

determined. Other chutes have been developed by the main level, one in particular of which yields high grade ore, mixed sulphide and silicious material with considerable lime-rock. Mr. Durand points out this as capable of yielding abundant ore of a value of \$50 per ton, should he require to produce for shipping. It is not Mr. Durand's intention to stope ore in this mine, until he has it thoroughly developed, his intention being to sink a perpendicular working shaft through this main level, and for 200 feet below, opening up lower levels. It is thought by the management that this mine will supply a smelter with self-fluxing ores. Before admitting that, I am inclined to think that lacking copper, the iron will not supply the silica in the ore for run-of-mine.

Above these mines, however, is a belt of copper ore, several locations on which will doubtless, with development, supply quantities of high grade copper ore, that is, will sort to over 12 per cent. Of such mines, perhaps the Cliff and Consolidated St. Elmo may be considered the more prominent, but even these have not developed sufficient depth to prove their ore chutes. Such ore in these mines sorted to 12 per cent. copper will vary in gold between \$8 and \$20 per ton, and will be highly important as aids to any smelting enterprise in the country.

The surface at the Cliff has an enormous exposure of copper ore averaging six to eight per cent. copper and \$30 gold per ton. No depth has been obtained on these, but it is possible to quarry from the surface a very large quantity of such ore. A lower tunnel on this property, now being driven though not yet reaching the chutes of copper ore, has passed through a body of pyrrhotite 90 feet long by 20 to 30 feet wide. This carries no copper, and probably not more than \$5 in gold per ton.

On the St. Elmo Consolidated, the main tunnel, 270 feet long, has been driven by the St. Elmo Company to develop their property. In the St. Elmo Consolidated ground it has passed through a well mineralized body, with chutes of strong copper ore four to five feet wide apparently, but having at the end only 150 feet to surface, the depth is hardly sufficient. On the St. Elmo other workings are, drifts 90 feet and 220 feet long, besides open cuts, cross cuts and shafts. There is apparently abundant ore, carrying excess of iron, 6 per cent. copper, and \$10 in gold per ton. Other mines of promise on this belt are the Red Mountain, Mabel, and View.

Another important mine is the Josie, which has on the Josie side 650 feet of tunnel and on the Poorman side 300 feet, one half of which is through Josie ground. This has developed two stopes which have, above this level, probably 25,000 tons of ore, that so far as development shows will probably average three per cent. copper, \$30 in gold per ton, with excess of iron. A shaft has been sunk, and from it levels driven to cut these ore chutes, which will develop large quantities of ore. This mine has done very little stoping, it being the policy of the management to keep development well ahead of production. The Columbia and Kootenay has large bodies of low grade ore with occasional chutes of what at present is considered shipping ore. A carload selected carried \$50 in gold per ton. Another lot shipped to Nelson, being run-of-mine from shaft, carried \$18 in gold per ton. A third, being run-of-mine from tunnel, carried \$23 in gold per ton. Of the low grade ore, Mr. King, the manager, says he can extract at a cost of fifty cents per ton 300 tons daily that will probably average over \$10 per ton.

The Jumbo has a prospecting level about 390 feet long. This, while passing through much of what might be styled ore, has developed two good chutes, one ten feet, the other twenty feet wide—the former being probably excess silica and carrying the higher value in gold, while the latter is excess iron, but still with a good gold value—Mr. Haskins says over \$20 per ton. The end of this tunnel has but 115 feet to surface. A lower tunnel has been driven 150 feet, which gives an additional 185 feet of depth perpendicularly.

The Giant is an undeveloped prospect near the Josie, having but twenty feet depth in ore. This ore, however, has carried, according to the samples taken and assayed by Mr. Roy Clarke, between \$30 and \$40 in gold per ton.

The Nickel Plate has 170 feet of shaft and 300 feet of drifts developed a small vein of ore, which, however, carries from \$60 to \$80 per ton in gold. A cross-cut from this level has proven the existence of two other apparently parallel veins, which also carry a high value.

The Crown Point, before it was taken hold of by the present owners, had a shaft 80 feet deep in shipping ore, and 50 feet without ore. From this they drifted 200 feet along a porphyry dyke, developing nothing. The ore in the shaft is from five to six feet wide, of solid pyrrhotite, and will carry probably over \$20 per ton in gold. The present company have started a new shaft, and tunnel to connect, at a depth of 172 feet. This tunnel is now 180 feet long, with probably 150 feet to drive. They propose to sink 200 feet below this tunnel and open levels before stoping, which probably means at least twelve months' work before we may look for production.

Another mine that will probably produce, if low grade ore can be handled, is the Monte Cristo. If, however, this ore continues to increase in value, with depth as heretofore, it will not be ranked with low grade mines.

These mines will produce smelting ore, and I am firmly convinced that a sufficient variety may be got to produce a self-fluxing charge.

In addition to these, there is on Sheep Creek a belt of mines that will produce free milling gold ore. Of such, the "O. K." mine is now producing ore to supply a ten-stamp mill, and is yielding to the plates \$15 per ton, in addition to high grade concentrate.

The "I. X. L." has recently cut a similar vein, and the Golden Drip has reason to expect a like good fortune.

I had read of Mr. John E. Hardman's criticism of Rossland ore, and mailed you a paper containing a reply to that gentleman, which deals very ably with some of his expressed opinions. I now wish to criticise other of his statements. He says "pay ore" in Rossland at the present time means \$18 per ton or better, and quotes the cost of freight and treatment at \$11 per ton, adding cost of mining, developing and superintendence from \$7 to \$10 per ton. With such ore bodies there is no reason why ore should not be produced in quantity for from one to three dollars, and many of these mines are developing with the expectation that a lower treatment than \$11 will soon be obtained. I feel very confident in estimating that the near future will see a treatment of \$8 per ton for ore delivered in bins at the railroad, and this will make \$10 to \$12 ore valuable according to its facilities for mining. Mr. Hardman also says pyritic smelting is not feasible because the ore is a pyrrhotite, and not a pyrite, and has no sulphur to spare. Authorities having experience in pyritic smelting, so far as it has gone, tell us that pyrrhotite is a desirable ore for pyritic smelting. The best authority on this subject is probably Robert Sticht, now in Tasmania. He says, "the cupriforous pyrrhotite of the Ely belt in Vermont, and the massive copper-bearing pyrites of the Verde mines in Arizona possess an abundance of ores exactly adapted to a pyritic process." And again, "Both pyrrhos tite and matte make excellent materials for this process, pyrrhotite affording practically about as much heat as does pyrite, owing to the loss of the first atom of sulphur in the latter mineral by volatilization as metallic sulphur. The oxidation of the iron probably furnishes as much effective heat as the burning of the remaining atom of sulphur." (See Peters' "Modern Copper Smelting," 7th edition, pages 387, 394).

R. R. HEDLEY.

Nelson, 10th December, 1896.

MONTREAL IN WINTER.

You ask for a newsy letter, telling what is going on in the old city, but it is hard to find very much concerning business to write about that is really new, or would prove interesting at this holiday season, when most men's minds naturally turn to matters of lighter vein, seeking relief from the daily grind of office or warehouse, and all their attendant worries.

With regard to the commerce of the year: In general trade 1896 has certainly not proved a year of money making. In visiting wholesale houses in the various lines of business, few are found who claim to have made any substantial gains. The year has been marked by extreme competition and cutting in prices, with a full average of failures, and many of the larger merchants say that if the balancing, now in progress, shows a fair interest earned on the capital invested, it is hardly more than they expect. In this connection it may be noted how the once familiar names of the older and more conservative houses of Montreal are gradually disappearing from the mercantile lists. Within the year the staunch old dry goods house of Mackay Bros. have finally withdrawn from business altogether, as also have Kinloch, Lindsay & Co., whose name was a synonym for fair and square dealing; the Greene & Sons Company, among the pioneers of the fur and hat trade, have decided to retire, and a couple of the old French Canadian dry goods houses are gradually closing out their business interests.

Manufacturers have been even less favored than jobbers. The directors in some of the large woolen companies have had to face positive loss, though for this state of affairs they are themselves largely blamable, through allowing the competition in prices and terms to be carried to such extremes; cotton prices have not been wholly satisfactory; shoe manufacturers, as a rule, do not claim to have made any money to speak of; a falling off in sugar dividends is anticipated, and iron manufacturing interests have been generally depressed, with the exception of a few concerns who make specialties, such as electric plant, biscuit machines, cigarette machines, etc., for which latter lines there is a foreign demand. Among our various electric companies there has been unusual activity, and when the work of developing the immense water powers on the Lachine and Chambly rapids, now well in progress, is completed, Montreal will probably be as well favored with regard to prices for electric lighting and power as any city on the continent.