35 to 40-ton charges in about 3 hr. each, the slimes being discharged with 26 per cent. of moisture. The alkali and the cyanide filters are arranged alongside of each other, so that the same operator handles both boxes from the switchboard placed between them. The filter plants are arranged on the semi-gravity plan; a 10 in. diameter centrifugal pump with 12 in. diameter suction and delivery pipes and hydraulically operated valves is connected with the cyanide box for transferring the excess pulp and solution wash. The clear solution from the cyanide filter box is delivered to the pregnant solution vat and the residue slime is dropped into the empty box, discharging by gravity to the residue dump.

The alkali filter box is connected to an 8 by 10 in. duplex double-acting piston vacuum pump with a displacement of 340 ft. per minute at 160 rev. per minute.

	Heads. per Ton.	Total Silver.		Extraction.	Average Residue per Ton.	Total Residues.
79 tons of	2,648.47 oz.	=209,229.13 oz.	at	99%	26.484 oz.	= 2,092.29 oz.
7,320 tons of	26.00 oz	=190,320 oz.	at	92%	2,080 oz.	=15,225.60 oz.
7,399 tons	54.00 oz.			95.66%	2.34 oz.	

The cyanide box has a 12 in. diameter by 10 in. stroke duplex double-acting piston vacuum pump with a displacement of 770 ft. per minute at 160 rev. per minute.

The pregnant solution vat is 34 ft. diameter by 8 ft. deep and the barren solution vat is 34 ft. diameter by 13 ft. deep.

Precipitation Department.

The original plans of this section of the mill were laid out with the intention of using zinc dust for precipitation and an equipment was installed of one 20-frame and one 10-frame 52-in. Merrill precipitation presses with 3-in. frames, together with the other necessary machinery.

Before the mill was ready to start, the experimental work on the use of zinc dust as a precipitant had disclosed that the cyanide solutions after precipitation rapidly deteriorated and fouled, so as to lose their dissolving efficiency. The investigation on this subject has been very fully explained in E. M. Hamilton's and J. J. Denny's articles and proves how impossible it would be to use zinc dust and get good results. After considering various other methods of precipitation, it was decided to use aluminum dust as the precipitant and modify the equipment accordingly.

The practical benefits gained by this change are:

No fouling of cyanide solutions, with a corresponding reduction in dissolving efficiency.

The working mill cyanide solutions are in a more active condition to dissolve silver than if they were freshly made up solutions which had not yet been used, showing in their favor an increased dissolving power of 0.35 oz. of silver per ton of ore.

A regeneration of 0.608 lb. of cyanide per ton of solution precipitated, equal to about 1.67 lb. of cyanide per ton of ore treated, or 408 lb. per day.

The recovery of silver precipitates averaging about 27,000 oz. per ton, or about 93 per cent. silver.

The pregnant solution is pumped to the precipitation room by a 6 by 9 in. vertical triplex pump, running at 54 strokes per minute, where it is clarified in a sand filter before flowing to the special tank arrangement for mixing the aluminum dust in the cyanide solution. It is then pumped into the precipitation presses by another 6 by 9 in. vertical triplex pump. The 20-frame press takes about four days to fill up with precipitates when handling about 550 to 600 tons of solution per day with a head assay running about 8.25 oz. and a tail assay 0.10 oz. The aluminum dust consumption over a nine months' period averages about 0.556 lb. per ton of ore treated, or 1 lb. (avoir.) dust=45.26 oz. (troy) silver precipitated, or 1 lb. (avoir.) dust= 3.104 lb. (avoir.) silver precipitated. The precipitates are sent to the refinery, where they are melted and refined in a reverberatory furnace, as described in R. B. Watson's article, and eventually shipped as bullion at 997 to 999 fine.

Extraction.

The following figures represent the average extraction obtained from a run-of-mine ore of 54 oz. of silver per ton, in the combined metallurgy of the high-grade and low-grade ore mills:

To this will be added the further recovery of 85 per cent. of the silver, made on the sale of the above 26.484 oz. of residue.

The working mill costs are here represented in the percentage that the various most important expenses bear to the total cost.

Labor	28.207
Cyanide	19.943
Electric power	14.542
New construction supplies	5.586
Aluminum dust	4.761
Aluminum ingots	4.709
Caustic soda	1.811
Aluminum plates	1.401
Refinery fluxes, fuel oil, coke, etc.	1.332
Pebbles	1.284
Battery supplies	1.013
Lime	0.579
Sundry supplies	14.832
	100.000

The annual meeting of the Western Coal Operators' Association was held at Fernie, Crowsnest district, British Columbia, on January 9. Those present were Messrs. Lewis Stockett and W. F. McNeill (Secretary), Calgary; John Brown, Hillcrest; A. C. McGibbon and O. E. S. Whiteside, Coleman; Jas. Howard, Taber; J. C. Reid, Lethbridge. These are all Alberta members of the Association. Owing to illness, Mr. W. R. Wilson, manager of the Crowsnest Pass Coal Co., was unable to attend.

A press despatch from Washington, D.C., January 15, says: Preliminary tests of Alaskan coal from the Bering River district have been very discouraging to officials who hoped they might develop a new fuel supply for the navy. Rear Admiral Griffin, in charge of the investigation, has reported to the House Naval Affairs Committee, that the Bering river coal tested so far has fallen so far under expectations in practical use as to be of no value, but from the Matanuska fields and other sections of the Bering district from which coal is yet to be tested, the navy is hoping for better results.