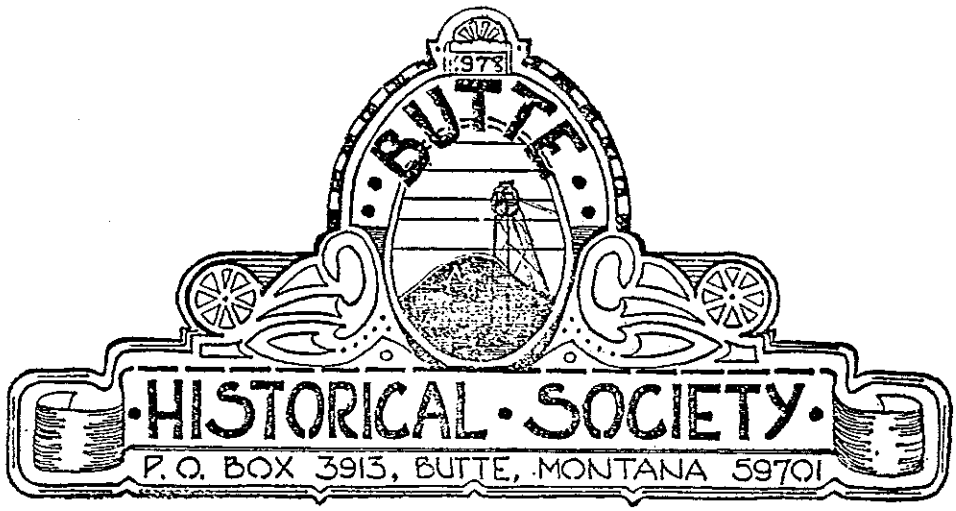


RELEASE FORM

I hereby give and grant to the Butte Historical Society as a donation for such scholarly and educational purposes as the Society shall determine, according to the regulations of the Society, all rights, including copyrights, to my tape-recorded memoirs, except for such restrictions specified below.

I also specifically grant Teresa Jordan, for valuable consideration, the right to use all or any part or paraphrase of any of my statements (with the exception of restrictions listed below) in connection with her proposed work of non-fiction provisionally titled Butte, America: Lessons From a Deindustrialized Town, as well as related articles. I understand that, unless restricted below, my name and photo may be used in the work and in related advertising and publicity.

Restrictions:

(Hazel McClernan)

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12 Apr 1988
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# NOTES ON USING MATERIALS FROM

# "IS THERE LIFE AFTER COPPER?" ORAL HISTORY PROJECT

Because of limited funds available for this project, audited transcriptions of the tapes were not possible. However, there are detailed notes for most of the interviews. The user should be aware of a few limitations on the use of these notes. Unless otherwise specified, the notes were taken at the time of the interview and were not later audited against the tape. They can give you a good idea of what was covered in the interview. However, if you find something specific that interests you, you should verify it with the tape. Because the notes were taken quickly during the interview, they may include inaccuracies. If you use information for attribution, you must go back to the original tape.

There are rough transcriptions for many of the interviews. Again, because of time and funds available, these transcriptions were not later audited against the tape. They are more accurate than the notes, but again, if you use information for attribution, check it against the original tape.

A few interviews have restrictions against use of the tape. The notes for these have generally been read and corrected by the subject of the interview and are accurate. Check the releases for further information.

Henry McClernan, head of The Bureau of Mines, interviewed in his office at Tech by Teresa Jordan, January 23, 1986

Small mining around Butte--the future is probably in mining silver. Aries Resources is working west of town, behind the Mining Museum. They are on hold right now because, Henry understands, of internal company problems. Also, there are metallurgical problems about separating manganese from silver. But they have great potential.

Lee Mining, probably similar operation, is working up north of Butte. They are also sort of on hold.

In the mid to late '70's, Henry's office was asked to assess mineral availability in the Butte area, to use geologic inference to estimate how much ore reserves--how thick, how deep. The numbers were huge, especially west of the Mining Museum, and north, in the Alice Pit area.

Also, there is a large manganese deposit. Again, the use for that is shaped by international influences. The United States consumption comes almost entirely from foreign sources. MN is used in steel. There was also a MN mining operation at Phillipsburg--that was used, some of it, for battery tops. There is a government stockpile yet in Butte--behind the 4B's restaurant. Basically, government surplus.

On the east side of Butte, Continental Pit, there are copper-moly values, and D. Washington has the potential to put that into production. Aries and other companies, perhaps several others, have the potential for silver mining here, other metals. The trend nationally is to go to much smaller mines. In the last 20 years, when you thought of mining you thought of the huge open pits. But the trend now is for smaller operations, like the Golden Sunlight Mine, (gold) in Whitehall; other gold mining operation in the Little Rocky Mountains. These tend to be small, employ, say, 100 people.

Henry recently did a Focus program with a mineral economist, Brauer (sp?). Brauer said he was glad to see President Reagan resist the tariff on Copper because domestic mining companies have got to get more efficient. We have to be competitive on an international scale. Other contries have low wages, less environmental concern.

In the old days, a criticism you often heard of the Anaconda Co was that it was top heavy. There were too many shift bosses, too much infrastructure to support. Interesting when the Company made the shift from the Hennessey Bldg to the Cat Bay--didn't want the perception that the operation had to support that big building.

Pegasus is mining German Gulch--bought the operation from Beal Mining. Pegasus also has a mine in the Little Rockies. They are

a Canadian firm, have experience in running smaller scale mines. Western Canadian mines tend to be relatively small.

For many people in Butte, the closedown came as a real shock. They look to Washington's coming in as "getting back to normal." Henry thinks that the younger people have a much more realistic sense of the mining future here--that it won't be the major operation it was in the past--than the older ones. But Butte didn't hit that great depression evident in other mining town. Others have virtually died.

Henry was surprised to learn that Washington had bought the mines. He thought that it was a dead issue; that no one would attempt it

Q: Are there still the individual prospectors around?

Henry has worked on a committee, Aid to Small Mine Operators. The interest in panning for gold or silver is sporadic. But when it comes down to it, mining is today almost hi tech. Very capital intensive. There is still the potential for a prospector to find high grade gold deposit. Gold is a commodity. The problem with copper, zinc, etc, is that finding it is just the first of many steps--they take long, complex metallurgical processing.

A big question w/ Montana Resources (D. Washington) is where he will put the waste--both solid and water. Possibly, he will put it in the Berk. Pit. That is closer, and a down hill haul. The longer the haul you have, the more trucks you need, because you need to keep the shovels going.

He will need to work on the concentrator. When Anaconda shut it down, they had the idea that it would start up again. So they mothballed it--cleaned it out, etc, instead of leaving gunk in it. But it was designed and built to handle 50,000 tons of ore a day, and it works best at capacity. Washington probably won't handle that much ore. It will probably take a lot of capital to solve the problem. There is a lot of usable material in the concentrator. The primary crushing mechanism may be worn out, but there are big grinding mills, much more. A lot of it could be used. It is probably a matter of a lot of reorganization.

Q: How can it pay to smelt ores in Japan?

Cheapest way to ship is by water. A company official once told Henry that it cost more to send the ore by rail to the coast than it did to freight it over the water to Japan. In an awful lot of mining projects, concentrates are shipped from one nation to another.

Henry wonders if the mining industry isn't in the same position the auto industry was a few years ago--they had real competition from Japanese cars. But that industry has come around, made smaller, more efficient cars. Mining will have to find some way to be more competitive, it will have to figure out how to compete

internationally. Cause it is either gonna adapt or die.

Kennecott has announced ambitious plans to modernize their plant. Mining has to significantly cut costs. A good example is Pegasus. From what Henry knows, it is very finely run, very cost conscious. They mine gold and seem to do well.

The future of mining will depend, too, on what metals are in demand. Gold probably has the best future, then silver. Copper is probably down the scale from those. And it is like farming--if you can't turn a profit, you can't keep raising cows.

Henry McClernan, showing the geography of Butte to Teresa Jordan, January 23, 1986. Notes taken on tour; no tape.

First stop: nodule to the north and just under Big Butte, turn off on road up the Butte.

Most of the rock on the Butte Hill is granite and it is about 70 million years old, give or take 2 million years. Once upon a time, it was a liquid deep in the earth. Because it was lighter than what surrounded it, it rose up like a dioper. When it rose, it cooled off. When it cooled, there is a lot of professional argument about where the metals came from. But as that massive body cooled, cracks formed. Probably because there was continental-scale stress, cracks formed in an E-W direction causing steep, planar, tabular formations. The granite cracked open and gold, silver, copper, arsenic, etc was deposited in the cracks.

But even before that, there was an earlier copper deposit. It was desseminated in little speckles throughout the granite. It is a little older than the metal in the veins. Possibly it was mobilized by hot water in the veins and deposited in them [check].

Where we are right now, and Big Butte itself, is volcanic rock. It was spewed out of the ground. That was not true with the granite. It rose up; and erosion exposed it. That all happened fairly recently in geologic time.

There is granite from quite a ways north of where we are standing to somewhat west of Timber Butte. The volcanic rock is younger than the granite; it crosscuts the granite and mineral deposits. So there are no veins at all, no mining, in the volcanic areas.

In between the granite and the volcanic material on the time scale is another rock--Aplite. It is similar to granite in composition, but younger. It is older, however, than the volcanic deposits. Aplite occurs as dikes, or tabular features.

The radon scare of a few years ago--most of the radon is coming from aplite. It has a higher than average content of uranium. And as that radioactively decomposes, radon is emitted. You can expect, geochemically, when you dig a basement, that the uranium goes through normal radioactive decay. A house acts like a bell jar and collects radon. Some radon comes from the veins, but not much. Henry thinks the amount of radiation is no more than from a flourescent watch, but suggests I check with Bill Burk, head of city health.

So, Butte area is composed of granite, veins, and volcanic rock. Sometime here, the elevation of the Rocky Mountains caused tensions along the whole Rocky Mountain chain. As a result of bending as the mountains rose, the whole area was put in tension. rocks pulled apart--they broke, and part of them fell back while others rose. The result in Butte is the whole valley. The

Continental Fault runs along the edge of the East Ridge. As the mountains came up, what is now the valley broke and fell down.

The Continental Fault is not one break, but a whole series of little breaks. From where we are, we can see a dip in the ridge line, and Henry points out where a big fault runs along the slope break. The Continental Fault has thousands of feet of displacement. Afterwards, the valley filled up with gravels to make the Flats. The gravel is thicker by the East Ridge, and wedge shaped. It thins out by Timber Butte. The fault is not vertical, but tips to West, 70 or 80 degrees.

The desseminated copper--the granite rose in a dome. When it split, part rose up. The East Berekely Pit (Continental Pit), much higher than the Berkeley, is part of the roots of the Butte Copper deposit.

The alleuvial gravels run north roughly to Front Street; from Front Street north, it is all bedrock (except for volcanic areas on parts of the west).

About three legislative sessions ago, a study sanctioned to monitor the filling of the Berk. Pit. It included a seismographic study. The Butte area is not dormant as far as earthquakes, but relatively quiet compared to the Rocky Mt. Range.

The waste from the Berk Pit was hauled up north and dumped close to the Cont. fault but on the same side as before. There was some concern, not so much about the weight, which shouldn't have had an effect, but the effect of the water in the tailings ponds lubricating the area--lots of clays etc in the dirt.

When the AMC applied to mine the Hillcrest Dump near the Old Community Hospital, Department of Lands did an Envirnomental Impact Statement which questioned what might happen if B.P was allowed to fill with water--that much mass so close to the fault. But probably that would not cause problems.

From where we are, Henry points out Missoula Gulch, which runs from an old red mining building down past St. James Hospital. The Syndicate Pit is in this gulch, where we will stop next.

The Alice Pit, due north, was near the old Alice Mine, where Daly got his start. It was mined for silver values. Pit was started in the 50's.

There is a zonal arrangement to the mineral district. In the middle, around the Kelley and the Belmont, is the copper rich district. Further east and west is a zone with copper and zinc. Farther out, is a silver and manganese zone. The Orphan Girl, behind the World Museum of Mining, for instance, is silver and MN. The Badger in Walkerville had zinc, MN, high silver. The Travonia, below Iron Street, had MN.

The Syndicate Pit, named after the Syndicate Vein. The vein

butts up against volcanic rock on one end, continues other direction up around the Mountain Con. The vein was mined from the Mountain Con and the Stewartt.

North and west of where we stand, there were once lots of small prospecting pits--they were primarily independant of the AMC.

We drive to the Syndicate Pit.

The pit is very steep-walled. The flat wall is one side of the Syndicate Vein. The Lexington Mine is above the Syndicate Pit, and the elevation of the pit is several hundred feet below the collar of the Lexington. When Henry was a kid, the Company ran a railroad into the area which is now the pit, set up ore bins, and ran a tunnel into the side of the hill which conneected with the Lexington shaft. The idea was that they could bring the ore out there, not hoist the full length of the Lexington. Also, they could load the ore easily on the trains. When they were developing that, they discovered the vein--it was fantastically rich. Besides, the price of silver, which had been at $1.29 for years, jumped up significantly. So they created the pit, and hauled the ore to a loading platform by the Anselmo. You hear about a mining company ripping and tearing--this was a classic case. Quick and dirty. They estabished dumps below the road, up the valley, on the hill above it. The blasting was tremendous. Henry's father got a settlement from the Company because one blast knocked his rifle rack off the wall, damaged his guns.

They started the pit in late spring. They didn't realize that it cut off the Missoula Gulch drainage. Henry remembers after a powerful rain that he walked by the pit, and only the top wheels of the power shovel showed above the water. That was in the middle to late 50's.

The Anaconda Company often started developments they didn't end up using much--the loading area in the Syndicate Pit was made of reinforced concrete, expensive as hell to build--and then they didn't use it much. Of course, Henry notes, he hasn't seen the accounting. But it seemed a tremendous expense for no more use than it got. Another example was the Ryan mine. It was supposed to become the central hoisting facility. The thought was that the B.P. would expand to take over the Kelley, which was the central hoisting facility at that time. They started at the Mountain Con at about the 3,000 foot level, setting a raise. Put in foundations at the Ryan. This is all very capital intensive. The steel for the headframe was just sitting up there for years. Millions were spent on the project, yet it was scrapped. One engineer working on the foundation for the Ryan read the plans wrong. The bolts going down into the concrete were supposed to be 8 inches apart. He placed them 8 feet apart. Things like that happened a lot.

We drive over a rise from the Syndicate Pit, and look at a knoll some distance in front of us--it has a few big rocks, some sagebrush, scant grass, not a lot of soil. Henry says he thinks this

is what Butte probably looked like before the town was here, although there might not have been sagebrush. But he doubts it was ever forested like the East Ridge. There was a significant amount of natural pollution. Manganese outcroppings; in the central area, copper salts and acids weathering out.

At the Berk Pit, Henry points out the instability of the walls--very steep; also, not very solid. Quite a high amount of clay, which slides.

On Montana Street we stop at Silver Street, roughly across from the Emma Mine. Henry says that after WWII, the government wanted Manganese, and subsidized its mining. The Company was greedy and mined too close to the surface. So, this area is now a subsidence zone. Montana street gradually slopes down toward Front, but at this area makes a steep dip--subsidence. On our left down a street, we can see the house that used to belong to Uuno Sahinen, who used to be in the Bureau of Mines. When he was young, you walked down four steps to the sidewalk. Now you have to walk up several to get to the sidewalk. The house has just sunk.

Henry's father and grandfather were both judges, both named John. His grandfather replaced Judge Lindsay, contemporary of Clancy. His grandfather helped clean up Clancy's lawsuits--which meant dismissing most of them. But he ran up against labor somehow. Henry's father grew up in the house at 127 S. Excelsior until his father died when he was about 5. But Henry's father remembers during a strike that the militia had a machine gun set up at the corner of the yard to protect them. (Old John died when Henry's father was about 5; they moved out of the house.)

About Washington's chances of starting up. Three important factors. When ARCO closed down, Butte was the most expensive copper mining operation in the WORLD. 2) Massive capital investment is needed to get going again. The concentrator is an antique; also, it is designed to operate at peak capacity, about 50,000 tons a day. H doubts Washington will run at that level. 3) The price of copper is controlled internationally. South America, Zaire, what used to be called Rhodesia, other third world countries, have fatastic reserves, and they are subsidezed by the government. If they see significant competition, they will simply decrease their price, run us out of business.

H hopes that Butte isn't being set up to have the rug pulled out from under again. He believes that Washington is sincere, but seriously doubts the efficacy of the project. Also, Washington is in the contruction business--which is much different than mining. H has qualms about his technical expertise.

Molybdenum is also controlled by international influence. The biggest, highest grade deposit ever discovered is on the Alaska sea coast. IT is not developed yet, but it is easy access, close to shipping. Also, there is a big deposit at Climax, Colorado. H thinks it is closed right now. So, the moly here has the potential to be swamped on the market. Moly is used in hardening steel. Also used as a lubricant. With the steel industry going to hell here, moly is one of the few minerals we export.

Berk. Pit had gold and silver values as well as copper. It was the 3rd or 4th largest gold mining operation in the US; also third or fourth largest silver mine. This because they moved so much ore. That was added value to mining the BP.

But there were probably not minable ore values in the BP anymore. And trucking out of the Pit was long and expensive.

Washington is looking at the idea of putting waste from the Continenal Pit into the Berkely. Would be a downhill haul; also much closer than the other waste dumps.

The underground mines could be pumped out, though it would probably require new pumps. Expensive.