



California State Parks

Video Transcript



The Standard Mill at Bodie State Historic Park

All right, here it is Sunday afternoon in Bodie. My name is Forney Hobbs, and I'm the mill foreman here. I understand you folks are all looking for work. You good workers? Okay, not afraid of hard work? All right. Good. I'll put you guys to work if you want a job.

A few things I want to remind you of—one, this is a union shop. We're going to have to send you down to the union, down on Main Street, and you'll pick up your union card there. It will cost you \$1 a month. If by chance you get injured or something like that, or even killed, the union will take up a collection for you and they will help pay your expenses. Another thing that we do recommend is that you go down to Boone's Store, down there on the corner of Main and Green, and pick up some beeswax. It's quiet here today because it's Sunday and the mill isn't operating. You go down there and you get that beeswax and you put it in your ears, that way you won't lose your hearing and that way you also won't lose your job. If you lose your hearing, we're going to have to let you go.

The town here is a little bit smaller here in 1905 than it was in its heyday. At one time we had 10,000 people living in this town. It was the second largest city in the state of California.

We do require that you have a change of clothes; we've had a lot of high-grading. Does anybody know what high-grading is? Well, hi-grading is stealing. We have a lot of gold in this building, and people have found various ways of getting gold out of the building. So what we have you do is we have you go into that building there, you wear your street clothes into that building and you change into your work clothes when you go on to your shift. When you get done with your shift, you come through the other end of the building and you change your clothes. You take off all of your work clothes, you're stark naked, you take a shower and you step into your street clothes and go on out on the town.

A few things on the employment here—we work two twelve-hour shifts a day, six days a week. The twelve-hour shifts you get paid \$4 a day. Now that's good wages—that's what we call Comstock wages. And for that, just for instance, you can get "three hots and a cot"—three hot meals and a place to sleep for a dollar-and-a-half a day over at the boarding houses. You can go down into town, and for two bits you can get two shots of whiskey or for a nickel you can get a nice glass of beer. For maybe a dollar you can get a nice pair of work pants. Does anybody have a problem with those wages? Good, good. That's good wages—very good.

Well, I'll tell you what, let me give you a little history here, so you'll know where you're working. The gentleman who lives in this house here is a fellow by the name of Theodore Hoover, and he moved here in 1903 with his wife, Mildred, and their daughter, Millie. He's the mill superintendent, and he has a brother that's also a graduate of the Stanford School of Mines.

California State Parks Video Transcript
The Standard Mill at Bodie State Historic Park

Occasionally, he comes in and visits us here in town. A few weeks ago he came in and visited, and he came in with some pretty seedy looking characters. It turned out that they were politicians. His brother is going into politics. We don't know how far Herbert will go in politics, but he's a pretty decent guy, so just keep your eye on the newspaper and see if you ever read anything more about Herbert Hoover. His brother is very, very instrumental in getting our mill in a profit-making situation.

Does anybody have any questions? Okay, let's go on up the hill, and we'll continue.

Seeing as how you're new in town, I'm going to explain a little bit about the history of the mill here, where you're going to be working. This mill was originally built in 1877. It was made out of wood. In the winter of 1898, the mill caught fire and burnt to the ground. By spring of 1899, this mill was up and operating. When we go inside, it's going to be interesting for you to take a look and see how we built this mill in that short period of time.

Originally this was one of nine mills, stretched across the front of the bluff here. This mill was powered by steam, and when it was powered by steam, it burned 20 cords of wood a day. A cord of wood is eight feet long, four feet wide, and four feet high. That's an awful lot of wood to burn in one day. Times that by nine, and that's even more wood. Then we go up on the hill, there's twenty hoisting works powered by steam up on the hill here. Each mine had a hoisting engine, and each one of those mines used between six and eight cords of wood a day. Forty-eight miles of tunnel under this mountain, and all of it shored up with wood. Then you get into town. In town, we did have 10,000 people living here trying to keep warm, and they would burn an awful lot of cord wood, because we get maybe, if we're lucky, if we're real lucky, we'll get two weeks out of the year that the weather doesn't get down to freezing or below. So we used an awful lot of wood here and there's no wood, there's no wood in this whole area. This is high desert, and all of the wood had to be shipped in.

We had a very large Chinese population at that period of time. They cut the wood and hauled it in on mule trains, wagons, any way to get the wood in here. It was a very, very good business to be in. Well in 1881, the company built a sawmill down at the south end of Mono Lake, and from that sawmill they put a railroad. The railroad ran from the mill, which is called Mono Mills, up to the top of the bluff here, up to the Standard hoisting works. And the railroad, all it did was haul wood up into Bodie. They hauled over 100,000 cords of wood a season up here. Well in 1892, a fellow by the name of Tom Leggett, who lived in that house over there that Mr. Hoover occupies now, he had been studying electricity and he convinced the board of directors that he could string power lines and run electricity for long, long distances. Now when we get inside the mill, I'll go into a little bit more detail about Mr. Leggett, but right now just remember his name, because we'll check on that when we get inside the mill. Okay, let's go on up here and take a look, and see how we get the ore in. Come on with me.

In 1877 a gentleman by the name of Andrew Halley came to town, and he put in our aerial tramway. This tramway ran from the top of the hill, the top of the shaft there, clear down to the end of this trestle. And these little buckets were on that aerial tramway. It was gravity-powered, and each bucket held about 140 pounds of ore. If the loaded buckets were heavy, they came down the cable, and when they got to the end here right at the end of this trestle, the bottom would be opened up, the ore would drop out, the bottom would close up, the bucket being lighter would travel on up to the top. There were fifty of these buckets on this tramway,

California State Parks Video Transcript
The Standard Mill at Bodie State Historic Park

and they were able to haul between 40 and 50 tons of ore a day using this system. The only problem was that about six months into operation the cable stretched 25 feet, and they had to cut that section out and splice it together. And this started to continue, the process of stretching and splicing. Finally, this became so labor-intensive that they shut it down, and they went back to hauling the ore in on mules and wagons. Once again the ore came in to the top, came in, and was dumped into ore cars. Right out of the end of this trestle the ore cars were brought in, brought over this trestle, pushed by hand, and dumped in the top of the mill.

The rock from the ore cars fell over what's called a grizzly. A grizzly is a set of iron bars set at about a 45-degree angle. They're set about that far apart (about six inches), and that allows rock that's about the size of my fist to fall between those bars. Now that's how they sorted the rocks. This was the ideal size for crushing the rock. It fell into two bins up there—each bin held 50 tons of ore. The bins had sloping bottoms that allowed the rock to slide into the back of the batteries, and that's where they started crushing the ore.

One of the jobs that we have upstairs is feeding the jaw crusher. We get large pieces of rock, we will give you a nice hammer, and you can break that rock up, and that will then fit into the jaw crusher. The jaw crusher upstairs has a mouth on it about like that (about 2 feet by 2 feet). It's just like this machine here. This is a small jaw crusher, works just like a human jaw. One side is stationary; the other side closes up on it and crushes the rock, all, once again, about the same size as my fist. All of that rock drops down into the hoppers. Would you like a job breaking the rocks? Okay, 12 hours a day, \$4 a day breaking rocks. That's a good job for you.

These pieces of iron here, these are called mortar boxes, and the stamps are in those mortar boxes. The stamps are about that long (about 3 feet), about that big around (about 18 inches). They have a three-inch diameter stem on top of them and on the top of the stem is what's called a tappet, it's a collar that fits over that stamp. Those stamps each weigh 1,050 pounds. There are five stamps in each one of those mortar boxes, and that's what they call a battery. Each one of those stamps drops 90 times a minute. That's why it's so noisy in here. That's why you've got to keep the beeswax in your ear. Do you have any questions? Okay, let's go on to the next show. Let's go on down this way.

Now this is the cam shaft. This is what operates the stamps. Now we've had to bring this one out here because it's badly worn, and we had to shut the battery that this was on down. Each one of these cams has two lobes. This is the tappet. The tappet rides on the cams, and as this wheel turns, as it turns this shaft, each one of these stamps drops 90 times a minute. It turns at 45 RPM, and that's what it gives you off of these two cams lifting that tappet, drops that stamp 90 times a minute. Now each one of those stamps weighs a 1,050 pounds, and it drops about that far (about 18 inches). So that's one of the things that really makes the noise, and it vibrates so badly that we've had to make these wheels out of wood. If they were made out of cast iron, they would shatter. The vibration was so much that it would shatter that cast iron. What we need to do now we'll be going into this next building here. We'll actually go into the mill, and I'll show you where some of you will be working. Just follow me.

This is our machine shop here. The original mill did not have a machine shop, and when the new mill was built, we decided to put in a machine shop so that we could do the maintenance in the mill right here in-house. Is anybody here a machinist by any chance? Okay, good,

California State Parks Video Transcript
The Standard Mill at Bodie State Historic Park

because we can put you on, and we'll give you \$5 a day, so that's good wages. The lathe over there, that was at one time the largest lathe on the eastern Sierra. It weighs 20 tons, and it was brought in here by mule train. The lathe is from the East Coast. It was made in Massachusetts and was made about the time of the War Between the States. It came in by rail up to Reno and was shipped down from Reno to Carson City, was put on the narrow gauge railway and sent down to Thorn, Nevada. There it was put on wagons and hauled over Lucky Boy Pass, about 40 miles, by wagon and pulled by mules. We had twenty-mule teams here; we had forty-mule teams here. The steam engine was down in the bottom of the mill there. You can still see the smokestack for the boilers.

This is called a shaper, and that shaper was used to flatten pieces of iron. That's another smaller lathe. This is a drill press. Now one thing you'll notice is there's no electric motors on any of these machines. They're all driven from what's called a line shaft. That shaft went across the top of the mill, and pulleys and belts came down to the machines, and that's what operated the machines. If a machinist wanted to change the speed of his tool, all he had to do was change the location of the belt on the tool. You've got to be very careful in here with these belts going up and down. You don't want to catch your hand in here, because if you lose a finger or lose a hand we're going to have to let you go. Any questions about working here in the machine shop? What we'll do now, we'll go into the electric room and see how this mill is powered. Come on with me.

This is the electric room, or motor room. Do you remember the fellow that I told you about by the name of Tom Leggett? Well, he is the man that brought the electricity here to Bodie. He convinced the board of directors that he could transmit electricity over long distances and so the company gave him enough money to build a power plant down on Green Creek, thirteen miles from here. He brought the power in at a straight line. Brought it in right through the graveyard and up to the mill here. People didn't like that too well. In fact, they called it Leggett's Folly. They didn't feel that that process would work because Thomas Edison had been able to transmit electricity only three miles, and if Thomas Edison couldn't do it, this upstart Leggett, there was no way in the world that he could do it. So this was quite a problem for Tom. The women of the town spurned his wife. They wouldn't invite them to any of the dances or anything like that. He was kind of an outcast, he and his wife. But, anyway, the day came when he would start this mill in operation under electricity.

One of the other problems that they had was that they had to shut the mill down to put all this equipment in and to change over from the steam to electricity. And he did that—it took quite a long time to do that. All these people were out of work, so that irritated the townspeople even more. But the time came when he was going to hook up the electricity. They had run a telephone line down that power line, and they had run that power line in that straight line because they were afraid when it went around a corner, the electricity would jump off into the sagebrush never to be seen again. But, anyway, he called down to the power plant, and in the meantime a crowd had gathered around the front of the mill. All the townspeople were here and they were going to see Tom Leggett fall flat on his face. So he called down there, said, "Turn on the electricity." They threw the switch up here, and nothing happened. The townspeople, about this time they're getting pretty rowdy, and so Tom felt, "We better do something. This thing better work or they're going to ride me out of town on a rail." So he called down there again. They did something with the wiring here, got the electricity going, and all of a sudden that motor right over there started to turn. It turned faster and faster, and

California State Parks Video Transcript
The Standard Mill at Bodie State Historic Park

finally they were able to start the stamps dropping. They said the roar from the crowd drowned out the sound of the stamps. Now that's pretty impressive because you could hear those stamps operating five miles down the canyon. Well, all of a sudden, Tom Leggett was the most popular man in Bodie. Tom went on to work for a small electrical company called Westinghouse, and he went in and put electric power plants in places like Rhodesia, South Africa, Australia, all over the world, and became very wealthy putting in those power plants. This room here saw the first transmission of long distance electric power in the world.

One thing about the electricity, they were able to save a lot of money using the electricity versus the steam. The first year of operation of this mill under electricity, they were able to save the price of the power plant, the stringing of the wire, all of the wire, all of the labor to string the wire and this equipment to get this mill operating. They saved that amount of money that they could pay all of that off in one year with the money they saved. Okay, let's go on this way. Now I want you to go down these stairs. Hold on to the handrail so you don't fall. I'd hate to have you injured before you got a job here.

This is the stamp room, and I've got a couple jobs in this room, easiest jobs in the mill, if any one of you'd like to take a job. How about you? Okay good. This is, like I said, the easy job. These are the stamps up there. You see those? Each one of those weighs 1,050 pounds, and it's dropping 90 times a minute. That's what crushes the rock. It crushes that rock fine enough to go through this screen. This screen is called a 40-mesh screen—40 holes per linear inch—very, very fine. The rock comes in the back of the mortar box, falls between the stamps and these dees, that's those big iron things there, is crushed and mixed with water. It comes out in what's called a slurry, a very thin mud. It comes down over these tables.

Now these tables are called amalgamating tables, and your job will be to paint mercury, quicksilver, on these tables. They're covered with copper sheet and then you'll paint that copper sheet. The mercury sticks to the copper and the gold and silver that's in that slurry will stick to the mercury. It works just kind of like a magnet. Okay, what you'll start to do, you'll start to feel this mercury, and it'll be like putty.

At that time, we have to do what is called "hanging up the stamps," and for that we'll give you these two tools. This is called a cam stick, and this is called a latch bar. You'll go up on the catwalk above the battery here. Cam is going around in front of you, like this, turning 45 RPM. You'll take this cam stick, and you'll put it between the cam and the tappet. That'll raise the tappet up off the cam, and then you'll put this latch bar under that. The tappet will drop onto there and hold the stamp up. That's called "hanging up the stamps."

You'll then come down the stairs here, and you'll take that scraper, and you'll scrape the table. The mercury, like putty, you roll it up in a ball. You put it in a bucket like that and take it into my office. It's very valuable, because that contains between 40 and 60 percent of the value of the rock. Once we have enough of those amalgam balls in the safe, we'll take it over to the retort room, and there we'll boil the mercury. Mercury boils at 600 degrees. It will vaporize, we'll catch those vapors, condense the vapors. It'll come back as mercury, leaving the gold in the bottom of the retort.

Now you think you'd like this job? What you've got to watch for is if your teeth start turning blue or black, you better find another job because that's a sign of what's called mercury

California State Parks Video Transcript
The Standard Mill at Bodie State Historic Park

poisoning, and we don't want to have anybody get sick with the mercury because if you do, we're just going to have to let you go. You understand that? Okay. The rest of the slurry that comes down off of here goes into those buckets and originally it just went out into the tailings ponds out in front of the mill. Remember, that's still valuable rock, because it's got the remainder of the gold and silver in it. The Chinese would come over from Chinatown and pan that gold and silver out of the rock. Well, in 1895 we developed a process here that stopped that operation and gave us a lot more value out of our rock. Do you have any questions about the amalgamation process here? Okay, let's go on.

What I'd like you to do is go right around here and down those stairs. Now, I'm rather new at this job, and I've only had this job for two weeks, because my predecessor was killed. And what happened to him, as you go down those stairs, be sure you hold onto the handrails because I don't want this to happen to somebody again. What happened to him, he fell on that wheel down there, and it tore him apart. You can see the mess that it made up on that wall. Really, we haven't quite got that cleaned up yet. So go right around there, down those stairs, and I'll meet you in the next room.

All right, this was the blacksmith shop right over there. This was a water well. Right here was the retort room—that's where we boil the mercury, get the gold out. That's the smelter where we melt the gold. This is the assay office. Each one of these bars that goes out of here has a small section taken off of it, and that's assayed, and the assayer can tell how much gold, silver, and base metal is in that bar. That's stamped on the bar, and that accounts for the load that's being shipped out.

Now what I'm going to do, I'm glad to have you hired, and I'm going to go. I've got another group to interview, and I'm just going to go over and meet them. Welcome to Standard Mill. Thank you.

Running Time: 28:53
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