

Regional Oral History Office
The Bancroft Library

University of California
Berkeley, California

Western Mining in the Twentieth Century Series

John F. Havard

MINING ENGINEER AND EXECUTIVE, 1935 TO 1981

With Introductions by
Victor E. Cole
and
James V. Thompson

Interviews Conducted by
Eleanor Swent
in 1991

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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1976 SME President
John F. Havard

Cataloging information

Havard, John Francis (b. 1909)

Mining engineer

Mining Engineer and Executive, 1935-1981, 1992, xv, 157 pp.

Family background, schooling in Montana and Tacoma, WA; Depression years, mine employment, Montana; Montana School of Mines, and University of Wisconsin; employment, United States Gypsum Company, 1935-1952: mine manager to chief engineer of mines, gypsum and perlite projects in Oklahoma, Montana, California, Newfoundland, Dominican Republic; Potash Company of America: manager, Carlsbad, NM; continuous mining machine, union contract negotiations; Pabco, Fibreboard Corporation: vice president, developing selenite gypsum, management problems; Kaiser Engineers, 1965-1980: manager to senior vice president, building minerals division; projects (cement, iron, coal, uranium) in US, Canada, Australia; failure of Kaiparowits Plateau power plant project.

Introductions by Victor E. Cole, Executive Vice President, Kaiser Engineers; and James V. Thompson, Senior Mining and Metallurgical Engineer, Kaiser Engineers.

Interviewed in 1991 by Eleanor Swent for Western Mining in the Twentieth Century series. The Regional Oral History Office, The Bancroft Library, University of California, Berkeley.

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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, but not petroleum.

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.

We note with much regret the death of two members of the original advisory committee, both of whom were very much interested in the project. Rodman Paul, Professor Emeritus of History, California Institute of Technology, sent a hand-written note of encouragement just a few weeks before his death from cancer. Charles Meyer, Professor Emeritus of Geology, University of California at Berkeley, was not only an advisor but was also on the list of people to be interviewed, because of the significance of his recognition of the importance of plate tectonics in the genesis of copper deposits. His death in 1987 ended both roles.

Thanks are due to other members of the advisory committee who have helped in selecting interviewees, suggesting research topics, and raising funds.

Unfortunately, by the time the project was organized several of the original list of interviewees were no longer available and others were in failing health; therefore, arrangements for interviews were begun even without established funding.

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 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. Several alumni of the University of California College of Engineering donated in response to a letter from Professor James Evans, the chairman of the Department of Materials Science and Mineral Engineering. Other individual and corporate donors are listed in the volumes. The project is ongoing, and funds continue to be sought.

Some members of the AIME, WAAIME, and MMSA have been particularly helpful: Ray Beebe, Katherine Bradley, Henry Colen, Ward Downey, David Huggins, John Kiely, Noel Kirshenbaum, and Cole McFarland.

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 will add another dimension to the many publications about 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, Leadville, Colorado, in 1988.

Frank McQuiston, metallurgist, 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.

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.

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.

Willa K. Baum, Division Head
Regional Oral History Office

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

October 1990
Regional Oral History Office
University of California, Berkeley

Western Mining in the Twentieth Century Oral History Series
Interviews Completed, April 1992

- Horace Albright, Mining Lawyer and Executive, U.S. Potash Company, U.S. Borax, 1933-1962, 1989
- James Boyd, Minerals and Critical Materials Management: Military and Government Administrator and Mining Executive, 1941-1987, 1988
- Philip Read Bradley, Jr., A Mining Engineer in Alaska, Canada, the Western United States, Latin America, and Southeast Asia, 1988
- Catherine C. Campbell, Ian and Catherine Campbell, Geologists: Teaching, Government Service, Editing, 1989
- James T. Curry, Sr., Metallurgist for Empire Star Mine and Newmont Exploration, 1932-1955; Plant Manager for Calaveras Cement Company, 1956-1975, 1990
- James Mack Gerstley, Executive, U.S. Borax and Chemical Corporation; Trustee, Pomona College; Civic Leader, San Francisco Asian Art Museum, 1991
- John F. Havard, Mining Engineer and Executive, 1935-1981, 1992
- George Heikes, Mining Geologist on Four Continents, 1992
- Helen R. Henshaw, Recollections of Life with Paul Henshaw: Latin America, Homestake Mining Company, 1988
- Lewis L. Huelsdonk, Manager of Gold and Chrome Mines, Spokesman for Gold Mining, 1935-1974, 1988
- Arthur I. Johnson, Mining and Metallurgical Engineer in the Black Hills: Pegmatites and Rare Minerals, 1922 to the 1990s, 1990
- Evan Just, Geologist: Engineering and Mining Journal, Marshall Plan, Cyprus Mines Corporation, and Stanford University, 1922-1980, 1989
- Plato Malozemoff, A Life in Mining: Siberia to Chairman of Newmont Mining Corporation, 1909-1985, 1990
- James and Malcolm McPherson, Brothers in Mining, 1992
- Frank Woods McQuiston, Jr., Metallurgist for Newmont Mining Corporation and U.S. Atomic Energy Commission, 1934-1982, 1989
- Gordon B. Oakeshott, The California Division of Mines and Geology, 1948-1974, 1988

Vincent D. Perry, A Half Century as Mining and Exploration Geologist with the Anaconda Company, 1991

James V. Thompson, Mining and Metallurgical Engineer: the Philippine Islands: Dorr, Humphreys, Kaiser Engineers Companies: 1940-1990s, 1992

Interviews In Process, April 1992

Samuel S. Arentz, Jr. (Escalante Mine), in process

Donald Dickey (Oriental Mine), in process

Ward J. Downey (mining, construction engineering), in process

H. S. Pete Fowler (Kaiser), in process

Wayne Hazen (metallurgy), in process

James Jensen (metallurgy), in process

John Livermore (geologist), in process

Carl Randolph (U.S. Borax), in process

John Reed (rock mechanics), in process

Joseph Rosenblatt (EIMCO), in process

Eugene Smith (U.S. Borax), in process

Langan Swent (San Luis, Homestake, uranium mining), in process

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The Regional Oral History Office
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INTRODUCTION--by Victor E. Cole

It was a great day for Kaiser Engineers the day that Jack Havard walked into the Kaiser building in Oakland, California. Normally, one of the fun things about managing professional endeavors is to watch how your people develop and grow with opportunity and responsibility. But Jack Havard was a mature veteran with proven skills and experience which fortunately fit the needs of Kaiser Engineers at a critical time in its growth. There wasn't time to watch people develop to carry major responsibility in this case.

Jack Havard, in my opinion, is the best, all around, balanced, mining engineer and manager I have known. I might even coin a phrase and say that he is a persona multifarious because of his many talents. He carries his excellent training and his extensive experiences in a complete "ready to use kit bag" that is available for immediate application wherever he finds himself or whatever he is doing. In spite of many years in top management positions (where many of us lose our sharpness on technical matters) Jack Havard has always been on the cutting edge of technical competence in the mining industry. In addition, he brought with himself to Kaiser Engineers a well developed, proven set of senior management skills. And with all this, he has a special sense of responsibility toward the well being of the community in which he is working and is willing to volunteer his services to make a difference for the better. This includes his church and the professional societies to which he made major contributions in time and leadership.

Just for good measure, in this multifarious vein, Jack has a special talent in writing and making presentations. We were proud to have him represent us in any group and report of our team. He always made an excellent impression.

The way Jack Havard and I got together was a lucky happening almost by chance. A friend of Jack's, who was the chief executive of Kaiser Gypsum, and for whom I had worked several years previously, Mr. Claude Harper, was talking with Jack about a change in careers. Claude called purely on speculation and said I should meet an interesting fellow. It so happened that I had recently been given responsibility to develop the mining and minerals business into a going profitable division of Kaiser Engineers along with other divisions. I had been contemplating what I should do without making any decisions on a course of action. The idea of a proven senior professional to lead this effort was considered, but not too seriously since company policy was to promote from within the organization, and further, I didn't have a good idea of where to find such a genius.

Jack Havard walked in the door after Claude Harper's call and I was immediately alert. Jack had not been doing what we needed since he had not been involved with a consulting engineering and construction organization. However, even though it was a long shot, he had so many good basic qualifications in the industry that we both thought it could work. And work it did! Jack was given profit and loss responsibility for developing, selling, and carrying out engineering and construction services in the natural resources, mining, and minerals industry as a vice president of Kaiser Engineers on February 20, 1963.

A little insight into the Jack Havard I came to know can be gained from his reaction to this situation. His major experience had been in operation of mines and manufacturing, such that he was not familiar with the special intricate problems of designing and building. That did not cause him a moment's hesitation in his enthusiastic response to the challenge of changing direction to make a success of a business he would have to learn as he went along the way.

There is no need to say more about Jack's many experiences developing super capability in several divisions of Kaiser Engineers since it will be covered in his biography, except to say that he was a resounding success. He gave us fourteen years as a corporate officer, finishing as a senior vice president, and then many more years as a senior consultant. While he did this, he faithfully served the professional organizations of the industry on a national and international scale as chairperson or officer of many groups. As an example, Jack was president of the Society of Mining Engineering for a full term which required that he travel extensively on behalf of the society, all on top of his demanding schedule of running a business for Kaiser Engineers. He never missed a beat covering both activities.

There are many stories that could be told about Jack and his relationship to the people he worked with. Perhaps they could be summed up by saying he was always known as a gentleman and a man admired by his associates. He was and is a highly valued friend to me.

If I were to think of just one of his most valuable traits, I would recount the optimistic, up-beat attitude he possessed when facing hard business decisions. Such a spirit helped lift the weight of executive problems in a turbulent business. Since both Jack and I had backgrounds in the gypsum industry, if things got too tough to talk about in the engineering business, we could just dump that conversation and talk about the gypsum business.

The day Jack Havard reached mandatory retirement age marked a day of loss to the company and the many friends who revered his guidance. What he had built continued on in a way which was a tribute to the careful builder who nurtured it to prominence and success. Jack did stay on as a consultant for several special assignments.

Many of us look back to the relationships that bred close friendships and are very grateful that John F. Havard came along the road at the right time to be a significant part of the history of the Kaiser family of companies.

Victor E. Cole
Executive Vice President in charge
of Operations (retired), Kaiser
Engineers, Inc.
Adjunct Professor, Civil Engineering,
University of California, Berkeley

March 1992
St. Helena, California

INTRODUCTION--by James V. Thompson

I first met John F. Havard in the early spring of 1963. Jack, as he preferred to be called, had joined Kaiser Engineers to reorganize and head up the group that was responsible for obtaining design and construction work in the mineral industries. A further assignment of this group was to provide initial services to clients in feasibility studies, preliminary engineering, and capital cost estimating. If a major job materialized from these efforts Jack and his group continued to be involved.

After our first meeting I did not see much of Jack for about six months; he hit the ground running, traveling almost constantly on business development and meeting present and potential clients. Early on he obtained a construction job in Montana.

In business you get to know the boss best when you travel with him, and I made several trips with him both domestic and overseas. He has a hands-on, but light touch, management style. I never once saw him even come close to losing his temper or speak harshly to anyone. If he had confidence in an associate he required only that he be informed on progress and major developments. If he did not have confidence in an employee and surveillance of that employee became too burdensome and corrective measures failed, he removed that person by transfer if possible, and only as a last resort by termination.

Jack was professional in every respect regarding the mineral industries and he built a professional team. Some were more into the nitty-gritty of engineering and some were better communicators than others, but for the most part all of the team that Jack built were good engineers and communicators. Jack had a few failures in selecting people and discharging them hurt him in two ways: he is a compassionate person and did not like to bring hardship on anyone; and second, he felt that he to some extent failed when he selected the person in the first place.

I worked for Kaiser Engineers for twenty-five years (three years on contract after formal retirement) and seventeen years were spent working under and for Jack Havard. Of all the executives in Kaiser Engineers he was to me without a peer; yet he was not an "old time Kaiser hand" among whom there were many greats.

I have kept in touch with Jack, since our retirement, through letters, phone calls, and occasional meetings. In addition to working for a great executive I made a great friend.

Jack can contribute much to the history of mining in the West in the twentieth century. He was a young adult during the Great Depression whereas I was only a teenager. It was a time of trial for those like Jack who would ultimately make their mark in the mineral industries. His story will make good reading.

James V. Thompson
Senior Consulting Engineer (retired),
Kaiser Engineers, Inc.

March 1992
Layfayette, California

INTERVIEW HISTORY--John F. Havard

Jack Havard was recommended for the oral history series on Western Mining in the Twentieth Century because of his outstanding career as geologist and mine manager with major companies, culminating as senior vice president of Kaiser Engineers. His profession has awarded him all of its highest honors: President of the Society of Mining Engineers in 1976; member of the National Academy of Sciences National Committee on Geology; the Hardinge industrial minerals award of the American Institute of Mining, Metallurgical, and Petroleum Engineers; distinguished service citation from the College of Engineering of the University of Wisconsin; honorary chairman, University of California Mining Association.

His oral history tells of his research as works manager for United States Gypsum at Heath, Montana, which led to revolutionary improvements in the manufacture of gypsum board. At Heath he also successfully handled a mine cave-in. Subsequently he traveled widely as chief engineer of mines for U.S. Gypsum. Then he became resident manager at the Potash Company of America plant near Carlsbad, New Mexico, where he not only represented management in labor negotiations, but was accepted by the union as arbitrator, which testifies to his skill in human relations.

He came to California in 1953 as vice president of Pabco, which later became Fibreboard Corporation. He discusses his difficulties in this position with a troubled company. Then he went to work for Kaiser Engineers as manager of mineral projects, later became vice president of the minerals division, and retired as senior vice president. During nearly twenty years with Kaiser, he led the company in continuous growth in planning, engineering, and construction projects around the world.

When the oral history series on Western Mining in the Twentieth Century was begun, Mr. Havard was one of the first to be invited on the advisory committee. He was enthusiastic and helpful from the start, recommending several interviewees and facilitating the progress of the series. Some interviews with another narrator were held in his charming guest house in Nevada City.

When he was invited to be an interviewee himself, he first declined out of modesty, but then was persuaded that his oral history would add valuable documentation of the contemporary mining industry. The formal letter of invitation to participate was sent to him on 25 January 1991. The untimely death of his wife Faith intervened, and after a planning session, four interview sessions were held at my home in Piedmont, California, on 4 and 5 September and 25 and 26 October 1991. He was well prepared, with

documents at hand to refresh his memory. The tapes were transcribed by Deborah Kirk in Grass Valley and lightly edited at the Regional Oral History Office. When the transcript was sent to him for review, he returned it very promptly with few changes.

The two introductions are by Kaiser Engineers colleagues Victor E. Cole and James V. Thompson. The tapes of the interview are available for study at The Bancroft Library.

Eleanor Swent, Interviewer-Editor
Western Mining in the Twentieth Century
Series

March 1992
Regional Oral History Office
University of California, Berkeley

BIOGRAPHICAL INFORMATION

(Please write clearly. Use black ink.)

Your full name JOHN FRANCIS HAVARD (JACK)

Date of birth MARCH 18, 1909 Birthplace HELENA, MT.

Father's full name FRANCIS THOMPSON HAVARD

Occupation METALLURGICAL ENGINEER Birthplace IPSWICH, AUSTRALIA

Mother's full name MARGARET ELIZA RALEIGH

Occupation HOUSEWIFE Birthplace HELENA, MT.

Your spouse FAITH HARTLEY (DIED MAY 11, 1991)

Your children DAVID FRANCIS, EDITH ANN (BRITTS)

JOHN HARTLEY, PATRICK WILLIAM

Where did you grow up? PACIFIC NORTHWEST, MONTANA

Present community NEVADA CITY, CALIFORNIA 95959

Education MONTANA SCHOOL OF MINES, UNIVERSITY OF

WISCONSIN (P.B., Ph. M., B.S., E.M.), HARVARD AMP

Occupation(s) MINING ENGINEER, GEOLOGIST, WORKS MANAGER,

CORPORATE VICE PRESIDENT, MINING CONSULTANT

Areas of expertise MINING, GEOLOGY, MANAGEMENT

Other interests or activities 22-ACRE HOME PROPERTY,

READING, FORMERLY TENNIS AND BACK

PACKING

Organizations in which you are active SOCIETY FOR MINING, METALLURGY,

AND EXPLORATION, SOCIETY OF ECONOMIC GEOLOGISTS,

A.A.A.S., EPISCOPAL CHURCH, CIVIC AFFAIRS

Havard: In visiting Wales I found no record of it, but I did find southeast Wales swarming with Havards--a hundred of them listed in two phone books. The name is rare over here.

We do have the family crest, a bull's head with the motto "In Dio Spes Est" or "In God is hope." I have not yet filled the genealogical gap between 1597 and the year of my grandfather's birth, 1846.

My grandfather Havard, whom I never met, was born in the little town of Abergavenny. I visited it and found a beautiful little town with exposed-timber buildings, lovely homes, and of course the ruins of a castle. It is bustling with activity. The town is largely surrounded by lush dairy farms except where it reaches the foothills of the Black Mountains, a national park area.

Incidentally I have four first cousins in Australia. We are especially close to one family, with considerable visiting back and forth over the years.

Swent: What about the immediate family?

Havard: My father was born in Australia in the little town of Ipswich, which today is a suburb of Brisbane, and the reason that he was there was that his father had pursued his true love from England to Australia.

A man named Ramm was one of the first railroad contractors and had built railroads in Spain and then was asked to build railroads in Australia, in Queensland. The little town of Ipswich happened to be a convenient place for the various railroads that branched out into Queensland. Mr. Ramm travelled around the Horn from England with his daughter, Mary, to Australia and went about his business of building these railroads.

The story is they had a terrible trip around the Horn in a sailing vessel with a very cruel type of master of the ship, so that it was a very unpleasant experience. But they made it.

Swent: About what year was this?

Havard: This was probably about 1869. My grandfather, William Havard, was a young solicitor who had fallen in love with Mary Ramm in England, and he pursued her half the way around the world to Australia, and they were married in Brisbane. I think you can classify that as a true love affair.

And out of that union were born four sons and a daughter, and the youngest member of the family was my father, whose name was Francis Thompson Havard, and as I understand it, he was a normal schoolboy, enjoyed sports, and was educated at the Ipswich Grammar School, which is still in existence and still has quite a reputation around Oceania, or Australasia would probably be more accurate.

Swent: Francis Thompson was a poet. Was your father named for the poet?

Havard: I don't know; I doubt it. He came from a good Anglican family, and I am quite sure they would not name him after that Francis Thompson.

My father was educated at the Ipswich Grammar School and was graduated from there. His mother was a rather strong-minded woman who was interested in the careers of her children and decided that metallurgy was a coming field. So the decision was made that he would attend Freiberg, the great technical university in Germany, which at that time was outstanding in the field of mining and metallurgy. And so he entered Freiberg in 1897, so well equipped in German from his Ipswich Grammar School that he could move right into a German technical university and participate as a student. He was graduated from Freiberg in 1901. One of his best friends was an Irishman from the sweet vale of Avoca--Jack Wynne. I was named after him.

Swent: This was in the Hartz Mountains.

Havard: On the fringe of the Hartz Mountains in Germany.

His first job was as furnace foreman at the Great Falls Smelter in Montana, and while there he was a young, single man-about-town and was invited to a ball that was held at the Park Hotel in Great Falls, which was a great establishment in those days, by the owners. People were invited from the Butte-Helena-Great Falls Corridor and from elsewhere in the United States. At this ball, my father had a dance with my mother, and there was an immediate attraction. She had been invited to the ball from her home town of Helena.

Swent: Love at first sight?

Havard: Right. It was love at first sight, by two highly romantic people, but they didn't get to know each other well enough to become engaged. Shortly thereafter, he was offered work in Germany, and he went back to Germany and operated some mines in the Hartz Mountains for three years, keeping up a correspondence with my mother, which is quite a formal correspondence.

Swent: Has this been preserved? Do you have those letters?

Havard: Oh yes, I have those letters.

Swent: What a treasure.

Havard: And they are very interesting because of the way they addressed each other in very formal ways, you know. But my mother had made up her mind that that was the man for her. He left then, after the conclusion of his work in Germany, came back to the United States to Helena, and proposed to my mother, who, of course, accepted, and then he went down to Chile to build a copper smelter for the Copiapo Mining and Smelting Company, which issued him, as part of his pay, some stock which I still have and which are interesting pieces of paper. He was down there eighteen months.

Swent: And this is in what part of Chile?

Havard: In the northern desert of Atacama.

Swent: The Atacama Desert--not a good place to take a bride.

Havard: No, he originally thought that he might send for her and they would be married down there, but he found the conditions were too rough for her. So at the conclusion of that job, he came back to Montana, and they were married in Helena.

Swent: This must have been about 1905?

Mother's Family, the Clarkes and Raleighs

Havard: In 1908. And the other side of my family, my mother's side, also is full of pioneering incidents. My great-grandfather, whose name was Albert Gallatin Clarke, had a business in Missouri, near St. Joseph, Missouri. His two brothers were officers in the Southern Army, and somebody had to support the family somehow. And of course, Missouri was very badly disturbed by the Civil War and by Quantrell's Raiders, which are famous for their forays into Missouri.

He made up his mind to establish a business in the new gold fields in Montana. So he loaded up a flatboat with mining supplies and various other materials, including some china, and he took this material up in a flatboat to Ft. Benton, Montana, where he hired teams and was taken across country to Virginia City,

which was then the center of gold mining. After a few months in Virginia City, he decided he was in the wrong place.

So he moved to Helena, which recently had been called Last Chance Gulch. The reason for the name was that a group of prospectors had been hunting gold through the country and had become very discouraged and had done some panning on Prickly Pear Creek, as it was called, and then gone elsewhere. One night, they had a discussion among themselves and said, "Well, we're not finding a thing. We're going to have to give this trip up. Let's just go back to Prickly Pear Creek and try once more. That will be our last chance." So they went into Last Chance Gulch, and they hit gold. That was the beginning of Helena, Montana.

My great-grandfather heard about it and moved his stock of merchandise to Helena and prospered mightily in merchandising, livestock, and mining.

Swent: Gallatin is a big name in Montana, and around there. Is this--

Havard: Oh! That is a separate story. I don't know why he was named after Albert Gallatin, but Albert Gallatin is a figure in United States history who never gets the amount of credit he should get, because he follows people like Adams and Jefferson, and somehow he doesn't get attention. But he was a young Swiss who came over here to the state of Pennsylvania and was elected to Congress and later had a life of great distinction, including being secretary of the treasury, and was part of the team that negotiated the end of the War of 1812. And he was ambassador to France. For some reason or other, his name became widespread in Montana, and I have never been able to see the connection, but there are rivers and mountains, and a county, and an airport named after him.

Swent: But your grandfather's name, you think, was independent of this?

Havard: I think my grandfather's parents must have had an admiration for Albert Gallatin, who was contemporary.

Swent: But they weren't related, that you know of.

Havard: Not that we know of. There may have been an acquaintanceship or something. We don't know. At least, I can't find any record on it.

Swent: It's a very distinguished name to have.

Havard: Well, Albert Gallatin was a very interesting man. One title sometimes given to him is that he is the Father of American Ethnology, because he had a great interest in the natives and

their practices, along with all the other things he did.

Swent: But your Albert Gallatin Clarke was known as "China" Clarke.

Havard: He was known as China Clarke because of the dishes that he brought along, and that name lasted all his life, even though he was a very distinguished-looking man and very dignified. Nevertheless, he couldn't escape that nickname.

Swent: And he became very wealthy.

Havard: He became very wealthy, not only in his store, but in cattle and mining and so on. As soon as he was settled, he asked his daughter and her husband, who had just been married, to come out and join him. So they got on the Central Pacific Railroad, which had just been built, got off at Ogden, and then travelled five days by stagecoach from Ogden north to Helena, where they settled down, and the firm of Raleigh and Clarke was formed. My grandfather's name was William Raleigh. They both, China Clarke and my grandfather, built mansions in the style that were built in those days. It was rather interesting that in Great Falls and Helena and in Butte, many of the business and professional people were Southerners, and they all tended to know each other, and they had a great social life--built these big mansions and put on big parties. And it seems strange nowadays to think of them, these little towns, but it was the Southern tradition.

And another interesting sidelight is that Helena, of course, was on the mainline of the Northern Pacific, and the train ride from Chicago to the West Coast was quite long, and various celebrities would stop off in Helena, particularly artists, because Helena had a nice theater. I know that Madam Schumann-Heink, a great soprano, and Carrie Jacobs Bond, who wrote many popular songs, were both guests in my grandparents' house. It was a rather interesting community of people.

Swent: And it's now the capital.

Havard: Yes, as a result of a great political struggle, which in itself is a fascinating story that reflects the great rivalry between the [Senator W.A.] Clark interests and the Anaconda Company's interests. Marcus Daly wanted the capital to be in Anaconda, which was his town, and Clark fought it fiercely, and in the end the people voted for Helena. That was not an easy choice.

Swent: Was it already the capital when your family was there? No, of course, it wouldn't have been. Not when your great grandfather came. So they must have been involved in that.

Havard: They had certainly voted for it as the capital.

Swent: Was your family involved in the politics of the state?

Havard: Very little. Apparently, China Clarke was not interested in politics and was not interested in being in the public scene very much. He was a bank director, and that sort of thing, but his name does not appear in the politics at all. I think he avoided that political scene. Anyway, there were pioneers on both sides of my family.

Swent: And this ball was part of the Southern social life?

Havard: Right.

Swent: So then your father came back, and your parents were married there in Helena.

Havard: In Helena. And then my father engaged in various consulting work, mining and metallurgy, around the state. Then I appeared on the scene. I was born March 15, 1909. And I was born in my mother's own bedroom in the big house she was brought up in, because the nursery at the hospital had an infection loose in it, and they didn't want me to go to the hospital.

Swent: Of course, in those days a lot of children were born at home anyway.

Havard: Yes, I imagine. So after I arrived in the scene, my father decided he should stop roaming and try to find a position where he could be stable and help bring up his little boy. He was offered a position starting the Metallurgy Department at the University of Wisconsin and took it, and we moved to Madison, I would assume in 1910.

Swent: Do you have any idea how he happened to be called to Wisconsin?

Havard: I don't know. I don't know what the contact was.

Swent: He must have had connections of some sort.

Havard: He had made many influential friends in New York and places like that in his work, so I suspect that one of these probably spoke up for him. He enjoyed his work very much, and while he was there he wrote what was for many years the standard textbook on refractories, called Refractories and Furnaces. Shortly after he completed that book, he got pneumonia, and he died in the hospital, because in those days it was a gamble. Either you lived

or died if you got pneumonia. And he was a healthy, athletic, young man, but it took him.

Swent: How old was he?

Havard: Thirty-four. And I was four.

Swent: Terrible. So there was your mother in Madison, Wisconsin, with no family around.

II EDUCATION AND EARLY TRAINING

Havard: Well, in the meantime, my mother's family fortunes had disappeared, literally, and so we had royalties from the book and small life insurance payments to live on. My mother was very restless, so we moved around the West a great deal.

Swent: Where did you start school?

Havard: I started school in Helena, Montana.

Swent: She went back there first.

Stadium High School, Tacoma, Washington

Havard: I wound up graduating from Stadium High School in Tacoma, Washington, which fortunately was an excellent high school.

Swent: Did you have relatives in Tacoma?

Havard: No. We had a friend there that wanted a house looked after while she travelled, and that's why I went there.

Swent: So you had a place to live anyway.

Havard: Yes, for a year.

Swent: But your mother was not very strong.

Havard: Well, she was physically strong, but she was disturbed mentally. The term they used--she was nervous. Well, she had more profound problems than nervousness and couldn't possibly hold a job or anything like that. So I was brought up really as a poor boy, but she always had an interest in finding some little place to live in a good neighborhood. So I always got to good schools.

Swent: You must have had a lot of responsibility.

Havard: Yes, I sort of started taking care of her when I was four, in a way. It's not really true, but partly true.

Swent: You had to grow up very, very young, I'm sure.

Havard: Stadium High School in Tacoma was an extraordinary experience, and I look back on it now, with all the troubles they have in high schools, and think of that place, where you never had to worry about anything ever being stolen, where you never had to worry about drugs or liquor, where there was so much activity for people to do after school. You know, athletic teams and girls' athletic teams, and clubs of all kinds.

The biggest impression made upon me was by a man who taught journalism, which is sort of an unusual high school course. His name was Ural Hoffman, and I'll never forget him. He not only taught journalism, but he taught us really, basically, how to write English. So we put out a weekly newspaper of which I became editor, and it was just a great high school experience. And a total contrast with the problems we hear about today. No girl ever got pregnant. You know, just a different world.

Swent: How many were in the high school? Was it a big school?

Havard: It was a big school, about 1800. Senior high school.

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Swent: And your English and writing training has certainly stood you in good stead ever since, hasn't it?

Havard: Yes, it certainly has.

Swent: In fact, I think you said at that time you hoped to become a journalist.

Havard: Well, this man got me so interested in it, I expected to make a career of journalism. And he expected me to make a career of journalism.

Writing Radio Continuities

Havard: At that time, my mother and I were absolutely running out of money. There wasn't any left. And just at the right time I got a job writing what we called "radio continuities" for a Seattle radio station. The client was Sperry Flour Company, which has long since been absorbed by somebody, and I had to write a program for every evening, five days a week, which meant that every day I had to complete a program. I started soon before I finished high school. I doubled up the end of high school and the beginning of this job.

Swent: What sort of program was it?

Havard: Well, I wrote travelogues, if you can imagine. And I wrote to every Chamber of Commerce where I could get information, and wrote these things. And then there was a man and a woman who provided the music, and that was it. Prime time. Six-thirty in the evening. Radio was pretty crude in those days.

Swent: Did you do the speaking, as well?

Havard: No, I just wrote it. Meanwhile, I registered at the University of Washington in journalism. And when the contract had expired for that particular program, of course, I was out of work, so I began to hunt for work, in Seattle particularly, so I could go to the University of Washington. And I was unsuccessful.

Mine Labor. Rimini. Montana

Havard: I think that the Depression was not too far away, and it was very difficult to find anything. I had a cousin who was starting a new mining venture in Montana who wrote to me and asked me if I would like to come and work for him. I had no alternative. I said, "Certainly." So I went back to Helena.

Swent: What was your cousin's name?

Havard: His name was Phil Barbour, and his partner, who had the money, was Norman Slade, who was the grandson of Jim Hill, the railroad builder. I think that my cousin's first idea was that I was to be kind of a staff man for him and work on claims in the courthouse, and do that sort of thing, but he quickly ran out of that kind of work and sent me up to the mine to work as a laborer. The mine was about seventeen miles from Helena, up near the Continental Divide, in a famous, little old mining town called Rimini [rhymes

with "eye"] which, of course, should be pronounced Rimini [rhymes with "me"] and was probably named after some travelling show that stopped in Helena.

Swent: What were they mining?

Havard: Well, my cousin had a great interest in mining, and his father was a physician whose hobby was grubstaking miners who had something that looked good up in the mountains. And Phil had gotten some training by following that.

His reasoning was that the great Butte camp was at the southern end of the Boulder Batholith and that Rimini, an old mining camp, was at the north end of the Boulder Batholith, and that Butte had started with gold, silver, and lead mines near the surface, with the copper discovered deeper, and Red Mountain at Rimini had only been mined superficially for lead, silver, and gold. His thought was that maybe there was another Butte looming there. So he was going to drive a crosscut adit or tunnel deep into the bowels of Red Mountain to see if he could hit a situation parallel to Butte, which wasn't such a bad idea.

So by the time I got there, this adit had just been started, and I went to work, first outside as a laborer, and discovered that I was in terrible physical condition to do that kind of hard work. I had worked before in factories and whatnot in the summertime, but I had never been up against a pick and shovel and the kind of work I had to do there. But I did it. I persisted and did it.

Swent: Where were you living?

Havard: Well, we were able to rent a little cottage. My mother was with me. We rented a little cottage in Rimini, and in the summertime this little cottage had running water from the stream, and in the wintertime every morning I would take an ax and two buckets and go off and break the ice in a nearby horse trough and fill the buckets of water and bring them back, and that was the water for the day. The result was that we didn't bathe very often. I didn't [laughter]! Once a week I bathed in a tub in the kitchen. Anyway, and when it's the wintertime--

Swent: What did you burn for heat and fuel?

Havard: Wood, which was delivered as cord wood and which I had to saw and split by hand every day, to have ready for the woodstove. We had a little stage which was a Ford--kind of a station wagon of that day--driven by a young farmer who did the shopping in Helena for



Jack Havard working for Montana
Lead, Inc. Rimini, Montana, 1928.

the citizens of Rimini and brought the mail and the food up to the camp for us.

Swent: You gave him your list, and he picked it up.

Havard: He had great pride in getting through, and if the snow got deep, he'd come through with a team and a sled, but he'd get there one way or another [laughter]. And kept us alive.

Swent: You were working six days a week, seven days a week?

Havard: I can't remember; it must have been at least six. I think it was six, because I did have a girl friend, and I mean just a friend, in Helena, and on occasional Saturday nights I hooked a ride to town and would take her to the movie and stay overnight with relatives and come on back, and so on. It must have been a six-day proposition.

Swent: What was there at Rimini? Just a few houses?

Havard: Well, it was a typical movie set. You had the dirt road following the creek, you know, up into the mountains, and the little town was spread along the road, with one little side street with a few little cabins on it. And the town at one time had been quite prosperous and had a number of businesses, all of which were log cabins with false fronts. Typical. Just exactly what you would see in movies. And there were no stores or anything up there. The only commercial establishment was Mrs. Wilson's boardinghouse, where the single miners ate very well indeed.

Ethel the Mule

Havard: After working as a laborer, I began to get more responsible jobs, and this leads me to tell you about Ethel. Ethel was a mule. We had been hand-tramming the cars out of the tunnel, and I had done quite a bit of that. I mean, just to push the empty car in, and ride and push the loaded car out to the dump and spill the contents. But we were getting too far back for a one-man hand-trammer to keep up, so Phil hired Ethel and Ethel's mule skinner. Ethel's mule skinner was named Shorty. He was really short, probably about four feet tall, and had the map of Ireland on his ruddy face. He and Ethel were a pair and loved each other, and I will never forget the day they came into Rimini, and he drove Ethel with great dignity up the main street to her stable. I should mention that Shorty's unvarying lunch was a pancake sandwich--a pancake between two pieces of bread.

And of course, he was her mule skinner underground, and I think she handled three or four cars at a time and knew her business and had done it elsewhere. I think he probably served both shifts, because mucking was only half the shift, you know. But he was afflicted with prosperity and had saved his money. He disappeared, and I was led to understand that this was normal procedure. That after he had accumulated a certain amount of wages, he would go to some town and blow it, you know, drink it away. Anyway, he was gone six weeks on this big bash, and I was appointed the mule skinner. So, Ethel and I--

Swent: Oh, he didn't take Ethel with him?

Havard: No, no. He left Ethel behind, and I skinned Ethel. I learned how to be a mule skinner, but I didn't have to learn much because Ethel knew more about it than I did [laughter] and behaved herself perfectly until the last night when I put her in her stable, and she expressed her contempt for me by lashing out at me with both her rear hooves and fortunately missed me. But I thought, all right, she realized that she had had a lousy skinner for six weeks, and she was going to show me.

So then I was promoted to run the compressor and do all the outside work on the night shift. This compressor was a mechanical marvel by today's standards. It was a Chicago Pneumatic semi-diesel engine and compressor, the like of which, fortunately, we no longer have to put up with. The semi-diesel engine meant that it worked under lower pressures than a normal diesel engine. You started it by putting a blowtorch on a hot tube in the head of the engine, got that tube cherry red, and then you would hit the machine with the compressed air from the tank where you kept the compressed air stored, and kicked it over, and it would start running. And it ran along all right, compressing air with its very inefficient engine, and it would burp little circles up above the smokestack.

The problem with this engine was that once a month it had to be taken down and cleaned. And so I would stay over (the shift would end about three o'clock in the morning), and the master mechanic would come up, and we would tear the engine down and become absolutely filthy with grease in the process, clean the engine up, and put it back together again.

Swent: It burned diesel?

Havard: It burned diesel fuel.

Swent: Where did you get that?

Havard: Oh, I think that was brought up in barrels. It was a very inefficient machine.

Swent: Why was it called "semi-diesel?"

Havard: Because it didn't have the compression that it takes to be a full diesel engine, you know. You had to start it by getting this tube cherry red and then kick it with the air. And the tube would stay hot, and it was only a partial diesel. It was very soon superseded by the full diesels. You know, it was an anachronism.

Swent: What did you use the compressed air for?

Havard: Well, that was used in a normal fashion underground. We had a pipeline into the mine. The miners were very skilled, and they were equipped with the big heavy Ingersoll-Rand drifters, and they used a crossbar to mount the drifter on, which is a practice that is now obsolete. The muck was hand-mucked off the turn sheets (steel sheets) and into the cars.

After the muck was shovelled off the turn sheets, the tough part was mucking on the rough, as they would say, where your blast had taken place, and, of course, where you had no turn sheets. I would always go in at that time and help them muck off the rough. You used a round-point shovel, and that was hard work because there was no steel sheet. You were just digging into the pile of broken rock. Then after that was done, the machine was set up again and the lifters of bottom holes were drilled, with the drill underslung on the bar.

Swent: Were these jackleg drills?

Havard: No, no, no. These are not jacklegs. Before jacklegs. This was a big, heavy, horizontal bar that had a screw on one end of it. And you would mount this lifter (which was a quite a heavy machine, all I could do to lift it), and you would drill your holes off the horizontal bar, and that could be done while the muckers were working on the turn sheet. And everybody had a turn to get the muck off the rough. Then you would put the machine down underneath the bar and drill the lifters. All of this was an excellent education for me.

It was also up to me to prepare the explosives for the night.

Swent: What kind of explosives?

Havard: Well, we used real gelatin dynamite, potent stuff, and we used number-eight caps and fuse. The rock was hard, so we used the real gelatin dynamite.

Swent: You had to be really careful with it.

Havard: Yeah, we had to be careful with it. I'll never forget one night. I would get everything together and put it into an empty muck car, and it would be taken back in. And there would be a box or so of dynamite in the bottom, and then the primers would be on top where the caps were inserted into the dynamite. And one night the muckers didn't look. They started mucking right into that car, and discovered to their horror that they were throwing rock on top of those primers [laughter].

That's as close as we ever came to having a real disaster. Never had much in the way of accidents because the men were good, you know. We didn't have a lot of safety rules printed around. We just had people who knew what they were doing. And taught me how things should be done. I was a very willing learner. Fascinating experience for me. There are lots of stories that go with Rimini--too long to put into this.

Swent: Oh, no. Tell some more.

Havard: Well, one more story. Before I was promoted to my responsible night-shift job, I spent several months in the morning striking steel for the blacksmith. He was a big wonderful man, maybe 6' 5" and fit. This was before detachable bits came into use. The bits were an integral part of the drill steel, which of course came in various lengths. The blacksmith had a synchronized program of heating the bits in a forge, shaping them while red hot, and then tempering them just right in a water bath. Well, my job was in the shaping, first swinging a twelve-pound sledge against the die which the blacksmith held against the red-hot dull bit and then finishing the job by tapping a sharper die with a light hammer. My chief objective was not to hit the blacksmith's hands! I did--on my first day. He just looked down on me, not saying a word, just looked down on me. I never hit his hand again. In time I developed a modest degree of skill and a considerable degree of new muscle. I loved this job--the huge, genial blacksmith, the red-hot steel, the sizzling water, the smell of the forge, the taste of sweat--you know, a fun scene for an impressionable youngster.

In those days I could step back and look at a whole scene, and the scenes around that mine trapped me into a romance with mining which has never left me.

Swent: That picture explains a lot.

Havard: The end of it was that after I had left they kept going until they were in there I think 3300 feet, and while they hit veins, they never hit a commercial vein, so the venture was a failure, unfortunately.

Swent: Did they get the costs out at all?

Havard: No.

Swent: Nothing. What a shame.

Havard: No, they never developed any ore. They did hit the veins. The veins were there. They were not copper-bearing, so it was not a successful venture. But I was gone.

Swent: I think you said along in there somewhere you also got a letter from the newspaper in Seattle.

Havard: Well, just after I got on the job, the newspaper in Seattle wrote me that I had the job as university reporter, but it was too late.

Swent: You were a miner by then.

East Helena Smelter. American Smelting and Refining Company. 1929

Havard: Well, I was a laborer by then [laughter]. Learning how to do hard work. Well, anyway, partway through this, it must have been early spring of 1929 that Phil ran out of money for a while, and I rustled a job at the East Helena Lead Smelter of American Smelting and Refining Company.

I hadn't mentioned this before. It's interesting that I was given a physical examination before I went to work in the smelter--this was 1929--and the doctor gave me very clear instructions on how I was to handle myself from a health standpoint, that I was to always wash my hands before I ate, that I was to drink lots of milk while I was on the job, and I was to wear a dust collector if there was any chance of any dust. So the company at that time was aware of the hazards of lead and were instructing their new employees on how to handle themselves. Actually, they didn't know how really deadly it was in terms of dust that you don't see in the air. But at any rate, there was a real good examination and real good instructions to the best of their knowledge at that time.

And my job was to run three Dwight-Lloyd roasters. These were standard grate roasters that were used in the metallurgical industry, and I think we had a bank of eight of them. They were small machines by today's standards, and I had to run three of them. I think it was probably the worst job I ever had in my life, because it was so dull. Most of the time, you just walked up and down, up and down, watching these machines, you know, and looking at the feed that was going onto them. But if anything went wrong, then all hell broke loose.

Swent: What sorts of things went wrong?

Havard: Well, I don't remember. A chain would probably break or something, and the machine would shut down. The foreman would come running, and the mechanics would come running, and it would be a frantic scene. But shift after shift, it was just as dull as it could be.

Swent: Nothing went wrong.

Havard: Nothing went wrong. You just walked up and down on this bank of roasters. Those machines have all been taken out and replaced by one modern machine. But the mine reopened, and I left the smelter and went back up to the mine.

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Havard: I was only at the smelter one month. Then I went back up to the mine and renewed my work up there.

Swent: They were still trying to mine?

Havard: Yes, they got their finances together and reopened. I went back up, and I made a trip over to Butte to see if I could enter the Montana School of Mines. By this time, I had become fascinated with the mining business as I observed it. And I was exposed to one of the most interesting situations you can get in, which is exploration, where day-to-day you are always looking for something remarkable to happen. I found out that I could get in there [at Montana School of Mines], and I think I had saved up three hundred dollars, which was enough to make the move.

Swent: You haven't said how much you were paid for your work at Rimini.

Havard: I was paid five dollars a day.

Swent: As a laborer. And were there any benefits?

Havard: Oh, no. You took care of yourself.

Swent: And you were still able to save?

Havard: I think I saved three hundred dollars, and that was enough to move.

Swent: And you were supporting your mother, as well?

Havard: Oh, yes. All of the time. Of course, our expenses up there were not very high.

Swent: Well, you had to buy your own work clothes.

Havard: Yes, and I think our rent was something like fifteen dollars a month.

Swent: Did they have hard hats yet?

Havard: No. I should mention that. The hats were soft, cotton hats, and we used carbide lights. Safety shoes were not in use. So that, really, there was no safety equipment.

Swent: What sort of clothes did you wear? Blue jeans? Denim?

Havard: No, just brown work clothes, and in the wintertime you wore warm underwear and layers of clothes, winding up with a sheepskin coat, if you were outside.

Swent: Was it wet underground?

Havard: Yes, it was wet underground, at times. If it was wet, we just put on slickers. I would finish up, when I was running the compressor and doing outside work, somewhere around three o'clock in the morning, and then I would have to walk a mile down the road back to town by myself, because it was my job to start up the ventilating fan and blow the powder smoke out, do the last chores, and then walk home, about three or four o'clock in the morning. And, if it was cold, then I had a big sheepskin coat that would keep me warm.

Swent: So the mine was working two shifts?

Havard: Two shifts, yes.

Swent: And you were really working both shifts?

Havard: When I was running the compressor and doing the outside work and going in and helping in the mine occasionally, that was all on the night shift.

Havard: And in spite of all that, you still liked it?

Havard: Oh, I loved it. It was fascinating. Well, I went over to Butte, and we rented a little, tiny, tiny house not far from the Montana School of Mines, and I started job hunting.

Laborer. Timber Butte Mill. Butte. 1929-1930

Havard: And I was very fortunate, because without much looking, I got a job as a laborer at the Timber Butte Mill, which was south of Butte, and was a rather noted flotation plant because of the new processes which had been developed there. My job was simply doing whatever labor the crew was required to do. This was afternoon shift. The first thing we had to do was to unload the incoming ore cars, which were bottom-dump hopper cars of about fifty tons capacity. We had to unload them into the big receiving bins and then get up and clean them out.

And then in our spare time, one of the most fascinating jobs was shovelling lead concentrates into a boxcar. Lead concentrates are heavy, as you might guess, and they are sticky. And so you used an oiled, square-point shovel so that when you threw the lead concentrates towards the back of the boxcar, you wouldn't follow them [laughter], and that was pretty good exercise.

Swent: Was there any hazard involved in this?

Havard: No, I don't think so. They were damp. By today's standards, they were probably hazardous; but by those standards, they were damp, and there wasn't much dust in the air. Then there was ordinary cleanup work and so on that kept us busy.

Swent: How much were you paid for this?

Havard: This was five dollars a day. I think I worked six or seven days a week; I can't remember which.

III MONTANA SCHOOL OF MINES

Havard: Then I signed up for about two-thirds of a load of courses at Montana School of Mines, and I had my troubles because, while I had taken a full amount of high school mathematics, I really wasn't prepared for engineering school mathematics. So I had to work pretty hard at that. I gradually began to fall behind, and I couldn't keep up the full shift of labor, and I couldn't keep up the number of courses I was trying to carry, about a two-thirds load. I was short of sleep, too.

I was just getting worn out, and two things happened. I asked the foreman if I could come to work at five o'clock instead of three in the afternoon on school days, and that suited him just fine, because that was really the time when the cars were spotted for unloading.

Then I had a very fortunate incident take place at the school, where the teacher of freshman English invited me into his office one day and told me that he wanted me to leave the regular class, and he wanted to tutor me. I think it was two or three times a week in the afternoon that he would tutor me. And so with that combination of changes, my life got much better for me.

Swent: Got a little more sleep?

Havard: Yes. And he had me do creative writing.

Swent: Do you remember his name?

Havard: His name was Johnson, and I do not remember his first name. He had a master's degree from the University of Minnesota, and I think this was his first college teaching job.

Anyway, out of that came a story called "Night Shift" which recounted my experiences at Rimini, in a third-person type of way, and it was picked up by a regional magazine called The Frontier. And then, to my utter amazement, it was listed as one of the best short stories of that year in the O'Brien Best Short Stories. And

it has been reprinted as part of an anthology on Montana, a book. And so that tutoring was very well worthwhile.

Swent: What about some of the people that you met there? Did you make any friends that you have kept?

Havard: Certainly, there were some friends that I have kept. We went very divergent ways, because I left there before I even graduated, but there were a few people I stayed close to for years, particularly a very fine man named Ralph Utt, a fellow student of mine, who was later vice president of Western Knapp Engineering, before it was sold, in San Francisco.

Swent: That's Davy McKee now?

Havard: Yes.

Swent: Any others that you would like to mention?

Havard: Well, he was the chief one. As I say, the problem was I left before I graduated. I did about two years' work in the three years I was there.

Swent: And you were working at the Timber Butte mill?

Havard: Well, I worked at the Timber Butte mill starting in the early fall of 1929, and I worked until the summer of 1930, when I was laid off, and shortly thereafter the mill was shut down and never started again. There is nothing there now but concrete ruins.

Swent: Who had done the flotation work there?

Havard: The mill was a Clark mill. It was built by the Clark interests, not by Anaconda. But when I worked there, it was an Anaconda mill. Everything was Anaconda. A man named Griswold was the chief metallurgist, and with a partner named Sheridan was responsible of the success of the process at the mill. Selective flotation was developed to a high degree there, because it was a lead-zinc mill, and the use of cyanide in selective flotation was pioneered there. And all of this was Greek to me; I was just looking at hand shovels.

I walked to the mill one afternoon with Mr. Griswold, and he learned that I was a student at college. He lent me some books and was just as nice as he could possibly be.

[Interview 2: September 5, 1991]##

Swent: You had talked about the Timber Butte Mill. I guess you worked there until it closed?

Havard: Well, no, I was laid off shortly before it closed.

Swent: Laid off because it was closing?

Havard: Yes, because the Depression was putting the clamps on it, and it was unprofitable. Shortly after I left, it did close permanently.

Swent: You had several other jobs during your three years in Butte.

Havard: Yes, I certainly did.

Swent: At one point, I think you said you had four outside jobs?

Havard: All four at one time, in the school year of 1930-1931, if I can count right.

Swent: In addition to going to school, almost full time. What were they?

Moving the College Library

Havard: Well, when I was out of work from the Timber Butte Mill, I had looked, of course, for something to do, and I landed a job in moving the library at the Montana School of Mines from the second floor of one building to the main floor of another building, where it had more room.

And I worked for a librarian who was a very interesting woman, and who became a significant part my life. Her name was-- she had just been hired--Margery Bedinger. She was a graduate of Radcliffe and very competent. It was remarkable that we got her at that little school. She had just been librarian at West Point, and she did not like West Point. She wrote an article for, I think, the Nation magazine entitled, "The Goose Step at West Point," with a lot of criticism of the way they did things in those days, probably pretty well-deserved criticism. Anyway, she left West Point and came to us. She hired me and a couple of other students to help move this library. The job occupied me all of the summer, and it was quite a job, physical as well as carrying a lot of elements of learning about the library

business, and the Library of Congress system of notation and all that sort of thing.

Swent: She was teaching you about that at the same time?

Havard: Well, she had to, you know. We moved the books from this one building down to this other building, and in the course of this, of course, I got to know her very well, and we became lifelong friends. She corresponded with me up until the time she died.

Public Relations Writer for the School of Mines

Havard: Then I also got a job writing public relations news stories for the School of Mines that were sent to the newspapers around the state, telling of events going on at the School of Mines. And I guess those things kept me busy then. This was the first summer between my first and second year.

One of the interesting things about Margery was that she was an early expert on Navajo jewelry, and in the twenties she rode horseback deep into Navajo country and collected. Eventually, she wrote a book on Indian jewelry, which was sort of a standard work on the subject. So she was a very interesting woman to be around, an extremely bright and stimulating person to be around.

Swent: Quite a little older than you?

Havard: She was about thirty-five when she came there.

Swent: You probably thought she was an old lady.

Havard: No, no. She later went on to other places. Also she brought with her a lot of world travelling as well as her Radcliffe education. So those of us who were privileged to work with her received quite an informal education in other things.

Swent: She talked about her travels?

Havard: Oh yes. Then the second school year came along, and I remained in the library as sort of an assistant, and I continued to write the PR news for the school, but then I also got a very interesting and unusual job.

English Professor's Assistant

Havard: This was the Depression. The School of Mines was short of money, and the English instructor that I had liked so much, and who was so kind to me in the first year, had left, and they were unable to replace him because of finances. So Professor Scott, who ran the English and economics departments of this college, was overworked. He knew of my background, so he asked me to correct the English freshman themes, and I did that for the whole school year. It was probably totally illegal, because I was a sophomore myself. But I had done so much writing and newspaper work that he was pleased with the results.

Swent: Did he pay you something?

Havard: Oh, sure.

Swent: English and economics is kind of an unusual combination, isn't it?

Havard: Well, it was a small school. He taught the humanities.

The most interesting incident in that work was that in going over the English themes one week, I discovered two themes that were identical, word for word, and they were written by people I knew. And so my quandary was what to do with these themes. I decided I would correct them in the same mode in which they were written. I made identical corrections throughout the two, gave them identical grades, made identical comments on the two of them, and sent the whole batch to the professor. Of course, he didn't look at them in any detail, and he didn't catch it, but the two fellows caught it. I never had any more duplications from them. I don't know if maybe I'll go to jail yet for having done that, for correcting freshman English themes as a sophomore.

Swent: Were there women in the classes?

Havard: There were a few women. They were taking general courses. I don't remember any women yet in engineering at Montana Mines, but women were there, treating it as a junior college for a couple of years.

Miner at the St. Lawrence Mine

Havard: And the fourth job was that I worked weekends in the St. Lawrence Mine in Butte, which was one of the oldest and smallest and shabbiest of all the Anaconda Company's mines. The company had made the practice for many years of hiring students from the college on weekends and giving them jobs underground, filling in for miners that were off for one reason or another. This was a great thing, and many of the boys existed on the money that they made, which was something like five dollars a day. But some of the students who were really physically tough and knew their stuff worked as contract miners, and they made twice as much. But I wasn't that type.

For anyone who was interested in mine design, this mine had one peculiarity that set it aside. It was on such a steep part of the Butte hill that they couldn't use a conventional hoist with cable because the hoist had to be so close to the collar of the mine that there wasn't room for cable to move back and forth across the drum, so they used a braided steel cable that wound up in one layer on a narrow drum, and there were very few such operations anywhere.

Swent: They had to invent that there?

Havard: Well, this had been done elsewhere on steep hillsides where they couldn't get the fleet angle that was required for a conventional cable hoist where it moves back and forth across the drum. This one just wound up on a spool. And also the cages and the skips didn't fit very well in the guides and would sometimes get stuck. It was a strange mine.

Swent: Was it safe?

Havard: Well, I never did see an accident in that mine, but there was no formal attention paid to safety. For instance, the first night I went to work, I just went down to work, was handed over to some miner to help him, and there was no safety instruction of any kind. You were on your own and dependent upon an experienced miner to keep you safe. We were still wearing soft cloth hats and using carbide lights. There was little advancement in safety.

The same kind of air tools that we had used up at Rimini were being used in Butte, the Ingersoll-Rand, or some brand of big drifters, and what we called "buzzies" (they were known either as "buzzies" or "widow makers") that drilled up-holes, and jackhammers for down-holes. And there were compressed-air mucking

machines introduced and storage-battery locomotives. So I worked there most of the school year, two nights a week.

Swent: I suppose Anaconda pretty much ran the college as well as everything else, did they?

Havard: Well, it wasn't visible, but you can bet that the president was very sure to be good friends with the top people at Anaconda, because Anaconda was really pretty much running the state at that time.

And I also took a little time off to play football with the team [laughter]. We had considerable success among the small northern Rockies colleges, and we played in all kinds of winter weather. I certainly kept myself fully occupied and learned how to use time. I never was one of those tough guys that could go without sleep or rest. I had to schedule my life all right.

Cub Reporter for The Montana Standard

Havard: I got through the second year, and then along came the second summer in Butte, the summer between the second and third years, and I asked for a job at The Montana Standard, which was the leading newspaper in the area at that time, and they hired me as a cub reporter. They were sort of familiar with what I had been doing because stories that I had been writing for the school, of course, had come to them. They hired me, and I worked full-time all summer, taking the place of reporters going on vacation, so I was exposed to everything.

When I first went on the police beat, I was introduced to the chief of police of Butte, who was known as "Jerry the Wise." Jerry was an enormous Irishman with a florid face and purple nose, and two of the sharpest, coldest, blue eyes I ever saw in my life. He fixed his gaze on me with those two eyes and said, "Jack, you understand that there are some things which we do not write about?"

And I was in no mood to defend freedom of the press at that time, so I agreed with him [laughs]. But no incident ever occurred while I worked there when that dictate had to be brought into the picture. Jerry the Wise kept order in that whole community of fifty thousand people with two uniformed policemen, and I am sure, and I could never prove, that he had an army of informants, because the town was kept under control. There wasn't any question about it.

Swent: And not necessarily a docile population either?

Havard: No, no. The Depression was on, but people hadn't really started to leave, so there probably were close to fifty thousand people in the general metropolitan Butte area.

Swent: There was a big Irish population there, wasn't there?

Havard: Yes, there were a lot of Irishmen, and there was quite a lot of segregation of mines by races. For instance, the Irishmen lived in Dublin Gulch, and many of them worked in the Mountain Con Mine. And, the Mexicans lived down in the Flat, and they all worked in the Belmont Mine, which was the hottest mine in the camp. There was a tendency for Finns and other nationalities to segregate by mines, probably not as much as is represented by the conditions at the Mountain Con and the Belmont.

Swent: What were conditions like at the St. Lawrence?

Havard: It was a small mine, a mixed group of people.

Swent: Was it awfully wet or hot?

Havard: No, because it was a shallow mine, it was fairly cool. The deeper mines were hot, and the Belmont was notoriously hot, where the Mexicans worked.

Swent: I have heard stories of some of them being so wet and dripping acid?

Havard: Oh, yes. The waters were very acidic in some parts of the mines. In later years, those acid waters were pumped to the surface and spread across launders filled with scrap iron, and copper was recovered.

Swent: So you didn't have to report anything that you felt a problem with?

Havard: Well, I think I had just one experience where I ran into the Anaconda Company, and that was in the summertime when part of a schoolyard caved into an old mine. They had stoped near the surface, and one summer afternoon there was a cave-in and no children standing where the cave-in took place, fortunately. And I was Johnny-on-the-spot. And in no time at all, their trucks were running in there with fill. I had a story, but I couldn't print it, which was rather stupid because everybody in town knew it had happened.

Swent: Were you told not to print it?

Havard: Well, the story was just killed.

Swent: The editor just didn't print it.

Havard: I don't think I even got to the point of writing it. I just came back in with my notes, and he said, "Don't bother writing it."

Swent: What was the labor situation like then?

Havard: Well, it was thoroughly non-union. There never was a story of any accidents in the mine, and men were being killed from time to time, but no story would ever appear in the paper. The company maintained a pretty good hospital called Miner's Hospital. And then there was a Catholic hospital in the town, too, and I used to visit them both when I was on the police route and see what was going on.

Swent: When people were laid off, did they just have to leave Butte?

Havard: Well, really the only thing they could do was to get out of Butte, try to get wherever they came from, to their home or some place.

Swent: Did the company own housing?

Havard: No. The company had a big department store, but it didn't meet the "company store" stories at all. It was just there, and you could use it or not, if you wanted to. No, there was no interference in the private lives of the miners at all.

Swent: Did the Depression hit pretty hard?

Havard: Oh, it hit very hard. As a matter of fact, Butte actually never fully recovered from it. Well, I think that's an exaggeration. The war came on, and there was a demand for copper, and that re-invigorated Butte for a while. Then, after the war, the Butte underground operations became uneconomical, and the huge Berkeley Pit was developed. Eventually, Anaconda sold everything, and a Missoula contractor has bought all those properties and has made a great go out of it with open-pit mining.

Swent: Was there open-pit mining as well as underground when you were there?

Havard: Not when I was there.

"Big Jim" Farley

Havard: Well, the summer ended, and I have many interesting little stories to tell about people I met. For instance, Big Jim Farley. You remember Big Jim Farley? Big Jim Farley was chairman of the Democratic Party, and he came to town, and our old dependable political reporter, for some reason, was not available, so I was sent out to this big home in Butte, which was owned by an Anaconda lawyer, to interview Big Jim Farley. Of course, the story that I was trying to get, and every reporter in the United States was trying to get, was who did he think was going to be the Democratic nominee for president? Every reporter was hunting for an angle. And I was not so naive that I didn't know that that was a story that would be nice to get.

Swent: This was for the 1932 election?

Havard: It was for the 1932 election, and this was in 1931. After the summer was over, I was kept on in the same role except I worked just weekends, Saturday and Sunday nights, reporting.

I went out for the interview, and Big Jim Farley who, of course, was a national figure, was just as nice to me--whom he could well recognize as a green, young reporter--just as nice as he could be.

Swent: Good politician!

Havard: So I finally popped out the question, "Well, Mr. Farley, who do you think is going to be the Democratic candidate?"

And he said, "It will be a Democrat from the state of New York."

That's all I could get out of him, and so that was my story the next morning in the paper. But that wasn't the end of my association with Big Jim Farley. Many years later when I was working for Kaiser Engineers, I was in the Waldorf Astoria lobby, and Big Jim lived in the Waldorf Astoria. I met him in the lobby and said hello to him, and I told him this story. And he said, "Well, I don't remember you, but I remember the stop and the house and talking to a reporter."

He was just delightful and wanted to know who I worked for, and I said, "Kaiser Engineers."

He said, "Well, I'm a great admirer and friend of Edgar Kaiser. Give him my best regards." So I did when I got back to Oakland. And apparently, soon after that, he died at a very ripe old age.

Swent: I thought you were going to say that he remembered your name, because he was famous for remembering everybody's name.

Havard: Yes, he was, but I was too small. He could remember the incident, but he couldn't remember me. That was fine.

J. C. Penney##

Havard: Another very prominent person I interviewed was J. C. Penney, who stepped off the Olympian during a stop in Butte, and I was there to meet him. We talked on the platform, and of course the subject was the Depression. He opined that we were going to come out of it all right, and we would be okay. And he, again, as a very prominent businessman, was just as kind to me, as a green reporter, as he could possibly be, which I guess is characteristic of many big men.

Swent: He started out not far from there, didn't he?

Havard: He started in Wyoming, I think his first store was. Oh, I met a number of other celebrities along the way like that. So it was an interesting year. They liked me there; they liked what I produced. After the summer, they kept me as relief reporter on weekends for the school year--one night in the police run and one night on the city run.

IV STRUGGLING DURING THE GREAT DEPRESSION

Havard: But right at the end of the school year, which was the end of my third year at Montana School of Mines, they said that they could no longer keep me, that the times were getting so tough that they couldn't keep me. So that meant no summer work. And there was no work; there was nothing. The mines were gradually shutting down. The Depression was clamping down hard on Butte. I tried everything you could think of to get a job.

I got two good, full years of stuff the three years that I spent at Montana Mines. Butte was no longer a source of employment. My uncle and aunt had some properties up in Rimini, all of these old log cabins with the false fronts, and they told me that we could live in one of them, my mother and I. We hired a truck, put our few possessions on the truck, went up from Butte to Helena to Rimini, and moved into this little old log cabin with a false front which had been a mine office at one time, many decades before. Then I just started hunting around for jobs anywhere, and trying to pick up a dollar here and a dollar there.

And then I got a job as a reporter for the Helena paper, covering the Montana State Fair, but of course that only lasted for a few weeks. But, one way or another, we had enough money to eat.

Miracle Number One: Clara Holter Kennett

Havard: Then I had this amazing experience which I call Miracle Number One in my life, there having been a series of miracles in my life for which I am duly grateful. And this was the time when I had a job painting the inside of a cabin up in Rimini. Rimini was a kind of a resort, had turned into something of a resort town; there was no mining going on. The company I had worked for had finished their adit, and had been unsuccessful, and so there was nothing going on, but it still was a beautiful place to be.

A very distant relative of mine was having a cabin built for herself, a very nice cabin. I was hired to do some painting. I was, one day, up on a platform varnishing the ceiling, when she came in and said to me, "Jack, I understand you want to go back to college."

I said, "I'd certainly like to."

She said, "I'm prepared to lend you whatever you need so that you can finish."

Well, I almost fell off the scaffold. Her name was Clara Holter Kennett, and she had lost two young men sons to illness. I found out later that she had a number of students she was putting through college on the same basis. She would talk around and find people that seemed to deserve some help, and she would help them, and as she was paid off by those who graduated, she re-lent the money without interest to others, so she had a continuing thing going. I guess it was sort of a living memorial to her own sons. She was a lovely, lovely woman.

So there I was suddenly with the means to finish, and where to go? I didn't want to go back to Montana Mines, because I wanted a broader education, and I particularly wanted to do more in the field of writing. And I wasn't changing my viewpoint that I wanted to be a mining engineer; I still wanted to do that. So I thought about several places, including Stanford and Harvard. I had some correspondence with Harvard, and the professor of mining engineering at Harvard was Donald McLaughlin. He wrote me back a very pleasant letter, as he would, you know, welcoming me if I could get there.

Well, I had in mind the debt that was going to face me when I got through, and so I cancelled all the places like Harvard and Stanford and decided to write to the University of Wisconsin, where my father had taught and where he died, and got a nice letter from the registrar welcoming me and pointing out that I could get a so-called legislative scholarship, which would relieve me of out-of-state tuition, which was a considerable amount of money, if my grades were up, and I mean up.

University of Wisconsin

Havard: So I packed up and went to the University of Wisconsin and had a really wonderful three years there.

Swent: Who were some of your teachers?

Havard: Well, the outstanding group was the Department of Geology, which at that time had Leith, Mead, Twenhofel, and Winchell, who were really an outstanding "Great Four," you might say. All of them eminent in their fields. Then there were a couple of young men coming along behind them that were very bright. One of them was a man named Emmons, Con Emmons, who did great things with the petrographic microscope. There is no use going into the technology of that, but it was extremely interesting work. And the other one was Robert Schrock, who was my thesis advisor and later became chairman of the Department of Geology at MIT. So these were very, very bright men. And incidentally, Mead became chairman at MIT before Bob Schrock. They stole him away from Wisconsin. So they were a preeminent group.

Swent: Was geology your major?

Havard: It was a co-major. My electives were so balled up in the engineering curriculum, which is very strict as to what comes before what, that I had a lot of time to spend on geology, so I got a bachelor's and a master's in geology while I was getting my B.S. in mining engineering. The Engineering Department, of course, was first-rate, always has been, and still is, but the Mining Department was just average, but that was all right.

I took a very heavy load every semester, exceptionally heavy load, and I had to make almost all A's, and I did, so that I got my legislative scholarship every semester. That's a great incentive [chuckle]. The result was I graduated with high honors from both the College of Liberal Arts and the College of Engineering, spurred by finances [laughter].

Swent: But you were glad not to have to be working at the same time.

Havard: That's right. I got a Ph.B., Bachelor of Philosophy, and a Ph.M., which was Master of Philosophy; that means "natural philosophy." It's an oldtime terminology; I doubt if they use that any more. Then, I got a B.S. in Mining Engineering.

Swent: And an E.M.?

Havard: Later on, I got an E.M., after I graduated. At that time, the states were not licensing professional engineers to any great extent. So some of the universities were trying to set up some kind of program that would give a graduate engineer a professional status, so he could hang it on his wall. At Wisconsin, they had a professional engineering program for which you had to be out, I think, six years, and you had to have some kind of responsible position, and you had to write a thesis that was acceptable to the faculty. So I did all those things and got my E.M., the thing I could hang on the wall as a professional engineer.

Swent: What was the thesis that Schrock advised you for?

Havard: Well, that was interesting. We have to go back to the English class. You know, I told you the story--I don't think it has been on tape--about talking to my mining engineering professor who was my advisor when I first arrived there, and we worked out my program. I had to have a liberal arts subject, an elective. So we were looking through the catalogue, and I saw Advanced English Composition, under a woman named Helen C. White, which was for English majors.

And I said, "That's the thing I'd like to have. Do you think she would let me in?"

He said, "Well, I don't know. It says English majors, but let's phone her."

So he phoned her, and she was delighted to have a strange animal like a mining engineering student come into her class [laughs]. I went into that class and enjoyed it tremendously, because she was a very bright and attractive woman, who wrote beautiful books. In fact, they were so beautifully written, they really didn't get much general sales. They were specialized books on Catholicism in the Middle Ages, and things like that. She was later president of the national AAUW [American Association of University Women] for two years, I think. At any rate, that was a wonderful course and a great privilege to learn at the feet of Helen C. White.

Swent: What sort of things were you writing?

Havard: She would hit us with various kinds of things, but if I had a chance, I wrote about mining. Some of the things got published in the university magazines. Anyway, I did all right. I was a straight-A student in that course, did better than the English majors did. But the first day, in walks a nice-looking blond co-ed, and sits down next to me, which was the available chair, as I

recall (she was just a little on the late side), and in the course of time we became friends.

She was really my first girlfriend, and she was absolutely delightful. She was a--I get teary because I begin to think about things [pausing]. Sis--her nickname was Sis--sort of took me in, she sort of took me in hand in the university and saw that I got to the concerts and broadened my education.

Swent: You hadn't had time for that sort of thing up till then, had you?

Havard: She took a liking to me and just introduced me into the world of art and literature in the university. For example, she took me to hear Fritz Kreisler play the violin. Well, we became very good friends, and met a lot, and studied together. Incidentally, she was a Delta Gamma.

Swent: What was her name?

Havard: Her name was Florence Riddle, widely known as Sis. This diversion has a point to it, because her mother ran a summer camp up on Green Bay, a summer camp for small boys and girls. I was invited down to their home for Christmas one time, so they got to know me, and I was invited to be a counsellor up there, which meant that I had a summer job, which I badly needed.

Camp Counsellor and Field Geologist

Swent: And a pleasant one.

Havard: And a very pleasant one, which I knew nothing about. I went to Dr. Schrock, and I said, "I've got to do my fieldwork for the thesis somewhere this summer, and I've been invited to work as a counsellor up on Green Bay."

And he said, "That's just fine! There are some things that I want to look into, in those cliffs."

The cliffs along Green Bay are gorgeous, high cliffs of what was called the Niagara Dolomite. And so I had both my job for the summer, and I had my fieldwork for the thesis. I was very fortunate. Of course, Sis was a counsellor on the girls' side, and I was one of the counsellors on the boys' side of that camp. It was a wonderful experience.

Swent: It sounds like a great summer.

Havard: After camp closed, I climbed cliffs and gathered samples. Luck was with me again.

The following summer I repeated as counsellor at the camp, and I continued to gather samples from the cliffs, this time for my master's thesis.

Anyway, the three years went by, and in 1934 I got my bachelor's in geology. In 1935, I got my master's in geology and my bachelor's degree in mining engineering, and I had had a wonderful three years.

Swent: The Depression was easing a little bit by then?

Havard: It was easing a little bit, not much. Of course, I began to start looking for a job--I got out in 1935--and they were not easy to find in 1935. I thought, you know, I'd get some kind of a romantic job in the Andes or Australia, or someplace where mining engineers went and got romantic jobs.

V WORKING FOR UNITED STATES GYPSUM COMPANY, 1935

Havard: I got one offer, from United States Gypsum Company. This came about because a Ph.D. in geology from U.S. Gypsum visited back at Wisconsin and talked to the geology professors and the mining professors about the quality of the graduates they had that he might be interested in. My name popped up, so I went to interviews in Chicago, and they hired me.

And of course, I was broke, as usual, or on the verge of being broke, because I had borrowed as little as I could borrow. My mother lived with me in Madison, incidentally. We always got a tiny little apartment somewhere. She couldn't leave me, you know. Anyway, I put her on the train to Montana and got into my little car and drove down to western Oklahoma.

Swent: This was the romantic spot?

Havard: This was the romantic spot. This was the sand hills of western Oklahoma.

Swent: An exotic place.

Havard: There wasn't a paved road into it, you know. Could have been the desert in Chile.

I must tell you about my automobile! The same woman, Mrs. Kennett, said to me one day, "You know, my nephew had a car, and it's in a garage in Helena, and it's got four flat tires and it won't run very well, and we're paying rent on it, and Jack, if you can get that thing out of there, you can have it."

It was a 1927 Essex Super Six Speedster, and it was as cute as it could be. I went down there, and I patched the tires. I started the engine, and it just sounded awful, but I got it back up to Rimini and I got the master mechanic to analyze it, and he said, "Well, you've got loose main bearings under that thing." And he told me how to fix them, so I jacked the car up on blocks and crawled underneath and fixed the main bearings.

Swent: I'm surprised you even knew how to drive. Where did you learn to drive?

Havard: I had an uncle that taught me how to drive in Seattle on a Model-T when I was sixteen. He took me out on an old racetrack on the outskirts of town and taught me out there. It was the safest place you could possibly do it. So that's where I learned to drive.

Swent: And learning to patch tires was part of it.

Havard: Yes. At any rate, that's the car I drove from Rimini to Madison, Wisconsin. I put it up on blocks during the winter, but I drove it for three years around Madison. And then after I got a job, I drove it for two more years.

Swent: Did you have to crank it?

Havard: No, it had a starter on it. Couldn't stand a rainstorm. In heavy rains, it would quit. And you would have to dry out the parts around the magneto, but it was cute as it could be. I took pictures of it. When I showed it to the students at the University of California (I finally gave a talk there), they applauded every time they saw a picture of the Essex Super Six Speedster.

Swent: Was your mother unhappy about going back to Montana?

Havard: Well, sure, any time she was separated from me, because I was all she had to live for, but there was no fooling around about that; I was going down to a new job, and I was going to go alone.

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Swent: Was there anything significant about your graduation?

Havard: Well, I got high honors; I mentioned that. I was off to work after each graduation, you know; I didn't stay for the ceremonies.

But I ought to jump ahead a little while we are talking about this. Six years after graduation, when I got my professional degree, I was then works manager at Heath, Montana, for U.S. Gypsum, and I decided to go to commencement exercises. I had met Faith, who was in Chicago in a nursing program, and I asked her if she could come up and join me in the commencement ceremonies and be with her for a while.

This was at Madison. Her uncle was president of the University of Wisconsin, and she had lived in the presidential manse for a couple of years before she felt an urge to-- . Well, really, her first urge was to be a missionary nurse, and there is a story behind how she got that, but I'll leave that for some other time. But anyway, I did go back in June of 1942, yes, seven years after I graduated, in June of '42, and she couldn't get up in time for the actual exercises in the morning. So I walked across the platform and got my diploma from her uncle, and then I went down and met her at the train in a rental car. We drove out to the presidential manse where I met her uncle and her aunt and people who were gathered there for the afternoon of commencement, which was very pleasant indeed.

Swent: Was her uncle's name Dykstra?

Havard: Dykstra, Clarence Dykstra. So that was a delightful occasion. We got on the train together and went back to Chicago, and she went back into the nursing program, and I got on a train and went back to Montana.

Professional Associations: AIME, SME

Swent: When did you join AIME [American Institute of Mining, Metallurgical, and Petroleum Engineers]?

Havard: Immediately after I got out of college, in 1935, as a junior member.

Swent: That was the beginning of a long successful career in that association, too.

Havard: Well, it was also a fine example of what SME [Society of Mining Engineers; Society for Mining, Metallurgy, and Exploration] and AIME could do for people, because when I landed at this job in Oklahoma, in this little town called Southard, a company town, I was the only engineer at the facility, and I was a long way from any meetings. But I got the magazine and the technical papers, and I bought books. SME was a great educator and fulfilled one of its roles very completely with me, which is taking care of the lonely engineer who was a long way from anywhere.

Swent: Keeping him in touch with his profession.

Havard: And the advances in the profession. So it really was helpful.

Swent: The magazine was Mining Engineering?

Havard: Yes.

Superintendent of Mines and Quarries, Southard, Oklahoma

Swent: Did you go there to assist or relieve another engineer?

Havard: I was hired to be--this is a mighty title for a small job--superintendent of mines and quarries for this plant. My predecessor had left several months before, and there had been a gap in there.

Swent: That's hard to go in with nobody to show you the ropes.

Havard: It was kind of a cold beginning, but the works manager was a very fine man and very intelligent man, and he put me through a course of training. He had me working in the laboratory testing, and he had me working as a plant engineer doing all kinds of chores for the master mechanic. I got a thorough indoctrination in that plant, from June until December, when he finally let me take over as superintendent of mines and quarries.

Swent: He was your superior?

Havard: He was the manager of the whole works, what they called works manager.

Swent: What was there in addition to mines and quarries?

Havard: It was an extremely interesting gypsum plant. I couldn't have been sent to a more interesting plant, because the gypsum was extremely high grade, and therefore, they could make things there that they couldn't make elsewhere. They had the normal line of building materials, the plasters, and they had a full wallboard plant, with Sheetrock and Rock Lath, the standard gypsum wallboards.

They also produced some unusual products, such as filler for toothpaste and orthopedic plasters that are used by orthopedists. And pottery plaster, which was used by the pottery industry for making all kinds of pottery dishes and so on, all of which are made on plaster casts. We also made a product called plate glass plaster, which was used as a bed for polishing plate glass, a process which has become obsolete in recent years. We had to be particular in the rock that we chose for these different products.

Because of the variety of products--including deadburned gypsum, which was called Keene's cement, a very hard, water-resistant plaster--it made the plant very interesting.

Swent: Did you have anything to do with the production?

Havard: I just produced the gypsum rock that was brought up, but I had to meet the specifications for these different grades. It was pretty crude operation by today's standards. We had a dragline that did the stripping. We loaded the rock by hand. It was hand selected and hand cleaned, and the men were paid by the ton loaded into two-ton cars.

Swent: Who were your laborers?

Havard: They were mostly from Tennessee and Kentucky, that type of person, and nice people, hard working.

We had a few key people. For instance, we had foremen, a mine mechanic who was very skilled, and a dragline operator who was skilled, and so on. I had to do everything in engineering. If we were going to extend the railroad--we had a narrow-gauge railroad that hauled the rock from the quarries up to the plant for crushing--anything that required any engineering, I was the only one around to do it [laughing].

We had a couple of underground mines. One of them provided us a very special kind of rock, and the other was a hide-out in bad weather.

Swent: Did all these different grades come from the same location, or did you mine at different places for what you wanted?

Havard: Oh, different places, and sometimes it was the degree of cleaning you would do on them. It was a beautiful gypsum.

Swent: Are there any special hazards with gypsum?

Havard: No, it's very benign. You can breathe gypsum dust, and it doesn't hurt you at all.

Swent: And mining it isn't particularly dangerous?

Havard: No, not at all. It's a soft, white rock. It's really a delightful rock to work with.

Swent: There's a perlite plant in Grants, New Mexico. What's perlite?

Havard: Well, I'm responsible for that plant. That comes later in the story, much later.

I'm trying to think of something more interesting. First, in the process, I had to learn management, which nobody had ever taught me. In those days, they didn't have management classes for mining engineers. You were just sent out to manage for yourself, and I learned a lot. I made mistakes handling people, and--

Swent: Were there people who resented your coming in?

Havard: Well, there were some, I think, that did. One of the things that helped me was softball. This is a digression, but it's kind of interesting. In that country out there, in fact throughout Oklahoma and maybe other states nearby, at that time, fast-pitch softball was the game. There was no TV, and radio was rather limited, and entertainment was limited, so the town softball team was the place where people put their hearts.

At Southard we had departmental teams, and then we had a Southard team. I made the Southard team all right. We travelled around to these nearby towns--I guess they all were in the range of five hundred to one thousand people, so they were little towns, dirt roads in every direction, impoverished agricultural towns--and play in the evening, to play softball. And it was just tremendous fun. It was exciting, because everybody in town was there cheering. Because I made the softball team right away, that was a great step in being accepted by the people.

Swent: What position did you play?

Havard: I played first base and pitched, usually one of those. That was a tremendous outlet, and so I became friends with all these people. And they were wonderful people in many respects. They would come out of the hills of Tennessee and Kentucky mostly.

Swent: Were they miners by background?

Havard: No, no. They had long English names, you know, like Schoonover and Mannering. They were delightful people.

Swent: Churchgoers?

Havard: Yes. There was a preacher in town; the company supplied his house. He had a wife and daughter. He preached every Sunday. I think he was kind of a Southern Baptist type.

Swent: Dances. Were there dances?

Havard: Oh, yes, yes. They were nice people. Totally intolerant of blacks. No black would dare show up in that community. But they were a hard-working, decent bunch of people, aside from that built-in prejudice, which didn't mean anything at that time. That's just the way it was. Nobody thought about it.

Swent: All Democrats, I bet.

Havard: I suppose they were. I don't remember anything much about--

Swent: Politics wasn't important?

Havard: No. Roosevelt was solidly in place at that time.

Swent: So you didn't talk politics much.

Havard: And, of course, we could tell-- . We were a very sensitive gauge of the economics, and our business kept getting better during the three years I was there.

Swent: It was a good place to start out?

Havard: It was a good place to start out and learn the basics of supervision.

Swent: Was there company housing?

Havard: All company housing. It was very simple but adequate. I think our house was fifteen dollars a month.

Swent: You were there as a bachelor. Did you board somewhere?

Havard: Well, my mother joined me after a few months, and we fixed up a little house.

Oh, I have to tell you an incident. Right off the bat, I went into the office, and the cashier was a rather nosy man, as you tend to get in a place like that. And shortly after I was there, he said, "Jack, you're making \$135 a month. We've never started an engineer here at over \$125 a month. What kind of pull do you have in the main office?" Well, that was news to me. I didn't know that. But I did start at \$135 a month and saved money.

Swent: That was a princely salary in those days. Were there boarding houses?

Havard: There was a boardinghouse. When I got there, I had driven down from Madison, and I had seventy-five cents in my pocket. That was

my total worth, plus the Essex Super Six Speedster and a great box of books in the back of it. So I stayed there three years.

Swent: Did they have a company bunkhouse or boardinghouse, or something, for the single men?

Havard: Yes, yes. And, when I first arrived there, I was fed because I had a job. I didn't have enough money to pay for more than one meal. They took care of me all right.

Well, after a few months (and I was single), I had met a very nice girl who was the daughter of a doctor in a nearby town. We had gone to shows together, but there wasn't a spark, and she later married somebody else. And I was just lonely, you know, really. I didn't want to be a single man all my life, and there were no girls in that town.

Laborer at Climax, Colorado

Havard: So I resigned and decided to hit the metals industry. I took my mother, dragged her along with me (by this time, I had graduated to a Chevrolet coupe and a little trailer behind it), and went to Denver. Unfortunately, I chose the recession of 1938 to do it. It was no time to quit a job, and the only job I could get was at Climax, Colorado, which was then going great guns.

I got up there, and I was to be a mining shift boss underground there. They tested eyes at that time, and they gave me a physical. You couldn't go underground unless you were 20/20 uncorrected, and I wasn't. I couldn't make it. So I went to work as a laborer in the mill on a cleanup gang, which was quite a comedown, but I had to have a job. I lived in the bachelor quarters up there. Then, I wrote to U.S.G. to see if they had any openings, and they immediately hired me.

Swent: Hired you back.

Plant Engineer, Lime Plant, Marcus, Washington

Havard: Yes, immediately, and I think they sensed why I left, and sent me up to Marcus, Washington, which is now under water from the Grand Coulee Dam. They had purchased a lime plant up there, which was

an industrial lime plant, making very high quality lime for the paper industry and other industries.

I was sent up as plant engineer to get some new kilns built and to do some other things and also to look at their deposit. They were having trouble with silica, too high. So I spent a year there, and told them that they had a really serious problem with their deposit.

While I was up there, they asked me to undertake some exploration work in Nevada. I was to go from the Utah border across the state of Nevada and across the Sierra, and I was to look for gypsum deposits on both sides of the railroads, the Southern Pacific and the Western Pacific, all across that stretch of country. I did it, and it was a lot of fun.

Swent: You were all alone?

Havard: All alone, and I got all the information I could from the Nevada and California bureaus of mines and went to work, looking up every reported occurrence and every piece of geology that looked like it might have any interest. I found nothing more than is known today; that is, I found nothing new, but I spent six weeks and had a lot of fun.

Swent: That's a lot of country.

Havard: A lot of desert country, yes. Well, I had to be within trucking distance of a railroad. I couldn't, for instance, look at all of northern Nevada. I had to think about transportation to a railroad. So I had some limitation. That was an extremely interesting piece of work for a young fellow to do.

Southard, Oklahoma, and the Depression

Swent: One question I wanted to ask you here, going back a little bit, you had said something about a community garden in Oklahoma.

Havard: Oh, I was talking about the background of this plant during the Depression.

Swent: This is in Southard.

Havard: In Southard, Oklahoma. When I got there in 1935, they did have some business, and the plant was functioning five days a week, but earlier in the Depression, before I got there, business was almost

nonexistent, and they just didn't lay off everybody; they gave everybody a little work every week, a day or two. They formed a community garden, and it was a great success, and it provided the people with food, all of which they could store over the winter, and was a factor in getting this group of people through the Depression, when they were working so little.

Swent: Whose idea was this, do you know?

Havard: Well, I think that was the works manager, whose name was Merle Allison, a very fine man, and I think he's the one that developed that plan. But it was very tough, and of course, there was no place for those people to go, and he wasn't going to have them starve, if he could help it.

Swent: Had these people come from Kentucky and Tennessee recently, or had they been there for a while?

Havard: Well, they had drifted into Oklahoma, yes. No, they hadn't come directly to this plant. They had drifted west.

Swent: They hadn't come just because of the Depression, is what I was asking, because the Oklahoma people went to California.

Havard: No, this was not that kind of a situation. These people just happened to be working their way west, out of the Appalachians.

Swent: Well, I wanted to catch up on that. And so then you did this exploration work in Nevada. When was that?

Havard: I think it was spring of 1939. Then I went back to the plant at Evans, Washington, which was on the Columbia River, and shortly after I had returned there, where I was plant engineer, the Chicago office asked me to move down to Lovelock, Nevada, to head up the drilling program on a gypsum deposit at Lovelock, which I knew existed; I had seen.

Drilling a New Deposit at Lovelock, Nevada

Havard: They had got an option on it, and they had a consultant there, named Jack Byron, who was a mining engineer and a U.S. Mineral Surveyor. He was on the site, surveying the claims and doing that sort of thing, and I was to head up an actual exploration program, and the company sent in a new core drill. I had a driller, and I had picked up local labor around Lovelock, and we went to work drilling out this deposit.

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Havard: Jack Byron really taught me how to survey, because I had never before been with a U.S. Mineral Surveyor, surveying with the accuracy with which he had to survey. He taught me techniques that I hadn't been familiar with.

Swent: You hadn't had that in college?

Havard: Not in that kind of detail. I learned from a real expert.

Swent: What is a U.S. Mineral Surveyor?

Havard: That's an official title. That means he's passed government tests and is licensed to survey claims for patent, which means it has to be very accurate surveying. So my education picked up, working for him.

We drilled that thing, and we mapped it and did all the usual things you did, and sampled it and sent the samples off to another plant to be actually run in the plant, and so on. The company bought the part of the deposit which they could get their hands on, and eventually I bought for them a square mile of desert on which to build a plant in the future, and which they still own, I'm sure. The deposit was not high grade and hasn't yet been worked, but we did a very thorough job of exploring it and working out some rather complex geology that you don't see very often in the industrial minerals field.

Swent: What was complex about it?

Havard: It was folded and faulted in a rather unusual manner.

The Regan Quarry, Yerington, Nevada

Havard: Then the company got an option on a property about ten miles out of Yerington, Nevada, called the Regan Quarry, which was supplying very pure gypsum to cement mills. The company took an option on this property, because Lovelock hadn't turned out as well they hoped. They asked me to pick up and move down there. We moved in one day. We pulled out of Lovelock, and the next day, we were drilling in Yerington. We drilled that deposit--

Swent: Diamond drilling?

Havard: Yes, diamond core drilling. We started mapping and doing the usual things you do, and we discovered, much to our disappointment, that we had a little fault block. We first drilled all around it, and we couldn't find anything. Then we went down into it, into the pit itself, which was being worked, and drilled holes out from the pit itself, and we found this was a little fault block, all by itself.

That was my thesis for my professional degree, because the company dropped the option on the property, and I asked them if I could use it for my thesis, and did, and that's how I got my professional degree, from that. That took about six months.

Then they sent me back to Lovelock to do some final surveying and to survey a road from the deposit to the plant site, which was on the main line of the Southern Pacific, and I did all that sort of stuff.

Swent: This is getting to be 1940?

Havard: This is 1940, yes. They sent me down to the biggest plant they had in the West, at a place called Midland, California, twenty-five miles north of Blythe, out in the real desert.

Swent: I thought that was later.

Havard: This was the first trip. There is another one that is coming. They had very complex geology down there, and they sent me down there to see what I could do to solve the problems of working that deposit. So I ran a core-drill crew, and we did mapping.

Swent: So you were really mainly doing geology at this time.

Havard: At this time, yes. And I'm afraid I wasn't very helpful.

Works Manager, Heath, Montana

Havard: Then, much to my surprise, I got word that I was appointed works manager for the Heath, Montana, plant, which was a tremendous step forward for a young fellow. So I went up to Lewistown, Montana, which is the nearest big town. I picked up my mother at a town out near the coast of California, where I had found a place for her. We drove up to Montana, and I took over as manager of a small, but quite interesting plant, that served the Pacific Northwest with Sheetrock, and plaster, and Rock Lath, and standard building materials.

This was my next real learning period in management, because now I was in charge of the whole facility. This was the mine and the calcining mill, and the board plant, the shops, and everything. It was a dandy job.

A Mine Cave-In

Havard: We had a couple of interesting incidents there. One was that the mine caved in, and this was an all-underground mine. When I first went there, I had been very concerned because the main entry from the plant back underground into the mine was being supported by pillars which had been robbed, very fragile pillars. They had been there forever, you know. I couldn't really justify a program of going in there with concrete buttresses, and so on, but it bothered me that in this main entry the pillars were so thin.

Anyway, one night I was out picking wildflowers on a Sunday evening. The night shift went to work Sunday evening, and as I drove into town, at one of the entrances to town was one of the employees, and he waved me down. And he said, "The mine is caving in." They'd put somebody at every road that went into town to catch me.

So I went out there, and, sure enough, it was caving in. Those thin pillars had given way, and we were totally blocked from the mining area. Nobody was hurt, because the crew going in Sunday evening heard the stuff coming down and backed out. Yes, that was some night, because that whole mine just collapsed. It just unravelled. The good part of the mine, where we were doing proper mining, with proper pillars and everything, was cut off.

Swent: How large a mine was it?

Havard: We only put out four hundred tons a day. It was a small mine, but kind of vital to the plant. It's interesting that, after you get through the process, you make as much wallboard in tonnage as you took in rock, so we made about four hundred tons of product a day.

I had a quandary of what to do. One of the interesting little vignettes is that the division manager, who was my boss in Chicago, was a man who liked to put on a very tough mien. I called him that morning and informed that we had lost the mine, that it had caved in, and instead of there being a big strutting uproar from the other side, there was a weak little voice that said, "Jack, what are you doing about it?" [laughing]

They had driven an exploration adit into the side of the hill just about one-half mile from the mine, and they had done a good job and left all the material in a good, neat dump. So I went to town and hired some trucks and hired some laborers. We hand loaded that stuff and trucked it around to the crusher, and we kept the plant going. We never lost a square foot of board. But that was only good for a short length of time, relatively speaking.

We decided to go around the side of the hill on the edge of this deposit, getting a little rock as we went, and then started a new entrance that would take us into the good part of the mine that was not caved. All this was done--

Swent: You didn't try to reconstruct the caved part?

Havard: Oh, no, there was no chance at all there. That was gone. And we lost equipment. We lost a motor generator set and other good equipment, but it was never recovered. And other equipment was gone.

Swent: But no people.

Havard: Oh, no people. The company sent out their veteran mining engineer, who was in his seventies, was the vice president and had been the vice president of engineering, to help me, and he and I were fast friends and remained fast friends until he died.

Swent: What was his name?

Havard: John Nold. I have written stories about John Nold. He was a remarkable man, and we really can't get into his life here, or we will have another whole biography. Anyway, we got that job done and got back into the good part of the mine and instituted different mining practices. They had been hand loading, and I introduced slushers, designed the slushers, and had them built.

Swent: You made your own there?

Havard: We had them made in a steel shop in Great Falls, two of them, and they were a great success. The mine was mechanized, finally.

Swent: Did the men resist this at all?

Havard: Oh, no, no. They were glad to be relieved of hand loading. We had to teach them how to run these things, but I knew how to run them, and that was no problem. So that was the mine incident.

Swent: What kind of mining were you doing?

Havard: Room and pillar.

Swent: They had just left the pillars that were too small.

Havard: Well, they robbed them, you know. I just don't understand it. Of course, the overburden, above the entrance to the mine, was rather light, but it was always a worry to me. Looking back, I should have done something, but I don't believe I would have been allocated a nickel to fix it, because it had been standing for twenty years or more. Anyway, that was one very interesting aspect of that job.

Revolutionizing the Manufacture of Sheetrock

Havard: The other interesting aspect was that my predecessor, who was a bright young guy who had moved onto other things, had started to speed up this board plant, which, by any standard, was a very small board plant, and when he went there, it had a line speed of fifteen feet a minute. He decided that it could be speeded up and had started to do that work. The war had just about started, and the defense industry was in full blast, and our materials were badly needed. We could sell every square foot we could make, you know.

The head of the laboratory was a chemical engineer, and he and I sat down and talked about the theory of drying this board, and we decided that the theory had been all wrong and that dramatic increases were possible. The theory was that you kept the temperature in the kiln below the theoretical scorching temperature of the Manila paper which is on the outside of the sheetrock. You've seen Sheetrock; it's got a kind of creamy paper surface to it. We decided that as long as we were evaporating water from the surface of the board, that we could let the temperatures go way up, as long as we were evaporating water.

Swent: This is manufactured wet?

Havard: Yes, it goes into a kiln wet, formed wet, and then goes into the kiln, which is a long, long affair, six or eight decks high. So as long as water was evaporating off the surface of that board, that board would not scorch, regardless of what the temperature was. We went to work on that process, and we kept speeding it up and speeding it up, until we got it up to forty-five feet a minute, or three times its design capacity. Of course, we had to

keep changing motors; we had to keep adding more hot air, and there was a lot of detailed engineering that went into it to make it work. The word got around, and this revolutionized the manufacture of gypsum board. Increased everybody's capacity then.

Swent: You were doing something that nobody else had done?

Havard: This young fellow who was the works manager ahead of me had conceived the idea, but he hadn't really developed the theory yet. He was on the right track, but this chemical engineer and I gave it detailed attention. Simple, simple, you know, but not obvious, simple but not obvious.

Swent: What was his name?

Havard: His name was Coffman, Vern Coffman. He later succeeded me as works manager of the plant. The result was a tremendous increase in production, tripled, and all this stuff gave me a pretty good reputation within the company.

Courtship of Faith Hartley

Havard: While I was at Heath, I got a little alumni bulletin from St. Francis House, the Episcopal student house at the University of Wisconsin, which I had attended, and I was confirmed there. It said that, "Faith Hartley is in nurses' training at St. Luke's Hospital in Chicago." News notes, you know. And I thought, "I know that girl." She was a friend of Sis at the Delta Gamma house, and I knew her. I would never be interested in her seriously, and I couldn't remember her as ever being at St. Francis House, but she may have gone there after I left, for all I know. So I said, "Well, the next time I'm in Chicago, I'll call her, because it would be fun to get together and talk about our mutual friends." And I knew that's all there would be to it.

Swent: Sis had gone off by this time?

Havard: Yes. We never got close to matrimony, and I am not quite sure why, but I never could pop the question. We stayed friends until she died. We corresponded, and she later married, had an unfortunate marriage. Anyway, I'd periodically go to Chicago, which was the company headquarters.

So the next time, I called St. Luke's Hospital and asked for Faith Hartley and got her on the phone and told her who I was, and "Do you remember so-and-so?" It drew a complete blank. She

didn't know me at all. So we started checking dates, and I discovered that she had started at Wisconsin six years after I had left, and I had the wrong girl, for some reason or another. So I said, "Well, I was going to invite this friend of mine to dinner tonight. Why don't you come, just for the fun of it."

And she said, "You know, my date has just stood me up. He's a reporter, and he has to work tonight. I'll come!"

I said, "Well, how will I know you?" [pause] This is getting hard for me to tell.

She said, "I'll just be average, and I'll have a black coat on. We'll meet in the lobby at St. Luke's."

So I go into the lobby of the St. Luke's Hospital, and here is an obvious nursing student sitting there on the couch, a gorgeous blond with a black coat. And I thought, "Oh boy. How lucky can a guy get on a blind date!" So I go up to her and ask her if she is Faith Hartley, and she says, "No, but I wish I were." I was befuddled, to say the least.

And then comes along the real one, and immediately, I just fell for her. I took her to dinner at a place called The Cellar, which was quite a place in those days in Chicago. Then the next morning I managed to wangle her to breakfast at the Palmer House. Oh yes, with the waiters in their dress suits, and the busboys in their scarlet jackets, and all that stuff. Then that night--I was hitting the timing just right, because she worked all kinds of hours--I invited her to Henrichi's, which was one of the better restaurants in Chicago, and proposed to her.

Swent: One day later.

Havard: Yes. And, she thought that was totally ridiculous, that she was interested in doing what she wanted to do, what she was doing, and that was that. I got on the train and went home. It took me a year to finally catch her.

Swent: A lot of coincidences had to get put together for that, didn't they?

Havard: Yes, and I wrote to the house mother at the Delta Gamma house in Madison and told her just that I had been trying to meet a girl that I had known and had gotten the wrong girl, and had there been a Faith Hartley. She wrote back and said, "Yes, there was a Faith Hardy," and I didn't catch the difference in the name. It was too close.

Anyway, it's part of the Heath story, because this chasing was while I was at Heath, and I was finding more excuses to get back there to the Chicago office and take Faith out for dates, you know. Eventually, when we were married, she came to Lewistown, and we lived there for a year.

We lived in Lewistown, and she went in to finish her nurse's training in a very good little Catholic hospital in Lewistown, run by nuns, and they were delighted to have her. In fact, they just made her a full-time nurse.

Swent: That must have been quite a change for her, after growing up in Los Angeles, and studying in Chicago.

Havard: She was cold the whole year. She was cold in Lewistown, the whole summer, and all next year, she was cold.

Swent: She had never lived in a small town before?

Havard: No, I don't think she had, and she had never lived in that kind of climate. Of course, she had lived in Madison, which can get plenty cold, but she hadn't lived in the dry cold that we had, and the cold summers.

Swent: You said that her father was head of the Music Department at Occidental College.

Havard: Yes. And her mother, who is now going to soon have her 101st birthday, was a singer of some note down in that area.

Swent: So she had been used to a little more cultured environment than you find in some of these mining places.

Havard: Oh, yes, yes. But she was the kind of person that could be at home anywhere. And we made good friends in Lewistown. There were a lot of nice people. That was a town of about five thousand people. There were some interesting people there.

Swent: But not every city girl would think that it was--

Havard: No, and later on when we lived in mining camps, she accepted it. One time we spent some time in the towers of the Waldorf Astoria on business, and that was fine. She could accept that, and she could accept living out in the desert. She was very flexible.

Swent: Very adaptable. That's great.

Havard: Always making friends.



Faith Havard, 1931

[Interview 3: 25 October 1991]###

Swent: When we stopped last time, Faith was already in Lewistown, but I think we'd better back up a bit and find out how she got there.

Havard: Well, as I had said, I had been courting her for a year. In the process, I had written to her parents, saying that my intentions were honorable, or words to that effect. But I became discouraged that I was ever going to convince her to marry me. I received a letter from the parents inviting me to come down to South Laguna Beach for Faith's vacation, and I thought that was a great idea, whether I was going to make any progress with Faith or not. I hadn't had a vacation on the beaches of southern California in my life, so I was happy to accept the invitation. Faith told me later that she had been furious that I'd been invited without her knowledge.

Swent: It wasn't her arrangement then?

Havard: No. Travelling in those days--this would be August 1943--was largely by train, because what few planes there were, were occupied by military and other special personnel that could get aboard them, so I had to take the train from Butte to Salt Lake City and then pick up another train in Salt Lake City to Los Angeles.

I got off at East Los Angeles station, and I'll never forget this incident, because at a distance I saw Faith with her parents, and she started suddenly running towards me and came up to me and jumped up into my arms and gave me a big kiss, and it didn't take long for us to decide we were going to get married. We had a pleasant time on the beach at South Laguna, where I learned quite a bit about the surf the hard way, because all of my swimming had been in inland lakes, and Faith was amused at my landing on my nose in front of a wave.

But anyway, we were married in the minimum amount of time permitted by law, and the marriage took place in the Episcopal church in Laguna Beach. Those attending were Faith's parents, a couple of her friends, a couple of schoolteachers who lived across the street, and a group of children that she had been babysitting for in the past, because this was a rather quick wedding and impromptu.

Swent: It happened during this same vacation then?

Havard: That same vacation, yes. So then she had to write to St. Luke's that she wasn't coming back, and we boarded a train for Montana and arrived in Lewistown.

Swent: What was the date of the wedding?

Havard: The date of the wedding was August 19, 1943.

Swent: So she got there in time for winter.

Havard: And she went right to work at the hospital, because she wanted to get her R.N., and as I have explained, they were very happy to use her, really made a full-fledged floor nurse out of her. The only impediment was that David came along when he wasn't expected, and he wasn't invited, but he decided to come. He was born on the day that she was to be graduated from the nursing school.

Swent: So she missed her graduation. How did you travel from Lewistown to Chicago?

Havard: Oh, that was rather fun, because you would drive down, or hitch a ride with somebody, to the town of Harlowtown on the main line of the Milwaukee Railroad, and it was about midnight that you would get on the train there. The interesting thing about it was--and it was always very interesting and exciting--that the eastbound Olympian would come in almost silently under electric power, with its electric locomotives, and it was at Harlowtown that the change was made to the steam locomotive. So you would leave with the big huffing and puffing of the steam locomotive, but, of course, it was great fun to see the change made there. That was very direct, right into Chicago.

Swent: You took a Pullman then? You could get them even during the war?

Havard: Oh, yes. I had some priority, you know, because of my job. But it was not very easy on airplanes, which, anyway, was only one DC-3 a day.

Swent: Was there an airport in Lewistown?

Havard: Yes. There was a little airport. This airport was taken by the Air Force and greatly enlarged and was one of the subsidiary training fields for the B-17 bombers. We had, working in the office for us at Heath, the former Miss Montana, and one of the pilots took a shine to her, and he buzzed the plant with a B-17, and I thought that the place was going to fall down.

VI WORKS MANAGER, MIDLAND, CALIFORNIA, 1944

Labor Turnover in the Desert

Havard: Shortly after David was born, I received word that I was going to be transferred to the plant at Midland, California. This was a large plant, as gypsum plants went, serving the southwestern United States. Midland was located in the Colorado desert, about twenty-five miles north of Blythe, California. It was on a spur line of the Sante Fe Railroad which went down to Blythe.

This plant was loaded with business, very important to the company, and was in serious trouble, because of extremely high labor turnover. People didn't enjoy living out in such a barren desert environment, and the turnover in certain parts of the plant was very bad. The total turnover was about three hundred percent a year, so that the management problems were staggering at the place. I don't know why I was given the honor of being its works manager, but I suspect that it came from the fact that we'd handled that cave-in pretty well at Heath, and they thought maybe I could do something about this situation at Midland.

We drove from Lewistown down to Los Angeles, then out to the Midland plant with the little baby. I'll never forget the first evening we were there. The Hispanic community at Midland, made up of people who had been with the company sometimes for as many as three generations, were having their annual barbecue, to which everybody was invited. And we went down to the barbecue, and Faith was nursing David, and these Hispanic women gathered around with great interest to watch the process going on. [laughing]

We had a nice, usable house, cooled by evaporating coolers in those days, which were only partly effective.

Swent: In that dry air there, they do pretty well, don't they?

Havard: They do pretty well.

Swent: Desert coolers, they call them?

Havard: Yes, desert coolers. The town itself consisted of about eight hundred people and had a store, and a little restaurant, and various other amenities.

Manager of the Company Town

Swent: Was it a company town?

Havard: A company town, of course, yes, very much so.

Swent: Had the company built most of the houses?

Havard: All of them, yes. My job was to be manager of the town as well as the plant. And sometimes the town would take more time than I really had to spare for it, because all kinds of problems happened when you've got eight hundred people out in a lonely desert location.

Swent: Eight hundred?

Havard: That was the number of residents we had.

Swent: So you had a school?

Havard: We had a school and good teachers, good school and good teachers.

Swent: Was this part of the county system?

Havard: Well, yes, the teachers lived in Midland, and I think that most of them were wives of supervisors, people of that type. It was a good school. When the children had to go to high school, they went to Blythe.

Swent: Did you have a school board that administered the school, or did that come as part of your job?

Havard: I think the school was run by the county, because I can't remember ever being involved in it.

Swent: You didn't hire the teachers?

Havard: No, no. And while I was there, three and one-half years, I don't think there was any turnover on the teachers.

Quarries, Mine, Mill, and Board Plant

Havard: The plant consisted of two gypsum open-pit quarries and one underground mine, supplying the rock by truck to the crushing plant. The mill consisted of primary crusher and Raymond mills for grinding, rather specialized mills using air circulation for sizing.

The product of the Raymond mills, called land plaster, was then sent over to the mill where it was calcined in four big kettles and made into what we called stucco, a variety of plaster of Paris. From the mill it was transported to the board plant, where there were two big board machines manufacturing Sheetrock and Rock Lath and other gypsum-board products. The capacity of those two machines reached nearly a million square feet per day, so it was a big producer in those days.

Swent: Were there any restrictions on you in dust control?

Havard: Oh, there was dust control, lots of cyclones for collecting the dust. But gypsum dust is really harmless; it's only a nuisance dust. And so it didn't have very heavy control on it.

Swent: Did you need water?

Havard: Our water was hauled in on the railroad from wells in Blythe, in tank cars, and stored in big tanks to supply both the plant and the village. It was dry up there.

Health and Safety

Swent: Was there a hospital?

Havard: We had a nurse and a first aid room, and there was a small hospital in Blythe. As was usual in the U.S.G. plants at that time, there was a very heavy emphasis on safety, and we had few lost-time injuries.

Swent: The emphasis on safety came from headquarters?

Havard: It came from headquarters, and of course, by my nature, I enthusiastically enforced the program, because the last thing I wanted was people hurt around the job.

- Swent: This came in the form of written policy, did it?
- Havard: Each plant had its own written safety rules, and the works manager could apply various programs, in the way of meetings and so on, which he considered fit. And in fact, the safety rules were written plant by plant, so they referred to a specific plant. They weren't just general company-wide rules.
- Swent: Do you think that's a better way to do it?
- Havard: I think so, because there is great variety in the problems that you meet in the different types of plants. There was a general pattern, but the actual rules that came out were put out by the local plant management.
- Swent: What were the hazards?
- Havard: Generally speaking, the equipment was good, and the guarding of machinery was carefully done, so that your real problem was to prevent people from hurting themselves, and encouraging them to follow good safety practices. As in many heavy-industry plants, one of the greatest problems was a sprained back; it was always ruining our statistics and was very hard to prevent, even though we had classes and taught people how to lift and so on. We were bedeviled by sprained backs.
- Swent: You did quite a lot of trucking there.
- Havard: We trucked the ore from the mine to the crusher, which was a mile or two miles.
- Swent: Was that a particular hazard?
- Havard: No, I don't recall we ever had an injury. Fortunately, the turnover among the mining crew, which was mostly Hispanic, was very low, and they were an effective group of people. The worst of our turnover was in the board plant.

Ethnicity of the Workers

- Swent: These were not Hispanics?
- Havard: No, no. In fact, one of the things I did was to appoint a young Hispanic man as a foreman in the board plant, and that's the first time it had ever been done, and I was warned that I was going to

get into great trouble. But he was the right man, and everybody accepted him. So we broke the ice.

We also had a colony of black people, who were mostly in the labor jobs, and after being successful in promoting an Hispanic in the board plant, I thought, "Well, now, let's see if we can't get at least a shift boss out of one of our black people." We went through the records very carefully, but the degree of education was so low that we couldn't find anybody that we could use. These people had come directly out of the cotton fields of the South and didn't have enough education to handle even the simplest kind of book work that a shift boss would have to handle.

Swent: When was this?

Havard: This was in 1944. The war was on full tilt. We had some privileges as an essential producer. We were able to get all the food we needed, including meat and some things that were in short supply, we could get nevertheless, because we did have some rating.

Swent: What was gypsum used for, or the board, that made it critical?

Havard: For all kinds of construction, particularly many of the new facilities that were being built and for barracks, because it was a fire-resistant lining for barracks, which they very much wanted, having learned in the First World War that fire was a real danger around a barracks. So there was a great demand. The plant ran at capacity all the time, and the problem was to keep the quality up with so many green people in the board plant.

Swent: You had Hispanic workers mainly in the mine?

Havard: Right.

Swent: And, then, black workers that were laborers--

Havard: Around the plant. And the other people were mostly Southerners, Texans, or people from Texas, and Arkansas, and Oklahoma, and Tennessee, and Kentucky, which would explain some of the problems we had in terms of prejudices.

Swent: So the people didn't work well together?

Havard: Oh, they worked well together, because they segregated themselves, and, as I said, I really broke one of the conventions when I put an Hispanic foreman in the board plant for the first time, but there was no racial trouble in the town, at all.

Swent: All of their children went to school together.

Havard: All of the children went to school and got the same education, and they got along well in the just casual meeting around town. They tended to be segregated in their housing, but they wanted it that way, really.

One of the good things the company had done was to scatter the supervisors' houses around the camp. They were a little better than the ordinary houses, but there wasn't a hill, for instance, there wasn't an aristocracy hill with the works manager and all the supervisors living together. They were scattered out among the people, and I think that was a very smart move.

Swent: Who decided this, I wonder.

Havard: I have no idea. It was that way when I got there.

Swent: Were there churches?

Havard: No, there was no church.

Swent: Did you have any social organizations?

Havard: We had all kinds of social organizations. People were very dependent upon each other, so we had many different kinds of clubs, and so on. The supervisory people played a lot of bridge together, and had progressive dinners, and really had all kinds of fun together. The women were organized in what was called the Beau Ideal Women's Club, which was an official chapter of the National Federation of Women's Clubs.

Mechanizing the Board Plant

Havard: The greatest task that faced me was trying to reduce the turnover and carrying on training programs that would cope with the high turnover. We were also involved in some significant improvements in the board plant, introducing automatic take-offs that eliminated hand labor, where the board came out of the dryer and was bundled and readied for shipment. We put in automatic take-offs that did the work by machine, put the board together in the proper way, and taped it properly, and put it on pallets ready to be transferred into the boxcars. This was quite a major program, and also was a labor reduction program, getting rid of one of the most unpleasant jobs that we had in the place.

Swent: Did you have opposition to that from the workers?

Havard: Oh, no, no. They weren't there long enough. That was the highest turnover end of the thing.

Swent: So you were able to automate that without difficulty.

Havard: Yes, with no problem at all.

Swent: As a result of your Hispanic foreman, was there anything that that led to?

Havard: No, he was totally accepted. He was the right man, and people seemed to grasp that he was the right man, even though it broke precedent.

Swent: Did the turnover rate improve then?

Havard: It gradually improved, but every summer I had a crisis, because the hot weather would descend, and people who had stuck it out through the winter would leave in droves, you know. Trying to recruit people was extremely difficult. We recruited people in Los Angeles, and sometimes the recruiters didn't use very good judgment, and they just picked up somebody off the street and sent him out to us. We've seen them come out and look the place over and start walking down the road to Blythe before they went to work [laughing]--too much desert environment for them.

One of my tasks was to determine what the gypsum ore reserves were for this facility, and after a mapping and drilling program, I had to report that the reserves were really very, very small, and the life of the plant was short.

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Havard: The result of all that was that the company bought a huge deposit in the Fish Mountains near the Salton Sea from Pacific Coast Portland Cement Company, developed a fine open-pit mine, and a rebuilt a first-class dieselized railroad and built a huge new board plant. A few years after I left Midland, Midland was shut down and the new plant near the Salton Sea took over and is currently the big source, because they had an immense deposit of wonderful gypsum.

Swent: How long were you in Midland, in all?

Havard: We were there three and a half years, and Edith Ann, our daughter, was born in the Blythe hospital. We really loved it there. We had very good and close friends, and I used to say that I wanted

to be good enough to keep the job and not so good that I would get transferred to the Chicago headquarters.

Swent: Did you get to Los Angeles very often?

Havard: Our vacations were at Laguna Beach, of course. Faith's uncle, who had been president of the University of Wisconsin, became chancellor at UCLA [University of California at Los Angeles], and we had one very pleasant Christmas at his home on the UCLA campus.

Swent: So you had a little relief from Midland, too.

Havard: But, you know, there were no car air conditioners in those days. It was just hot, that's all. We did a lot of our travelling at night.

Swent: It was a long drive to go to Los Angeles. How did the end of the war affect things there?

Havard: Well, it helped, because servicemen began coming out, and we could hire them and were getting a much higher type of personnel, and the turnover was greatly reduced.

I'll never forget the mill superintendent, who had been a chief petty officer in the regular navy, I guess in the twenties. He came to me with great glee one day after the war was over and he said, "I've got the lieutenant with a broom around the crusher; I've got the captain with a broom cleaning the mill; and I've got the major up on the roof, cleaning the roof." [laughing] He was absolutely delighted.

Swent: You were able to hire people who had been majors and captains, really?

Havard: Yes, we were, and also we started getting back our own employees that had been in the service. These three were new hires, and they were just being broken in and oriented around the place. The major, I remember, had achieved his rank because he was a fighter pilot.

Swent: So, what would he end up with after his training with a broom?

Havard: I don't remember. His story is covered by the comments of the ex-petty officer.

Swent: You did have need for some well-trained people, then?

- Havard: Oh, yes, we had a plant engineer, and the various superintendents had to be well trained. We had quite a few engineers on our staff.
- Swent: Your total work force was about eight hundred?
- Havard: The work force was about 320.
- Swent: Eight hundred was the population of the town. I thought that was the number of houses.
- Havard: We had practically no commuters. Everybody lived up there-- their families also.
- Swent: Those were good times?
- Havard: It was a very interesting job. It was a very demanding job, and it never got completely under control because the hot weather of the summer would just raise Cain with the work force.
- Swent: Yes, working in a quarry in the middle of the summer would be--
- Havard: That wasn't our problem. Those people went to work at four o'clock in the morning, and they were an Hispanic crew. The superintendent of the mine was a graduate of South Dakota School of Mines named Conway, a very competent man and a good leader. He really had an almost entirely Hispanic crew under him, but they got along just great.
- Swent: One shift?
- Havard: One shift, yes.
- Swent: Your plant, was that hot too?
- Havard: Yes, the plant was hot.
- Swent: Your calcining--
- Havard: Wasn't air conditioned, great big buildings. It was just hot.
- Swent: Did you do any roasting or calcining, anything that would make it hotter?
- Havard: Well, we calcined in the mill, producing stucco, an active form of gypsum, which was transferred to the board plant. And then in the board plant, we had long, multilevel kilns for drying the board after it had been formed, but relatively low temperature. One of the advantages of gypsum processing is that it can be conducted at

relatively low temperatures compared, for instance, to Portland cement.

Swent: You mentioned that there was complicated geology there?

Havard: It was very complicated. It was very much folded and faulted. Gypsum, under a structural deformation, exaggerates even the pictures in the textbooks; if it's squeezed, it acts as a plastic, so that you will have it very thin between maybe walls of limestone in one place and it will bulge to many times its original thickness in another place. Midland was about as complex as you could find a gypsum deposit.

Swent: What does this translate into in terms of your work? It made the mining more difficult?

Havard: It meant the mine superintendent had to be very alert, and we had to do a lot of core drilling and had to try to find out where to mine, so it was difficult, but the worst problem of all was that we were running out of reserves, which led to the eventual demise of the plant and its total demolition eventually.

Swent: Who decides at what point to shut the place down?

Havard: It was decided by the top management in Chicago. I certainly gave them the facts, and they were able to negotiate the purchase of this other deposit much farther south.

Swent: I'm just wondering if there was any constraint on your part in advising them that this place was about to run out.

Havard: Oh, no, that was an objective report.

Swent: You weren't nervous about bringing that kind of news to them?

Havard: No, it really wasn't a great surprise. In fact, it was because we were all so concerned that I was asked to make this rather definitive study so their decision could be made. There was no problem there at all.

I suppose we should mention the Midland softball team, which, when I was there, was the champion of the Blythe Valley League, if you can imagine that. I played a lot of softball. This is fast-pitch softball we're talking about. I wanted to play for the Midland team, and I told the manager of the team that I'd love to play softball, but he would have to treat me like he treated everybody else or I didn't care to play. Well, he was the type of fellow who was very happy to treat me like anybody else, a rare

opportunity. So I had a lot of fun playing softball with the Midland team.

Swent: What was your softball season?

Havard: I think it was mostly in the spring. We played in the evenings in Blythe.

Swent: You went into Blythe for it?

Havard: Yes, and it was really fun. In small towns, that kind of thing is about the only interest they had, you know. It was the same sort of atmosphere as I mentioned talking about the towns in Oklahoma.

Swent: You couldn't have a swimming pool with no water, could you?

Havard: No, we didn't have a swimming pool. We had a tennis court and softball fields. You wouldn't call them fields; there was no grass on them. This was an absolutely barren desert.

Swent: You mentioned the women's clubs. Was there any sort of service club for the men?

Havard: No, there were no men's clubs, that I can remember.

Swent: Any AIME in the area?

Havard: No, you had to go to Los Angeles for that, if you wanted to go to an AIME meeting. I think there were probably only two of us that belonged to AIME out there.

Swent: Did you have to go to Chicago periodically?

Havard: Yes, I had to go to Chicago, and that was really very pleasant, because we'd drive up to Needles and get on the Super Chief, which was a delightful way to travel. I don't think I ever used an airplane out of Midland, because it was so convenient to get on the Super Chief, and it was very fast in those days.

Swent: What was it? Just a couple of days to Chicago?

Havard: Yes, I think it was. From Los Angeles to Chicago took thirty-nine hours in those days, so that for me it was less than that. I'd get on around midnight and spend that night and all the next day and the next night and then be in downtown Chicago.

We were unionized and had some interesting negotiations every year, but we never did have a strike and always managed to settle it amicably.

Swent: What was the union?

Havard: The Cement, Lime, and Gypsum Workers of AF of L. They were a moderate, pretty decent group of people to work with.

Swent: What about political activity? Were you involved at all in county, state, or national politics?

Havard: The day that Edy was born was the day of the first national railroad strike. I was on the phone almost constantly from the hospital, because this meant that our water supply was going to be cut off. We shut down the plant in order to save the industrial water, and the strike only lasted two or three days, I think.

Swent: What was the date of that?

Havard: That would be May 17, 1946. Later, there was another strike, after I left, and this time everybody was prepared. The local train was run by supervisors, and the water was hauled up to the plant, and the plant didn't have to shut down.

Swent: You were very dependent on railroad, then.

Havard: Oh yes, we sure were. All of our shipments went out by rail.

Swent: That would determine the cost of your product completely, wouldn't it?

Havard: Yes. Trucking hadn't developed as much as it has since then, either.

Swent: Did the company or the industry, that you know of, did they get involved in political activities, vis-a-vis the railroads? I would think that they might.

Havard: I made some calls to government people in regard to that railroad strike, but otherwise, I wasn't active politically.

Swent: At what level were you calling?

Havard: I think I called the governor's office, but it was an ineffective move, you know. This was a national railroad strike.

I did get involved in the Blythe Hospital, which closed down for financial reasons, and there wasn't another hospital in, I guess, one hundred miles. I worked on a committee to get the hospital reopened and hired a consultant to help us do it, and we

did it. We got it back in operation. That was my chief political activity.

Swent: That's a pretty important one. Where did the money come from for it?

Havard: The company put in some money, and I think other people in Blythe put in some money.

Swent: This was before the day of federal funds to help, wasn't it?

Havard: Yes, we had to do it on our own. Fortunately, there were a couple of good doctors in Blythe; why, I don't know.

Swent: What about taxes? Did you ever have to work against or for any kind of tax relief?

Havard: The company would send out a tax expert to deal with that problem, and all I would do was get him information, but that was a pretty specialized kind of thing. This man would come out and meet with officials at every level that had anything to do with taxation.

Swent: How were you taxed? On your production?

Havard: I don't remember how we were taxed.

Swent: Was there any Southern California Mining Association or anything similar that you were involved with?

Havard: No, there was nothing of that kind. I did give a talk to the SME in Los Angeles at one time on the operations of the plant, but it was pretty remote.

Swent: Movies? Did you have a movie theater?

Havard: We had a movie theater in Blythe, and people went down to it.

Swent: Nothing at Midland.

Havard: No.

Swent: Did you have to organize the annual company picnic, or a Christmas party, or New Year's party or something of the sort?

Havard: I can't remember those. I do remember the Hispanic annual barbecue. That was really the big event. Everybody was invited, and everybody had a lot of fun.

Swent: Was that for a Mexican holiday?

Havard: Yes, and I can't tell you what it was.

Swent: September 16th, maybe. Your job didn't involve social life, as well?

Havard: Not formal social affairs, I don't really remember. But, my gosh, people were busy with their private parties and bridge clubs and all that sort of thing.

Swent: I imagine Faith had to do a lot of socializing.

Havard: Faith arrived there at age twenty-three, I guess, and she really had a lot of responsibility as the works manager's wife, and she handled it very well and made some longtime friends. In addition to getting to know the people in the plant, which was very important, or the people associated with the plant, she also had to be the hostess for the visiting dignitaries from Chicago, the officers who would come out periodically and look the place over, and we would have to take care of them.

Swent: Did you have a guest house for them?

Havard: We had a guest house, that's right, but Faith had to make the dinners and provide all of the hospitality except the guest house, which was for sleeping.

Swent: Where did you get your food from?

Havard: We had a store with a store manager, and the food was trucked in to us from the Los Angeles area. The store was a company store, but we didn't run it as a company store. We didn't deduct from the employees' wages, or anything like that. We ran it as a straight store, and people were perfectly free to get in their cars and go down to the Safeway in Blythe, so that it didn't have the atmosphere of a company store at all.

Swent: This was part of your job, too, then, to hire the manager of the store?

Havard: Yes, and probably the worst job I got was that the company management in Chicago, in its wisdom, decided that we should get rid of the contractor who was running the restaurant, and that I should take over the running of the restaurant. That threw on my shoulders a terrible burden that used up more time than I had to spare, really, from my real duties, because I discovered that running a restaurant is a terrible piece of business. Trying to keep good chefs out in a place like that, and keep people satisfied, was practically impossible. I think it was very poor

judgment on the part of the management in Chicago to get that idea. I don't know who cooked it up, but it was forced upon us. We had to deal with it, and it was really bad. There were one or two times when the chef would just up and leave, and some of the supervisor's wives would go down and take over the cooking in the restaurant, you know. It was a small restaurant, but it was terribly troublesome. The worst part of my job I ever had there.

Swent: What about liquor? Did the restaurant serve that?

Havard: No, we had a beer bar, and we had no problems with the beer bar. People would go in there and get a cold beer. I don't remember any problems at all with it.

Swent: Who managed that?

Havard: It was next to the store. Of course, the plant was well organized. There was a personnel manager of the personnel department who took care of all these town jobs like the store and the bar and so on. That was part of his job.

Swent: It wasn't directly under you, then?

Havard: No, but the restaurant might as well have been, because it was so much trouble. [laughs] The departments had their superintendents.

Incidentally, we manufactured our own power. We had a diesel power plant.

Swent: So you had to bring in the diesel fuel.

Havard: That came in on the railroad.

Swent: That would be another reason to keep the railroads moving.

Firing a Superintendent##

Havard: Speaking of the powerhouse reminds me of the first test I had when I arrived at the plant. I was told that the superintendent of the power plant, who was a long-time employee of the company, had been taking parts from the power plant and selling them at a mine in Arizona over weekends. He had been with the company about twenty-five years and had many friends in Midland. This was immediately an intolerable situation.

Swent: Who told you this?

Havard: I can't remember, but it was one of the superintendents who told me. One of the first days I was there, I drove over to the mine in Arizona and talked to the people and found out, sure enough, he'd been coming in there and repairing their engines and bringing parts with him, which they didn't know had been literally stolen. After I got the goods, I went back and fired him, and that was considered by the old hands as a rather risky thing, because he had been there so long and had so many friends. I hired some deputy sheriffs from Blythe to stand in the powerhouse for a few nights to make sure there was no interruption of the power, and promoted a very good man to powerhouse superintendent, and on we went. It was a very unpleasant piece of business to start your career with in a new location.

Swent: You had to clean house. How did you go about confronting him?

Havard: I just called him in the office and told him I knew this, and he admitted it, and that was that. I wasn't going to have any of that going around there. I could see no excuse for him, so I just terminated him, not feeling very good about it either, but feeling that it was an absolute necessity.

Swent: Probably a lot of other people were glad you did it.

Havard: That's right. Eventually, it turned out that way, of course.

Swent: I'm trying to think if there would be any other opportunity for pilfering, but actually, in a gypsum or a board plant, there's not much you can steal, is there?

Havard: Oh, no, no. The machinery is pretty well tied down. This was the most negotiable stuff around, the parts for those diesels--they were standard Fairbanks-Morse engines, pretty negotiable parts.

Swent: You didn't mention what sort of equipment you were using in the mining in the quarry, and you did have one underground mine, you said.

Havard: Yes, we had one underground mine which we stoped with slushers, inclined stopes. The quarries were just conventional quarries with power shovels and trucks.

Swent: What brand were you using?

Havard: Heavens, I can't remember.

Swent: Or how big?

Havard: The equipment was relatively small. For instance, the trucks that brought the ore down from the mine to the mill were fifteen tonners, which were considered big in those days, but which are peewee trucks today.

Swent: Was maintaining your road any problem?

Havard: No, we kept it up in good shape with a grader.

Swent: When you did have rain, did you have a lot?

Havard: We very rarely had rain, but, as you do in the desert occasionally, you get a cloudburst. That would present some problems in the quarries, but it wasn't significant because it didn't happen often enough.

Swent: No problem with fire?

Havard: No, but I remember we had regular fire drills, for which we would fill a barrel full of oily trash and set fire to it, and then the alarms would go off, and our volunteer fire department would go to work. We had these periodically, just to keep people on their toes.

Swent: It would be a house fire that you would be more concerned about, wouldn't it?

Havard: Yes.

Swent: Were people pretty healthy? Did you have disease problems?

Havard: No, they were healthy. It's a pretty disease-free atmosphere.

An Obstetric Emergency

Havard: Our biggest medical problem turned up one night when someone knocked at the door of my house at five o'clock in the morning, and it was one of our new employees. He said that his wife was ready to give birth to a baby, and his friend's car had broken down, and could I get him some transportation to Blythe. Well, I went down to his house with him, and I could see that his wife was just about ready to give birth.

I was faced with a real dilemma, you know, of responsibility if she gave birth in a car going down that road. Who would know what would happen? I thought the chances of getting her safely

down to the hospital were kind of slim. So I called the nurse and called Faith, and they tended this woman in her own home and it was a successful birth.

I've often thought about that incident--that could have backfired something terrible, but it was a judgment call. I just didn't like the idea of having her give birth in a car. I thought that was probably the greater hazard. So then after that, we discovered the word got around among some of these new and rather destitute employees, and the plant nurse kept a very close eye on the pregnant women to make sure that we didn't have to go through that again. We got them to the hospital in time.

Swent: You didn't want to go into the business.

Havard: No. We were all very worried about that.

Swent: What about gardening, or anything that grew there. Was there anything at all that you could plant?

Havard: Well, we had a little yard with some crabgrass that would grow, and we had some ocotillo trees which we tended very carefully. That was it.

Swent: That was it. That's why you like gardening now. What about domestic help? Could Faith get anybody to babysit or help her?

Havard: Well, yes, I think we had some young people that did babysitting when we'd go out and play bridge somewhere else, but there wasn't much problem there. It was really a very interesting experience, and we both loved living out there in that environment.

Swent: You weren't concerned about crime.

Havard: Oh, no. Lots of strange people there. You had some people who chose that kind of isolated desert location for their own psychological reasons, so we had some interesting characters.

Deputy Sheriffs

Swent: You must have had guards or sheriff protection.

Havard: We had three of our employees who were deputized, and we had very little trouble. In fact, the only time I can remember that all the deputies were in use was when three trucks came through town, strange trucks, and headed up towards the dump, where waste board

was placed clear out of sight in a little canyon, board that wasn't good enough to sell, resulting from startups and shutdowns, and so on. Gypsum board was in such demand at that time that people were trying to get it any way they could.

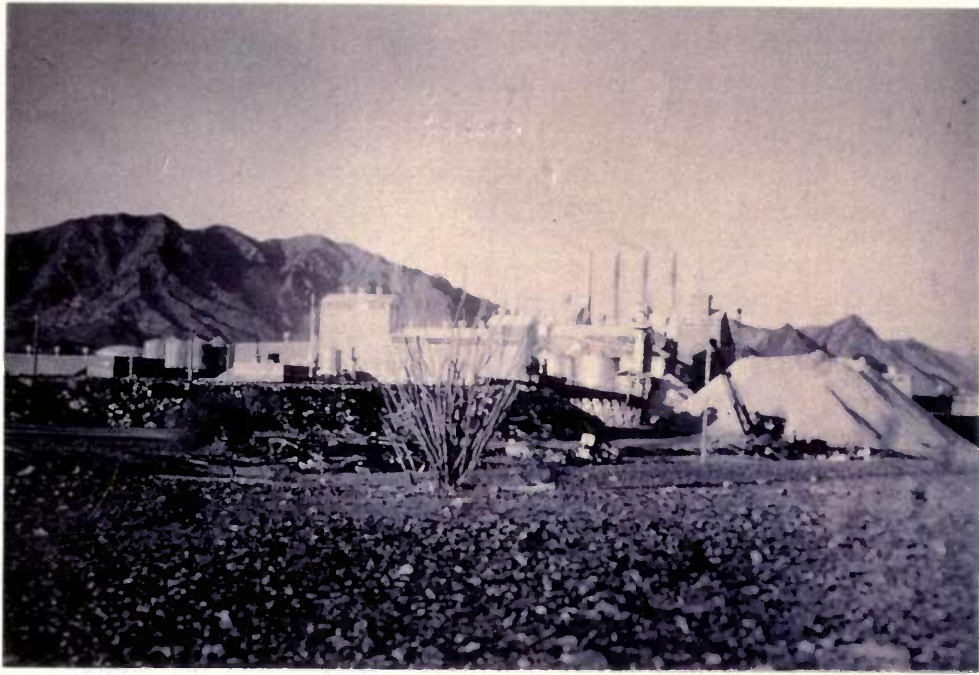
In fact, I was offered bribes by people who came into town, if I would let them have some board. But these three trucks were just set up to take the board off the dump, and we spotted them going through town in the evening, and the three deputies and I hopped into our cars and followed them and took them into custody out on the dump. In the first place, they were very surprised that they were doing anything wrong, because the man who had hired them had not told them they were doing anything wrong. The last thing we wanted was faulty board loose in the market anywhere. I think we took them down to Blythe and handed them over to the sheriff's office and gave them a good scare, and that was all there was to it. That's the most use of our law that I can recall. It was a very peaceful place.



Dominican Republic *USG* *~ 1950*



Empire, Nevada *USG* *~ 1950*



Midland

LISG-

~ 1946

Works Manager



New Brunswick

1950

 $C \in C$

Chief Engineer of Mines

VII CHIEF ENGINEER OF MINES, UNITED STATES GYPSUM COMPANY,
1948-1952

Havard: While we were pursuing this life and really enjoying it, I received a telephone call from Chicago saying that they had appointed me chief engineer of mines for the company, and I was to report to the Chicago office. Faith and I sat down and talked about it and didn't particularly like the prospect of going to Chicago, but we decided that this was a different kind of opportunity and that we should accept it and see what happened.

Swent: When was this, Jack?

Havard: This was in 1948. So off we went to Chicago on the train with a stopover at the Grand Canyon with two little, tiny children with us. When we reached Chicago, the company had reserved an apartment for us on the near North Side. It was wintertime and cold. We had to buy all new clothes for the children.

Then we had to start house hunting, and this was a post-war housing market, which meant that the prices were high, and the homes were scarce. There was a great demand for new homes. We had saved our money in Midland, and we thought we were in good shape, but we found out that the metropolitan inflation had gone much faster than we anticipated, and we didn't have the money that we really should have had.

Swent: How much were you paid at Midland? Do you mind saying?

Havard: Six hundred dollars a month, I think.

Swent: As works manager, this was undoubtedly a good salary.

Havard: Yes, a good salary. Not really high, but good.

Swent: But it didn't go far in Chicago.

Havard: Of course, I got an increase. I think my increase was to one thousand a month in Chicago, but--

Swent: But the company wasn't providing your house now.

Havard: No, they weren't. And it was no longer fifteen dollars a month rent. We finally wound up in Arlington Heights, towards the northwest, in a small, new home which required a lot of work, and I wound up in the Chicago office. The officers of the company were not very sensitive to people. I came in, as an ex-works manager from a plant where I'd had a nice office, and I'd had a secretary, and they plunked me in the middle of a bull pen with one desk and no amenities of any kind whatsoever, and I've always resented that. Very poor way to treat somebody.

Consultant for Twenty-Five Mining Operations

Havard: But the job was a fascinating job. I was, in effect, a consultant for about twenty-five different mining operations in the United States and Canada, and I was also in charge of exploration for gypsum and also for other minerals that might be interesting.

Swent: Was this a job that had existed before? Were you replacing someone?

Havard: I was replacing John Nold, whom I have mentioned before in this story, who was an officer of the company and had been in charge of this type of thing, but was getting well up in his seventies, and they wanted to relieve him. He was an indefatigable man; he didn't care how much he travelled, where he went, or how many hours he worked, or anything of that kind. He was a dedicated man to his job. I'm afraid I wasn't quite as dedicated.

He was a delightful gentleman and, of course, was responsible for my getting this job. The job itself was extremely interesting. On the one hand, as I said, I was really a consultant, called to where there were problems and trying to help the different mines and quarries in the company solve their problems.

Swent: This was a big change from operations?

Havard: Yes, it was. This was a staff job. And then, I was in charge of exploration, and we were looking at a good many different things.

Investigating Perlite, a New Mineral

Havard: The most interesting project was investigation of perlite. Perlite had just been discovered as a useful mineral. It's a volcanic glass that contains a small amount of entrapped water. When perlite is crushed or ground and then heated, it expands like popcorn, and you have little siliceous globules that under the microscope look like Christmas tree ornaments. It makes an excellent insulator. The technology was all new.

Swent: What technology was involved?

Havard: The use of perlite at all was new and discovered after the war. That this glass could be expanded and could be made useful. The company was extremely interested in it. One possibility was as an additive to gypsum board, because it is very lightweight when it's expanded and also it had other obvious uses as an extremely lightweight aggregate, weighing about six to ten pounds per cubic foot when it was expanded.

I spent a lot of time in the West, locating deposits of perlite and sampling them and sending the samples into the research lab in Chicago and determining what the properties were.

Swent: Who actually discovered that perlite would do these things? Was this U.S. Gypsum people?

Havard: I can't tell you who did it. I don't know who did it. It was certainly new, and there were two companies that were, at that time, most interested in it. One was United States Gypsum, and the other was Great Lakes Carbon Company. Johns-Manville came along, sort of behind, with a little later interest.

Swent: I was just wondering how this sort of news gets about. How do you find out that somebody has discovered a new mineral?

Havard: I can't remember how it started. Certainly, we got into it very early in the game, when the properties weren't fully understood, you know.

Swent: Did somebody come to you and say, "Go looking for perlite?"

Havard: Yes, somebody in the company--I didn't find out by myself. I just can't tell you how I was initially told about it, but I went to work on it very vigorously, and it turned out to be extremely interesting because it took me into an entirely new field.

It took me into the volcanic rocks, of a particular type, on the rhyolitic side of the volcanic rocks, and we had a lot to learn. All the perlite is in the West because it's found in these glasses that occur only in the volcanic rocks in the West.

Swent: Where is it besides Grants?

Havard: We ran down perlite in Colorado and New Mexico and Arizona and California, principally. Because it had to be associated with silicic volcanic rocks, we wouldn't find it in the great basaltic lava flows of Idaho, for instance, or Washington. Eventually, we bought two deposits that seemed to meet our needs. We wanted a little tougher and slightly heavier perlite than the Great Lakes Carbon people were looking for. They wanted one that would fluff up into very light material, very white; whereas we wanted something that was pretty tough and could be used in various building materials.

Canadian Gypsum Company: Shipping in the Bay of Fundy

Havard: The job took me a lot into Canada, particularly Nova Scotia, where the Canadian Gypsum Company subsidiary had very large gypsum operations that supplied the raw rock to manufacturing plants in Boston, Staten Island in New York, Philadelphia, and Jacksonville.

The gypsum was mined in Nova Scotia on the Bay of Fundy, and while I was on the job an elaborate shipping program was developed with a new facility at a place called Hantsport on the Bay of Fundy. The company owned, I believe, four vessels, which were twelve-thousand-ton coastal bulk carriers. These vessels would be scheduled so carefully that they would arrive at the Bay of Fundy as the tide was rising and would tie up at Hantsport just before high tide, and they would be loaded with their twelve thousand tons of gypsum in two hours and would go out on the receding tide. The whole maritime operation had to be very carefully synchronized. It was very interesting.

Swent: That's where they have twenty-foot tides, isn't it?

Havard: No, forty feet. It would be just mud where the ship had been tied, you know. I got involved in a lot of exploration work in Nova Scotia and New Brunswick.

Swent: Was this Canadian Gypsum Company a subsidiary?

Havard: A wholly owned subsidiary.

Gypsum Investigation in the Dominican Republic under Rafael Trujillo

Havard: I also investigated gypsum in the Dominican Republic, a deposit which is located near the Haitian border out of a little town called Barajona. This was an interesting job because of the geology, but even more interesting because of the politics that were taking place in the Dominican Republic at that time. The country was under the absolute control of a dictator called [Rafael] Trujillo. I was taken down to the Dominican Republic by a broker from New York who was bilingual in English and Spanish.

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Havard: We first stayed in Ciudad Trujillo, which was the capital city named after the dictator by himself, and then we flew by DC-3 to this grass field at Barajona and stayed there in a tiny, little, primitive hotel, and I did investigation out in the field from there by jeep. I found out that the Dominicans had hired an Italian geologist who was running the drilling operation. He spoke Spanish and Italian, no English. So we had a little triple translation going on with my friend, who knew English and Spanish, and the Italian who knew Italian and Spanish, and he and I argued over the geology by making sketches mostly.

It was a very tricky deposit because it was close to an operating, open-pit salt mine, and salt (sodium chloride) and gypsum don't work well together. Small quantities of salt just totally upset the setting of gypsum, so I had to be very careful that any drilling we did took into the account the presence of nearby salt. We never did make any kind of a deal on that deposit, although I certainly had an interesting time in the hinterland of the Dominican Republic right up against the Haitian border.

One time, we decided to drive back to the Ciudad Trujillo in a couple of jeeps, and we went through ten military checkpoints between Barajona and the capital city, which gives you an idea of the security that the dictator was throwing around. On my final trip, I took the DC-3 from Barajona, and on the way I took some pictures of some of the lagoons which seemed to me to be typical of a place in which gypsum might be currently being deposited, a long way from being commercial but of scientific interest.

When the plane landed at Ciudad Trujillo, the pilot, who turned out to be a captain in the Dominican Air Force, stepped up to me and said, "The purser tells me you were taking pictures of our naval installations."

I said, "I didn't see any naval installations, much less take pictures of it. I was taking pictures of the coastline, places that interested me for scientific reasons."

He said, "I want your roll of film."

I said, "You're not going to get my roll of film. I'm here as a guest of the Industrial and Agricultural Bank of the Dominican Republic, and I have no intention of giving you my film."

He was absolutely furious--spoke good English, incidentally--but absolutely furious. My ire was raised; I had a lot of other interesting pictures on this roll of film, too, so I didn't want to get rid of it. I went back to the hotel and got rid of my field clothes, shaved, and was invited to a final luncheon in a club for the top business people in the republic.

When I got there, one of the bankers whom I knew came to me in obvious trepidation, pale as a sheet, saying he'd just gotten a telephone call from the general, and the general was Trujillo's brother--the dictator's brother--telling him to get from me a roll of film. Well, I knew I was licked, because if I didn't give it to him, I didn't know what would happen to this man, so I pulled the roll out of the camera and gave it to him. That was the end of that incident. Later on, of course, Trujillo was killed, and the country reverted back into a form of democracy.

Investigation in Jamaica

Havard: I also investigated gypsum in Jamaica, and this was a pleasant task, because the first trip we made was made with John Nold, and he wouldn't fly for reasons which I'll tell in another story. We had to get on a cruise boat. It was a delightful trip. It was an Alcoa freighter that had accommodation for maybe sixty passengers, including a little swimming pool which was just absolutely delightful--the whole thing. We looked at these deposits in Jamaica and took the boat back to New Orleans. Subsequent trips I made to that deposit I made by air, of course.

I found a very complicated little deposit which had been described to me as a mountain of gypsum. The reason it looked like a mountain of gypsum was that the gypsum outcropped on a face of limestone and gave the impression of the whole hill being gypsum, but it was not, and it had been very heavily folded and so on. I recommended that it be purchased because it would give us a southern source of gypsum for a few years. That was done; it was purchased and operated until it was exhausted.

I went into Mexico to look at some things, too.

Mexican Investigation for Gypsum

Swent: Where were they?

Havard: The deposit was out of Monterey, but back in the mountains--spectacular country, spectacular scenery. That particular deposit, not very good economically.

Swent: Did you acquire any in Mexico?

Havard: No, but later on my successor did, in another place.

Swent: You did get the one in Jamaica.

Havard: Yes.

Swent: And the one in the Dominican Republic?

Havard: No, we didn't take that one. We felt that was pretty hazardous--both from the standpoint of the nearby salt and also because of the dictatorship, and we had to deal with the government. Although I spent quite a bit of time on it, we finally decided against it.

Processing Perlite

Swent: You said that you looked at a lot of perlite prospects, and you only acquired two of them?

Havard: We acquired two. That's all we needed. One was near Grants, New Mexico, and the other was near Lovelock, Nevada.

Swent: Was the technology from your standpoint any different from that of gypsum--I mean the mining and the processing?

Havard: Of perlite?

Swent: Yes.

Havard: No; they were very small operations. The one in Grants, New Mexico--eventually, after I had bought the deposit and had left the company, U.S.G. bought out Pumice Corporation of America. Pumice and perlite are close relatives. They acquired that plant at Grants and processed the perlite through it.

We built a little plant at Lovelock, a very small plant, right on the railroad there. It never really materialized into a valuable resource for United States Gypsum Company for some very good reasons, technical reasons.

Swent: What were they?

Havard: Well, the idea of using it in wallboard was what attracted, but they discovered the obvious, that air is cheaper than perlite. Perlite, as I say, is like little Christmas bulbs. Air is still cheaper, and foam is what they used and still use in making gypsum board.

The other thing was that, if you put perlite in the board, it would dull the knives of the applicators, and in that business, you have to constantly cater to the applicators, because if they don't like your board, they go to your competitor's board right away. Experimental work that was done showed that these little siliceous globules dulled the knives. But there are companies that are making board, not gypsum board, but making board with a lot of perlite in it.

It's an interesting material. The industry has grown; the material is used in gardens, and it's used in a variety of ways where you need a pure, very light-weight material. It is used as an insulator in various applications. In the end, perlite really didn't meet our needs. It took research work to find out; it sounds very simple, but you had to work at it.

Swent: Chemically, it's not at all related to gypsum; it was its applications that would have made it appealing to you?

Havard: Yes, it would have been adding a very light-weight aggregate.

Swent: So, apart from that, you were looking only for gypsum deposits.

Havard: Well, I would look at other things, some asbestos deposits, and some limestone deposits. Generally, we were interested in the industrial minerals over quite a wide spectrum. That was the kind of business we were in.

Swent: So you didn't spend a lot of time in your bull pen in Chicago.

Havard: No, and of course, the travelling was terrific.

Personal Discontents with Traveling and Suburban Living

Havard: We found that we had two major problems as a family. One was the amount of time that I was away. By this time, we had John, so we had three children, and the burden that it left on Faith was, I think, really excessive.

The second thing was that we weren't happy in the northwestern suburb of Chicago. This was a period of real intolerance in places like that. For instance, a Jewish family would have been harassed and kept out, if possible, you know. It was kind of an atmosphere in which we were not at all comfortable, although we did make some good friends. Faith always made good friends. But finally one day we sat down and talked it through and decided that enough was too much, and we were going to make a change.

Then I started looking, and sort of out of the blue came an opportunity in Potash Company of America, near Carlsbad.

VIII MANAGER, POTASH COMPANY OF AMERICA, CARLSBAD, NEW MEXICO,
1952-1953

Swent: How did this come to you?

Havard: I think it was a headhunter who came to me. This company had a vacancy in what they called assistant resident manager, which really meant the manager of the New Mexico operations. The resident manager was an officer of the company and was really dealing with other things.

I took the weekend off and went down and looked the situation over, and it was another desert situation, which we had enjoyed.

Swent: Carlsbad isn't as deserty as Blythe, is it?

Havard: Well, we were twenty-five miles east of Carlsbad and pretty well out in the desert. I looked over the situation and liked it, so we gave notice and left.

U.S.G. tried to keep me, but my mind was made up. They wanted to know about a successor, and I recommended a man named Frank Appleyard that I thought would be very good. He took the job on the terms that he could have two professionals added to the staff, which I should have done. He made this a provision of taking the job. He took the job, and he did very, very well with it. He retired as a vice president, and just did a top-notch job for them, with a staff that really expanded as time went on.

Swent: Had you known him? Was he someone you knew?

Havard: Yes, and we still correspond, and we are good friends. A very fine man. So that was taken care of very well.

We got into our car and drove to New Mexico. We had a house waiting for us out at the camp. There were only a few supervisors and technical people living in a little camp community at the mine. The bulk of the thousand employees came in by bus from Carlsbad. My job was to actually run the operations there at Carlsbad.

Swent: Again, what was your title?

Havard: Assistant resident manager. It always irritated me. The resident manager was busy doing other things, including running a big development program on the potash beds of Saskatchewan, which eventually opened up an entirely new industry, and which has become, I guess, maybe the world's biggest producer. He was pioneering that work, and I was running the local job. We had this home right near the plant and some very delightful people living out there, some of whom are still our good friends.

Swent: You might want to mention some of their names.

Havard: The people who have become very dear to us were Orrie Olson and his wife, Rusty. He was a chemist in the laboratory. They were a delightful couple; they now live in Walnut Creek, and we've always been very close. There were others, but the Olsons were the ones that, because of geography, we were able to stay very close to.

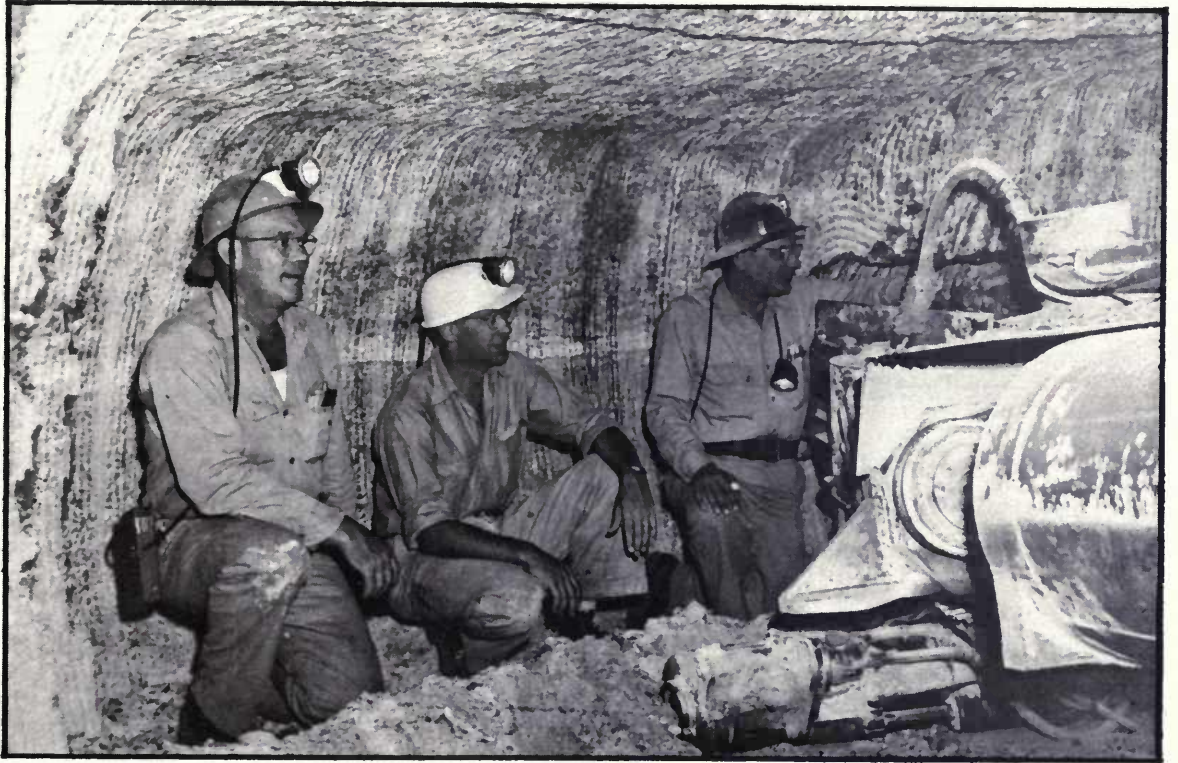
Swent: You form close friendships in a place like that.

Pioneering the Continuous Mining Machine

Havard: We had a mine about a thousand feet deep, a magnificent deposit of potash ore, mined mostly by room-and-pillar methods, with coal-mining equipment that had been adapted to the room-and-pillar work in potash.

The company was pioneering at that time the continuous miner. They had developed their own type in their own shop, and had one operation underground where they were using this continuous miner that was depositing the potash on a conveyor belt that was taking it out to the main line of the underground railroad, where the cars were moved automatically as they were filled. It was quite advanced for that time, at an experimental section.

It was a very good and very safe, well-operated mine. The ore was brought up to the surface and crushed and ground and processed through the flotation process, resulting in a potash concentrate. The waste was the halite, the common salt that occurred with the potash ore. A small amount of the potash ore went through a fusion process that resulted in a very specialized granular product.



Underground with a continuous miner. Jack Havard (center) with mine supervisors. August 1953, Potash Company of America, Carlsbad, New Mexico.

The mine was very independent, had its own power plant with a bank of fine engines, and it also had a very complete shop, one not only capable of doing ordinary shop work, but of building these prototype continuous miners. My understanding is that the Potash Company of American, or its successor, is still using this type of miner, which, because of its design, doesn't have a general application.

Swent: You had water there, did you?

Havard: We had a very adequate supply of water, brought in, I guess, ten or fifteen miles from a mesa, beyond the plant.

Swent: What about union troubles; were you involved in that?

Havard: No, no, we had no troubles of that kind. We, of course, were always striving to improve our operations and our technology through a research group located there.

Negotiations with Mine, Mill, and Smelter Workers Union

Swent: What was the union, the same AF of L union?

Havard: The union was the Mine, Mill, and Smelter Workers.

Swent: There were a lot of labor problems in that area.

Havard: Yes. Before I had gotten there, there had been a protracted strike, about two years before--real trouble in the bargaining process.

One of the most interesting small incidents occurred as a result of the bargaining that took place while I was there. Of course, I was on the company's bargaining team, which worked with the other mines in a sort of master contract kind of situation. Those Mine, Mill, and Smelter Workers at that time were pretty tough bargainers. So we got into a protracted negotiation; we could not arrive at an agreement, and neither side wanted another strike. So the question was, "How do we handle this? We can't agree. We don't want a strike. So what do we do?"

Swent: What did they want, higher wages?

Havard: Well, they wanted higher wages particularly, and, of course, some other goodies, the details of which I no longer remember.

In the first place, we said, "We are not going to extend the contract. If we can't reach an agreement, there is no contract." They would have liked to have just extended the contract, but we just thought that would lead to protracted negotiations, so we said, "No agreement; the contract is terminated."

This worried them particularly, because the contract had an arbitration clause, and they did not want to lose the arbitration.

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Havard: They did not want to lose their arbitration, saying, "What in the world are we going to do about that?"

I said, "I'll be the arbitrator." To my utter astonishment, they accepted the proposal. Probably due to the fact that I been responsible for initiating some supervisory training by an expert we brought in. I think that that had probably impressed these people, that I was a fellow trying to make things work better.

We had three arbitration cases come up while I was the arbitrator, and I remember I decided two of them in favor of the company and one of them in favor of the union. No trouble whatsoever. Eventually we got a contract signed, but that was rather an unusual little piece of union relations.

Swent: A real compliment to you, I would say.

Havard: Yes, I think so.

Swent: Were you replacing somebody?

Havard: I was replacing a man who had left and who later had a very fine career himself.

Swent: It's always tricky, though, to come in after somebody, isn't it?

Havard: Yes, it is, but I really didn't have much trouble with that. I thoroughly enjoyed the place. It was a complete company operation. The president had his office there, right in the same building.

Well, we were happy there, and brought Patrick into the world in Carlsbad, and that was number four and the last.

I received an unexpected visit from a man named Bill Spence, who had been a top sales type for United States Gypsum and who had then become the personnel manager for U.S. Gypsum. He was now working for U.S.G.'s former president, William L. Keady, who had

displeased the chairman of U.S. Gypsum, a great character named Sewell Avery, and had, therefore, been fired.

Keady had received an offer to run Pabco Products, Inc., in San Francisco, and he was busy reorganizing that company, which was in very bad shape, hanging on the ropes, as the result of a decrepit management. Bill had decided that he wanted me to be vice president of manufacturing for Pabco.

We were in no hurry to leave the desert. On Bill Spence's first visit, we politely said that we weren't interested, but he came back two or three months later, and he came back with a better package that involved some stock options and more salary, and Faith and I decided that we really had to take this up because we didn't know what the future for our children would be in Carlsbad, and we felt that, if we did move to the Bay Area, we could be assured of a good schooling and all along the way, you know, a different life. So we accepted, and I resigned at PCA with some regret.

IX VICE PRESIDENT OF MANUFACTURING, PABCO, SAN FRANCISCO,
1953-1962

Swent: That was in 1953.

Havard: Yes, in August of 1953. We came to San Francisco, and I remember the company put us up at the Huntington Hotel on Nob Hill.

Swent: That's quite a change from Carlsbad.

Havard: Yes, very nice, and we got there late, and we had a ten o'clock dinner over at the Fairmont Hotel.

I was faced with a really difficult job of making a job, because I wasn't replacing anybody; I was coming in to be in charge of all their operations. Pabco, at that time, was well known in the Bay Area. If you went across the Bay Bridge, you would see a great, big sign reading, "Pabco," on its forty-acre plant in Emeryville, and you could also smell the plant, because they made linoleum there. It was not an objectionable odor, but it was a distinct odor over that area.

It was an old company that supplied mostly the Pacific Coast and was in a variety of building materials. They were in gypsum with a board plant in Southgate, a Los Angeles suburb, and an open-pit mine near Las Vegas. They were widely known for paints. They made an asbestos industrial insulation. They made roofing felt and all kinds of asphalt roofing, and they made linoleum, a big part of their business. They made good linoleum; the only trouble was that linoleum was being replaced by plastics.

They had plants up and down the coast, stringing from Portland down to Los Angeles, the big one being the plant in Emeryville. They had also built a brand-new linoleum plant in Metuchen, New Jersey, which was out of date while it was on the drawing boards, but which was a beautiful facility in terms of the buildings and the tunnels that connected the buildings, the machinery, and so on. Unfortunately, it was just obsolete technologically and marketing-wise before it was built.

We had all kinds of problems. I found that they had a chief engineer named Bob Hallanger, and I was very much interested in his capabilities because he was going to be a key to whatever we did. I travelled with him, and I decided that we had a gem. He was an honor graduate of Cal Tech [California Institute of Technology], a very quiet, sort of shy man in his appearance, but very firm underneath, and extremely capable, an exceptionally fine engineer. I stayed with him, and we started to work to try to improve things.

Some Horrendous Management Problems

Havard: The problem at Emeryville was horrendous because there were half a dozen different facilities on the forty-acre property, and there were eighteen unions headed by the Longshoremen. The company had hired a very capable negotiator, a man named Rudy Thuman, but he needed backing up with force, so that he knew that he had the top management behind him. He got that backing from the new management.

The plant also had a lousy safety record, and one of my first acts was to seek out the safety engineer, who I found was a capable young man. I sent instructions around that his recommendations were to be followed and that we were to get to work on the safety. The first year, we reduced the accidents in the Emeryville plant to a third of what they had been.

So, you know, there were things that we could do and did do, but we also were plagued by the fact that we had some obsolete processes, and a high degree of inefficiency, and this very, very difficult union situation.

We proceeded to enlarge the gypsum business because Bill Keady thought that there was a lot of potential in it and because he understood it well. My job was to find deposits and see that we designed and built a couple of new plants, all of which we did.

The asphalt roofing business was a fundamental business, and we developed the idea of building roofing plants next to oil refineries, so we could pump the asphalt from the oil refinery to our plant. We built a new roofing plant next to the Union refinery in Wilmington, and one next to the Shell refinery in Martinez.

Swent: Nobody had thought of this before?

Havard: Well, I think they had back East, but Pabco hadn't thought of it before. We really went to work the best we could, but I quickly learned that when a company is going downhill and you start changing things, trying to improve things, you really accelerate that downhill movement for a while. It was difficult, but we made a lot of progress.

Pabco Becomes Fibreboard Corporation

Havard: A few years after I went there, Bill Keady was able to negotiate a major move. There was a Fibreboard Corporation, owned half by Pabco and half by Crown-Zellerbach, that made paperboard--that's heavy paper for packaging materials--and had a big business in corrugated containers and in quite sophisticated packaging, the kind of thing where the printing is done very well for all kinds of products, such as margarine, packaged in cartons. The company had printing presses, very good equipment, had its own engineering department, its own research department.

Crown-Zellerbach was ready to get rid of their interest because they felt it was a handicap to them from an anti-trust standpoint in doing some other things they wanted to do, and so Bill Keady arranged the financing and acquired Fibreboard, and the name of the company was changed to Fibreboard. I retained the same job.

Swent: Pabco Products just became Fibreboard.

Havard: Yes. We did not change the brand names of Pabco Paint, and so on. We then became a pretty good-sized company. As I said, I think we were somewhere around number three hundred in the Fortune list of five hundred industrial companies.

Introduction to the Timber and Paper Businesses

Havard: This got me introduced into the timber business, because we had fifty thousand acres of timberland, and into paper making, both with virgin pulp and with used papers, and into this whole printing business, all of which stretched me pretty heavily.

Swent: This was a completely new field for you, wasn't it?

Havard: Yes. Meanwhile, we shut down the Metuchen plant, the plant in New Jersey, because it was an absolute loser. We were assisted in shutting it down because the Rubber Workers union, which handled the linoleum plants in this country, had decided to use it as a test case in new negotiations. Knowing that the company was weak, they thought they could extract a lot of fine contract provisions from us, and then they could go to the two big manufacturers, Armstrong and Congoleum, and get a better contract. They struck us at Metuchen, and we couldn't have been more pleased, because that just accelerated the shutdown of that plant. The buildings were sold, and the machinery went down to South America for some purpose or other, and that was the end of that.

Swent: Did this affect your union situation here, on this coast?

Havard: No, no, because we had these eighteen unions at Emeryville, and they did not have the Rubber Workers.

Vice President of Engineering and Resources

Havard: My job began to change because we were doing so much new construction and renovation, and so on, that I finally became vice president of engineering and resources, and another man came in as vice president of manufacturing.

Swent: Again, the vice president of engineering and resources was a new job. You weren't succeeding anybody in that.

Havard: No. Our biggest task was to build a whole new paperboard plant at the San Joaquin division at Antioch, and this involved some innovations, as most of our work did, under Bob Hallanger. We introduced a Swedish digester into the new plant and did a number of interesting things.

However, tensions were developing. Some of the officers didn't like Hallanger, didn't understand him, and wanted me to get rid of him, and I refused to do that. I said that we had a great deal of talent in Hallanger, and I could begin to sense that I was getting in trouble and beginning to get outnumbered at the top, so I started looking around for some other position.

Getting Fired: the Best Thing That Ever Happened

Havard: Before I found it, I was fired--the best thing that ever happened to me. Shortly after I was fired, Bob Hallanger resigned. Well, taking his case first, in a fairly short period of time, he had founded Hallanger Engineers and eventually had an engineering company that had a main office in Orinda, and offices in the Seattle area, the Los Angeles area, and on the Gulf Coast, and just did fine.

Swent: So it was good for him, too.

Havard: Absolutely delighted me. In the meantime, I had to find something, and I was looking at a number of things. At the particular time I was fired, it wasn't a very good time to be looking for a top management job.

Swent: How did they fire you?

Havard: Well, the president invited me into the office and told me that he was terminating me.

Swent: This was in 1962.

Havard: Yes.

Swent: Did they give you golden parachutes in those days?

Havard: No, they gave me three months' salary, which was miserable, but I was too proud to argue with them. I knew it was going to happen, you know, and I had already started looking around.

Swent: Did you have any retirement?

Havard: Yes, I had some stock, and I had some retirement.

Benefits at U.S. Gypsum

Swent: What about U.S.G.? Did you have retirement with them?

Havard: No, U.S.G. didn't have anything of that kind. They were in the Dark Ages in personnel practices. I should have mentioned that earlier. Sewell Avery, who was quite a character, believed in the individual initiative, and that a man should put things aside to take care of his old age. He didn't believe in Social Security or

anything like that. The only trouble with his theory was that he tended to pay the lowest wages and salaries that he could pay, so it didn't work. And of course, eventually they had to totally change their ways.

Swent: They had no retirement plan?

Havard: No, no, nothing.

Swent: They were required to have Social Security.

Havard: They were required to have that.

Swent: So when you left there, you left with just what you had saved?

Havard: Bare, that's right.

Swent: And then, you had only a few years with Fibreboard, not long enough to build up a retirement benefit.

Havard: Well, I had some buildup of pension, and I had my stock options which were substantial.

Swent: What other sorts of benefits did you have with Fibreboard? Did you have health insurance and all that sort of thing?

Havard: Oh, we had a health plan, sure, and that extended over the period of severance, three months.

X KAISER ENGINEERS

Manager of Mineral Projects

Havard: I was told that the Kaiser companies at that time were a very good place to work. They were on the uprise; they had just built the new building and those companies were beginning to go to town, so I began to investigate over there.

Swent: You were living in San Francisco?

Havard: We were living in Menlo Park when I worked for Fibreboard.

I got the idea that Kaiser Engineers had been doing some mineral jobs, some of them a good size, but that they didn't have a coherent program. They would get these jobs as part of other things they were doing. And so I arranged a series of interviews with the executive vice president and one of the top vice presidents of Kaiser Engineers and told them that I thought they ought to have a Minerals Division and that I was the man to head it up. Strangely enough, they bought this idea.

I think one of the reasons that I was successful--I know one of the reasons that I was successful--was that a number of the directors of Fibreboard were very unhappy, and, in fact, one of them told me, when they heard that I was being fired, that it was a real dilemma to them--that they either had to let it happen or they had to express lack of confidence in the president, and that would start a whole sequence of events which they really didn't want to start. So a number of them were very helpful to me, one of them in particular, Emmett Solomon, who was then chairman of the Crocker Bank, and who knew Edgar Kaiser and Gene Trefethen and other top people that were in the Kaiser companies. I know he went to work for me, because he was most unhappy that I had been let go. So I had a sound idea, and I also had, in the background, some very substantial help going on.

Kaiser Engineers bought the idea, hired me, and made me the manager of mineral projects--that was the first title--and I landed in the eighteenth floor of the Kaiser Building, with a job to build again.

[Interview 4: October 26, 1991]##

Swent: This is our fourth interview, and there are a couple of things that I thought we should fill in from before.

Sewell Avery, Chairman of U.S. Gypsum

Swent: One was Sewell Avery. You mentioned him, and we really didn't identify him. He was the head of U.S. Gypsum?

Havard: He was the chairman of United States Gypsum Company when I joined it and had been a major factor in the successful operation of that company, and established policies, and so on. He was a man of very firm convictions, one being that people should stand on their own feet, and the government should stay out of the way.

He therefore felt that his employees should save their money and provide for their own old age.

Swent: At that time, he wasn't alone in that.

Havard: No, he was an exaggerated case, I would think. And, because of his success with U.S. Gypsum, he was asked to head Montgomery Ward, which was in considerable trouble at that time, and he became noted in the news because he refused to follow some of the government wartime edicts, and I forget the details, but the amusing part was that Franklin Roosevelt sent troops in to his office, and they carried him out of his office, and this picture of Sewell Avery sitting in the hands of two soldiers and grinning from ear to ear made the newspapers all over the country.

Swent: Did you ever meet him?

Havard: I met him a couple of times, particularly in talking about future places to look for gypsum resources.

Swent: He was pretty much involved then.

Havard: He still kept an interest. He was chairman of the board, and he was of course a very intelligent man with broad interests, but he certainly was an ultraconservative. The problem was while he had these beliefs that his employees should be independent, he paid them low wages and salaries. So this was inconsistent and resulted in high turnover of executives and engineers.

In fact, when I left U.S. Gypsum, there was a story in the business pages of the Chicago Daily News about the turnover at U.S. Gypsum and listed something on the order of twenty people, including me, that had left. The good side of this, in which I participated, was the fact that with that high turnover, there was a great opportunity for young men to rise up in the organization.

Swent: I think you said when you went to the Chicago office of U.S. Gypsum, you were paid a thousand dollars a month.

Havard: Yes, and it rose a little bit over the years that I was there. When I went to Potash Company of America, I doubled my salary and acquired a group of the conventional benefits that were coming along at that time.

Swent: You were not a vice president of U.S. Gypsum, and yet you had an acquaintance with the chairman of the board; he was talking to you about what you were doing. Is that usual?

Havard: I think so. I had the job of ensuring their mineral resources, not only gypsum, but other minerals, too. I set myself the objective of trying to see that every facility had a fifty-year supply of whatever it was, where that was possible, and of course, we were looking elsewhere. When I made investigations of the deposits in Jamaica and the Dominican Republic, I would come back and prepare a presentation which would be made to the officers of the company. So I was well acquainted with the top brass.

More About Faith Hartley Havard

Swent: Did you want to explain a little bit about Faith not becoming a missionary?

Havard: She was a dance major at the University of Wisconsin for two years and lived in the president's house because the president of the university was her uncle. She had some very interesting experiences there, and the people she met, and so on. But then, as the war approached, she got the idea that she wanted to be a medical missionary, and I think this probably resulted from her

acquaintance with a Father Boynton, who was the priest in charge of St. Francis House, the university Episcopal chapel. He was a remarkable man, later became Bishop of Puerto Rico for the Anglican Church there.

She then left the dance majoring and went to St. Luke's Hospital in Chicago to become a registered nurse, with the objective of being a medical missionary. I'm the guy that interrupted that [chuckling]. She became a medical missionary in Midland and other places along the way.

Swent: Did she ever work in any of the hospitals where you were?

Havard: I have already mentioned that she worked in the hospital in Lewistown, trying to complete her R.N. requirements. There weren't any hospitals in the other places, and by the time we got to Carlsbad, for instance, we had three children and a fourth one on the way.

Swent: So she was doing her nursing at home.

XI MORE ABOUT FIBREBOARD

Swent: It seemed to me that we skipped Fibreboard a little quickly, that there might have been more things you would want to say. You said that you built the new plant at Antioch, but after I looked at this report that you left me, I wondered if there was more that you wanted to say about that machinery.

Havard: When the merger took place with Fibreboard, the Pabco-Fibreboard merger, we combined a lot of departments, and one of the ones we combined was the two engineering departments under Bob Hallanger, at my insistence. The chief engineer for Fibreboard went on to manage the big operation at the San Joaquin pulp and paper mill.

For the combined companies, we built a lot of new facilities, and we improved a lot of the old facilities. I mentioned the San Joaquin mill where we installed a complete new unit, including the digester and right on through the paperboard machine itself.

Pioneering Environmental Controls

Havard: Along with that work, we did a lot of pioneering work in environmental controls at that plant, because the air and water quality control boards had just been formed. I will say that the directors of Fibreboard were very cooperative with me in working to really solve those problems, and we did. We did cease discharge into the Delta, I guess the San Joaquin River, probably, and we did a tremendous amount of work in reducing the air pollution, which is just natural from a pulp mill, which is not particularly harmful but smells bad.

I'll never forget the last thing we were trying to round up was a chemical called methyl mercaptan. It is extremely odoriferous in fractional parts per million or less, and I remember that we would periodically get complaints from as far away as Stockton, people smelling this stuff, and we had a

terrible time corralling it. One of the amusing parts of the corralling process was that we sent out sniffing teams in automobiles and under different weather conditions, taking the roads around the plant and recording what they smelled. Eventually, we caught it by an incineration process, but that whole task of meeting new air and water requirements was extremely interesting and challenging, and we were pretty successful in doing it.

Replacing the Emeryville Plant

Havard: One other thing I might mention while we're on the subject of Fibreboard was that we knew that Emeryville--that big, complicated facility--was doomed, was generally obsolete, and we began replacing it with individual plants built elsewhere. For instance, the roofing plant at Emeryville was replaced by a new roofing plant at Martinez. We were aware that in the end we were going to have to get out of there, so I initiated the first planning for the use of the land after it ceased to be a production facility. All this work was very preliminary and accomplished by some specialized consultants that we hired to help us. Now, of course, the plant is gone. When you drive by there, you see lots of new buildings and a tall apartment house, and across the way, where the dump used to be, there are new buildings. That all came about in due course of time.

Swent: You owned the land, didn't you?

Havard: Yes.

Swent: It probably turned out to be as valuable as the production had been.

Havard: I was gone when they actually began the moves to sell that land; it must have been very valuable.

Development of a Selenite Gypsum Deposit near Las Vegas

Swent: There were gypsum mines.

Havard: We really did so many things, it's hard to talk about them all without being much too lengthy. Bill Keady was particularly interested in expanding the gypsum business of originally Pabco,

then Fibreboard. So we went about it, and some interesting things happened.

The company had held, for many years, I think several thousand acres of land near Las Vegas, that was very isolated and consisted of a most unusual deposit of gypsum which was entirely selenite, which is a platey crystalline form of gypsum. We were running out of rock-type gypsum near Las Vegas, and we had some problems of access to this land, but I sent our mining engineer out to look at it. I think he had to get permission from the army to cross some army ground to get into this place. He went out there, and he was astounded by what he saw. It was a huge deposit.

He came back and reported to me, and we put drill crews out there and went to work on the deposit, and we found something on the order of a billion tons of this selenitic gypsum. Well, that solved our problem from the standpoint of resource, but we had to find out how to clean this stuff in the first place, because there was a lot of clay in it, and how to use it, because that type of platey gypsum hadn't been used in the United States.

We hired a metallurgical firm to help us with the testing and development of a flow sheet. One outcome was that we built a road to the highway near Las Vegas, and we also were careful to make arrangements that a railroad could be built parallel to that road and connect with the main line of the Union Pacific. We built a recovery plant which was unique, and started feeding the Southgate gypsum plant with this new gypsum, which brought in endless technological problems in what you might call the art of making board out of entirely different type of material. But we succeeded, and today there is a very large board plant out on that deposit. First, it was built by Johns-Manville (which bought the property from Fibreboard as Fibreboard disintegrated). Now it is controlled by California Gypsum Company, and the railroad was built, and the whole thing has been a success. So that was a very interesting story.

We also located some deposits in Colorado on the east slope of the Rockies, and we built a new board plant at Florence, Colorado, which was really a very interesting design and was a successful plant.

Swent: Did you do your own designing on the plant?

Significance of Good Management

Havard: Yes, and we built its twin at Newark, California, which was just as good mechanically but didn't operate as well because the labor force wasn't as good, that we could get in the Bay Area.

Swent: That's Newark, here in the Bay Area? You could get better laborers in Colorado?

Havard: We just simply had a better crew in Colorado. They tuned up that machine and just ran it beautifully; whereas, in Newark, we had more start-up problems, and then the problem was people, just weren't as good. That goes from the manager on down.

Swent: What is the difference?

Havard: Well, I think we didn't chose as good a manager, that's the prime thing.

Swent: How does this show up?

Havard: Well, it showed up in a much slower start-up--you know, getting the bugs out of a new plant and getting it running well. And then, it just never was as efficient as its twin in Colorado.

You know, it was an interesting comparison of identical plants in two completely different circumstances.

Swent: I was wondering specifically where it shows up--in more accidents?

Havard: Oh, no, it was production efficiency--speed on the machine, and quality, and so on. It was very interesting.

Swent: You said you hired a metallurgical consultant on this other gypsum in Nevada. Do you remember the name of the company?

Havard: Yes, it was the successor to the Western Machinery Company--Wemco, I think it was called at that time, but later was absorbed by another company.

Swent: You designed your own machines for these plants, did you?

Havard: The gypsum machines were built by a specialized machine maker, Coe Manufacturing Company--that is, the actual board machine and the dryer. Of course, we had to write the specifications for it. And we also had to design our own front end of the plant, the calcining part.

Making Gypsum Board: an Art as Well as a Science

Swent: So first you treat the gypsum, and then you put it between board.

Havard: Well, as I explained in talking about Midland, you take the gypsum rock, crush it, and grind it, and calcine it, which makes the gypsum active as a plaster, and you carry that over to the board plant.

The board machine itself is a very long machine, depending upon the capacity of the plant, but several hundred feet long usually, and there is a big roll of special paper, over four feet wide, that unrolls and moves through the bottom of the set of master rolls. Then the gypsum slurry, which consists of the stucco that we have sent over from the calcining plant, plus water, plus fibers, and plus some chemicals, especially foam-making chemicals, is fed onto this lower sheet of paper, and the manila outside paper of the gypsum board is fed in on top. And this sandwich goes through the master rolls and is formed, and then travels down a long belt where the gypsum sets up, and you have the board formed. You arrive at a cutter at the far end of this conveyor which cuts the gypsum board to the proper length, and then it's transferred into a multi-deck kiln, where it is dried. When it emerges from the kiln, it goes into the automatic packaging equipment.

Swent: Where did the difference between the platey gypsum and the rock gypsum--where did that make the difference? In the beginning?

Havard: It was physically different, and when it was fed into the calciner, it went in these little plates instead of little particles. It made some subtle differences in handling which I don't recall. As in many processes, there's some art involved, and the art of redeveloping the right gypsum crystals that will interweave with the paper and behave properly is a little tricky, and in dealing with the new material, we had to solve a lot of problems that I guess you would say are in the form of the art rather than the chemistry or anything like that.

Swent: The new machine that you put in in Antioch: did you do the research on this? Or did you go out and buy a new machine?

Havard: Our engineering department did the layout of the new paperboard plant and the flow sheet and specified all the equipment that was to be used. We bought the equipment, and the paper machine itself was bought from a specialized machine maker named Black Clawson.

Of course, there were many other big pieces of machinery that we bought and installed. The actual detail design and construction was done by Bechtel, on a competitive basis, not on a bid basis, but on a competitive basis with a couple of other contractors that were invited to make proposals, and it was a successful job.

The Board of Directors

Swent: You had some very high-powered people on the Fibreboard board of directors, big local names.

Havard: Yes, we did. They were a high-powered group. Not all of them, but--

Swent: Did you have close contact with them?

Havard: I had to go to every board meeting and present what we were doing, which depended upon what my duties were, and my duties varied quite a bit over the nine years I was with Fibreboard, until finally I was in charge of the engineering and resources, but I did have to make a presentation every month at the board meeting.

Swent: Do you want to mention any of the people? There are some prominent names, Herman Phleger and Porter Sesnon, those are both old San Francisco families.

Havard: Yes. I think I mentioned Emmett Solomon, who was of particular help to me when I was working to get something going at Kaiser Engineers. They were all very friendly to me.

Swent: Did they know anything about the business, or were they just friends of other people on the board?

Havard: You mean the directors?

Swent: How did they get to be directors?

Havard: I think the entire crew was there when I went with Pabco, and I think Bill Keady had picked many of these people. Some of them, I think, were directors of the old Pabco. The board didn't change when Fibreboard was acquired, because Fibreboard had been half owned by the two companies.

Swent: It was a pretty tight little club, was it?

Havard: I think you might call it that. They were very decent people. They weren't the classical capitalists that didn't think anything but money. They, as a group, I would say were very decent people and interested in what was going on.

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Swent: I was sort of wondering what makes a company just go away. Disintegrate, I think, was the word you used. It must come from something the board does or doesn't do.

Havard: I think it can also result from exterior problems. Most of Fibreboard's business was regional; whether it was in building materials or whether it was in packaging, the company was a regional company. The big, national competitors really made it tough on a regional outfit, and then, I think they made some mistakes in the top personnel. Of course, I would think that. [chuckling]

Swent: Did the change from railroads to trucking have a big effect on their business?

Havard: Not at Fibreboard, but it did on the big gypsum producers, like U.S. Gypsum, which tried hard to force all shipments to be made by rail; that was a very good arrangement for them. When the trucking came, it brought with it also some small, new competitors, which U.S.G. knew that it would, but of course, over the years they had to accommodate and accept the trucking as a major part of the transportation of their products.

Swent: That made a big difference, didn't it?

Havard: I was gone from them when this happened, so I just don't know. I think it did.

Swent: Would you like to say anymore about Fibreboard?

Havard: No, I think we'd better get on to Kaiser Engineers.

XII BUILDING A MINERALS DIVISION AT KAISER ENGINEERS, 1963-1974

Swent: You said yesterday that you thought that Emmett Solomon had helped a lot, but you presented your idea of being a manager of their minerals division. I thought you replaced somebody named Ralph Bates.

Havard: How did you know that?

Swent; Somebody told me that.

Havard: Well, now, I didn't really replace him. Ralph Bates was a top-flight salesman for Kaiser Engineers, and what sales efforts were made in the minerals area were made by Ralph Bates, who was not a trained mining engineer, but was a superb salesman. When I first went with Kaiser Engineers, he and I worked together. He took me out on trips to talk with clients. But then he became very ill and died, actually, but by that time, I was beginning to get the reins in my own hands and realize what was needed.

I was extremely impressed when I first went with Kaiser Engineers because I felt that they were the brightest and most versatile group of engineers I had ever met, which they probably were. We had several nuclei to build a minerals division on. There was no minerals division, and, in fact, at first I was just called manager of mineral projects. Later on, I was made a vice president of the minerals division, which was my objective in going to Kaiser Engineers.

The Finest Cement Plant Engineers in the Country

Havard: We had three nuclei in the company: one was a group of about three very intelligent engineers. The group leader was Ken Olson, ably assisted by Ian Watson and Art Torsley. They were top innovators in the field of cement plant engineering. They had just finished a cement plant for Kaiser Cement near Helena,

Montana. I was invited up to the dedication ceremonies, and the plant impressed me tremendously from its design.

Swent: This belonged to Kaiser Cement.

Havard: We built it. Kaiser Cement was a client like any other--many of the Kaiser companies were clients of ours, and actually, as time went on, they became less important, and most of our work was outside the Kaiser group of companies. But anyway, this cement plant showed a lot of ingenuity, and I remember telling the manager of the group, whose name was Ken Olson, "You people have got the capability of being the best cement plant engineers in the United States."

Swent: Specifically, what was ingenious about the place?

Havard: The layout was ingenious. It was something entirely new, in that it was really in the general layout of the plant--the relationship of the various parts.

Swent: I would think this would be pretty standard. What makes one cement plant different from another?

Havard: Well, I don't know as we want to get into the detail of it--

Swent: I do, please.

Havard: Well, the plant was physically streamlined, even to the point where the office and laboratory were built in the bottom of the big silo, a very convenient location that was later copied in the industry. Anyway, I was impressed, and I felt that these people could really accomplish things, and this turned out to be true, just every word of it turned out to be true. They grew and did become, I think, accepted as the finest cement plant engineers in the country, and they got that reputation in a period of time when a revolution was taking place in the industry, because the old plants had been so inefficient thermally--very high fuel costs--that it became very important to rebuild the old plants and to design the new plants in an entirely different way to make much more effective use of fuel. So that was one group.

Three Top Mineral Engineers

Havard: The second group was just three engineers in the metals field, who were in the Oakland office. This included Jim Thompson and George Miesel and Art Melting.

These were very capable men, working as individuals, but there was a nucleus of a technical group. Later on, Jim Thompson headed up a department in mineral technology and economics, which was very important to us, and had quite a few people in it. So there was the beginning of something that I could recognize.¹

Kaiser Canada

Havard: The third nucleus was a group of people who were working for Kaiser Canada, the Canadian subsidiary headquartered in Montreal. These people had built the Quebec-Cartier iron ore concentrator in northern Quebec and were in the process of designing and building the Wabush concentrator in Labrador. As part of my indoctrination, I was sent along with a young Canadian engineer, who had been hired to be a sales engineer in Canada, to visit these plants and some other facilities that Kaiser Engineers had built.

We went first to the Wabush concentrator in Labrador--and this was in the dead of winter--and we saw Kaiser Engineers was building this plant under canvas, really--very difficult conditions--so cold that they never shut down their diesel trucks and other diesel-powered equipment. They kept them running twenty-four hours a day. It was a great achievement, but no more than other engineering companies have done in that far northern country.

Then we grabbed a bush plane and flew to northern Quebec to the Quebec-Cartier plant. It was in operation; we had just finished it. Then we went to Montreal, where the engineering group was headquartered. The field people, of course, were out building Wabush. I realized that here we had a tremendous pool of talent that was going to leave Canada and come back to Oakland. These people were real experts now, by this time, in iron ore concentration.

I felt very confident that we had some fine people available to put together as a minerals division. The big problem was to get started in some areas where we were not known. We had no

¹For further information, see James V. Thompson, Mining and Metallurgical Engineer: The Philippine Islands: Dorr, Humphreys, and Kaiser Engineers Companies: 1940 to the 1990s, Regional Oral History Office, University of California at Berkeley, 1992.

standing at all in the non-ferrous minerals, and we had no standing at all in coal. We had to organize a marketing plan, you might say, and a sales organization that could develop these areas plus the areas where we were already beginning to make some headway, in cement and iron ore.

Swent: Who was your competition?

Havard: Our competition was Bechtel's mineral division, the Ralph M. Parsons Company, Stearns Roger, Western Knapp, and similar outfits.

Swent: Utah?

Havard: Not so much at that time, but we had plenty of competition.

Swent: People like Morrison-Knudsen and Peter Kiewit?

Havard: Well, Morrison-Knudsen later became active in the minerals industry, and successfully, but not at this time. They were not competitors. Peter Kiewit was primarily a dirt-moving contractor, not a full-service organization. Our purpose was to do planning and engineering and construction--be able to go the whole way with a client, starting off, if necessary, with the exploration and carrying it right on through to the end, which we did in many instances.

Swent: You would still turn it over to another mining company at the end?

Havard: We were strictly planners, engineers, and constructors. We were not operators. Of course, our origin was with Henry J. Kaiser, as his engineering group while he built his industries.

Swent: You weren't thinking of getting into operations.

Havard: Oh, no, no, nor does somebody like Bechtel, unless it's an extraordinary situation. No, we didn't. We liked to do turnkey jobs and help the owner start up and then move off.

Rebuilding the Kennecott Smelter

Havard: As I recall, the first break we had in the non-ferrous metals industry was when we landed a job to rebuild the Kennecott Smelter near Salt Lake City.

Swent: Garfield?

Havard: Garfield Smelter.

Swent: How did you get that?

Havard: Well, we made proposals. There were three big parts of a modernization plan that they were doing at that time, early sixties, and we proposed on all three. They gave it to three different companies, and we drew the smelter, which was the most miserable job, because we had to rebuild the smelter while it was kept in operation. We found that we had a very bright young construction manager on the job, and--

Swent: What was his name?

Havard: His name was Ken Willis. We did it, and we did it successfully. And that really was the starting point in the non-ferrous field.

ASARCO; a Major Client

Havard: We also landed our first job with ASARCO. ASARCO became a major client of ours over the years; a very fine relationship was developed for them. We did a variety of jobs for them.

Swent: What was the first one that you did?

Havard: Well, let's see. I guess the first job was a copper leaching plant in Arizona.

Swent: You did a lead smelter in Missouri for them?

Havard: We did a lead smelter in Missouri for them, and we did work in the Idaho operations, and then we designed the Troy, Montana, copper operations for them. They became one of our best clients.

Swent: Did you have to acquire new staff to do some of these things? Were you building up a staff?

Havard: Our group continually grew. While I was there, I knew nothing but growth, fortunately. Over the twelve years I was with Kaiser Engineers, we just continued to grow and broaden the type of work we could do.

Major Jobs in Australia

Havard: Our know-how in iron ore took us to Australia where we worked for Hamersley Iron, in northwestern Australia. We did a lot of work for them up there.

Then, for a group of companies, we were chosen to do a major exploration and planning job for an entire new iron ore complex in northwestern Australia. Each of these facilities was in the billion dollar class, because you had to build new towns, new railroads, as well as new open-pit mines, and ports, and the whole thing.

We did an extensive study for Mt. Bruce Mining Company. That was a plan to bring in one more of these big producers. We accomplished all the work, including exploration and testing--all the layouts ready for detailed design--and the Japanese found that they were getting all the iron ore they could use from Australia, so this plant, unfortunately, did not go ahead after all our work.

Tilden Iron Ore Concentrator, Ishpeming, Michigan

Havard: We also landed a job in excess of one hundred million dollars at that time to build the new Tilden iron ore concentrator for Cleveland Cliffs, which was a very large job.

Swent: Where was that?

Havard: That was near Ishpeming, Michigan, in northern Michigan--another cold-weather job, and a big one.

A Celestite Project in Nova Scotia

Swent: Let's talk about one that failed, or did you ever have a failure? Did you ever have some that didn't work so well?

Havard: I think our most peculiar job was for Kaiser Aluminum in Cape Breton in Nova Scotia, where they wanted to install a mine and concentrator working on celestite, which was used in particular kinds of high-quality glass like the fronts of television, and so on. It was a rush job, and we had to develop the process and build this plant. When all this was done, they found that the

market wasn't what they thought it was, and they found that their mine was not what they thought it was. This one had to go down as probably a failure, but I don't think we can take the full blame for that. Generally, we were successful. That's how we kept right on growing.

Swent: In a case like that, the blame goes to Kaiser Aluminum and not to you?

Havard: Well, we worked hard, you know. [laughs] It was a toughy, a highly-specialized job, done too fast. We went right from their laboratory bench to full-scale design without a pilot plant. It was a very difficult job and just didn't work, including their market projections.

Swent: There were some iffy things with Kaiser Steel.

Havard: We did a lot of work for Kaiser Steel, mostly done by our steel division, not my division, which undertook some very large steel mill expansions, not only for Kaiser Steel, but for Armco and other companies. I remember the Armco job was under way when I went to Kaiser Engineers, and it was called Project Six Hundred, because it was a six-hundred-million job, which today you would have to multiply by some number. It was a huge job, four different locations. But that was done by the steel division, you see. There were other divisions working right along, parallel with us, in other fields.

Marketing the Mineral Division

Havard: I might talk a little bit about the sales effort. I'd come out of companies where marketing, per se, was very important, and I felt that the marketing concept as compared with the sales concept wasn't used enough in Kaiser Engineers. We tried to develop a marketing system whereby we analyzed projects all over the world that we expected to come into fruition. We would analyze our possibilities of getting the work, and what it would take to get the work, and built up a marketing plan every year with a five-year projection attached to it.

A major help in this work was a man named Ed O'Connell, who was a superb salesman and had been watching us grow. He was with Arthur G. McKee, later Davey McKee after the English firm acquired it, and he had been watching us grow. He decided there was an opportunity for him with us, came over to talk to me, and I was really happy to hire him.

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Swent: So Ed O'Connell came to you?

Havard: Yes, and I was happy to hire him, and made him manager of sales for the division. We had people working out of Oakland and also out of New York, as well as getting help from our overseas divisions, which would oftentimes land mineral jobs, and we would supply the personnel to get the work done overseas.

Swent: What precisely was your role then? Were you out trying to get the projects, or was somebody else out doing that?

Havard: Most of the preliminary contact would be done by Ed O'Connell and his people, but when you got to major jobs, for instance, the Tilden concentrator of Cleveland Cliffs, I had to really become a salesman. At times we would invite our general manager of Kaiser Engineers on very large jobs, because you begin talking to the top people in these corporations. We always were talking to people well up in the organizations.

We acquired expertise in the uranium concentrating business as a result of these marketing efforts that we did every year. We felt that there was an opportunity for us there. These uranium plants were coming in; they were small, but they could be profitable. We hired people with the know-how and became one of the leading engineer constructors for these Western uranium concentrators. This is an example of what you could do when you have a marketing plan going.

Swent: Where were these? You did one at Church Rock--

Havard: Church Rock, New Mexico, and one down in Texas--did a number of them.

Breaking into the Coal Industry: Sparwood Project. British Columbia

Havard: The coal industry, of course, is very large, and I did some investigation early on as to what we could do in the coal industry, where we had done practically nothing, and where we really didn't have experienced personnel. I went to the coal division meetings of SME and listened in and I just realized that this was a very specialized game, occupied by engineering

companies that specialized in it, and it was going to be a very tough nut for us to break.

We got into it anyway and became a major factor in a very strange way. The Kaiser Steel Company, in its heyday, was aggressive and imaginative and decided to develop a big open-pit coal mine in British Columbia, where there were enormous resources, and to build a big coal preparation plant. Of course, as soon as I got the rumor, I went to the vice president of Kaiser Steel who was in charge of the work--

Swent: Who was that?

Havard: That was Bob Heers--trying to sell our services, and--

Swent: You even had to sell them within the company?

Havard: Well, it was a separate company but in the same group. Oh, sure, nothing was taken for granted. Well, we told him that, sure, he could get some specialized coal engineers to do the cleaning plant but that he had a very large project on his hands, and we could provide him all kinds of help.

He turned us down cold and brought in a specialized coal concentration company, and pretty soon Kaiser Steel discovered that they had a bear by the tail up there. They had to build some big, wide roads on steep mountainous territory, beyond the capability of these people that they had hired; so they asked us to come up with our civil engineering people and design and manage the construction of these roads.

Then the second thing that happened was that they discovered that they had an electrical distribution problem that was a very difficult one because of the huge electric shovels and equipment they were using up in the open-pit mine. So they asked for us for electrical engineering help. From these sources we learned that the whole project was in trouble.

Swent: What was the name of the project?

Havard: The Sparwood Project. The design was rather peculiar in the coal-washing plant. Some equipment had been introduced that we felt at least was pretty peculiar for that application, and we were getting word back from our engineers who were up there on other jobs that the plant was in trouble.

They had also purchased the largest trucks and the largest power shovels ever made, and they were trying to debug these things in the open pit--two-hundred-ton trucks and thirty-five-

cubic-yard shovels--at that time the largest that had ever been built--still huge, even today. They had their hands full and were foundering in their enormous undertaking.

I was in Montreal on business and received a telephone call from our general manager, Lou Oppenheim, saying that Edgar Kaiser had told us to get into the British Columbia coal picture, including correcting the difficulties in the coal washing plant, where we had no expertise, other than some people that had sort of dabbled in the game.

I called our sales manager in Pittsburgh, Pennsylvania, a most capable man named Bill Kneppshield, who was principally the sales manager for our steel division, although he would help in any other way he could. I said, and I remember the words, I said, "Bill, I want the best damn coal-washing engineer in the United States, and I want him right now!"

Bill said, "All right, we'll see what we can do."

He located a man named Joe Matoney who was working for a small coal engineering outfit but who had an excellent reputation in the game, and we got together, and I hired him immediately. I liked him very well; I had great confidence in him; he impressed me. He came on out with his family and immediately went to work on the problem with this Sparwood concentrator. He developed a plan to correct it, but the plan cost ten million dollars.

We had a series of meetings in the top level of the Kaiser building with people like Edgar Kaiser himself attending and Jack Carlson, the president of Kaiser Steel, suchlike, and, of course, it was up to Joe to make the presentations. We helped, but he was the expert, and he made an excellent series of presentations. They realized he knew what he was talking about, and they authorized the work.

We went up with an engineering team and a construction team and did this job, completely renovated the front end of the coal-washing plant, and it was very successful. The word got around, and this got us into Western coal, with Joe Matoney heading up a new coal group, and eventually we became quite a factor in international coal and worked at various places around the world from an engineering standpoint. We did make it into the coal industry.

I think we were, without a doubt, the most well-rounded minerals engineering firm, maybe in the world. People have told us that, because we had covered all the bases, and we were

growing. It was a very stimulating job; I never had so much fun in my life.

Swent: You had to fire some people.

Havard: Oh, you were talking to Jim Thompson. [laughs] Well, that was just the nature of the work.

Swent: You don't have to mention names, but sometimes the things that go bad are very instructive. The Joe Matoneys are wonderful, but they are rare, after all.

Havard: One of the specialized engineers that we hired had been recommended to me by one of our own people, and I said, "Well, we've got to have references." I got six references of people that knew him, and I started making phone calls. I contacted three of these references, and they were all so high on this fellow that I thought, "Why should I go any further?"

I hired him, and I found that he was just totally incompetent in our work. He could do other things; he could manage, he could be a good mine superintendent. But he was just absolutely incompetent in our work, and I had to let him go. In the due course of time, I talked to the other three references, at meetings and elsewhere, and they said, "We would have told you he wasn't the right man for you! You should have called us!" The moral was, call all the references; don't quit. I got the three good ones first and quit, because I was in a hurry.

Eagle Mountain, California

Swent: Were you involved in Eagle Mountain?

Havard: We did a lot of work at Eagle Mountain, but I think that we'd have to say that the Kaiser Steel people dominated that work. I was always very unhappy with what we did there, although I had to give them credit that they had a very, very difficult job, a very low-grade and complicated ore deposit to start with, and that meant a very complicated concentration process to make an iron ore concentrate that could go to Fontana.

We did do some work there, but I don't think we ever did much thinking there. We did what we were told to do by the client. Oftentimes, well, I wouldn't say often, but occasionally this happened with outside companies, too, where we would find ourselves working for a strong-minded chief engineer and finding

ourselves in disagreement over what ought to be done and how it ought to be done, but those were just human problems that you just had to work out. I can't ever remember being thrown off the job because of disagreement, but I think that generally we did better than we did at Eagle Mountain in getting across our views.

Hamersley Project, Northwest Australia

Swent: What was special about the Hamersley project, other than being very far away?

Havard: Well, there's a story about Hamersley that's kind of interesting. I really don't know how long I should go on with this.

Swent: Go on. Don't worry. Tape is cheap.

Havard: We were doing some work for Hamersley as managers of a new project for the construction of a pelletizing plant, to pelletize the iron ore fines, which made a useful blast furnace feed out of the fines. The actual construction was being done by Dravo of Pittsburgh, who had patents on the pelletizing machine itself.

The iron ore was ground fine in three huge ballmills, at that time maybe the largest in the world, 4500 horsepower each, which is big even today. I was called into Lou Oppenheim's office and told that the people in the field were unable to make these ballmills work, that the bearings were overheating. Of course, we're talking about many tens of millions of dollars worth of plant sitting there waiting for these ballmills to work, and the Hamersley plant manager was having a fit and looking around to see who he could blame, and very understandably; he couldn't get his plant started!

I was told to go to Australia to solve the problem of these ballmills, the hot bearings. I'm not a mechanical engineer or a specialist at ballmills, you know, but you never say, "I'm not going to do it."

I studied up on lubrication and got some ideas in my head and took off for Perth, Australia. Then I grabbed one of the Fokker planes that flew eight hundred miles north to Dampier, which was the name of the port where this concentrating and pellet plant was located. To my horror I found out that the chief engineer for Nordberg, the manufacturer of these mills, had been on the job and had left the day before without solving it.

I thought to myself, "If the chief engineer of the manufacturer can't solve this problem, how am I going to solve it?"

I discovered that Nordberg had just sent in one of their construction managers that had just been freed from a job, and he was the type of man who actually built these facilities for Nordberg all over the world. I hunted him up that evening, and found him, and realized that he really knew what he was talking about. He was thoroughly experienced and had a lot of competence, and I developed a lot of confidence in him. I'll never forget at the end of the conversation, he said to me, "Jack, tomorrow morning let's just run the sons of bitches." [laughs]

So the next morning we went out to these huge mills, and we picked one of them. There were recording thermometers on each bearing. There was supposed to be a certain curve which was followed temperature-wise as the mill started up and kept on running. These were very big, bronze bearings with a big steel pinion shaft. We took the caps off and examined them and found that the trunions were in good shape, were not scarred--there hadn't been any dragging of the metal--and we put the caps back on.

He took one bearing at one end of the mill, and I took the other bearing at the other end of the mill, and we started up. Of course, the temperature curve went on up as the mill gathered speed and began to do its thing, and it rose above the specification level, which didn't daunt this construction manager. At a few degrees above the specification, it levelled out and just ran beautifully.

We went through all three mills, and the same thing happened at every mill; they just went slightly above the specification, but when they got there, they just ran. There was no problem at all. It wasn't a high enough temperature to cause any damage. These mills were brand new and were very heavy and very big, and they were getting a new experience with that type of equipment. So at the end of the day, I went to the plant manager and I said, "You can run your ballmills. Take it over."

When I arrived back in Oakland, I was a hero. Of course, I didn't deserve to be a hero; the only heroic thing I did was to recognize a man who knew what he was doing. [laughs] That was my introduction to Hamersley and the northwestern Australian iron ore, but later on I made a number of trips out there for work with Hamersley and also work on this Mt. Bruce Mining Company development. It was tremendously interesting.

More About the Cleveland Cliffs Tilden Plant

Swent: Was there more to say about Tilden? You mentioned it but didn't say much about it.

Havard: Well, Tilden was a big concentrator and--

Swent: Was that a new one, or was that an expansion?

Havard: That was a new one. Cleveland Cliffs.

Swent: Empire was an expansion.

Havard: Empire was an expansion of one of the existing mills, but Tilden was new, and the interesting thing about Tilden was that it was a pioneer plant in utilizing nonmagnetic taconite ore, iron ore. A revolution had taken place in the iron ore industry because the high-grade, direct-shipping ores had been exhausted in Michigan and Minnesota, and through some very fine research by the U.S. Bureau of Mines and by the companies, the magnetic separation of magnetic taconite had been developed, and a number of big plants had been built to utilize this process.

The Tilden plant was to use a nonmagnetic taconite, which meant that it had to use the flotation process, and this was developed, very much to their credit, largely by Cleveland Cliffs themselves in their own pilot plant. The result was that it was to be the largest flotation plant in the world in terms of product, not in terms of feed, but in terms of product--tons of product produced. Of course, it involved many new problems, but we proposed on it, and we landed the job and proceeded to engineer it and construct the plant. It processed about 35,000 tons of ore a day.

It was not an easy job because the client got us off to a late start in the fall, so that we had much more winter work than we had planned to have and should have had. But we built it and it was successful. Came in around budget and around time, I think, and has been a very successful operation--a big facility.'

Swent: Empire was big, too, wasn't it?

¹For more information on this subject, see the oral history of Donald Dickey in the Western Mining in the Twentieth Century series, Regional Oral History Office, University of California at Berkeley, in process, 1992.

- Havard: Empire was big, but that was an addition, and we went right on from our work at Tilden to doing this addition at Empire, which was nearby. It was a magnetic taconite concentrator.
- Swent: I had a note about new use of semiautogenous grinding mills? Was this something revolutionary--
- Havard: The grinding mills in the Tilden plant were semiautogenous, which was really just carrying on a development that had seen considerable progress by that time.
- Swent: Empire was using the same process that they had before; you just simply made it bigger?
- Havard: Yes.
- Havard: When you went into these places, were you unionized? Did you have to pick up workers locally? Where did you get your laborers?
- Havard: We were generally unionized, and we would get our labor from the local unions or bring them in, if we had to. In some cases, we had to go far afield to get the crafts we wanted and bring them in.
- Swent: Did you get involved in labor disputes?
- Havard: No; we had very good labor relationships, and we had a good safety program and generally ran good jobs and didn't have disputes.

Atlantic Cement Company

- Havard: We ran into one rather amusing situation at Atlantic Cement Company, which was partly owned by Newmont Mining--had been developed, designed and built by others on the Hudson River south of Albany to supply cement to the big New York market by boat on the Hudson. The cement grinding mills had turned out to be totally inadequate.

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- Havard: By this time, we had an excellent reputation in cement, and we were hired to replace the old mills with new mills. We were being watched very closely by Newmont's potent chairman, Plato Malozemoff, whom I had casually known for many years, because we

were both students at the same time at Montana School of Mines. He was in graduate work, and I was an undergraduate.'

A strike was called by Atlantic Cement's operating union while we were in there replacing these mills, and Plato got a hold of me and wanted me to bring our forces through the picket line.

I said, "We can't do this, because we have jobs going on all over the country, and wherever we've got union labor, we would be in grievous problems with other clients."

He didn't like this at all. He was very angry with me that we wouldn't do it, but we wouldn't, and shortly thereafter the strike ended, and we went ahead and completed the job. Mr. Malozemoff was a man of very strong opinions which he didn't hesitate to express. I was on the receiving end of some of those opinions at that time.

Generally, our problem with construction labor was finding adequate labor at a given location, and many times we had to send recruiters out and bring people in from a distance and make proper arrangements in order to get the job done.

Swent: Would you get involved with housing?

Havard: Well, not too much, no.

Swent: Did you have to find trailers, or something?

Havard: We had to make accommodations, but I can't recall that that was ever a great handicap. It became a handicap later on in getting some jobs because some non-union contractors would capitalize on the fact that they could do things cheaper with non-union labor, and we eventually acquired a subsidiary where we could meet the requirements of a non-union job.

Swent: What was that called?

Havard: The Industrial Company out of Colorado.

There are some other things I think I ought to say about Kaiser Engineers. I think that the development of the minerals division can be looked upon as a successful operation, but a thing

'For further information, see the oral history of Plato Malozemoff, A Life in Mining: Siberia to Chairman of Newmont Mining Corporation, 1909-1985, Regional Oral History Office, University of California at Berkeley, 1990.

of this kind doesn't develop from one man, and I had tremendous help from the top management of Kaiser Engineers, from Lou Oppenheim, the executive vice president and general manager; and Jack Hughes, who was vice president and assistant general manager; and particularly from an executive vice president that I reported to, named Vic Cole, who was extremely helpful in every way, very encouraging, used excellent judgment, and we became very close friends. Vic is retired, but he is teaching construction management at the Engineering College at UC Berkeley. I can't say too much for the kind of assistance and encouragement that I received from Vic Cole.

Swent: Was he your immediate superior?

Havard: He was my immediate superior, and he and I have a mutual admiration society.

There were people in the minerals organization that were outstanding, such as Jim Thompson, who ran the mineral technology and economy group that acquired quite a reputation as a capable group of geologists, mining engineers, metallurgists, and economists who could carry out the first phase of the planning for a project.

There were many others that were--

Swent: Some of these had been there already. You didn't hire Jim, did you?

Havard: No, he was there. We did hire Sammi Haddad, who rose up in the organization quite rapidly because he had a lot of talent and whom we sent to Montreal to be project manager for Noranda on the Gaspé copper job, building a new copper concentrator, right in the heart of the Gaspé Peninsula, which he did very successfully. Eventually, he became my successor, and at that time the minerals division moved into an eight-story building in Oakland because we had outgrown any available facilities in the Kaiser buildings.

He was later succeeded by Arnold Kackman, who had headed the cement group very successfully.

Swent: Had you identified Haddad as the one to succeed you?

Havard: Yes, yes. He was successful at it and was later transferred to London to be in charge of the European-African operations.

Swent: Were you involved in the African work at all?

Havard: No, we didn't do any work in Africa except some investigations. Kaiser Engineers had been deeply involved in Ghana, where they built a large dam and built a big aluminum plant, but the minerals division was not very much involved in Africa.¹

South Africa, of course, is the biggest producer of minerals, but they also have excellent universities and didn't need help from outside. We did a lot of work in South America, and I sent people down there but never had to go. There was never any real reason for me to go down there. People like Al Wallach were thoroughly capable of running their jobs down there.

We had overseas divisions with their own sales forces, and if they landed a mineral job, it was our job to supply the personnel so that people would be coming in and out of the minerals division to and from the overseas jobs.

Swent: It sounds like a confusing organization, but it seemed to work.

Havard: It worked, yes.

Swent: I've noticed in reading some of the Kaiser reports that I could get hold of, in the early 1970s, apparently they made a big push for diversification. This is Kaiser, in general, lots of talk about diversifying. Did this translate into anything for you?

Havard: No, I think we were cutting our own path pretty much all the time.

Swent: Maybe you gave them the idea.

Havard: Well, I don't know about that, but we certainly diversified to the point where we were covering the entire minerals industry. We could do anything in the minerals field with some expertise.

Swent: Sometimes, this is a sign of a company that's growing, and sometimes it's a sign of a company that is grasping for something to save it.

Havard: I was extremely fortunate in that I knew nothing except growth. Sammi, who succeeded me, knew nothing except growth. Later on, particularly in the early eighties, the engineering and construction activity in the mineral industry became very small, and all of the companies had troubles. By this time, Kaiser

¹For more information on the dam in Ghana, see the oral history of H. S. Fowler in the series on Western Mining in the Twentieth Century, Regional Oral History Office, University of California at Berkeley, in process, 1992.

Engineers was in new hands, and in the end the minerals division simply disappeared and is no longer a part of what is now Kaiser Engineers, what they call ICF Kaiser Engineers.

XIII SENIOR VICE PRESIDENT, KAISER ENGINEERS, 1974-1980

Havard: Eventually, I reached retirement age, at sixty-five, and I turned my job over to Sammi Haddad, but the then-current president of Kaiser Engineers, Max Pearce, asked me to remain as a senior vice president. He didn't think I should retire, that they should retain my services. It was agreed that at age sixty-five I should turn over the division so people could progress, but he and Vic Cole agreed that I should stay on. I was given the title of senior vice president, and I was to take on special projects. This staying past ordinary retirement age was very unusual in all the Kaiser companies, but it did happen to me, fortunately, and I was healthy and interested and very glad to keep on going. I moved into another office and became involved in some extremely interesting work.

Kaiparowits Coal Project. Southern Utah

Havard: The first big job was to manage the Kaiparowits Project. We landed a big job with the power companies who were developing the Kaiparowits Plateau coal field in southern Utah. They were seeking help from a major engineering firm in order to accomplish this project. As I said, we had developed a reputation in coal know-how through Joe Matoney and, of course, we had many other capabilities.

The first thing we did was to write a master plan, which is a big thick volume which they accepted, and we became managers of the development of the entire Kaiparowits Project except for the power plant block. The partners were Southern California Edison Company, Arizona Public Service Company, and San Diego Gas and Electric Company.

Southern California Edison Company's own engineering department took on the development of the actual power plant block, which was to be a three-thousand-megawatt plant, an

extremely large plant. This plant was to be fed coal from underground coal mines in the virgin Kaiparowits Plateau seams.

We did the exploration and drilling and all of the planning for the mines, for the transportation system, the communication system, and, with help from specialists, we developed a plan for a whole new town for fifteen thousand people. While this work was going on, it was being vigorously opposed by environmental groups which, in my opinion, put on a very poor show indeed.

Distortion of Information by Environmental Groups

Havard: I might not have agreed with the Sierra Club, for instance, but at least I thought they wore white hats, and I discovered that these environmental groups could use tactics that were very poor, indeed, and I lost my respect for some of them, particularly the Sierra Club, because there were actual lies about this project that were spread by these groups.

Swent: How were they opposing you? In the press?

Havard: Every way you can think of, including putting the pressure on the government, particularly the government in the state of California, which was susceptible.

Swent: This was actually in Utah, wasn't it?

Havard: It was in southern Utah, and the project had the complete support of the people in the area and the governor and the government of the state of Utah. The work was accomplished to the point where the whole facility was ready for detailed design and construction. Incidentally, we did some of the first work in the use of the new satellite imagery in analyzing conditions in the coal mines that we were planning.

Swent: How could you do that from a satellite?

Havard: Looking for lineaments that you couldn't see on the ground. We had a man who specialized in interpretation to help us--a man I'd known beforehand. It was a very interesting job.

Swent: Why did the California legislature get into it?

Havard: Well, the legislature didn't get into it, but general opposition developed in California, which is very susceptible to--the Sierra Club has enormous power. We had every environmental organization

against us. One of the worst in terms of spreading false information was, strangely enough, the Audubon Society. Many hearings were held.

Swent: Where were these?

Havard: The biggest one was held in Salt Lake City. The companies were very well aware of public relations, and the whole project was open to inspection by any legitimate organization.

Robert Redford was opposing the project and was invited down. In fact, I was present when he arrived and was given a helicopter ride over the whole project. He later appeared in a "Sixty Minutes" program which was extremely critical of the project and used his talents to full degree to talk about it. Interestingly enough, they never showed a picture of the Kaiparowits Plateau at all, obviously because the Kaiparowitz Plateau was as barren as it could be and really an ideal place to do the kind of development we were talking about. It had no interest to anybody, except perhaps its nearness to the Grand Canyon and some of those parks, but the power plant had been planned for complete recovery of particulate matter with the latest equipment, so that we didn't expect to affect the environment.

That "Sixty Minutes" program was accepted widely and was a factor in the opposition, and it was really disgraceful, the way they handled it, to clip the comments of the governor of the State of Utah and clip the comments of Southern California Edison Company's manager was just disgraceful. It was a perfect example of how a television program which looks so real can be manipulated for a purpose.

Swent: Did they show pictures of other areas?

Havard: Oh yes, waterfalls and things in the state of Utah, but not a picture of the Kaiparowits Plateau.

Swent: And implied that you were ruining them?

Havard: Yes, yes. It was a disgraceful piece of work. The companies had to get, as I recall, well over three hundred permits to accomplish this work and to build the transmission lines. They were being attacked by these environmentalists who were being very successful in influencing high officials, particularly in the state of California, which was a major market. A lot of the power was to be brought into California.

In the end, the companies gave up, cancelled the project and lost the twenty million dollars or so that had been spent in

exploration, development, and engineering, and so on, a good part of it by us.

Swent: Did you get paid?

Havard: Oh, sure. Oh, yes. We had an excellent relationship with the three companies. We met regularly with their representatives, and there was never any question about our relationship with those three power companies. It was top-notch, and we did them a good job.

We produced an enormous report and produced the only book I ever edited. We decided we had done so much on geology that we should put into a book the geology of the Kaiparowits Plateau, and the companies agreed. We produced a bound volume, the only book I ever edited. [laughs] The project took a couple of years of my time and was extremely interesting.

Swent: That must have been a big disappointment.

Havard: Oh, it was a terrible disappointment, and particularly to people in the power companies. For instance, the project manager for Southern California Edison Company had put ten years of his career into that project, from the very original planning on through. He was in it long before we were pulled into the job.

Books have been written about it, but I don't think the plant will ever be built in any form that we can recognize. The coal reserves are immense and are still there. The companies asked us for various studies afterwards--for instance, the economics of building a coal gasification plant and some other followup jobs of that kind.

A Job for New Jersey Zinc Company in Ireland

Havard: The next individual job which was of great interest was--I was asked to manage a job for New Jersey Zinc Company.

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Havard: We were asked by New Jersey Zinc Company to investigate a proposed zinc refinery to be built in Ireland. Our job was to develop the economics of the project and to find a location for the plant. This meant some trips to Ireland, and some low flying around the island, and investigation of various sites. We were successful in finding a very fine site on the Shannon River.

I got that part of the work done all right and then we developed the economics, which were reasonably good, but the job never went ahead because the zinc market developed problems, and they couldn't justify building a new facility.

While these two bigger jobs were in effect, Faith and I had moved to Nevada City, and I was commuting, spending anywhere from two to four days a week doing consulting work for Kaiser Engineers. I was asked to come in to run a crash program to produce a proposal for a billion-plus-dollar job in Colombia, developing a new coal field for Exxon and the Colombian government. Our competition on this one was Morrison-Knudsen. This took a real burst of energy to produce a six-volume report on every aspect of the project, an amount of work I felt was absolutely excessive but was typical of Exxon's request for proposals. We got that job done, and it was a very, very close decision, we understood, and we lost it. The politics went against us, and we lost it to Morrison-Knudsen. It was built, and it's in operation.

Quartz Hill, Alaska, and More Lies by Environmentalists

Havard: Then Kaiser Engineers had been accomplishing a lot of work for U.S. Borax on their huge, low-grade molybdenum deposit near Ketchikan, Alaska, in a very sensitive area, but on claims that had been long owned by private interests. The company had developed a plan that would have absolutely minimized any environmental effects. It was to be a very large, low-grade operation, and again, we carried the engineering all the way to the point of detailed design.

Swent: I think this is the one they call Quartz Hill, isn't it?

Havard: Yes, yes. Our project team had some problems in putting this report together. It was a very large, complicated report, and I was asked to come down and manage the production of the report, which I did, and I think that was the last of the work I did for Kaiser Engineers.

Swent: That project also never went--

Havard: Has never gone--

Swent: Because of the environmental opposition. It must be terribly disappointing to work for years on something like that and then--

Havard: Of course, it's still there. Every effort was made to hide it so it couldn't even be seen by anybody in a boat, unless they went right to the point where the molybdenum concentrates were going to be loaded on barges. It was not going to harm the environment. The literature from the Sierra Club was just full of outright lies. In fact, I wrote to the club and told them that they were lying about the project, but, of course, never got even an answer from them.¹

¹For more information on Quartz Hill, see the oral histories of Carl Randolph and Eugene Smith in the series on Western Mining in the Twentieth Century, Regional Oral History Office, University of California at Berkeley, in process, 1992.

XIV ACTIVITIES IN RETIREMENT

Independent Consulting

Havard: Meanwhile, up at our retirement place near Nevada City, I began to develop my own consulting business, and one of the first jobs I had was for Southern California Edison Company to appraise a group of coal mines in Utah that were possibly available for sale--big operating mines, and I think I should probably keep the name of the owner confidential--but I did go down, and go into these mines, and go over the country, and make a report to Southern California Edison which they accepted as a satisfactory report.

I began to get small jobs in the gold industry in the Far West, which I hadn't been involved in, actually. When I was at Kaiser Engineers, there was no work in the gold industry, because the price was being held down, so we never did a tap of work in the gold industry, that I can recall. I began to get called upon to do some work by people who knew my background, and of course, you can learn pretty fast if you have been exposed to all these other things. I examined quite a few proposed projects in gold.

Pinson Project, Nevada

Havard: The most successful one was being called upon by a potential investor in the Pinson Project in northern Nevada. He had been asked to participate and own stock in the Pinson Project. There was nothing to see in the field. I'd been in the country before, and all you would see was a sagebrush desert with a few drill hole markers sticking out.

There was no point in going to the field, so I went to the office of John Livermore, noted geologist and entrepreneur in Reno, who was deeply involved in the project and had been responsible for obtaining a whole series of consulting reports,

which I went over very carefully. I arrived at the conclusion that it was an excellent project, and I wrote a short report and then took it down to this client in San Francisco and told him verbally that I not only thought he should invest in it but he should try to get a larger piece, if he could. The project turned out to be phenomenally successful and is still in operation but now on lower grade ore than they started with, but all the people that had stock in that company succeeded very well. I think that's the only really positive piece of gold mine investigation I ever did. Usually, I turned them down.¹

Swent: When you go to somebody like John Livermore and ask to see his report, is this a touchy matter?

Havard: No, because they knew that this man had asked me to investigate, and I had full cooperation. The reports had been done by leading people in every field, and it was first-class work, and there wasn't any question in my mind but that it would be successful. I said the only thing that could inhibit the complete success of this mine would be a failure of management--bad management. Otherwise, it was going to be an excellent mine.

Swent: When you do an investigation like that, can you invest in it also?

Havard: Well, I never do. No, I don't think you can mix consulting work and investment. At least, I don't think so.

Swent: Some people do. In fact, I guess you used to be expected to, a long time ago.

Havard: Yes, you took it as part of the job.

Advising a Nickel-Cobalt-Chromium Project in Papua-New Guinea

Havard: The last big consulting job I did--large in scope--I got through a friend of mine, Hal McVey, who is an outstanding consultant in the industrial minerals field. He had been doing some work for a company that, in partnership with MIM of Australia--one of the big Australian mining companies--had accomplished a lot of exploration work on a nickel-cobalt-chromium deposit in Papua-New Guinea. Bechtel had done a lot of work for them, but they wanted to get a

¹For further information, see the oral history of John Livermore in the series on Western Mining in the Twentieth Century, Regional Oral History Office, University of California at Berkeley, in process, 1992.

second opinion, and McVey recommended me. I was hired to look at the situation, including all the Bechtel reports.

I took a field trip to the site in Papua-New Guinea, which, of course, was very interesting because this deposit was up in the mountains and accessible only by the native trails or by helicopter. Naturally, we chose the helicopter. [laughs] I wrote a report that took a different approach to the deposits than the Bechtel report, and I think it was an interesting and worthwhile approach. I talked to the Bechtel people first before I went over there, and we had a very good relationship. They were interested in the kind of thing I was talking about, too. So there was no problem there.

Swent: What was the difference?

Havard: The difference was that they had planned to mine the ore up in the mountains at about three thousand feet above sea level, build a big road, and transport the ore in huge trucks down to the coast to the refinery, which would extract the nickel, cobalt, and chromium from this ore. My approach was that we should grind the ore at the quarry and put it in a pipeline and transport it by pipe--

Swent: That would be a wet slurry?

Havard: Slurry form, yes. It had to go into slurry form anyway--to the coast. There were some other differences in my methods, but that was the major difference. Actually, I wrote the draft of the report before I visited the deposit, using all the available information, which was considerable. That was a very interesting trip, hopping around with a helicopter in the jungle and landing in little clearings where they had been doing some exploration work.

I came to respect the native Papua-New Guineans, and I was amazed at their facility with language. There are several hundred languages in Papua-New Guinea. Every village is a separate entity, because they were all separated by mountains in little valleys. Their ability to handle languages was amazing, including learning English.

Again, the total economics of the industry were such that there was no chance to go ahead with the program, which would have cost a full billion dollars to put into operation. On the way back, I made a report to the MIM people in Brisbane and incidentally was able to go out to Ipswich and see the Ipswich Grammar School and the town in which my father was born, which was very nice.

Swent: So that project never went through?

Havard: No, it's still lying there and waiting for the economics to catch up with it.

Swent: This was just the fault of the economics, then.

Havard: Yes, the whole industry--supply and economics--to make it possible, because the ore is there.

I think the final job I should talk about in the way of my own consulting work is some work I have accomplished for the Empire Mine State Historic Park.

Swent: Before we do that, I had disposal of nuclear waste here.

Havard: Oh, that's way back.

Swent: I got it out of line, then?

Havard: I don't know as that really adds much to the story, but while I was a consultant for Kaiser Engineers I became involved in many meetings on the question of the disposal of nuclear waste. We were in partnership with Parsons, Brinckerhoff, Quade and Douglas of San Francisco on this job, in which, I think, they had sold themselves to the government agencies, and we were brought in for our mining expertise. I sat through many meetings, and I thought the problem was solved, but this was fifteen years ago, and we haven't yet made any move to solve the problem.

Swent: What did you think the solution would be?

Havard: We were looking at disposing of the waste in an underground mine at a depth of three thousand feet using stainless steel capsules that would hold this material, and taking all the proper precautions of automatic handling and everything, but the politics are such that it isn't getting done, you know. As you are well aware, we haven't found a politically acceptable answer.

Swent: Where would you have put it?

Havard: The place that we were looking at, at that time, was in the great basalt lava fields around Hanford, Washington, where already there is a nuclear facility.

Swent: You thought that would be the answer.

Havard: Yes. I think we got on that just sort of talking about the problem, and I didn't make any worthwhile contributions to those meetings that I can remember.

Empire Mine State Historic Park, Grass Valley, California

Swent: You wanted to talk about what you were doing for Empire. Why did you chose Nevada City? Why did you go all the way up there?

Havard: We were living in Oakland in a house that we were very fond of, but we decided that was not the place to retire, and we wanted to get more of a country-retirement situation. On weekends, we began scouting. We scouted the Napa Valley, for instance, and then we began going up and down the foothill country. I wanted to get within reasonable driving distance of an airport, because I thought I'd be doing some consulting work. We drew some radii from the Sacramento Airport, and we were very unsuccessful. We made trip after trip, up and down the Sierra foothills. We came into Nevada City for the first time, and we liked the area very much, talked to real estate people, and we just didn't get anywhere with them. I guess it must have been six months later that we doubled back onto Nevada City and met a real estate man at five o'clock in the evening; he was closing up. We told him what we were hunting for: we wanted to have a view; we wanted to be out in the country, but we wanted to be close to town; we wanted to be in nature, but we wanted power and telephone--all these contradictions.

He said, "Well, I'm going to take my book home tonight, and you come back at nine o'clock in the morning."

At nine o'clock in the morning, he drove us out to our present home, and we said, "We'll take it."

Swent: It was already built.

Havard: It was already built, but it had a rather small living room, and we could see that with the gable-type living room, that we could extend it very easily, which we did, and it made the house. So we were very happy there and became deeply involved with the community and our Episcopal church and whatnot. It met our requirements superbly. We were very fortunate to find it.

Getting back to the last job I'll talk about: the people in charge of the Empire Mine Historic Park, along with people from the Chamber of Commerce, decided that visitors to the park should

get more of an underground experience. They can walk around the park now, and they see some very interesting things, including the so-called Bourne Cottage and some beautiful grounds, but all they get underground is that they can go about forty feet down the main shaft.

They tried some different ideas. One idea was to sink a shaft. They talked to a mine entrepreneur named Tim Callaway; I had done a great deal of consulting on gold properties for him. He said, "Why don't you drive an adit? People then could ride a train, go underground in the adit, and it would give them a real underground experience." There wasn't any opening left in the old mine that was safe, that you could use for that purpose. They asked him who could help, and he gave them my name.

So I went out and looked at the thing, and I developed a total plan for an adit that would intersect the shaft, and for a visitors' building, and the use of a regular man-trip train with a storage battery locomotive, and a program that would really give people an underground experience. We'd put hard hats on them and slickers on them and put them on the man-trip train and take them back into the intersection of the main shaft, and this would be a great experience. I worked on that to the point where my drawings were ready for detailed design, and the project has been carried on. The detail design was approved by the state, but now the state has no capital funds, so the whole project is in abeyance. We still meet with the Chamber of Commerce people and other interested people to see if there is any way we can get financing through the mining companies, or otherwise, to get this job done, but I think it's going to be a long time before the money can be raised to do it.

Swent: It will go eventually, though, don't you think?

Havard: I hope so. It would really add to the park and, of course, the Chamber of Commerce is enthusiastic about it, and the Friends of the Empire Mine are enthusiastic about it. It was a very interesting little job.

Swent: Lots of wonderful people up there, aren't there?

Havard: Yes. Thus, endeth the story.

Swent: Not quite. A little bit more. I want to ask you some questions. You haven't talked about the Western Governors Advisory Council and the SME; there's still some story to tell.

Havard: Oh, yes.

XV PROFESSIONAL ORGANIZATIONS AND AWARDS##

President, Society of Mining Engineers

Havard: This is the story of my relationship with the Society of Mining Engineers. As soon as I was out of college, I joined the Society as a junior member. I was at the Southard, Oklahoma, plant, and the publications became my source of knowledge and a way of keeping up to date on the industry while I was in a very isolated location from that standpoint. I always maintained an interest in the society, in membership, and went to meetings when I could. Many places didn't permit very easy attendance to these meetings. Occasionally, I would give talks at meetings.

When I joined Kaiser Engineers, not only was it an opportunity to become more active, but there was encouragement from the organization to become more active because part of the game is to know people and to know what's going on. So I then became a regular member of the San Francisco section. I had always been interested in serving, if I could. As a matter of fact, when I was with U.S. Gypsum as chief engineer of mines, I think I was program manager one time for the Cement, Lime, and Gypsum Division of the SME.

With Kaiser Engineers, I became more and more involved, until I was Chairman of the Industrial Minerals Division. Then, a few years later, I became President of SME, in 1976.

Swent: What did that involve?

Havard: It involved a year of working with the executive director and running the meetings of the board.

Swent: Lots of travel?

Havard: Making some speeches around in different places.

Swent: Your company really has to give you full support for this.

Havard: They did, because it was very useful. I not only enjoyed it personally, but it developed the most activity on the part of Kaiser Engineers that they had ever had in SME. I went on to do many, many tasks for SME, some of them after I retired.

Henry Krumb Lecturer, AIME

Havard: I was appointed a Henry Krumb lecturer and developed a couple of lectures which I gave around the United States one year.

Swent: What were the topics?

Havard: I had two topics. One was entitled, "Stories of Lost Mines," and I think I had seven stories of mines that were lost economically, not geographically.

Swent: This wasn't the Superstition Mountains kind of thing?

Havard: No, no. It started off with the first mine I worked on in Rimini, you know, the efforts to develop that deposit and the failure to do so, and carried on through a lot of other experiences that I had had. It was all done with slides; I talked while I was showing slides of these things. It was pretty well received. In fact, I think I gave ten lectures, which is more than usual.

I had another program on satellite imagery. I had become a director of the Geosat Committee, which was a committee formed by mining and oil companies to promote the use of the Landsat images which were just then becoming available. This was new.

Geosat Committee

Swent: Was this a committee of the AIME?

Havard: No, it had no relationship to AIME, other than friendship and some talks that were given, you know, that sort of thing, but it was a separate committee. I became a director of this national committee. The president was Dr. Fred Henderson, who had his Ph.D. in geology and was very capable at this task. That took quite a bit of time and was quite interesting, but as a result of all that, I had a talk prepared on the use of satellite imagery. Only

one AIME section asked for it, and that was the Cleveland section, which are mostly metallurgists, for some strange reason. I gave that talk just once there. All of the other talks were the talks on the lost mines.

AIME Committee to Develop Accepted Definitions of Ore

Havard: Also, I chaired a committee to develop accepted definitions of ore with Armand Banfield, who was then president of Behre-Dolbear Company, a leading mining consulting firm in New York. He and I worked together in developing these definitions, which were approved by three professional societies, and that was an interesting piece of extracurricular work.

Then SME decided to build a new headquarters building near Denver. They had pulled out of New York, which was the original headquarters of SME. SME had been growing very rapidly. AIME, the parent organization, stayed in New York, but SME moved, first to Salt Lake City in leased quarters. That wasn't very successful, so a search committee was appointed to find the best location, and after much study decided upon a property on the outskirts of Denver, in Littleton.

Swent: You were on that committee?

Chairman of Committee to Construct SME Headquarters in Littleton,
Colorado

Havard: I wasn't on that committee, but I was asked to chair the construction committee for the new headquarters. I said, "I'll chair it as long as I'm the committee." I didn't want a bunch of people trying to do that kind of thing. So we hired the architects and the constructors.

Swent: I've been there. It's a lovely building.

Havard: I was deeply involved in that, the original concept, and for my work on that, I was given the first President's Award. I have a nice plaque hanging up on the wall for my work on that one.

Chairman of Long-Range Planning. SME

Havard: Then a little later than that, I was asked to be chairman of a long-range planning committee for SME. We had to put together a first-class committee, and we had a prolonged job. I think it was a successful job in accomplishing long-range planning for SME, and many of our recommendations have been put into effect. I became really very active in that organization, and it was very rewarding.

Swent: You've received a lot of awards from all these organizations.

Havard: Well, yes.

The Hardinge Award for Industrial Minerals

Swent: The Hardinge Award.

Havard: I got the Hardinge Award for some of the pioneering work I'd done on gypsum in the West, as well as work on other industrial minerals. It's an AIME industrial minerals award.

I got, well, some of the usual things you get. I was a Distinguished Member of SME; that sort of comes with being president.

Let's see what else happened. One very interesting development was when the Sputnik days were on, and educators were giving their attention to high technology and competition with the Russians, and so on. Mining began to be looked at as a rather plebeian kind of an occupation, and many universities dropped their courses in mining engineering, including the University of Washington, Washington State, and the University of California at Berkeley, where mining had really been a tradition, you know. They kept the metallurgy, but they dropped the mining.¹

I began thinking about this, that there wasn't a mining school on the Pacific coast. The nearest one was the Mackay

¹For further information, see the oral history of James and Malcolm McPherson, Brothers in Mining in the series on Western Mining in the Twentieth Century of the Regional History Office, University of California at Berkeley, 1992.

School of Mines in Reno. I got to thinking about the Hearst mining building and the tradition at Berkeley, and I talked to Doug Fuerstenau, who is, you know, a premier metallurgist at Berkeley. You know him very well.¹

I said to Doug, "I think that another look should be taken at mining engineering in Berkeley." Well, he thought that was interesting, so he got hold of the dean of the College of Engineering, and we had lunch at the Kaiser Center one day. I presented to the dean my ideas that the time had come to re-establish mining engineering at Berkeley. We were very busy then; this was at the height of our activity and everything seemed to be growing. I felt that there was a real place for high-tech modern mining engineering which could be provided by a place like Berkeley. Well, the dean accepted the idea.

Swent: Do you remember who the dean was?

Havard: He was Chinese, and I can't think of his name. It was a kind of a name like Chan, or something. An awfully nice, bright man, as you would expect. The result of the whole thing was that they did re-establish a mining engineering department. They brought in top-notch professors who were mining engineers, primarily from South Africa and England, and they are still there. The operation, I think, has been very successful, although the slump in the eighties didn't help them at all, but they have established a very good department and done some interesting work. Well, as a result of that--

Swent: Excuse me. Did you have to do anything more than just buy them a lunch to get this going?

Havard: That's all. Yes, that's all I did.

Swent: And then with that they were able to--

Havard: Yes, they went ahead. Doug, of course, was very helpful, and he was also very interested in seeing that this idea develop.

¹Professor Fuerstenau is Principal Faculty Investigator for the oral history series on Western Mining in the Twentieth Century.

Honorary President of the UC Engineering Association

Havard: He was responsible, I think, for my being made an honorary president of the University of California Mining Association, which meant that I had to give a speech one year to their group and their guests. This led eventually to one of the nicest things that ever happened to me.

Distinguished Service Citation, College of Engineering, University of Wisconsin

Havard: That was that about three years ago, I was awarded a Distinguished Service Citation from the College of Engineering at the University of Wisconsin, and partly that was because the head of the minerals engineering at the University of Wisconsin was a former student of Doug's.

There is something about getting an award like that from your alma mater that really is gratifying. Faith and I went back to that program, which was conducted during alumni week, and I got the award at a dinner along with some other fellows. That was very nice indeed.

The National Academy of Sciences

Swent: It must have been. What about the National Academy of Sciences? When did you get into that?

Havard: I think this was just as I was retiring from the presidency of SME. I got a telephone call from the chairman of the U.S. National Committee on Geology, which is an organization within the National Academy of Science, asking me whether I could join that committee, because they liked to move around and get people from different organizations. Rarely, they got somebody from the Society of Mining Engineers, but I think they discovered that I'd done quite a bit of geology, so they invited me.

I had four years with that committee. Going to Washington for their meetings was, of course, extremely interesting.

Swent: Yes, it is very prestigious.



Distinguished Service Citation, University of Wisconsin College of Engineering.
Left to right: Irving Shawn, Chancellor; Jack Havard; John Bollinger, Dean.
October 1986.

Havard: Very, very fine people, top-notch geologists; the heads of some of the geology departments in the universities, and top people out of the government, particularly out of some of the research organizations. That was a delightful experience, and I just wore out my assignment after four years.

Swent: Did you submit reports or make decisions?

Havard: No, mostly I joined in the discussion around the table. There weren't too many of us. We'd get around one big table at the academy. I think the thing I talked about most was the progress of the satellite imagery, which was coming out at that time, because I was on the Geosat Committee and well aware of what was going on. I informed this committee of what was happening. I think that was my chief contribution to that committee.

Swent: What does the National Academy of Sciences do? What is their product?

Havard: They have committees all across the scientific field, including medicine, and these committees undertake projects and issue reports and are important, I think, in the scientific life of this country. The work that this particular committee was doing, during the time I was there, was promotion of international cooperation. This was the main thrust of the group at the time I was there. Out of it were coming some international activities.

Swent: Exchange of information?

Havard: Yes, and conferences and joint research ventures of all kinds. I remember one of the sticking points in our meetings was the problem of Chinese geologists from Mainland China and from Taiwan. They wouldn't meet together, and we were struggling, trying to overcome that deep prejudice which, of course, was reinforced by their respective governments. We were trying to accommodate and get them both at these international meetings.

Swent: Who funds this kind of activity? Did you pay for it out of your pocket?

Havard: Oh, no, no. The government does, and all you get is your expenses.

Swent: It was out of your pocket, but indirectly.

Havard: Well, yes, but not very much because I was retired at this time, and they paid my expenses.

Swent: It was your tax money that was paying this.

Havard: Yes. Of course, these committees of various kinds are still going on. One of my fellow Episcopalians in Nevada City is a distinguished retired doctor who is serving on two different medical committees at the Academy of Science.

Swent: You don't often get--I don't know what the tactful word is--practical mining people on such a committee. This is quite unusual.

Havard: I don't know of anybody else who has been there.

Swent: You are very unusual in that.

Havard: But, of course, some of these geologists were very practical leaders in their field.

Swent: Yes, but I mean it's usually academic people.

Havard: Yes, highly academic and research. One outstanding geologist was a woman from Los Alamos, for instance. The head of the Geology Department at Dartmouth was typical of the kind of people. And the director of the United States Geological Survey was on the group. For me it was a tremendously broadening experience. Just meeting those people was broadening.

Swent: A great honor.

Havard: Well, I don't know whether it was an honor, that you could say it was an honor. I think I just sort of fell into it, you know. It was a time they felt they should be getting somebody from SME. I think they rotate around these organizations that are related to geology. It was time they got somebody from SME, and my name popped up, and I guess they did a little investigation, found out I had a couple of degrees in geology which legitimized me a little bit, and I fell into it. But it was just a delightful experience, mostly because of the associations with these people, who were bright, delightful--

Swent: The cream of the crop.

Havard: Yes. Articulate, you know.

Western Governors Mining Advisory Council

Swent: We had mentioned the Western Governors Mining Advisory Council. That was long before, I guess.

Havard: That was when I was with Fibreboard, and this was a group--Phil Bradley has been on it for years.

Swent: He was one of the founders.¹

Havard: Yes, I think so, and he was still on it when I was appointed. It was a group that was to advise the Western governors concerning mining problems. It was founded at a time when agriculture and mining were the two activities that the Western governors were deeply involved with, many years ago, many years ago. I was appointed by Ronald Reagan to this committee, at the instigation of the director of the California Division of Mines and Geology.

Swent: Ian Campbell?

Havard: Ian Campbell! Ian and I were good friends, and we used to meet and have lunch together in San Francisco when I was with Fibreboard. He knew something of my background, and he recommended me for the position on this committee.

It was actually an anachronism. The meetings were interesting, of course. We joined in with the Western governors. One meeting that Faith and I attended was at West Yellowstone, where we met Governor and Mrs. Reagan and other people.

But we were gradually becoming a kind of an embarrassment, and I think that I was the one who suggested that the committee should disband, that it no longer served its purpose. There were many other activities that were extremely important to these governors and were not represented by such a committee invited to their meeting. We had just become out of date for a variety of reasons, and so we did disband. We wrote to the governors and told them that we felt we had played our role and that it was inappropriate for us to attend the meetings as we had. Got an awfully nice letter back saying, "This is a very rare occasion. We agree with you, but it's a rare thing when an organization

¹For further information, see the oral history of Philip Bradley, Jr., A Mining Engineer in Alaska, Canada, the Western United States, Latin American, and Southeast Asia, Regional Oral History Office, University of California, 1988.

recognizes that it needs to disband." I don't think Phil ever agreed with that.¹

Swent: I'm sure that is most unusual.

Director, California Manufacturers Association

Havard: Another interesting side occupation was that when I was with Fibreboard I was made a director of the California Manufacturers Association, and again, this was an outfit that was doing very practical work to promote and protect the manufacturing industry of this state and of course got deeply involved in all kinds of proposed legislation and that sort of thing. I enjoyed that committee very much, and I was quite an active member of it.

It had some pleasant social side effects that Faith could enjoy, such as the meeting at the big lodge, Ahwahnee, in Yosemite, and the meeting in Carmel, and so on. She enjoyed such social aspects of this job.

Swent: The tape is ending, Jack. Do you want me to put in another one?

Havard: No, I think that ought to do it. Golly, we've talked about everything we could imagine. Too much.

Swent: We can always add more, if we want to.

Havard: We can subtract some, too!

Swent: This has been just wonderful. Thank you very much.

¹For further information, see the oral history of Catherine Campbell, Ian and Catherine Campbell, Geologists: Teaching, Government Service, Editing, Regional Oral History Office, University of California, Berkeley, 1989.

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Things to Hang on the Wall--by John F. Havard

APPENDIX

The organization which has played the largest role in my professional life has been the Society of Mining Engineers, one of the constituent societies of the American Institute of Mining Metallurgical and Petroleum Engineers. Life is simpler if these are referred to as SME and AIME. I ignore a detestable but successful proposal in 1989, SME changing its name to the Society for Mining, Metallurgy and Exploration, Inc. (still SME).

Anyway, I felt too busy to joint the student chapter of SME at Montana School of Mines, then called the Anderson-Carlisle Technical Society, but I did join the student chapter of SME at the University of Wisconsin. This led to a delightful event because I was invited to attend a Chicago section meeting of SME. The invitation came from Professor Charles Behre of Northwestern University, who became one of the most famous geologists in the United States and founded the still-noted international consulting firm of Behre, Dolbear & Co., with whom I have had several contacts through the years. The speaker that night in Chicago was J.V.N. Dorr, founder of the Dorr Company, an international company inventing, manufacturing, and selling extractive metallurgy equipment.

As soon as I was settled in Southard I applied for junior membership in SME and I have a certificate attesting that my membership in the organization was effective on August 6, 1935, starting what is now a fifty-seven year stretch! For many years thereafter the SME books, magazines, and other publications, together with a rare opportunity to attend meetings, were my source for keeping abreast of my profession. This was invaluable.

When I joined Kaiser Engineers I became much more active in SME because personally I was anxious to do so and because close contacts with the membership were useful in my work. Soon I found myself elected chairman of the Industrial Minerals Division and ultimately chosen as president of SME in 1976. I was nominated three times for the presidency of AIME but lost the first two times through truly strange circumstances according to people who knew the goings-on in the respective nominating committees. The third time I withdrew my name for a couple of sound reasons. Actually my greatest service to SME was as chairman of some important committees such as the Long Range Planning Committee, the headquarters construction committee and the Education Committee. My whole association with SME and AIME has been most rewarding. It was rewarding to Faith also because it led to travelling and to many

interesting events and associations. The greatest reward to her was joining me on a trip to Australia to attend the joint conference of AIME and the Australasian Institute of Mining and Metallurgy in Canberra in 1978, with family get-togethers.

I have so many things hanging on the wall or tucked away somewhere that the simplest approach is to list them. And that I do as follows:

Degrees

My degrees from the University of Wisconsin were:

Bachelor of Philosophy (Geology), 1934
High Honors (1)

Bachelor of Science (Mining Engineering), 1935
High Honors (1)

Master of Philosophy (Geology), 1935 (1)

Engineer of Mines (professional degree), 1943 (2)
(1) Signed by Glenn Frank, President
(2) Signed by Clarence A. Dykstra, President
(Faith's uncle)

Certificate from Harvard:

Advanced Management Program
Graduate School of Business Administration, 1957

Registrations

California Registered Geologist No. 519
California Professional Engineer (Metallurgical) No. 654
Montana Professional Engineer*
Nevada Professional Engineer (Mining-Geological) No. 1952*
Utah Professional Engineer No. 3996
Wisconsin Professional Engineer No. E-8506

*Dropped as no longer necessary

Academic Honors

University of Wisconsin, College of Engineering
Distinguished Service Citation, 1986

"Leader in industry and education" This was awarded at a College dinner during Homecoming Week with Faith at my side. See photographs, flashed on the screen at the ceremony, included in these memoirs.

University of California, Berkeley
Honorary President, University of California Mining
Association, 1986-1987

This award probably resulted from my suggestion that UC reinstitute the mining curriculum after dropping it in Sputnik times.

Awards

Hoisting Engineer's License, State of Montana, 1929

I am proud of this, my first license, making me a second-class engineer of air and electric hoisting engines.

Distinguished Member, SME, 1977

"In recognition of and appreciation for your outstanding service to the mining industry and to the Society"

The President's Citation, 1979

"For singularly significant contributions to the design and construction of the SME-AIME Headquarters Building. First as Chairman and organizer and later as a member of the Building Construction Committee, his dedicated efforts and superior skills uniquely contributed to a quality of design and construction which will always be a credit to him personally and an enhanced asset to the Society of Mining Engineers of AIME. The Society, its members and the public served by the Society are indebted to John F. Havard for these distinctive contributions"

Henry Krumb Lecturer, AIME, 1979

I was one of three lecturers chosen for the year and I gave lectures on invitation to ten AIME sections across the nation.

The Hal Williams Hardinge Award, AIME, 1982

"For pioneering work in the gypsum industry of the Western United States, innovative leadership in many areas of mineral development and dedicated service to AIME"

Honorary Member, AIME, 1984

This is the highest professional honor of all. "For exceptional meritorious service to the Institute through outstanding performance in activities of unique worth to SME-AIME including his present role as chairman of the society's first long-range planning effort and for significant contributions to the profession of mining engineering and geology through an extended career of distinctive performance in important and challenging positions"

Leadership

Chairman, Cement, Lime and Gypsum Committee SME, about 1950

Chairman, Industrial Minerals Division, SME, about 1970

President, Society of Mining Engineers, 1976

Faith and I enjoyed this task. I contributed to solving some serious organization problems in Arizona. The White House presentation took place during my tenure. I must have been effective because when I relinquished the gavel to my successor I received a standing ovation, the only one I ever witnessed for a retiring president.

Vice President and Director, AIME, 1975-1977

This accompanied the SME presidency

Chairman, Education Committee, SME

Chairman, Construction Committee, SME

Chairman, Long Range Planning Committee, SME

Director, The Geosat Committee

Chairman, Mining Committee, Sierra College

Vestry Member, Holy Trinity Episcopal Church, Menlo Park

Chairman, Construction Committee, new St. Bede's Episcopal Church, Menlo Park

Vestry Member and Senior Warden, Trinity Episcopal Church,
Nevada City

Chairman, Construction Committee, Trinity Episcopal Church,
Nevada City, new annex

Vestry Member, Holy Trinity Episcopal Church, Menlo Park

Membership (other than SME and AIME)

United States National Committee on Geology, National Academy
of Science, 1975-1979.

This led to annual trips to the NAS Building in
Washington, D.C., and to association with some of the
outstanding geologists of the United States

Society of Economic Geologists

American Association for the Advancement of Science
Fellow since 1965

Who's Who in Engineering

Who's Who in Science and Industry

Who's Who in the West

Director, Friends of the Empire Mine, Nevada County

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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, Wellesley, 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.