

about Cripple Creek. In addition to these there are other cross veins and you find cracks running off from the main veins containing this quartz and gold. Then, by the action of the weather throughout the ages, a soil collected upon the loose rocks, the trees and grass came and the country developed as you now see it all about you."

It was a vein like the one above described that the prospectors of the Victor discovered. It was a great grayish-blue sandwich of gold and quartz running through walls of lava. It had granite connected with it, and the rock to the ordinary eye when taken out looked like cobble stones and broken granite. Immense works had to be erected to get the gold out of the mines, and I could see the big frame buildings containing these standing bleak and bare against the sides of Bull Hill as I drove up. These are the golden palaces of the Victor. They look more like Pennsylvania bank barns than anything else, but they represent millions, and the mines under them are as carefully watched as to the saving of every bit of ore as is the business of saving the cents in a bank or a great department store.

It is not easy to get access to a great gold property like the Victor. I had letters, however, from Mr. Moffat, and the manager of the mine went through its workings with me. We first dressed in suits of oilcloth and exchanged our derbies for old slouch hats. Going into the shaft house, I was shown the immense engines which are used to raise the rocks from the depths of the earth. The Victor mine is on top of a mountain, and the shaft which goes down into it, cutting its way through the rock at the side of this vein, is, I judge, about eight feet square, and at present writing it has been sunken to a depth of more than five hundred feet. This shaft is walled with boards. Within it there is an elevator much like that used for freight in a big store, which is raised and lowered by means of a great wire rope. This rope passes over a pulley about fifty feet above the shaft, and is connected with a steam engine in the shaft house. The engineer stands with his hands upon the levers, and as the miners down under the earth pull the wire ropes which ring the signal bells, he knows just where to move the elevator. From the shaft tunnels run off into the vein at different levels sixty-five feet apart. Each of these tunnels is a great pipe, made by digging out the gold ore. It has a little railroad in it, and the gold rock is loaded into iron cars about the size of a small dry goods box. Each car will hold about a ton of ore, and when filled it is pushed on to the elevator, and a signal to the engineer brings it to the top.

A car has just been taken off as we reach the shaft house, and the manager of the mine directs us to step on to the elevator. He signals the engineer, and we start downward to look at the mine. Within a few seconds we are far below the surface. The shaft is filled with a darkness so dense we can feel it. We huddle close together for fear of touching the board walls of the shaft and fall for sixty-five feet before we come to the first level. Here we see a score of dirty miners in jeans and get a glimpse of a car load of ore which is being pushed forward to the shaft. Each miner has a candle, which he holds in a curious iron candlestick, and the light makes him look

almost spectral against the darkness of the tunnel in the background. Then there is another signal, and we fall sixty-five feet to the next level. Here are more miners, and away off in the tunnel, where the miners are working, we see the gleam of the candles. Then there is another ring of the bell, and we drop to the fourth level, and here, nearly three hundred feet below the ground, and still more than two miles above, we leave the elevator to explore the artificial golden caves of this great Victor mine. We find several iron cars of ore waiting to be shoved upon the elevator as soon as we are taken off. The rock seems to be of a slate-colored granite, and we look in vain for any signs of gold. Our candles are lighted, and the manager starts ahead and leads us off into the darkness. The tunnel is about five feet wide, and so high that we can stand upright in it. It is blasted out of pure rock. The walls on the sides are of ragged rock, and the top is of the same character. Here and there the tunnel widens, and at places we find chambers dug out of the mountain.

We are told that this comes from the difference in the size of the vein and the manager moves his candle along the walls and shows us the vein of rock which here produces the gold. It is of a slate color and at the point we look is just about two feet wide. It ranges from two to twenty feet in width, and is a great sandwich of gold-bearing rock between walls of other rock, running slantingly, a great plate of gold rock down into the earth. How deep it goes no one knows. The tunnels through which we walk are already more than a quarter of a mile in length, and so far as they have moved downward, the ore has grown richer. At present only a small part of the gold has been taken out of the vein. These tunnels are only pipes of rock cut, as it were, out of the golden meat of this great sandwich. There is sixty-five feet of ore along the vein above and below each tunnel, and this gold is left to be mined in the future. This is called "gold in sight," and the miners might work at their present rate for several years, as I have said, and not get out all the gold which they thus know to exist.

The ore is of different grades in different parts of the vein. Most of the high-grade ore has assayed over \$200 per ton, some runs only \$40 a ton, and some less, but it is all very valuable.

As we pass on through the tunnel we see the work it takes to get out the gold. The rock is of the hardest kind, and it has to be blasted down by means of dynamite and diamond drills. Here by the light of a tallow candle stands a miner dressed in homespun. He holds a piece of steel the size of a broomstick, and quite as long, against the rock. We see that it is already some distance into the rock, and he pounds upon it with a great hammer, moving it around and around and boring, as it were, atom by atom, a hole into the gold-bearing ore. He has different sizes of drills. He uses a short one at first, then changes to a longer one until at last he has made a hole deep enough for a stick of giant powder. About him other miners are drilling and before long there will be a half dozen holes cut in this way out of the solid rock. Into each of these will be put giant powder or dynamite. This is used in the shape of candles of different sizes. Some are as big around as a

broomstick, and others are no larger than the ordinary candle. The candles are thrust into the hole, a fuse connected with them, extending outside. Then dirt or clay, or ore, is lightly pounded about the fuse, packing the candles of dynamite tightly into the rock. Then the fuses are lighted and the miners go away to another part of the works. In a moment there is a terrible explosion. We hear a number of these explosions as we pass through the mines. They fairly shake the earth and the concussion of the air puts out our candles, although we are a quarter of a mile away. At the same time the rock falls. It is now dug down with picks and loaded into the cars. It is not, however, thrown into the cars at the point where it falls. This gold-bearing ore is very heavy and every bit of muscle and expense is saved in a big mine like this. Pipes or shafts are cut between the tunnels and the ore is thrown into these and it falls by gravity into the car placed under the shaft in the tunnel below.

Each car is marked with the locality from which it comes. It is run along the track to the elevator, and when the ore arrives at the top some of the ore is taken out of it and assayed, in order that the manager may know just exactly how much each part of the mine is worth, and where the gold comes from. This assaying goes on all the time. The ore is divided into classes, and there is a warehouse at the top of the mine, which has an immense floor spotted with piles of ore of different grades. Each pile has a little board sign in it, marked so as to show from what part of the vein it came and its value. Some of the piles look like ballast, and others much like gravel, I asked whether the gravel was worth anything, and I was told that it comprised some of the most valuable ore of the mine. Some of it is, indeed, worth so much that it is carried away from the mine in little sacks, each holding no more than half a bushel, to the smelters. I was shown four sacks of ore, which the manager said were worth at least \$10,000, or \$2,500 apiece. I tried to lift one, but found it was all I could do to raise it from the floor. The high-grade rock is wheeled in iron barrows into the warehouse. I have seen wheelbarrows of dirt which looked more like gold to me on the roadside in Ohio. I pushed a wheelbarrow load myself, which I was told was worth \$100, into the warehouse, and upon my questioning the fact, I was asked to go to the assay office and see the method of finding out the amount of gold in the rock.

This assaying goes on all the time. The ore is assayed as soon as it comes out of the mine. It is assayed again and again in the mill, and in the cyanide mill which I visited near Florence every fifth handful in each carload of ore bought is put through an assay in order to find just the average that the car is worth. A part of each car which comes out of the shaft is put into a little steel mill called a crusher, which chews the big rocks into little ones. The little rocks are pounded up until they become a dust or a flour of powdered ore. This flour is first dried upon what looks like a cooking stove, until every particle of moisture has left it. Then it is weighed upon scales so fine that the weight of one of my hairs turned them, and so fine that even a pencil mark will make a difference in the weight of a piece of