

the mine July 7th, and it was the latter part of August before the installation was completed and tested. During all this period the supply of power was sufficient for development work, which was steadily pushed. It was necessary, however, to defer steady ore production, and shipments did not begin until September 4th.

The reduction of costs effected by the contract system will appear in the cost sheet for the coming year. It does not show in the table of average costs for the past year, published herewith. These are excessive, because most of the work represented there was done under the old wage system. Moreover, it includes the fixed and general expenses during a more or less complete stoppage of nearly three months, and a subsequent period during which little ore was produced. The results of the new system are now clearly established by the work of several months, and the improvement shown is even in excess of what was expected.

In shaft sinking, 129 feet of contract work compared with the last 100 feet under the wages system, shows that the average rate of advance has been increased from 23½ feet per month to the present rate of 47½ feet per month. The cost for drilling, blasting, shovelling and timbering shows a reduction from \$65.30 per foot of advance to \$44.30 per foot. This comparison is on a basis of three shifts (12 men) daily, and a 30-day month.

In drifting, the rate of advance for headings has been increased from the former average of 52 feet per month by the wages system to the present average of 94 feet per month by contract. The comparison is on the basis of two shifts (4 men) daily, per heading, and a 30-day month. The cost of drilling and blasting shows a reduction from \$8.03 per foot of advance to \$5.41 per foot.

In stoping, by contract the average ore broken per man per shift for the month of September is 14.4 tons. The former average, under the wages system, was 4.3 tons. The cost of drilling, blasting and explosives for the same period was 37 cents per ton of ore broken, against a former average of 94 cents per ton under the old system.

The results of the new system have been equally satisfactory to the contractors, who have averaged good pay, considerably above the standard rate of daily wages.

The main features of the mine equipment are now completed. They include a 200 horse-power steam-gear hoist, large headworks nearly completed; a large compound condensing steam compressor of the latest design and with a capacity of 3,960 cubic feet of free air per minute; a plant of several small compressors; and a boiler plant of 700 horse-power; a timber framing plant and also a repair and machine shop are now under construction. A large amount of work has been done in the way of accessory appliances, water supply, plant for fire protection, ore bins, grading, construction of timber yard, etc., etc.

The rate of production which it is desirable to maintain from the mine is fixed by the amount of pay-ore reserves in sight. The importance of not

having ore extracted faster than it is exposed by the new development is self-evident. If, as is probable, the vein continues its productiveness at lower levels; the present rapid progress of development work should so increase these reserves that it will be possible to increase the rate from time to time.

It must also advise that, as soon as convenient, a suitable reserve be accumulated in the treasury. This is necessary to tide over the emergencies to which mining is always subject, such as fire, accidents, fluctuations in the ore shoot, additional plant, etc., etc.

In conclusion, I must add that we have been fortunate in securing the aid of an unusually able and energetic staff, and I take pleasure in expressing my appreciation of their earnest co-operation. The chiefs of departments are Mr. Carl R. Davis, E.M., mine superintendent; Mr. Alfred C. Garde, M.E., mechanical engineer, in charge of construction and machinery, and Mr. Charles V. Jenkins, in charge of the accounting and purchasing.

Respectfully yours,

EDMUND, B. KIRBY, Manager.

Comparative Statement of Work Done and Its Cost, General Expenses Included, Per Foot or Ton, to September 30th 1900.

	Oct. 1st, 1898, to Sept. 30th 1899.				Oct. 1st, 1899, to Sept. 30th, 1900.			
	Work done Ft. or Tons	Total Cost.	Cost Per Ft. or Ton	Work done Ft. or Tons	Total Cost.	Cost Per Ft. or Ton		
DEVELOPMENT WORK.								
General Work, Stations, Re timbering, Machinery Repairs, etc.		\$12,232.38						
Sinking—Main Shaft	34.0	34,041.19	\$101.57	228.5	\$5,216.50	\$121.63		
Sinking—Small Shafts or Winzes	39.5	10,975.95	59.31	103.5	6,107.39	59.01		
Raising	37.5	15,275.81	41.17	903.5	50,000.01	55.45		
Drifting	2,375.5	59,663.59	25.13	2,421.	64,942.85	26.81		
Total Development Work	3,410.5	\$135,179.92		3,656.5	\$105,124.25			
ORE PRODUCTION.								
Ore from Development Work, sold, Tons	63.5			4,034.94				
Ore from Pumps, Storage, etc.	6,833	\$19,054.59	\$3.91	20,459.85	\$73,591.27	\$3.59		
Stopped Ore Sold								
Total Ore Sold	6,896.5	19,054.59	\$3.89	24,524.89	\$73,591.27	\$3.00		
SUMMARY.								
Expense of Development (per ton of ore sold)	6,896.5	\$135,179.92	\$40.49	24,524.89	\$105,124.25	\$5.73		
Expense of Ore Production	6,896.5	19,054.59	2.89	24,524.89	73,591.27	3.00		
Total Expenditure	6,896.5	\$154,234.51	\$23.38	24,524.89	\$78,715.52	\$4.73		