

THE SILVER KING



Among All the Great Mines Which Have Helped to Make Utah What She Is Today, One of the Largest Producers of Copper, Lead and the Precious Metals of Any State in the Union, There is One Name Which is Always Placed at the Head, That of the Wonderful Silver King.

Far and wide, its fame has traveled, all of its owners have made vast fortunes, one of them is making an honorable name for himself in the United States Senate, and still the great property keeps on turning out its vast treasure, with no sign of exhaustion and apparently able to maintain its present output for an indefinite period.

The Silver King is a great mine, great in its achievements, great in its owners and great in its future.

Every one knows Tom Kearns and David Keith, while Mrs. Susan Emery Holmes is the acknowledged leader of Sainly City society. Also every one knows all about the Silver King, its immense ore deposits, its magnificent plant and its spectacular aerial tramway.

There may be a few people outside of Utah, however, who are not quite so familiar with all these things as we are in this State, and for their benefit we present a few illustrations and some facts and figures.

One of our half-tones gives a view of the entire plant, and shows all of the buildings except the hoisting works, the upper part of which may be seen at the left.

The other cuts represent various features of the plant and mine, and an appropriate description will be found under each.

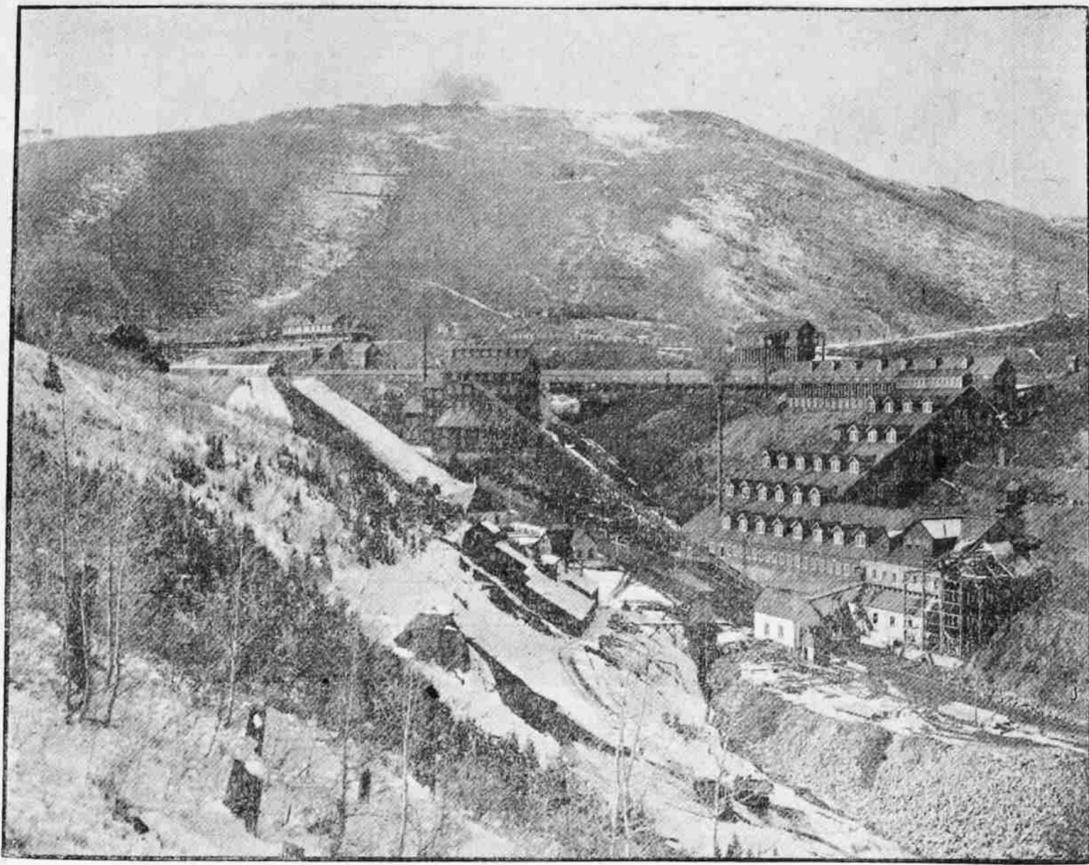
Without further comment, then, let us see why it is that the Silver King has attained its present proud position as the leader of all the producers in this great metal-producing State.

To begin with, the number of claims enrolled under the Silver King standard is 150—a goodly number, as any mining man would admit, if he had to do all the assessment work on them himself. These lie south and southwest of Park City, the mine proper being in the canyon farthest west of the three which contain the greatest mines of the district, and all of which converge at the Park.

Through the property there are found two great veins, one of which has not been opened up to any extent, but the other, a contact between lime and quartzite, is a vast chute, varying from two feet to as much as 125 feet in thickness. The average value of the ores taken from this ledge is given at 4.7 per cent lead, 60 ounces silver and \$5 in gold, although thousands of tons of it run far above that. This ore goes direct to the smelters of the American Smelting and Refining company at Salt Lake City and Pueblo. The second-class ore is first treated locally at the concentrating mill, which is so prominent in the illustration, and a description of which will be given later.

The gangue matter in the ore is crushed quartz, with considerable lime and more or less manganese.

The Silver King is essentially a deep mine, as no ore to speak of was found until a depth of 700 feet had been reached. Shafts are now down to the 1300



Silver King Mine and Plant. Mill at Right, Sampling Mill in Center, Hoist at Extreme Left.

level, and there are several miles of drifts, ore being taken from each of the various levels all the way down. In the mine proper some 350 men are employed, and the daily output is about 200 tons. The machinery for hoisting and handling this huge quantity of ore is, needless to say, of the costliest and most approved pattern. Indeed, if there is one thing more than another which distinguishes the Silver King plant from all its fellows, it is the superb manner in which it has been equipped. This applies not only to the machinery in the hoisting plant, compressor-room and mill, but in the character and perfect adaptability of its numerous buildings, as well as the great aerial tram which carries the ore down and the coal up in a series of buckets depending from huge steel cables suspended on stately towers built of structural steel on solid stone foundations, and which is always the first thing to attract the attention of the visitor to Park City. This tram is an example of the latest and best practice in that species of transportation, and is well worth a visit to Utah's greatest mining camp to inspect. It was installed by the Mine and Smelter Supply company, using the Finlayson patents, and although it has a capacity of twenty-one tons per hour, it re-

quires the services of but one man in its operation, everything except admitting ore into the buckets at the upper end being entirely automatic. Neither does it require any power to move the immense weights carried, other than that generated by the ore itself in its descent over the hills from mine to railroad receiving station. In fact, it develops about twelve-horse power in excess of requirements, and this is utilized in carrying back all of the coal used at the mine in the same buckets which bring the ore down. This operation is likewise automatic, except that gates have to be opened and closed by hand at the point where the coal is loaded.

Under the boilers in the various steam generating rooms at the mine the coal is fed to the furnaces automatically by means of the American underfeed stokers, thus doing away with all hand labor and securing a great economy of fuel, the combustion being practically perfect and free from smoke.

So much has been written descriptive of this plant that it is not our purpose to go over this ground again, but rather to describe the more recent changes that have been brought about.

The most extensive of these changes is the addition of the slime and dryer department. The form-

er is equipped with seven V-shaped settling tanks, five feet wide by five feet high by forty feet long, a forty-horse-power Ingersoll-Sergeant compressor, three large steel mud and air receivers, and two forty-eight chamber Johnson filter presses. Each of these presses has a capacity of fifteen tons per twenty-four hours. The slime water, which has been taken from the ore at various points in the process of concentration, is divided among the seven tanks. The flow through them is very slow, consequently the water comes off almost clear. The thick mud, or settlings, is tapped at the bottom, through molasses gates, and elevated to a storage tank above the presses. From here it is run through the steel receivers into the presses until the latter are full and the former nearly so; ninety pounds of compressed air is then used to force the remainder of the mud into the presses and the water out through the canvas. The water leaves the presses absolutely clear. The product of this department is shipped as a slime product, entirely independent of the regular concentrate.

After going through the process described, the slimes still contain about 22 per cent moisture. This makes it a hard product to sample and ship, also increasing the shipping weight. To reduce this moisture the company has installed a dryer of the Cummer revolving pattern. It is a cylinder forty-eight inches in diameter by twenty-five feet long, and can be made to revolve at different speeds to suit the character of the ore it is handling. The dust is collected in two hopper-bottomed chambers, one on top and one on the side of the cylinder. The slimes are first put through a chopping machine into which the dust is also fed to keep the knives clear and to prevent the pieces of the slime cakes from sticking together on the way to the dryer. From here they are conveyed through the cylinder and elevated to the shipping bins. The regular concentrates also go through this dryer, but are fed direct from the bin by a plunger feeder. The slimes and concentrates are dried to about 3 to 5 per cent moisture. The mill at present has a capacity of 100 tons of ore in ten hours.

The mill is now running two shifts and easily handles the output of second-class ore from the mine. Should this output be increased, the mill will put on the extra shift and run the twenty-four hours.

But seven men are required to run the mill proper, a crusher man, an oiler, a jig man, a jig carman, a table man and a table carman. Besides these there is a machinist and helper, a repair carpenter, fireman, one man on the presses and two on the dryer.

The ore received at the mill is concentrated in the ratio of three to one; that is, two-thirds of the weight is eliminated in the shape of worthless tailings.

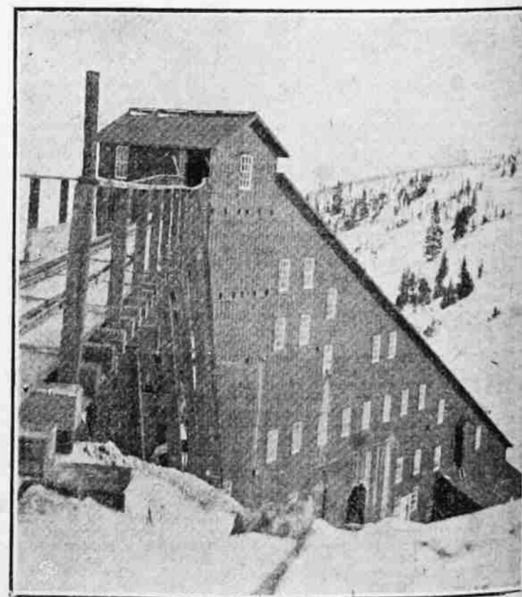
THE KEARNS-KEITH MINING COMPANY.

The year at the Kearns-Keith has been fairly satisfactory. A 150 ton mill, patterned after all that is best in the famous Silver King mill, has been erected, a cut of which accompanies this article.

The work for the most part has consisted in cleaning out and re-timbering the old Hanauer tunnel. New rails have been laid and a new compressor has been installed. The ore is at present being hauled out by horses. As prospecting progresses the ore mined is being put through the mill and shipped in the form of concentrates.

A bunkhouse with accommodations for sixty men, and a boarding-house have been erected.

The work is steadily progressing under the able direction of Superintendent Dailey, and before long the property may be expected to give a good account of itself.



The Kearns-Keith Mill.