

GOLD IN CANADA.

It is well enough known that much Gold exists in Lower Canada, and in some places to an extent that makes digging for it amply remunerative to the laborer, but there has been much uncertainty felt as to whether gold-mining could be carried on systematically and on a large scale, with results sufficiently profitable to secure its continuance. We, therefore, receive with much pleasure any accession to our knowledge on this subject. The Reports of Mr. Michel and Dr. Hunt, to which we made brief reference in our last impression, throw much light on the question under consideration.

Mr. Michel, a careful observer and practical miner as well, has, as we have already stated, come to the conclusion that gold-mining, properly conducted, would be profitable in many places. He says that the researches of the explorers of the Chaudière and St. Francis Valleys, "rewarded in many places by unlooked-for success, have placed this region among those in which the systematic working of the alluvial deposits and of the gold-bearing quartz veins, (aside from false hopes and extravagances,) may become a regular industry, having its alternations of success and failure, with chances of exceptionally large yield."

The abandonment, to a great extent, in 1865, of the alluvial gold deposits by the workers, who were so numerous in 1864, he attributes partly to the inactivity of the large organized companies, and partly to the speedy exhaustion of the Gilbert River, which, after the extravagant allusions of some, and the wilful misrepresentation of others, made a reaction inevitable, but he thinks the earlier over-wrought expectations and the present despair equally unwise, and unjustified by the facts. A vast field for exploration is open in Lower Canada, where hitherto the researches have been very limited; and reasoning from the positions in which gold has been obtained in California, Equatorial America, and Australia, we may expect to find the precious metal not only in the beds of streams, their shores and flats but also in the dry valleys and on the slopes of the hills. No trials have as yet been made involving much outlay, the explorations made being chiefly by individuals, or small local associations, or native companies, who have employed but a limited capital. "Up to the present time, no single mining enterprise, on an important scale, has been undertaken in this region, nor has any one attempted to put in practice the economical and powerful modes of working by hydraulic processes."

With regard to the working of quartz veins, Mr. Michel considers that their profitable working can only be determined by actual experiment on a large scale involving, of course, considerable risk of loss. As says, either chemical or mechanical, can only be useful in approximating to the value of the quartz; although multiplied assays from the same vein are important in establishing the auriferous character of the quartz, and in proving its constancy. "Nevertheless," he says, "it is much to be desired that serious working trials of the gold-bearing veins in Lower Canada should be made, the risks would diminish with experience, and, besides, it should be said that the facts already known as to the auriferous character of several quartz veins in this region are far from discouraging." Discussing the respective merits of quartz mining, and the working of alluvial deposits, while not depreciating the former, he gives a decided preference to the latter, as necessitating the employment of much less capital, as being more easy and less uncertain, and, consequently, in all respects best adapted to the means of Canadian companies. He thinks it should be a matter of regret, if the working of the mineral wealth of Canada were to be entirely abandoned by its people to foreign capital and foreign enterprise. In recommending the search for alluvial gold, he is also influenced by the consideration of the manner in which it is usually distributed, the occasional very rich yield, and, lastly, the possibility of discovering the veins which have furnished the precious metal. Mr. Michel himself never employed the hydraulic method in use in California, but he has often, in working alluvial gold mines in South America, employed rapid currents of water to lay bare the auriferous stratum, after which the current was reduced, but still sufficient to break up and transport the auriferous material, washing it in a series of little channels or sluices arranged in different levels, and in a broken line on a slope. The same method is in general use in South America.

The method used in California is thus described by

Mr. Simolin, a French engineer, and is recommended both by Mr. Michel and Dr. Hunt, as the easiest and best adapted for use in the auriferous slopes of the Eastern Townships. He says:—

"In the vicinity of Nevada, in California, they employ upon the placers the hydraulic method which has already been employed on a small scale on the banks of the Merced, and at Knight's Ferry. It is at Nevada that this method was invented, and there that its operation can best be studied. By means of a violent jet of water under a very high pressure, which the miner directs from a pipe like that of a fire-engine, great hills of alluvion are demolished; earth, gravel and boulders, come tumbling down with a crash, and the workmen have to take care lest they be buried in the ruins. The materials thus dis-aggregated, fall into a canal constructed like an enormous sluice, and called a flume. By this means the poorest gravels, in which the presence of gold would hardly be expected, are washed with profit."

Dr. Hunt gives in his report a sketch of the mode in which chemical assays of gold-bearing quartz are usually made. Ordinarily, from 600 to 1,000 grains' weight of the quartz in fine powder, is mixed with the same quantity of soda-ash or pearl-ash, and as much oxyd of lead, with a small proportion of charcoal. These are intimately mixed, and heated in a covered crucible to bright redness for about half-an-hour, then poured into a conical mould, where they form, on cooling, a greenish glass, with a button of soft lead at the bottom. The lead is then heated to a strong red heat in a muffle-furnace, in small cups of bone-ash, which absorb the dross or oxyd of lead as it forms and melts, until at last there remains nothing behind, unless gold or silver be present; these metals resisting the oxydizing process. This latter process is termed cupelling. If there be silver and no gold, the silver is at once dissolved by nitric acid, which does not attack gold, but if there be much gold present, it is melted before the blow-pipe with so much silver that the gold shall form no more than one-fourth part of the alloy, and this compound, when treated with nitric acid, leaves the gold in a pure state and ready to be weighed. Quartz holding a troy ounce of gold to the ton, is stated to be a profitable ore, and in some places, according to estimates made, a vein yielding as low as ten dollars to the ton may be wrought with profit. Dr. Hunt gives the results of assays made of quartz from twelve different localities. In one the average was \$25 66 to the ton, in another \$21 71; a third giving \$15 16, and the fourth only \$5 76; no traces of gold being discovered in the remaining eight specimens submitted for assay. Dr. Hunt, however, explains that these assays are no true test of the distribution of gold throughout the rock, although they establish the value of each specimen and the probable value of the surrounding material, and instances the fact, that although several specimens yielded large quantities of ore to Dr. Hayes, an eminent American chemist, he could not trace any gold in specimens taken from the same vein; while on the other hand, he found far larger proportions, and gold in some which had not yielded gold to Dr. Hayes and others. From data furnished to him by Mr. Michel, and his own experience and observation, he comes to the conclusion that many parts of the gold-producing region of Canada are adapted to the hydraulic process, and that it abounds in gold gravel beds, "to which that process might be applied with advantage, even though the proportion of gold in them was only a tithe of that in the flats of the Du Loup." The streams and rivers of the Eastern Townships could be readily dammed and utilized in this way, and gold obtained where its existence now is even scarcely surmised.

GREAT WESTERN RAILWAY.

THE following is the Report of the London Board of Directors of the G. W. R. of Canada.

The receipts on the capital account during the half-year amounted to £9,381 12s 4d, and the total receipts to 31st January, 1866, were £45,155,781 8s 2d. The aggregate expenditure to the same date amounted to £5,161,893 6s 6d, leaving a balance to the credit of capital account of £3,588 1s 8d. The outlay on capital account during the half-year amounted to £3,526 8s 9d, and consists of proportion of expenditure chargeable to capital on rebuilding timber bridges in stone and iron, cost of fish-jointing six miles of rail; outlay on new ferry-boat on Detroit river, new station at Toronto, and extension of the line along the Toronto Esplanade; cost of 2½ miles of line to be used by the Erie and Niagara Railway, &c. The receipts and expenditure on revenue account for the past half-year are as follows:—Gross receipts £387,039 6s 1d; working expenses, including maintenance of way, taxes, insurance, and rent of suspension bridge, £146,938 5s 8d, leaving £240,101 5s 5d, from which there has to be deducted—interest on government loan, £17,493 5s; interest on bonds, &c., £32,799 10s 9d; loss on conversion of American money £73,816 17s 11d; renewal of rails, sleepers, bridges, &c., £23,065 2s 2d. Balance

from half-year's working, £93,421 4s 7d, add surplus from last half-year, £3,265 7s 6d; leaving £96,686 12s 4d. From this the directors recommend a dividend at the rate of 6 per cent per annum, free of income tax, which will absorb £58,226 6s, leaving a balance of £11,000 6s to be carried to the credit of the current half-year. The loss incurred on the conversion of American funds during the half-year amounts to the sum of £73,816 17s 11d, this includes the conversion of \$242,164 44c of American money brought over from the previous half-year, and there remained on January 31, 1866, a balance of \$114,657 72c in American funds unconverted, or a reduction of \$127,600. During the past half-year the aggregate American funds converted exceeded by \$412,145 25c the amount converted during the previous half-year; and by \$357,293 76c that in the corresponding half-year. The price of gold has ranged from 148½ to 157½. The average cost of the gold purchased has been 144½.

[The following figures are from a table given in the report. They show the total receipts, expenses, and per centage of expenses on the gross receipts for five half-years past.]

Half-year.	Total Receipts.	Total Expenses.	Per centage of Ex'ps. on Re'ts.
	£ s d	£ s d	
Jan'y, 1864 ..	301,631 8 10	135,878 16 0	45 05
July, 1864 ..	311,959 19 2	110,188 10 3	44 61
Jan'y, 1865 ..	312,729 10 10	137,487 6 2	43 95
July, 1865 ..	254,565 7 8	132,486 12 3	46 66
Jan'y, 1866 ..	387,039 6 1	146,938 5 8	37 97

The gross receipts for the six months ending January 31st, 1866, were £387,039 6s 1d, against £312,729 10s 10d for the corresponding half-year of 1865, being an increase of 22½ per cent. In the aggregate the passenger receipts for the half-year just ended show an increase of £51,005 13s, the freight and live stock receipts an increase of £23,197 6s, and rents an increase of £106 16s 3d; being a total increase of £74,309 16s 3d, as compared with the corresponding half-year ending January 31st, 1865. The working expenses are 37 97 per cent as compared with 43 95 per cent for the corresponding half-year, showing a reduction of about 6 per cent. Thus the additional gross traffic of £74,309 16s 3d has been earned at an increased cost for working expenses of only £9,600 19s 6d. The new station at Toronto has been opened for public use. The traffic to and from Bothwell on the main line has greatly increased, consequent upon the progressive development of the numerous petroleum wells in that and in the Hamilton oil districts. The directors are strongly urged to construct the projected branch line, for which legislative powers were granted in May, 1863. In the matter of the Commercial Bank, notice of a new trial in Canada has been given by the Bank; but there is a prospect of an equitable adjustment being arrived at without further litigation. The accounts show that during the last half-year the cost of re-rolling rails at the Company's rolling mills has been reduced to \$22½ per ton. The production since the opening of the mill on the 1st August, 1861, has been 5,689 tons, at an average cost of \$24 per ton. The price formerly paid by the Company at Toronto was \$26½ per ton, exclusive of the cost of hauling from Hamilton to Toronto, which averaged \$1 60 per ton, making the total cost \$25 60 per ton. The Company has thus saved \$4 per ton on 5,689 tons re-rolled since the erection of their own mill, being a total saving of \$22,756 in the last eighteen months. The directors are glad to report that the railway bridge over the Hudson river at Albany, connecting the New York Central with the Hudson River and Western of Massachusetts railroads, has been completed. The opening for traffic of this bridge, it is hoped, will obviate in future the impediments which have periodically arisen in the transportation of through traffic to the seaboard, in consequence of the ferry-boats being unable to ply through the ice during the winter. The narrow gauge track about to be laid down on the Great Western main line will thus have an increased value as a through route. The gross earnings of the Detroit and Milwaukee railroad for the year ending December 31, 1865, were £347,616 17s, and the working expenses amounted to £205,682 14s 1d, leaving a net revenue of £141,933 23s 11d. Of this surplus the sum of £33,741 4s 6d was absorbed in the payment of interest on all descriptions of mortgage bonds of the Company. The gross earnings for the previous year, ending December 31, 1864, were £271,932 1s 4d; the working expenses, £161,799 14s; and the net revenue, £90,132 1s 4d.

British Revenue.

The following is a statement of the revenue of the United Kingdom for the years ended 31st March, 1865 and 1866, with the sources from whence it has been derived:—

	Year ended March 31, 1866.	Year ended March 31, 1865.
Customs.....	£21,276,000	£22,572,000
Excise	19,788,000	19,658,000
Stamps	9,560,000	9,630,000
Taxes.....	3,350,000	3,292,000
Property Tax.....	6,300,000	7,528,000
Post Office	4,260,000	4,100,000
Crown Lands	320,000	310,000
Miscellaneous	2,878,292	2,993,436
Total	67,812,292	70,313,436

Railway from Sarnia to Oil Springs.

A preliminary examination has been made by engineers of the G. I. R. Co. of the route between Oil Springs, Petrolia and Point Edward, with the intention of giving railway facilities to the oil regions. It is also understood that the Great Western Railway is about to open a line from Bothwell to Oil Springs, which will then have railway communication with all the world.