

local directors, and at 1,100 feet a mineralised reef was struck, as anticipated, which is now being driven upon.

*Klondike Corporation, Limited.*—There is practically no change in the position of affairs of this company since last report.

*Melkedalen Copper Mines, Ltd.*—The position of this enterprise is fully set out in a circular just issued to the shareholders of that company. Mr. Harman and Mr. Brooke Mee visited the property in September last, with Mr. Rickard, the consulting engineer, and feel assured that this company's interest in that undertaking is of great prospective value.

*Le Roi.*—Cabled returns for November: "Shipped from mine to Northport during the past month 15,576 tons, containing 8,380 oz. of gold, 9,600 oz. of silver, 407,400 lb. of copper; estimated profit on this ore, \$75,000. Shipments from second-class dump suspended for the winter months."

*Giant.*—Cable received 5th December:—"Output for month of November, 215 tons. Return from smelting works \$12 net per ton."

*Montreal & Boston*—Officials of the Montreal & Boston Copper Company have received information of the discovery of an important body of ore in the Crown silver mine, belonging to that company. The ore was found at the 150-foot level, and thus far shows a value of more than \$11 per ton or nearly double the average value of the ore hitherto taken from the mine. The management will at once increase the daily output to about 200 tons. This the company will be able to handle when its new furnace is completed, which will be on or about Feb. 1.

## CENTRE STAR.

The following is excerpted from Mr. Kirby's annual report referred to editorially in this issue of THE REVIEW:—

The condition of the Centre Star mine has much improved during the past year. The reserves of pay ore have been increased. The heavy decline in the price of copper has been more than offset by the reduction in smelting rates and the satisfactory solution of the problem of treating the low grades by milling now makes it certain that the large bodies of this ore exposed throughout the mine will soon be available.

There is no change to report above the 4th level.

The 5th level has developed within the main ore shoot two ore bodies which are now evidently continuous through the block of the 4th level second and third ore bodies described in the last report. Of these 5th level ore bodies, one is found to have large dimensions, extending 125 feet along the vein, averaging 29 feet in width and \$8.25 smelter's gross assay value. The other is 75 feet long, 9 feet wide, averaging \$16.00 smelter's gross assay value. These bodies extending below, terminate at some point in the block between 5th and 6th levels.

At the 6th level, the vein was found to branch. The north branch followed the previous place of the vein in which the inclined shaft is located, while the south branch assumed a more vertical position, departing at the shaft so that at the 8th level it stands about 200 feet south of the shaft station. The north branch so far as tested on the 6th, 7th and 8th levels is poorly mineralized and without pay values. The heavy mineralization is found to have followed the south branch, which is evidently the main vein. Its junction with the north branch has been found on the 6th level to lie about 450 feet east of the shaft. The time required to reach the vein in its new position by cross cutting back of the shaft stations has much delayed the exploration on the 7th, 8th and 9th levels. It is now well exposed on the 6th level, which extends through the greater part of the length of the claim. The south vein is but partially opened by the 7th level, while the 8th level has only just begun, and the 9th level cross-cut has not yet reached the vein. On account of this delay, it was deemed best to suspend shaft-sinking until the three lower levels were more advanced.

The 6th level pay ore, so far as now known, comprises the aforesaid downward extensions into its block of the two-fifth level bodies. There is also a body 355 feet east of the shaft, which as cut by the level is 50 feet long and the full width of the level, averaging \$7.95 per ton. With this exception, the level is generally in low grade ore and at various places in its course east of the shaft it cuts bodies of milling ore. These are evidently large in quantity, although their precise limits and grade cannot be ascertained until they are opened out for stoping.

The 7th level has so far exposed no pay ore, but has cut a body of milling ore of unknown dimensions.

The few feet of drifting done on the 8th level has been in low grade ore, but at the date of writing (Nov. 12) the level west from the shaft cross-cut has passed through 25 feet of high grade ore, averaging \$16.00 smelter's gross assay value. The heading is now in low grade ore.

The ore sales during the year are 11,087 tons, averaging \$13.31 smelter's gross assay value. The average assay contents were: Gold, .64 oz.; silver, .56 oz.; copper, 1.2 per cent. The present reserves of ore payable under the new smelter's rates are estimated at about 100,000 tons, averaging \$10.33 smelter's gross assay value (pricing copper at 12 cents, instead of 16.25 cents as in former reports). These reserves include only ore so exposed that its limits and grade can be estimated with reasonable certainty. They do not include the downward extension of the 5th level ore bodies into the 6th level block, nor do they include the better portions of milling ore bodies which in a number of places are known to carry enough value to make them payable under the new smelter's rates.

The development of the mine has from the beginning continued to expose large quantities of ore too low in grade for smelting, but rich enough to promise a handsome profit to successful milling. Now that the difficulties of such treatment has been overcome, these low grade masses will soon be available. It is impossible to present any reliable estimate of their quantity or precise value, because their limits have not been clearly defined, and, until milling begins, they cannot be accurately sampled without excessive expense. The process of stoping them for the mill will undoubtedly develop much ore of higher grade which is not now disclosed by the workings.

## CON. LAKE SUPERIOR.

The following is extracted from the first annual report covering the year ended 30th June last:—

### IRON AND STEEL OPERATIONS.

Within the past year the operations of your Company have been very largely increased by the starting of the Bessemer steel works and rail mill of the Algoma Steel Company, Limited. The entire mechanical equipment of this plant was installed and practically ready to run at the end of 1901, but owing to delay on the part of the contractors for the structural work and the lack of girders and columns to support the cranes, without which the mill could not be operated, it was impossible to put this plant into operation before the close of the fiscal year, since which time it has been running continuously. The starting of this mill was an event of no little importance in the history of Canada, as it marked the beginning of a new industry of great magnitude and the rolling of the first rail in the Dominion from Canadian Bessemer steel, made from Canadian pig iron smelted from Ontario iron ore.

The steel produced thus far in the Algoma works has been made from purchased pig iron, of which a large supply was acquired in advance of the starting of the plant at advantageous prices, as the blast furnaces of the company have not yet been completed. Two furnaces, one to use charcoal and the other coke, are under construction and are now well advanced towards completion, to be followed by additional furnaces as may be required. Like everything else dependent upon iron and steel manufacturers for material, the construction of these furnaces has been greatly delayed. The completion of the blast furnaces will give to the Company its own supply of pig iron which can be produced profitably at a much lower price than it can be purchased, and which, furthermore, will enable the Company to earn the bounty which the Canadian Government pays on pig iron made from ore mined within the Dominion, only the bounty on steel now being earned.

The Bessemer steel works and rail mill now in operation constitute a thoroughly modern and well-equipped plant. Its converting capacity is sufficient to produce 600 tons of Bessemer steel ingots daily, while the blooming mill and rail mill will finish from 1,000 to 1,200 tons per day. The arrangement of the plant is such that material can be handled at a minimum labor cost, and an unusually large output per man is thus obtainable. The availability of electric power at much lower cost than steam is one of the great advantages enjoyed by this plant. With the exception of the two main engines, which drive the blooming mill and the rail train, and the blowing engines of the Bessemer steel department, electric power is used throughout the works for the operation of cranes, live rolls, tables, saws, drills and straightening presses.

There are few plants so well arranged and so efficiently equipped and with the completion of the blast furnaces, which will furnish an independent supply of pig iron, it is believed that these works will be in a position to compete successfully with the best equipped mills in the manufacture of steel rails.

Renewals on the 18,000 miles of railroad now existing in Canada, and the requirements of the new construction which is bound to increase largely under the progressive policy of the Dominion and Provincial Governments, will furnish a sure market in Canada for steel rails far in excess of the capacity of this first mill, as indicated by the orders which your Company already has booked.

*(Iron Ore Mines.)*—The iron ore operations of your Company are probably the most important productive undertakings, not alone on account of the profits on the mining and sale of ore, but also because of the profitable business which the transportation of this material furnishes to your railroad and steamship lines, and beyond this the completion of the blast furnaces will make these mines the independent basis of the steel industry at Sault Ste. Marie.

Iron ore shipments thus far have been confined to the Helen mine which has fully justified all expectations as to the extent of the deposit and the quality of the ore. The shipments during the fiscal year of your Company ended 30th June, 1902, amounted to 341,750 tons as compared with 91,436 tons during the preceding year.

Since the beginning of the present season, work at the Helen mine has been devoted largely to the systematic development of the property in such manner as to permit continuous shipments much larger than have been possible since the first opening of the mine. Shafts have been sunk, and at different levels workings are being extended in a solid body of ore, which will permit the mining of ore of higher grade even than was indicated at the surface. The first ore is now being raised from underground, and an increase in the output is now made possible.

Lake Boyer, on the shore of which the Helen mine is located, has been drained, and a large body of surface ore has thus been uncovered. An extensive deposit adjoining the Helen mine which was not included in the property originally purchased, has been acquired by your Company, and this will permit the extension of operations at the Helen mine to greater advantage. The purchase of this adjacent property, with other mining claims held by the same owners now gives your Company complete control of the Michipicoten iron range, and provides not only opportunity for present mining operations, but also abundant reserves for the future. Your Company will be in a position to meet the demand for iron ore for a term of years extending so far into the future that the time of its termination need not be considered.

The extension of the railroad to the Josephine mine, ten miles beyond the Helen mine, now affords an outlet to the second of your iron ore properties that is under development. At the Josephine mine a shaft has been sunk and the development of the deposit is being carried on, so that the shipments once begun can be continued without interruption. The beginning of another season will see this mine ready to make shipments of high-grade Bessemer ore.