

the Moyie group and the east end of the Lake Shore has been developed to a depth of about 500 feet from its apex and along a length of nearly six hundred feet. Like that of the other big ore shoots, higher up the hill, its width varies considerably, in this case from two feet to thirty feet. This ore shoot rises above the 1,500-foot level into ground as yet undeveloped, except by a raise to the surface. Above the 1,700-foot level it has a westerly dip, but below that it turns over and makes to the east, and at the 1,925-foot level is going down strongly under foot.

There are found in all three sections of the mine large lenses of clean ore that will run 65 per cent. lead and 30 to 50 oz. silver. At convenient points, where the work can be done to advantage, the ore is sorted and the best grade is shipped as crude ore. The remainder, together with other ore stoped, is conveyed to the company's concentrating mill, either directly by an aerial tramway or by a gravity tramway part of the way, and thence by a mule tram.

The length of the self-loading aerial tramway which connects the St. Eugene workings with the concentrator is 3,300 feet and the difference in elevation between terminals about 1,400 feet. The stationary cable is 1 1/4-inch on the loaded side and 1 inch on the return, while the hauling rope is 7-8-inch diameter. The buckets will hold 1,500 lbs. of ore, but ordinarily their load is 1,000 lbs. The capacity of the tramway is about 300 tons in ten hours.

A two-bucket gravity tramway conveys the ore from the Moyie or centre workings, down to the 1,500-foot tunnel, where it is dumped into an incline shaft following the vein to the 1,800-foot level, whence it is hauled in trains of 20 cars by mules along a surface tramway a distance of about 2,000 feet to the mill. Ore from the 1,500, 1,700 and 1,800-foot levels is similarly taken over this tram to the concentrator.

The St. Eugene mine, besides having its own concentrating mill, which is operated by water power, has a steam power equipment, including a 20-drill Rand air compressor driven by steam furnished by two 150-h.p. Babcock & Wilcox boilers capable of working at a steam pressure up to 165 lbs. to the square inch. A pipe line 1,700 feet in length conducts steam to the top of the shaft at the 1,500-foot level to operate an 80-h.p. hoisting engine. This steam plant also serves as an auxiliary power to run the mill machinery whenever there is not sufficient water available to drive the Pelton wheels. It is housed in a wood building with iron roof; dimensions 100 feet long by 50 feet wide.

The mill building is of wood throughout. It is 250 feet by 125 feet, and its height from the lowest floor to above the part where the aerial tramway delivers the ore is about 100 feet. Solid masonry walls support the several terraces on which the machinery stands on concrete foundations. The ore crushing in the mill is done by four sets of Cornish rolls and a Huntington mill. The remaining equipment includes 14 Hartz jigs, 10 Wilfley tables and 20 Frue vanners. The mill has a daily capacity of 400 to 500

tons of ore, as shown by its crushing and concentrating operations over a period of about a year. It is built alongside the C. P. R. Company's Crow's Nest railway, so is advantageously placed for shipping the products of the mine.

Just across the railway from the mill is a wood building, 150 feet long by 25 feet wide, containing a plant for the treatment of the slimes from the concentrator. At one end of this building, where the mill tail race passes, there are four big elevators. One of these is fitted with large cups perforated with 1/4-inch holes, through which the water and fine slimes pass, the coarse and barren tailings being taken to the top and discharged into a flume, going thence into the lake. The water and slimes drop into a tank from which the three other elevators, working two at a time, lift them to the top of the building to four parallel tanks, each about 150 feet long, four feet wide and four feet deep, and hopped into sections. These are for the purpose of settling the slimes. The contents of each tank are drawn off in turn and the slimes fed into slime-saving machines placed on the floor below. The result of this treatment of the slimes is a profitable saving of values that without it would be run into the lake with the coarser tailings and so be lost.

The St. Eugene concentrating mill commenced operations in the latter part of April, 1900, and the following month saw a beginning made to ship concentrates to the smelters. Prior to this shipments had been restricted to a total of between 600 and 800 tons of crude ore shipped. During 1900 66,507 tons of ore were milled, this quantity producing 17,201 tons of concentrates, having a gross value (with lead at \$18 per ton, and silver 58 to 60 cents per oz.) of \$1,100,994.45. The net amount received from the smelters was \$627,415, so that nearly one-half of the gross proceeds of the ore went to pay railway and smelter charges. During the first five months of the year 1901 there were milled 49,159 tons of ore, which produced 12,025 tons of concentrates. While the grade of the ore was similar to that of the previous year, the market prices of silver and lead were so much lower that the gross value (with silver at 58 cents per ounce and lead at \$13 to \$16 per ton,) was only \$616,561 and the net proceeds \$272,361.79. If the necessary calculations be made it will be found that owing to lower prices for silver and lead the gross value of the ore produced in 1901 was about \$12.54 per ton, as against \$16.55 in 1900, and of the concentrates \$51.27, as compared with \$64 for the previous year. Freight and treatment charges together averaged \$27.53 per ton of concentrates shipped in 1900, and \$28.62 per ton in 1901.

The concentrates produced are of a character very desirable for fluxing purposes. Up to July, 1902, this product was shipped to foreign smelters, most of it going to the United States, the remainder being distributed among buyers from England, Germany and Chile.