--I never thought much about dying or anything, but when I was there with this gangrenous foot, is what it was,

I got to thinking, Gee, whiz, maybe this is the end of the line for old Bill.

Swent: Well, it would have been--

Humphrey: It would have been if they hadn't got it off, yes. So it changes how you look at things, and you don't get as anxious about things as you used to. You don't have to drive the fastest on the highway, you don't have to get there exactly on time, although your old habits stay with you. But I guess we've taken it a lot easier. I don't know if Edna notices the difference, but of course, she's been--here she comes now--she's been busting her fanny just taking care of me.

Swent: Hi, Edna. [interruption]

Humphrey: But I don't think it's changed what I want to do with my life. Just it makes you stop and think a little bit. It surprised me, because you never think about not being immortal. You never think about being a cadaver. [laughter]

Swent: Before we stop, there may be other things that you wanted to talk about that I haven't asked you.

Humphrey: I think you know more about it than I do, Lee.

Swent: I don't know if we've covered the main--

Humphrey: We've covered most of your outline here.

Swent: Yes, but that may not cover all the things that you wanted to--there may be other things that you had hoped to say that you didn't.

## Good Management: Intuition, Experience, Respect for People

Humphrey: No, I think we covered that. What interested me a lot about my career was the different management philosophies, and we've talked a lot about that.

Swent: I hope we've talked enough about them.

Humphrey: Yes. And how different but how similar the chief executives I've worked under have been, and how they do their work and treat people and get their intelligence. Clyde Weed and Plato Malozemoff and Harry Conger couldn't be more different types of

personalities, yet they all had one trait in common, which was to--what I crudely call--use people. They used people to their own advantage, and have other sources of intelligence other than the chain of command which you normally would get all of your intelligence through. They had people that they could call up and verify some of this more formal information that they're getting. They are pretty creative about how they use that information and how they get it.

So that's--I've learned that over the years, and a lot of people don't realize that chief executives probably have to have several sources of information, not just their primary organization and chain of command. I think that's--

Swent: Probably can't ever get too much.

Humphrey: Probably, and they never have enough to make decisions. You never have all the information you need, so a lot of their work is intuitive. And of course, intuition is probably experience. But you can have intuition without experience, too, so I don't know where the balance is. But they have all three of them been successful, the ones I've known quite well. I'm sure the other companies are run the same way.

Swent: It sounds as if you've put to good use all the things you've learned along the way, too.

Humphrey: I've had to use every little bit of knowledge I've had. It's surprising when you need to use it. It just all comes back. It all seems to fit in. But the big thing is people, the big thing in any organization is people. If you've got the right people, you can find ore bodies, and if you've got the ore bodies, you can make a mine, but you've got to have the people to start with.

And you have to treat people properly to get the most out of them. Times change, but I think basically people all want the same thing. They want to be recognized in their professional life, and respected, and paid enough to live comfortably and to educate their children. That's pretty basic stuff. And a lot of managements haven't realized that over the years. I'm thinking particularly of Asarco, which treats people very crudely and rough. I don't know how they maintain their loyalty there. Maybe by fear, I don't know. [laughter]

But anyway, that's about summing it all up, I guess.

Swent: Well, deep enough?

Humphrey: I guess so. What do you think?

Swent: Well, I think so, but I don't want to skip anything that you want to say.

Humphrey: Well, I suppose if something comes up later on, we can--

Swent: You can always add it.

Humphrey: But this has been a rambling session.

Swent: No, not at all. Sometimes the best stuff comes out when you ramble.

Humphrey: Maybe. Maybe I say things I shouldn't, too.

Swent: I think it's fine. Thank you.

Humphrey: Okay, well, thank you.

## XIII CHAIRMAN AND CEO OF DOE RUN MINING COMPANY, 1987-1990

[Interview 4: August 29, 1995] ##

### St. Joe Lead, Premier Lead Mining Company from 1864

Swent: We're continuing the interview with William Humphrey in Walnut Creek, California, on August 28, 1995.

When we interviewed before, we didn't include your Doe Run experience, so we'd like to talk about that today. How did this come about?

Humphrey: Of course, my association with the Doe Run Company started in 1987, but this all came about because of several changes and iterations of the St. Joe Lead Company that occurred. Just to back up a little ways, lead was discovered in what is now Missouri in about 1690, and in fact, they mined lead in Missouri for the Revolutionary War, to make bullets. So it's had a long history.

In 1864, the St. Joe Lead Company in the Bonne Terre District was formed. They were the premier lead company for a long time in the United States. In 1892, they built the first smelter on the Missouri River, the Herculaneum smelter. They also developed many underground mining methods and pieces of equipment that were new to the trade, like crawler shovels and roof bolts and things of that nature. So they were a very progressive outfit and with a long history, just almost as long as the Homestake Company.

The Viburnum Trend, 1950

Humphrey: That whole district was really kind of an uplift something like the Black Hills on the surface of the earth, and on the northeast side was this Bonne Terre District, which they mined for many years. And then in 1950, they discovered around the other side of this uplift the New Lead Belt, as they called it, the Viburnum Trend, which was a tremendously big reef-type structure that--apparently, there had been coral and things along this uplift at one time, there was a sea there, which made it a very porous area where the lead could be deposited. It was deposited in fairly flat seams, and anywhere from two inches to three feet thick, just solid galena with silver and some copper and some zinc.

So this trend was discovered in 1950, and it was probably twenty miles long.

The Buick Ore Body, 1965

Humphrey: By 1961, Paul Henshaw got interested in it, and along with the Amax, the American Metals Climax Company, did some exploring. They got a piece of land right in this whole long trend that the St. Joe hadn't taken up, and Paul thought there was some potential there, so they started exploring, and by 1965, they found the Buick ore body, which Amax and the Homestake then developed and built a--

Swent: Together?

Humphrey: Together, on a 50-50 partnership. They had something like 25 million tons of ore that ran almost 6 percent lead, and 1.5 percent zinc, and .5 percent copper, big, big, and over a wide area, maybe 100 feet of height in some of these things. So there was really big, big doing. The mine itself, in some places 100 feet high, was a big mine, a room-and-pillar method, where they could develop it with huge equipment. And of course, they had fifty-ton trucks, and they had big diamond drills, and all kinds of things that you wouldn't expect to see underground. You actually drove around in a pickup to go to your working place. These pillars went up 100 feet, I can just remember--they're still there. And the pillars were worth several million dollars, just the pillars themselves, that they left. So they're of course recovering them now.

But anyway, that's how it all started. Paul had this idea, and it was right, that you could do something with that. So they built a mine, a concentrator, and a smelter, to develop this ore body. The concentrators were selective flotation concentrators, and of course, the smelter was a typical lead smelter with a sintering plant and blast furnaces, where they could recover the lead as well as the copper and the zinc. They did in the selective flotation recover zinc and copper concentrates also.

## Homestake Lead Company Partnership with Amax

Swent: And this was all called the Buick?

Humphrey: This was actually called the--we had a Homestake Lead Company, and Amax had a lead company, and it was the Buick complex, yes. And Amax were the managers. By the time I came in--I guess I got involved in 1982 or '81, we'd had the typical differences of opinion about how to plan for the long term on this mine with Amax. Amax at that time was having some real financial problems worldwide. In fact, many people thought that they were going to go bankrupt. So they were hurting, and they were kind of flailing out, wanting to really get all the cash they could out of the mine, without paying much attention to longterm planning. So we had some really tough discussions. I was in charge of Homestake's interests there on the management committee, and eventually things--

Swent: Who were the other people that were on the committee?

Humphrey: I was the only one from the Homestake group, and they kept rotating people down from the Amax. There were just two people, Allen Booth and Jim Goreman. So that eventually, we bought their interest out. It was 1986, for $11 million.

## Development for Immediate Cash versus Longterm Benefit

Swent: You said they wanted to get it out quickly. What kinds of decisions were made?

Humphrey: Well, they were making decisions on holding back development in some cases, to mine out what was already developed, so that

their cash flow would be higher, not worrying about what might happen two or three years down the road.

Swent: You mean they were not exploring further?

Humphrey: Well, the ore body was there, but they weren't developing it. Because to develop this huge ore body, you had to develop it on two levels. You had to develop the upper level where the drilling level would be, and then develop the lower level, and then get some raises up through so you could blast this tremendous height down and mine it. And unless you got far enough ahead on your development, you were going to reach an impasse someday and not have any ore developed, and you had to stop and do your development. But they were so desperate for cash that they had--there were some problems with--

Swent: I guess I'm not clear on exactly what developing meant.

Humphrey: Developing means opening up--this trend ran for about twenty miles, and the Buick mine only had a portion of that, maybe a mile and a half or two. But to develop it, you had to go in and first get a drift up on top of the ore body, and then you had to get a drift down at the bottom of the ore body, and then you had to connect the two with some raises. Then you had to establish the pillars where they would come, and then open up the ground, and then you could go back and blast out between the pillars. So that all of that took a lot of work and a lot of time--

Swent: Before you were--

Humphrey: Before you would be able to mine the ore out. And that was really one of the biggest parts of the job, to get the development done, so you had a continuity of ore flow.

Swent: But you have no money coming in while you're developing.

Humphrey: Sure. So what you try to do is develop it while you're mining part of it; you develop the rest of it ahead of you, so you can move along, along this trend.

Swent: But they didn't want to do that.

Humphrey: Well, they weren't planning--I had a hard time getting them to make a long-range plan that looked reasonable, because they didn't want to, because they wanted to get the cash out. And it was a good cash producer. With that kind of grade, you know, you can hardly go wrong. So anyway, there were problems. I'm trying to think of--

Swent: Was Wallace Macgregor on the Homestake board at that time?

Humphrey: Wallace? Yes.

Swent: And he came from Amax.

Humphrey: He came from Amax, but he had had nothing to do, as far as I know, with the lead mining.

So Amax had a pretty good management there. What they didn't have, as far as the operating management went, the people that the local management reported to had different ideas about how to do things, and they didn't really want Homestake to interpose their management philosophy. So we had some problems, and it got to such a point that Amax was just floundering, and they kept changing the people they'd send to these meetings who really weren't up to speed and didn't know. So we finally purchased their 50 percent for $11 million.

## Buying Out Amax, Forming Doe Run with St Joe-Fluor

Swent: That must have taken quite a little negotiating.

Humphrey: Well, it was something that Harry did. Paul was gone by then, of course. Harry did that, and a tremendous job. At that time, we weren't making much money at the mines, because the price of lead was down. The costs were fair, but for some reason, the good Lord was watching over us, and the next year, the markets turned around, and of course, Amax was gone. We had conceived of a plan to join forces with the old St. Joe Company--that's why I mentioned that before--and I think we made $6 million the first year. We made half of it all back, of our investment.

So at that time, the Buick mine area in this big trend was higher grade than the rest of the trends.

Swent: Was St. Joe on both sides of you?

Humphrey: St. Joe was on both sides. I don't know how Paul got that stuff in the middle, but he got it, and it was supposed to be the highest grade. So St. Joe needed that high grade, and St. Joe by that time was owned by the Fluor Construction Company. They had actually made the president of St. Joe president of Fluor.

Swent: Who was that?

Humphrey: That was John Hughes. I think he got involved with the construction business, and the mines didn't get as much attention. Things were tough there, as far as the marketability went in those years, in the mid-eighties. And Fluor didn't really understand the mining business, but they got at odds with John, even though he was president of Fluor, and they transferred him back to St. Louis, where the St. Joe headquarters were. Then he got onto this management committee of the new--we joined forces with them then.

That was another negotiation, almost simultaneous with us buying Amax out. Harry got Fluor to agree to join forces with this higher grade section that they thought was a lot higher grade than it probably was. We got 42.5 percent, we Homestake, and 57.5 percent was left with the old St. Joe-Fluor Company.

Swent: Homestake got--

Humphrey: Forty-two and a half percent, by just--

Swent: Percent of the whole--

Humphrey: Of the whole works. So instead of having one mine and one mill and one smelter, we ended up with six mines, four concentrators, mills, and two smelters. So that was a very good deal for Homestake.

Swent: And was Homestake operating them at all?

Humphrey: No, then we set up a new company with a president, and that management reported to a management committee, which is like a board of directors. That gave us an ore body about 68 million tons of this high-grade lead ore. It was the biggest deposit in North America of lead, and probably one of the three biggest in the world. There's one in Australia, and Cominco up in British Columbia. So it was a real wonderful thing for the Homestake Company. We had--

Swent: And you were on this management committee.

Humphrey: I was on--the management committee was set up to start with, that each, I think it was every six months, the chairman of the management committee would be from one company, and then six months later from another company. Well, that's pretty short range for a mine, and Fluor by then had--John Hughes, who had been the head of St. Joe and then the head of Fluor, had left, probably in the first six months. So that one of the executive vice presidents of the old St. Joe-Fluor Company would come to these meetings. Kenneth Werneburg was one of them.

## Chairman, Chief Executive, Mentor to President Jeff Zelms, 1987-1990

Humphrey: But we weren't getting any long-range planning done. The local management felt interfered with, and Jeff Zelms was the president of this new company which we called the Doe Run Company. So after about, must have been eight months of this going back and forth, or maybe a year, they decided that what Jeff needed was a mentor, somebody that he could talk with and that would help him. So they appointed me as the chairman and the chief executive of the company, so Edna and I got a condo back there and spent half of our time there and half here back in San Francisco.

Working with him, I really didn't have to do much. Jeff Zelms is probably, in my estimation, one of the outstanding mining operators in the country.

Swent: Had he been with St. Joe?

Humphrey: He'd been with St. Joe right from the beginning, and came up through the ranks in the maintenance and the operating end, and was a very progressive guy, very much on the order of Clyde Weed-type of guy, kind of rough-hewn.

Swent: Clyde Weed was the Anaconda man?

Humphrey: Yes, Clyde Weed was the Anaconda chief executive. So Jeff and I had a very good relationship. We came to be rather close, we still are, and talked philosophically about how to do things. I didn't tell him how to do his daily work, but we did a lot of talking about how to develop personnel, and what kind of long-range goals we should have, how we should treat the unions. Previous to that, St. Joe-Fluor had a huge battle with the unions at the mines, and they were decertified finally. So all the mines were nonunion. The only union portion of the company was the old Herculaneum smelter.

There were some problems there; because of the union we weren't making the costs, and we weren't doing proper safety and drug programs.

## Safety and Drug Abuse Problems with the Teamsters Union at the Smelter

Swent: But the union was only at the smelter?

Humphrey: Only at the smelter, so we did have problems at the smelter.

Swent: I see. Safety and drug problems.

Humphrey: Yes.

Swent: Would you like to be more specific?

Humphrey: Well, I can try to remember now. If a person was thought to have been under the influence of drugs and had an accident, you couldn't take disciplinary action and fire him or lay him off for a period of time, because the judges ruled over there that you had to have previous knowledge that he was on drugs. And you couldn't connect the two, you couldn't associate his drug problem with the accident. So that if you could prove before an accident that a fellow was taking drugs of one kind or another, or inebriated with alcohol, then you could take some disciplinary action. So it really tied our hands. And the union, of course, was protecting these people, which was wrong. They knew it was wrong, but we had a heck of a time.

Swent: What union was it?

Humphrey: It was the Teamsters, of all things. You wouldn't think the Teamsters would have a smelter union, but they did.

So finally eventually, that was decertified also, and just lately, and they just got over this--long after I left. The result of it has been at that smelter that the costs have gone down something like 20 percent, and the number of people working there has been reduced by 30 percent. I think Jeff told me that just the other day. So it's just amazing. And they're all new, green people that have been retrained to work in the smelter.

## Recycling Batteries to Produce Laundry Soap Additive

Humphrey: So all of those kind of things were popping up, and so I stayed there for those two and a half years, and spent a lot of time back there. It was very interesting. We had determined that we wanted to build a recycling plant to take used batteries and

convert the Buick smelter to a recycling installation, where we could take used batteries and recover the lead, and the sulfuric acid, the sulfates that were in the batteries, could be transformed to sodium sulfate, which is a white substance and nontoxic, which is actually used in your powdered soap. When you buy a big box of powdered soap for your washing machine, about 85 percent of it is sodium sulfate, which doesn't have a doggone thing to do with cleaning your clothes, and 15 percent is soap. It's just a filler, like sawdust, but it dissolves and it goes down the drain.

So that was a byproduct that could come out of this recycling, so all that junk out of the batteries, you'd tip it over and put it through a reactor, and with sodium hydroxide, which is lye, and get this sodium sulfate out, which was a white, pure, crystal thing, it was an amazing machine.

Swent: So this was a good byproduct.

Humphrey: It was a good byproduct, yes. It was some value; not a lot, but some. Of course, most of the lead that's used is recovered lead, it's over 50 percent, probably two thirds, almost, is now recovered. You can't make enough recovered lead to satisfy the market, and you can't get lead pure enough, because the recovered lead has some impurities in it. So that's why you always need a primary lead source like these mines. And of course, a big use for lead is automobile and truck batteries, and they have not found anything that can substitute for them. There's about, I think it's 160 million automobiles and trucks on the road. They each have a battery that runs from seventeen pounds to twenty pounds in them. I suppose the trucks even have bigger batteries, so that's a lot of lead, and most people don't realize how important it is for them. That's the big market.

But if you can recycle these things and take care of the sulfur problem, you should be able to make better cost by reclaiming the old batteries than going through all of this process of mining and concentrating and smelting, and you can. I think the net cost, at least it was when I was there, was about ten cents a pound for the reclaimed stuff, where it was costing us about seventeen to twenty cents for the new lead. So it's a good balance and it's good business.

## Fluor's Short-Term Viewpoint; Construction versus Mining

Humphrey: And here again, we had a big problem with Fluor, in that they did not want to build that plant, and they just kept dragging their feet and dragging their feet. We did all the engineering, we took a trip to Italy, because the Italians had some particular type plants that were good for that. And to Germany to look at their plants, to England, north of London, where they have some plants that do that. So we were all set to go and we couldn't get them to do it.

And the budgeting was a problem with them. They couldn't understand--they were construction people--they couldn't understand why you couldn't make a budget, determine how many man-hours you were going to work for the year, what the cost of material was, and what your tonnage would be daily, and always come out within 2 percent at the end of the year. Because mines don't work that way. Sometimes the grade isn't there, sometimes your recovery goes bad, and sometimes you have problems with the ground, and sometimes in the mill. They just thought we were incompetent, and they told Jeff a couple of times that they just didn't think he was capable of running the company, and they told me many times. I had some real go-arounds with the head of Fluor. And they were very rude about it. They were used to rough--they weren't used to long range [thinking] and building people; building plants and getting out is what their job is. Something like the oil companies; they just couldn't understand the business. So we did have those kind of problems.

## A Surprising Buyout by Fluor, 1990

Humphrey: We finally got to a point where something had to give. Either we had to buy them out, or they had to buy us out. All of a sudden--we had meetings, I think it was every two months, these committee board meetings, and--

Swent: They were in St. Louis?

Humphrey: In St. Louis, and sometimes in Irvine, at Fluor's headquarters, and sometimes here at Homestake. I was chairman of that board, of that committee. Jeff Zelms attended. Dave Fagin attended, Lee Graber attended for us, and for Fluor, they had--

Swent: Let's see, David Fagin was president of Homestake at that time.

Humphrey: Yes.

Swent: And Lee Graber was the--

Humphrey: Vice president of development, yes. They had Les McCraw, who was the chief executive of Fluor, and Vince Kotney, who was the president of Fluor. So we had a pretty high-powered group.

Swent: Kotney?

Humphrey: [spells] I think it's a Gypsy name or something. So we had pretty high-powered groups at these meetings, and we'd either have them down at Viburnum, or St. Louis, or here, or there. The last meeting we had was in 1990. It was here. We sat and went through all of the agenda at this meeting, and Les McCraw turned to me and he said, "I have some other business to take up." He was the CEO of Fluor.

He said, "We, Fluor, don't want you to be chairman any more, so we're going to--according to our contract, we have the prerogative of not having you."

So I said, "That's fine, but I want you to know I'm not going to stay in St. Louis, I'm going to give up that apartment and we're coming back here, and you may not have the attention that you thought you needed."

He said, "That's okay. And I don't think we need to have these meetings so often any more." But this was after two or three hours of meeting.

So we terminated the meeting, and he walked out into the hall, and he'd been called out for a telephone call during the meeting, just for five or ten minutes. He walked out in the hall, and he pulled a check for $125 million out of his pocket and gave it to Dave Fagin, said, "Here, we'll buy you out." Very strange way to do it.

So just like that. So we said, "Sure," because we figured it would take us ten years at least to make that kind of money. So that was the end of it.

Swent: There was no negotiation or anything?

Humphrey: No.

Swent: Oh, for heaven's sake. [laughter]

Humphrey: We had been bickering back and forth, and I think we made an offer to them of some sort, to get their interest. But the problem that they had had was that they had so much money on the books for that company, they didn't want to have to take a write-down. So they bought us out, and then they took the write-down the next year. It was well over $200 million that they had on the books, for the whole thing. They paid us $125 million for 42.5 percent of it.

So that was an interesting time.

Swent: What an experience.

Humphrey: But in that time, the mine was run well. They had good operators. Jeff had been able to get the cream of the crop from the St. Joe Company, because he knew everybody and he got a bunch of young people--mine operators, concentrator operators, the smelter operators, the maintenance people, the sales group. In fact, Larry Stoehr worked in the sales group there for a while.

Swent: Oh, is that what he was doing?

Humphrey: Yes. So they were topnotch people, and most of them pretty young, I would guess mid-forties or under at that time. So they were just full of vim and vigor and willing to try new ideas, and we did develop a lot of new philosophy about mining, including the workforce, particularly the nonunion people, in some of the planning and decision-making.

## A New Mining Philosophy: Worker Participation in Planning

Swent: How did you do that?

Humphrey: They had little group meetings, and since we had so many mines and they were fully equipped, a man could keep--would use the same loader every day, or the same drill, and no one else would use it. So he would be responsible for that equipment, so his bonus depended on the availability of that machine and how he used it. So he was very careful, as if he'd owned it.

##

Swent: And this was something that had not been done before?

Humphrey: No, hadn't been done before. So because they didn't have a union, they were able to have little groups of people in these mines, and they worked four days, ten hours a day, each week. So they all got big long weekends, and they all worked together on a day shift, a ten-hour day shift. Since I left, Jeff has even included them in the planning, the longer-range planning, and the profit sharing. So it's worked very well.

## Job Rotation to Improve Morale and Management Backup

Humphrey: We started that, we started developing people to work both at the smelter and at the mines and concentrators, because there had always been some friction between, as you know, a miner and a concentrator and a smelter; they always blame each other for the lack of grade or the lack of recovery. So Jeff and I encouraged people to work, and we'd transfer them for several months, maybe a year, for a miner to go work in the smelter, and vice versa, so they would know exactly how the other guys felt about their part of the business.

In fact, we actually changed--I don't know if you remember Gary Boyer.

Swent: I remember him.

Humphrey: Gary went as the head of the mining division there, and he switched places with the head of the smelting division, which was a considerable distance away, about fifty miles, and actually moved up and ran the smelter for a couple of years. The smelter chief came down and ran the mines and mills. So they really started to understand each other a lot better.

Swent: Whose idea was this?

Humphrey: Well, I think both Jeff and I had that idea. We were concerned, I was concerned about what would happen if Jeff left or died or something, who could take over that whole operation? Because it's quite complicated. So Jeff and I talked a lot about it. I don't know how we came--we thought that it would be nice if these fellows could know each other's business better, and we wanted to do it all the way through the organization, so we did.

Swent: So you were thinking of it in terms of training?

Humphrey: Well, and having a backup for top management. That could be a real problem.

Swent: But it had other benefits.

Humphrey: Oh, yes, tremendous benefits. And of course, people were enthusiastic about it, and we got a lot of cooperation from these--it was an old company, most of the employees were old St. Joe employees; all of them, practically. There were a few at Buick that stayed. So they had a mindset about how old companies operate, and it took a little doing to convince these young people that there's a better way to do things. So the overhead was cut way back, and where they'd had a big office at each mine, and quite an elaborate office, we just cut the staff back and had just one office for the mines, centered in Viburnum. Things started to look a lot more workwise.

## Improvements in Safety Performance and Worker Health

Swent: How did this affect safety?

Humphrey: Well, then we were able to install policies on drug usage, give rewards for good safety performance, and they have had good safety performance. The mines were already doing that; the smelter was the big problem. But it affected the safety because people took a personal interest in their mine. With these several mines that we had, and the fellows working ten hours a day, forty hours a week--four days a week--they got to thinking that that little mine was their little mine, and they had to take care of themselves and the mine if they wanted to participate in any of these benefits that came from good safety practices.

With the smelters, we had a problem with lead blood levels, lead in the blood. So we had a very strict control of that, and made sure that people were aware of where they stood and why they were doing that, and protected them. If they got a high level, we'd take them out of that environment until it came back. And it does come back. So everybody got involved with thinking about that, and the environment. We did a lot of environmental work on the tailings dams and around the property, so things started to look better. It made a big difference. And you can only do that if people aren't hampered by seniority rules and work rules that don't let them do all kinds of things.

So that was a very effective--and it was a lot of fun for me, and I learned a lot, and Jeff learned a lot, and we helped each other. But he really carried the load, and he's still doing a whale of a job back there.

Swent: He's still there?

Humphrey: Yes. Fluor finally sold the whole company to a private individual, so it's privately owned now.

Swent: Where did the name Doe Run come from?

Humphrey: Doe Run was one of the early diggings in the 1880s, I think. It was called Doe Run along that old Bonne Terre trend, and it happened to be the place where Jeff's wife's parents were born, or some darn thing. To get away from having a lead connotation in the company's name, they thought Doe Run would be a nice name. I didn't think too much of it at the time, but it's--

Swent: It's so different.

Humphrey: It's different now, and it's well known. There's one of the original certificates up there.

Swent: Oh, this is a stock certificate.

Humphrey: Yes, for the original Doe Run Company way back then. I don't know what the date is on that. That's how it started.

Swent: I see. [looks at certificate]

Humphrey: 1906.

Swent: 1906. So there was a tradition of that name before.

Humphrey: Oh, yes. And then I think that particular mine closed, the Doe Run mine, and it just became part of the whole thing.

Swent: It was one of the early mines, then. I see.

Humphrey: But that whole district had pretty well played out by the time in 1960 when Paul went down there, when they discovered this new one.

Swent: Well, it was terribly exciting.

Humphrey: Yes. And it was a big thing and a big money-maker. We made a lot of money. The cash flow from that was fantastic. I would guess that whole lead business from Homestake's there, we maybe made more than a hundred million dollars in that last period of time, which was about three years, I guess.

Swent: And a check for $125 million to get out.

Humphrey: Yes. [laughter] And we only paid Amax $11 million for their half of all that. It was just a good bit of work. Both Paul and Harry did a whale of a job.

Swent: Sounds as if you did too.

Humphrey: Well, I had a lot of fun, and I was just kind of a figurehead there for a while, to try to keep the lid on these other partners. But Edna and I spent a good bit of our time back there, about half our time.

## Profit Sharing Benefits Management and Employees

Swent: Those innovative management procedures--

Humphrey: Yes, and they're still going strong. They now have profit sharing and they get--this is a privately owned company, and the employees get 10 percent of the revenues, 10 percent of the net revenues on the first dollar. They don't have to reach a certain point before they start getting it, they get it of every dollar, they get 10 percent of the profit, before taxes. So it's a great thing for the people.

Swent: Have other companies copied this?

Humphrey: No. I've suggested that we look at that, and I've been trying to get Jack to go down and talk to them about it. It's quite an innovative thing.

Swent: This is Jack Thompson.

Humphrey: Thompson, yes. And I"m sure he's interested in it, but it's really--Doe Run is such a closely knit company now that it's fairly easy to do. If you're spread out all over the world, it's kind of tough to jump into something like that, unless you try it out somewhere first.

Swent: Did you suggest doing it at McLaughlin?

Humphrey: No. You know, we had that gold bonus thing at Homestake.

Swent: In Lead.

Humphrey: Yes, at Lead, that we finally got rid of because it wasn't working right. It was based on market price and really not on performance.

Swent: That kicked in at $400 an ounce, I think, wasn't it?

Humphrey: Yes.

Swent: The miners--

Humphrey: Yes, would get a certain percentage increase in their daily rate. And I think Jack tried something at McLaughlin, and I've forgotten exactly what that was that was similar to that. And I think that worked okay.

## Homestake's Generous Savings Plan

Humphrey: But the biggest thing that I think the company did for the working man was the savings program, where you could put 10 percent of your salary or your wages away in a 401(K), and the company would match. I think that what Jack did when he was manager at McLaughlin, and we agreed companywide that we would match the hourly workers too, if they put money into a plan. And you can't beat that. The company matched, except for a few years when we were having hard times, 100 percent. If an employee put a dollar in, the company would put a dollar in also. In the tough years, we gave stock instead of money, and a couple of years we broke it down to fifty cents, I think, match.

But gee whiz, if a fellow--if you figure a man works 2,000 hours a year and makes fifteen dollars an hour, or $30,000, he can put $3,000 in and get interest, get a match for $3,000, and then that all makes interest that is tax-free until you take it out, it really adds up for an employee. It's a wonderful thing.

Swent: Yes. I think they also tried the ten-hour days, didn't they?

Humphrey: They did I think in the warm months, in the long daylight months. I don't know if they're still doing that or not. The ten-hour days at a place like Homestake in South Dakota probably won't work too well in a big mine like that. Although they're doing it at some of the mines in Canada right now.

Swent: Why? What makes the difference?

Humphrey: Well, I think just the logistics of the mine at South Dakota prevent you from doing that. You have to get a certain amount of material in and the rock out, and I think that the three-shift basis just works a lot better. You have to have different people in the same workings.

Swent: I was wondering why it would work in Buick and not at--

Humphrey: Well, because they had so many workmen along this long trend, with the six different mines, they had so many different working places that you could set a group down of ten or fifteen men and say, "This is where you work for the next year."

Swent: I see.

Humphrey: And you can't very well do that at Homestake in South Dakota, there's something like forty working levels and 120 working places, or something like that--

Swent: And only a couple of entrances; I see.

Humphrey: Yes. So logistically, that's not too good a thing to have. I think they've thought about it, and maybe even some day they'll get around to be able to do that.

Swent: You mentioned just briefly the lead poisoning aspect, but at that time, those years were also when the environmental controls became so strong.

Humphrey: Oh, yes. Fortunately, the company, particularly at the smelters, around the smelters, had kept very good records, and had very good periodic examinations of the workers.

Swent: I think St. Joe was a pioneer in that, weren't they?

Humphrey: Yes, they were. And also, then they tested the children in the schools around the surrounding areas, and took blood samples from them to show--to see if in fact there was some--. And then, of course, the sulfur smoke from the smelters got to be a problem, the same as in the copper smelters. So they put controls on that and made acid, and did have some excursions from the acid plant when it was shut down. But--

Swent: Excursions?

Humphrey: Well, sometimes you get, if you have to shut the plant down for a repair for a few hours, the smoke--the smelter keeps running and the smoke goes out into the atmosphere.

Swent: You don't mean excursion in the sense of going to a picnic.

Humphrey: No. [laughter] So you just have some gases escape. Other than that, they did a very good job. And of course, they made sulfuric acid and practically gave it away. I think it was sent to Memphis. Anyway.

So they had good controls, and Zelms was very much aware of environmental concerns. He keeps preaching to his people that they're working there only at the consent of the public. If the public wouldn't consent to have that operation, they couldn't operate. So he keeps harping on that so people become aware of really keeping the place clean and good. And I think it has worked.

## Jack Thompson's High Priorities for Safety and Health

Swent: I was wondering how much of this experience carried over into your experience at McLaughlin. Were there things you learned there that--

Humphrey: Well, of course, by then, Lee, I was pretty much out of the direct--Dave Fagin was the guy that the manager reported to. I could suggest things. So it didn't carry over too much, but you know, Jack Thompson is the same type of person as Jeff Zelms. He was very much aware of environmental and safety needs, and the sensitivities of the people not only working there, but in the surrounding development. So he really, I think, spearheaded that at McLaughlin, and watched it very carefully. I don't think we had any--there was no doubt that safety came first, and environment second, and then production.

Swent: You didn't have the toxic problems that you had with lead.

Humphrey: Well, not the same kind of problems, but when you're using cyanide, you always have a potential problem. So that I can't say that my experience at Doe Run really influenced much of what was done at McLaughlin, because I think most of it had been done by then.

Swent: I see. This was later.

Humphrey: Yes.

Swent: Well, I didn't realize that they had done these management innovations there. That's very interesting. Were these based on the Japanese models at all?

Humphrey: Well, they may have gotten an idea from them, but this is based on really--let me just see if I have a--I made some notes just on what they thought that they--[looking for notes]--how to motivate people, I guess that was it. They have a code and a business conduct, motivation. Since they didn't have a union,

what can you do to make people more aware. They have a gain-sharing program and a profit-sharing one. For the salaried people, they haven't had any salary increases I think for the last couple or three years. If they can add value to the profit by reducing costs, and show that they can do it, then they get a part of that increase, a part of that savings. Not only a part of the profit from the profit sharing, but a part of the savings. They have to comply with established norms for safety, ecology, product quality, and absenteeism, and each one of those is worth 20 percent. So if you don't comply with those, you can't take advantage of the saving.

So it's quite a neat thing. I just wrote these down. Plus, they've increased between 9 and 11 percent their base pay, just by doing this, over the past two years. Plus, they share in the profit. So the employees are doing very well. Of course, they've had some pretty good years. The price has been okay, but they keep fighting their costs down, so it's been very encouraging, what you can do with people in a company that's close-knit like that. I don't know if you could do that with Homestake being so spread out, but there are certainly some ideas that you can pick up there.

Swent: Now, there are other mines in Missouri, but not right in that district?

Humphrey: Well, that's the whole best district. All of that now is controlled by Doe Run. Kennecott used to be there, and Asarco; Cominco had a mine there, Cominco American. Right next door, actually, to the Buick mine. And those are all gone now. So it's largely a Doe Run part of the world now. Of course, it's still the biggest lead producer in the United States, in North America. Actually, they produce about 50 percent; over 50 percent of the lead in North America is produced right there. They do big business. And the secondary recovery plant is working well. As soon as Fluor--

Swent: The recycling.

Humphrey: Yes, the recycling. As soon as Fluor bought Homestake out, the very next day after pulling that check out of his--they went full speed ahead with this recycling plant that they'd been dragging their feet on. It was very strange. And that's doing very well.

Swent: Who was the phone call from? Did you ever find out?

Humphrey: The phone call was, apparently Les had called his board of directors to get a final approval, and I guess he had an

executive committee he had to clear that check with before he pulled it out of his pocket, and apparently he didn't find out until we were almost done with the meeting.

Swent: And Fagin could accept it just like that, or did he have to confer with somebody?

Humphrey: Oh, no. We knew what--we had been wondering if we could buy them out for a certain, and I think Harry had talked to them about it, and they just kind of put it off. So we were ready to do something.

Swent: He could just take it on the spot.

Humphrey: Well, but then Dave walked in to see Harry, I was by then upstairs, and Harry said, "Sure." Just did it right then.

Swent: For heaven's sake. [laughter]

Humphrey: That was really a good stroke for Homestake. Because we made--gosh, during the time we had that property going after Amax got out, we were making between $20 and $30 million a year in cash flow, on that $11 million investment. Just great stuff. So that's about the sum total of what my experience was there. I don't know how it could relate to McLaughlin.

Swent: Well, no, it doesn't need to. I'm glad we got this; this was something that we shouldn't have left out.

Humphrey: It was a lot of fun.

Swent: Was there anything else that you wanted to add?

Humphrey: No, I don't think so, Lee. I think that you've covered it very well.

Swent: Okay. Well, I'm very glad we caught this up.

Humphrey: Yes. It's a small portion of my whole working life, but it was a very interesting part. It wasn't too different from the copper business. The mills were the same kind of mills, and the smelter.

Swent: It all fits together.

Humphrey: It all fits together, yes.

Swent: Well, thank you very much.

Humphrey: Well, thank you.

Transcribed and Final Typed by Shannon Page

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Wilcox, Walter (Lake County supervisor)

Eleanor Herz Swent

Born in Lead, South Dakota, where her father became chief metallurgist for the Homestake Mining Company. Her mother was a high school geology teacher before marriage.

Attended schools in Lead, South Dakota, Dana Hall School, and Wellesley College, Massachusetts. Phi Beta Kappa. M.A. in English, University of Denver. Assistant to the President, Elmira College, New York. Married to Langan Waterman Swent, mining engineer.

Since marriage has lived in Tayoltita, Durango, Mexico; Lead, South Dakota; Grants, New Mexico; Piedmont, California.

Teacher of English as a Second Language to adults in the Oakland, California public schools. Author of an independent oral history project, Newcomers to the East Bay, interviews with Asian refugees and immigrants. Oral historian for the Oakland Neighborhood History Project.

Interviewer, Regional Oral History Office since 1985, specializing in mining history.