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MINING REVIEW

VOL. 3.—No. 5.

1885—OTTAWA, JULY—1885

VOL. 3.—No. 5

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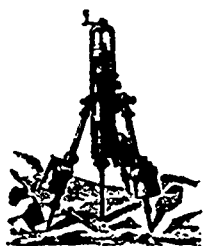
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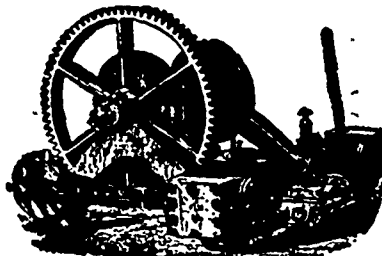
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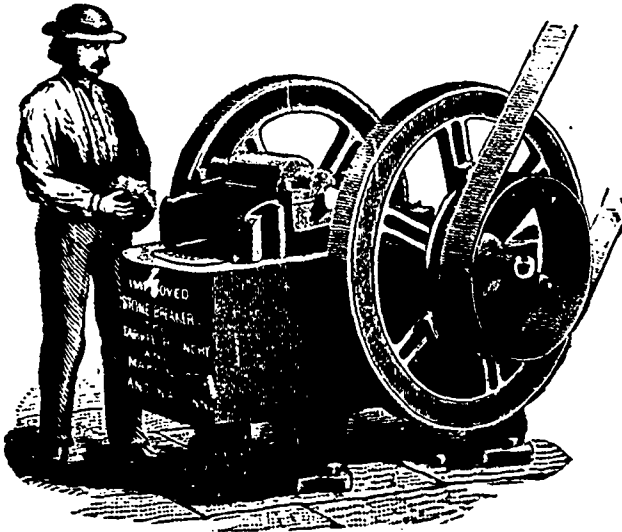
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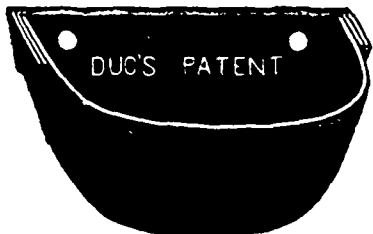
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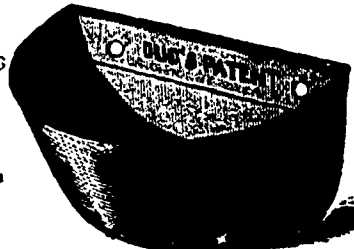
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SEALED TENDERS, addressed to the undersigned, and endorsed "Tender for Supplying Coal for the Public Buildings, Ottawa," will be received at this office until Wednesday, 1st July next.

Specification may be seen and form of tender obtained, on and after Monday, the 15th inst., at this office, where all necessary information can be had on application; also at the office of Jas. Nelson, architect, Montreal, and at the Dominion Public Works office, Post Office Building, Quebec.

Each tender must be accompanied by an accepted bank cheque for the sum of \$250,000, made payable to the order of the Honorable the Minister of Public Works, which will be forfeited if the party decline to enter a contract when called upon to do so, or if he fail to complete the work contracted for. If the tender be not accepted, the cheque will be returned.

The Department will not be bound to accept the lowest or any tender.

By order,

A. GOBEIL, Secretary,

Department of Public Works, Ottawa, 11th June, 1885.

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50 Good Miners Wanted. 50

Wages \$1.25 per day; regular board, \$3.00 per week.

For further particulars apply to

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The CANADIAN MINING REVIEW is devoted to the opening up of the mineral wealth of the Dominion, and its publishers will be thankful for any encouragement they may receive at the hands of those who are interested in its speedy development.

Visitors from the mining districts as well as others interested in Canadian Mineral Lands are cordially invited to call at our office.

Mining news and reports of new discoveries of mineral deposits are solicited.

All matter for publication in the REVIEW should be received at the office not later than the 20th of the month.

Address all correspondence, &c., to the Publishers of the CANADIAN MINING REVIEW, Ottawa.

One of the most important features of the mining industry is the economical treatment of low grade ores. The history of mining, says the *Chicago Mining Review*, wherever prosecuted, shows unmistakably that the most satisfactory results and the most permanent basis, upon which a profitable and satisfactory business in this field has been established, is upon large bodies of ores, permanent and regular in their deposit, which have been rather under than over the average richness, although in most instances, where inexperienced men have been prominently active, the least valuable has been most eagerly sought, while the permanent and real basis of prosperity has been neglected.

The importance of a better method which shall open the wide field of low grade ores to profitable development, is exciting the attention of some of the best and most practical mining men of the age, and there is no doubt but the new inventions now under consideration, and being thoroughly tested by practical work, will show a large advance in this direction, indicating that in the near future hitherto valueless properties will be successfully and profitably worked and be converted into valuable dividend-paying mines.

The sudden death at Liverpool, England, on June 4th, of Mr. Furman Hunt, President of the Oxford Gold Mining Company, N. S., is announced. Mr. Hunt had been prominently connected, for many years

past, with Nova Scotian mining interests, which have lost in his death an able representative.

Dr. G. M. Dawson, of the Geological Survey, sailed June 25th from Victoria, B.C., on the schooner "Carolina," for the east coast. Comox and adjacent districts and islands will be thoroughly explored, and mapped geologically. Quatsino Sound will also be visited, and the coal measures and mineral deposits will be examined.

Messrs. Eugene Coste, and E. D. Ingall, have been appointed to the positions of Mining Geologists of the Geological Survey. This is quite a new department of the Survey recently created by the Director, and the selection of these two gentlemen to fill the positions has been judiciously made. Mr. Coste is a graduate of the School of Mines, Paris, is a Mining Engineer of marked ability, and has obtained much practical knowledge in the mining districts of England, Wales, France, Germany and Belgium. Mr. Ingall, graduate of the School of Mines, London, England, is thoroughly qualified for the position he now occupies, having had much practical experience in the mines in Great Britain, and for some years past, at the copper mines in Western Canada. Mr. Coste is at present operating in the Madoc district, and Mr. Ingall on the north shore of Lake Superior.

It is not improbable that the next meeting of the Institute of Mining Engineers will be held in Halifax, N. S., opening on the 15th September. The Province of Nova Scotia and the Dominion Government are making grants of money and offering free transportation over Government railways in order to insure the success of the meeting, which promises to bring many substantial benefits to the Province and to be one of unusual interest to the members of the Institute, whose Secretary will soon issue a preliminary circular on the subject, if such has not already been done.

Baron Grant, whose notorious career as a London financier (in connection with the Emma mine scandal) is feelingly remembered by many persons on both sides of the Atlantic, is the defendant in a law suit which is likeley to cause a sensation. The Baron recently undertook, on the behalf of a syndicate of capitalists, to investigate the merits of a gold mine in one of the Western States of America, which was offered for sale in London. The syndicate furnished the Baron with a liberal sum for expenses, and he sent a prospecting party to examine the mine. The prospectors returned with unfavorable reports of the mine, but they brought back \$9,000 worth of gold ore. The Baron advised the capitalists that the mine was a bad purchase, but he promptly converted the ore into cash, and it is alleged, pocketed the proceeds without making any report upon that

branch of the subject. The capitalists are now seeking for the value of the ore, with interest from the time it came into the Baron's possession.

The inhabitants of Port Arthur and the Thunder Bay district, petitioned the Ontario Government to subsidize a line of railway, to be known as the Thunder Bay Colonization Railway, the object of which is to open up a rich section of country and to afford transportation to and from the mines in the district. The petition, however, did not find favor with the Ontario Legislature, and a subsidy was refused. Mr. S. J. Dawson, member for Algoma, has since brought the matter forcibly before the authorities at Ottawa, and the Dominion Government, recognizing the importance of developing the rich mineral deposits of the Thunder Bay district, has instructed Mr. Wm. Murdoch, C.E., to make a survey of the proposed line of railway, with a view to satisfying the Government as to the feasibility of its construction. It is well known to the petitioners that a good location can be obtained, and a grant is, therefore, sure to be made.

The enterprising burglar was at work in the Geological Museum on the night of July 1st. Some one of the many strangers who visited the Museum on Dominion Day had cast longing eyes at the handsome collection of gold specimens, and during the night managed to obtain access to the room containing the mineral collection. By means of a fine saw the lock of the show case, in which the gold nuggets and bottles of gold dust present so enticing a picture, was removed, and the largest nugget made away with. This nugget, however, was nothing more than a fac-simile of the famous "Welcome" nugget found at Ballarat, Australia, moulded in plaster-Paris, and so well gilded as to deceive the unpracticed eye of the nocturnal visitor, who, by this time, no doubt realizes the truth of the adage, "all is not gold that glitters." The original "Welcome" nugget sold for £9,325 (about \$46,000) and the fac-simile in the Museum was labeled with its intrinsic value, and no doubt caught the covetous eye of its present disappointed possessor.

Thanks to the powerful means at the disposal of the mining engineer, ores formerly considered poor, and which are in fact very low grade ores, are often worked with large profits. The very extensive copper mines in the United States, on the south shore of Lake Superior, are brilliant instances of this; and in the colony of Victoria, Australia, a new country like ours, where labor is very high, ores yielding an average of five dwts. of gold per ton (say \$5.25) are esteemed rich, and others yielding only from two dwts. twelve grains to three dwts. (\$2.62 to \$3.15) per ton are sometimes worked to advantage.

The *Chicago Mining Review* says:—
"The product of mining is indestructible and forms forever a factor of imperishable wealth, when added to the avenues of com-

merce and business. When its real value is understood, its true worth recognized and its development is undertaken in business-like and intelligent methods; when its requirements are studied, its demands met, when necessary conditions are secured, no industry known to men will produce more attractive features, more permanent qualities, or give better returns for the expenditure of capital and labor, than the development of the mineral resources of this country" (meaning the United States)—nor, we add, than the mineral resources of Canada.

The Calumet and Hecla Mining Company has declared a dividend of *seven dollars* a share, payable July 13th, and aggregating \$700,000. To our minds this present extra large dividend has the seeming of being very explicit proof that the suspension and reductions of dividends to which the management resorted last year was not justifiable nor made in the interest of the smaller shareholders, inasmuch as that suspension could but have the effect to make such holders to sell out their stock at the depreciated prices which immediately ensued. And the question arises: who bought the stock thus sold, upon which a dividend of seven dollars per share is now to be paid, in the face of a low copper market? (*E. & M. Record*).

The enormous profits that have been and are now being derived from the mining of low grade ores in the United States and Australia will give some idea of what can be done with the gold-bearing quartz veins of the Lake of the Woods and those on the north shore of Lake Superior. We are told, and statistics prove it to be true, that Australia ores yielding from \$3 to \$5 per ton are esteemed rich. In many of the mining districts of the United States \$6 per ton ore is worked at a large profit, and the Plymouth Consolidated Gold Mining Company, whose property is situated in Amador County, California, has worked its mines very extensively during the past two years at a profit of upwards of two hundred per cent., the ore yielding an average of not upwards of \$11 per ton. We are assured by very competent men, whose opinions have been borne out by careful tests, that the auriferous veins of the Lake of the Woods district have a mean value of over \$12 per ton, and the ore of the *Huronian* mine, to the southwest of Shebandowan Lake, has yielded an average of from \$18 to \$20 from a vein measuring from 5 to 12 feet in width. Surely this should be sufficient to encourage the owners of these properties to proceed to thoroughly develop them.

Mr. Coste, in his report to the Geological Survey, warns miners against the idea, so generally spread amongst them, that the richness of an auriferous quartz vein must naturally increase with depth, and states that, on the contrary, with depth a de-

crease in richness in gold in quartz veins was for a long time, by many, considered a law. Dr. Selwyn has, however, strongly refuted this theory, first in 1854, again in 1856, and in his "Notes on the Physical Geography, Geology and Mineralogy of Victoria, 1866," and now that the "Reefs" in Australia are explored to great depths, experience shows that he was right when saying: "That the extraction of gold from quartz reefs, if properly conducted, may be regarded as an occupation which will prove as permanently profitable in Victoria as tin and copper mining have been in Great Britain. It is a fact that gold quartz mining is more remunerative now in Victoria than ever, as shown by the statistics to be seen in the quarterly reports of the "Mining Surveyors and Registrars" of that colony. The following table from these statistics shows that if you take the two years 1876 and 1882, six years interval, the average yield in gold per ton is only less in two districts, is the same in two others, and is greater for the other three districts during the later period:—

1876.			DISTRICTS.	1882.		
Tons of Quartz crush'd	Average yield of gold per ton.			Tons of Quartz crush'd	Average yield of gold per ton.	
315,467	0	6 14 16	Ballarat	166,754	0	6 11 41
35,689	0	11 6 61	Bechelworth	35,570	0	12 15 35
356,927	0	11 22 86	Sandhurst	264,513	0	13 7 29
32,095	0	8 18 66	Maryborough	59,255	0	8 7 38
111,716	0	7 14 45	Castlemaine	107,215	0	5 20 51
88,729	0	16 22 47	Ararat	67,784	0	6 6 83
49,784	1	3 12 58	Gippsland	28,732	1	4 6 66

Another table, taken at random from these statistics, serves to illustrate how variable is the average of gold per ton in the "New Chum Reef," now being worked at great depths:—

Approximate Depth.	Tons of Quartz.	Average Yield of Gold per ton.		
		oz.	dwt.	grs.
At 400 feet	432	0	4	17 14
" 540 "	279	0	8	15 01
" 634 "	634	0	6	12 09
" 700 "	1,913	0	9	3 33
" 800 "	1,305	1	16	18 13
	759	0	10	12 2
" 830 "	811	1	7	29 22
	814	1	0	23 58
	1,629	0	13	19 81
	2,319	0	7	12 09
" 868 "	1,535	0	11	11 6
	474	0	9	21 15
" 900 "	1,680	1	2	9 6
	1,788	1	19	5 15
" 977 "	1,334	1	1	4 11
	1,582	0	18	21 48
" 1025 "	2,285	0	11	7 6
	2,197	0	9	22 72
	2,024	0	9	21 42
" 1030 "	3,101	0	12	1 39
" 1104 "	410	0	3	15 74
" 1110 "	334	0	8	0 21

The average yield, it will be seen, changes all the time, vertically as well as horizontally; this is the "Bonanza" feature so well recognized everywhere for the other metals, and gold certainly must not be excepted; for this metal, as well as for the others, the decrease of the richness in depth cannot be made a law more than the increase. The gold quartz miner, in consequence, must bear in mind that the richness of his quartz is liable to change every foot, on the level or in the shaft, and he should always explore in advance the underground, keeping careful records of

the quartz crushed from the new levels and of the gold obtained; it is the only means at his disposal by which he may know whether his rock is paying or not. Assays of selected specimens, or a certain richness at one time will not teach him much, and will often induce him to incur unremunerative expense.

The Phosphate Trade.

A visit to the Rivière du Livère will give some idea of what is being done at the phosphate mines in that district. There are at present no less than four steamboats actively engaged in forwarding supplies to the mines and towing ore-scoops loaded with phosphate from the various landings on the river bank to the C.P.R. terminus at Buckingham village for transportation thence by rail to Montreal. In fact, so rapid has been the delivery of ore at this point that the railway company has had some difficulty in providing rolling stock to forward it. At the mines there is more phosphate being raised than ever before, and the force of miners is being increased as rapidly as provision can be made for their accommodation, and this in the face of a somewhat low market—low only by comparison with other seasons, for at present prices the margin of profit is greater than that attending almost any other mining industry. The outlook for an increased production is very bright, and the future of this important industry has never been so promising. During the month of June the output of four mines aggregated not less than 2,500 tons. During the last two or three months the mines have been visited by a number of mining engineers, geologists and practical miners, all of whom have expressed much surprise at the large bodies of ore which are in sight in the openings now being worked, and at the unmistakable indications of an almost inexhaustible supply of high grade mineral. The opinion, however, has been given by some of these practical mining engineers that the system which has been adopted of working the deposits is not such as will serve for permanent mining to the best advantage, and suggestions have been thrown out for important changes to be made in this direction. At many points the beds or veins are of a sufficiently well defined and permanent character to warrant the sinking of vertical shafts and drifting on the veins at different levels. Tunneling has also been proposed, where it is at all practicable, to tap the mineral at the lowest point possible, and by means of trams to thus avoid the expense and labor attending the hoisting of ore and refuse rock. The services of intelligent, practical mining engineers might be engaged to advantage at some of the phosphate mines where skilful mining would be an important factor in reducing the cost of production. The system in vogue at present at almost all of the mines is much akin to open quarrying, and it is argued by scientific miners that this is not the most economical method of raising the ore, as it entails the removal of an unneces-

sary amount of rock, which is counted as dead-work. The nature of our phosphate deposits, however, is so different to that of any other mineral veins, and their character so irregular, that it requires practical experience and close and careful observation in the immediate vicinity of the mines to enable whoever may be conducting mining operations to determine how such deposits can be worked to the best advantage. During the past three years many important changes have been made. Steam power and machinery have been introduced; facilities for transportation have been greatly increased and the cost reduced almost, if not quite, fifty per cent.; more attention is given to cleaning the ore in order that it may go forward to the foreign market in a high state of purity; an increased demand for Canadian phosphate has been created; and the reputation of the mines is now firmly established. Having accomplished all this, mine owners can now turn their attention to studying the best methods at their disposal for permanent and economical mining, and with this end in view the suggestions and advice of practical men should, and certainly will, receive their earnest consideration.

THE MINES.

Proceeding up the Rivière du Lievre the first mine to be observed from the deck of the steamer is the famous *Emerald*. On the summit of a mountain, sloping to the river bank, can be seen the derricks, ore-bins filled with bright green phosphate and the waste dumps, indicating that a large force of miners are at work under ground. On a plateau, about mid-way between the mine and the river, is a cluster of neat and substantial buildings, including boarding houses, store houses, stables and the manager's office and dwelling. It presents the appearance of a small village, and is evidence of the profits which have been and still are accruing to the owners of this very valuable property. An excellent wagon road leads from the mine to the river, over which the ore is carried and placed in bins where it awaits transportation by scow to the railway at Buckingham. About seventy men are employed at this mine, and the output averages 500 tons per month. The convenient location renders the cost of transportation less from the *Emerald* than from any other mine in the district.

THE LITTLE RAPIDS MINE

is the next above the *Emerald*, about three miles further up the river, but, though only half a mile inland, is not visible from the steamer—in fact the *Emerald* is the only mine that can be seen from the river. The *Little Rapids* is situated on the crown of a mountain on Lot No. 6, in the 1st Range of Portland East, and is one of the best developed mines in the entire phosphate district. Three shafts, the deepest being 170 feet, and a large open cutting have proved the continuity of a true and well defined vein for several hundred feet. The vein varies in width at different levels, from 3 to 13 feet, and the mineral is of wonderful purity, quite free from pyrites and other objectionable matrix. The openings on this vein have exposed a body of mineral measuring upwards of 5,000 tons, which can be worked at a very small cost. Other veins have been prospected on the property, and are now being developed, and it would appear that wherever ground is broken bodies of phosphate

are encountered. All visitors to the district are attracted to this mine, and are much impressed with the singular regularity of the vein on which the most work has, as yet, been done. In this respect it differs from the other important mines, whose deposits are more *pockety* and variable. The machinery at the *Little Rapids* is well suited to the work it has to perform, and the buildings are of a substantial and commodious character. The ore that has been forwarded to the river bank presents an imposing sight on account of its pleasing pale green and uniform colour. Shipments from this mine will be of a very high grade.

THE NORTH STAR.

In our last edition we gave some particulars of the workings at this mine, and further developments have proved it to be a veritable "bonanza." The shaft is now at a depth of 190 feet in solid mineral, and from it 640 tons of high grade phosphate were raised during the month of June. The force employed at this mine does not exceed 50 men all told, a number of whom have been employed on the roadway between the mine and the river. An excellent road for a distance of $3\frac{3}{4}$ miles has been completed, over which the ore is being hauled and delivered on the river bank. Everything connected with the *North Star* mine is now in perfect order and thoroughly systematized, which reflects much credit on Mr. W. H. Smith, the company's superintendent and business manager, when taken into consideration the many difficulties and disadvantages under which he has laboured.

STAR HILL MINE,

in Portland West, continues to be a heavy producer, having given an output of 650 tons for the month of June. This mine gives employment to 80 miners and workmen, and is substantially and suitably equipped. The road from the mine to the river is in good condition, and the teams engaged in hauling ore to the landing are averaging about two tons a trip. The company owns extensive territory, but only three deposits are at present being worked, one of which is said to be as large as any yet opened in the district.

HIGH ROCK.

At this mine preparations are being made to greatly increase the production. Additional machinery has been purchased, some of which is in course of erection, and the force of miners has been almost doubled during the past few weeks—at present it averages 160 men. *High Rock* has always been the heaviest producer of the Canadian phosphate mines. The output for June amounted to 710 gross tons, the largest yet attained in one month, and it is expected that with the increased force and additional machinery, the output for July will considerably exceed that of last month.

The Lievre River Phosphate Company and Messrs. McLaurin and Blackburn (Templeton) are also doing good work, and at present it would appear that the mines of Ottawa county will send forward an unusually large amount of phosphate during the present season—the low market notwithstanding.

PHOSPHATE QUOTATIONS.

The market abroad continues steady and the feeling points to better prices for autumn shipment. Latest advices report a half-penny a unit advance since the arrival of first shipments. The market is now firm at 1s. $\frac{3}{4}$ d. for 75 per cent. mineral with the usual one-fifth rise, ex-ship London and Liverpool. This is equivalent to \$19 per ton in Montreal, with freight at present rates.

OCEAN FREIGHT:

Freight per S.S. from Montreal to London and Liverpool has been freely offering at 5s. to 7s. 6d., and last month's shipments went forward at an average of not over 5s. per ton. Summer rates are not likely to rule high, and it is expected that autumn shipments will be carried at as low a figure as last year.

Phosphate Shipments from Montreal for the Season 1875, to Date.

Date.	Vessel.	Destinat'n	Shippers or Agents.	Tons.
May 21	S.S. Sarnia.....	Liverpool.	Lomer, Rohr & Co	108
" 23	S.S. Kehrwieder	Hamburg.	"	500
" 27	S.S. Kehrwieder	Hamburg.	"	200
" 27	S.S. Oxenholm..	Liverpool..	Wilson & Green.	100
June 1	S.S. Somerset..	Bristol....	"	485
" 3	S.S. Suffolk....	London....	"	142
" 3	S.S. Erl King	"	"	148
" 4	S.S. Landerdale	Barrow....	Lomer, Rohr & Co	205
" 5	S.S. Glenmoran.	London....	Lomer, Rohr & Co	160
" 8	S.S. Milanese...	Liverpool..	Irwin & Hooper.	85
" 11	S.S. Wandraham	Hamburg..	Lomer, Rohr & Co	265
" 10	S.S. Cranos....	Liverpool..	"	118
" 11	S.S. Mississippi.	"	Wilson & Green..	590
" 19	S.S. Dominion..	"	Lomer, Rohr & Co	550
" 24	S.S. Finbury...	London....	"	318
" 25	S.S. Quebec....	Liverpool..	"	322
" 26	"	"	Wilson & Green..	544
" 26	"	"	"	120
" 26	"	"	"	197
				5,347

Correction—The first shipment of phosphate from Montreal this season was made by Messrs. Lomer, Rohr & Co., on account of the Ottawa Phosphate Company, to Liverpool, on May 21st, and not by Messrs. Wilson & Greene as stated in our last edition. The above is a correct list of shipments to July 1st.

The Griffin Manufacturing Company, No. 92 Liberty street, New York, recently erected a mill at the phosphate works of Read & Co., Newton Creek, Long Island, N.Y. It is running steadily about one and one half tons an hour, sixty mesh, at a speed of 200 revolutions a minute. The dynamometer shows that it requires from $18\frac{1}{2}$ to $19\frac{1}{2}$ horse-power. Another mill has been ordered, and orders are expected for three more within thirty days. The trial has been entirely satisfactory.

VILLENEUVE MICA MINE.

This property may fairly be classed among Canada's most valuable mining locations, and of all the mica mines in the country there is none to compare with it, either in respect to its productiveness or the quality of the mica it produces. This mine is being carefully and systematically developed, and the micaceous vein on which it is located has already been proved to considerable depth and for a long distance. A drift is being run into the face of the mountain to tap the vein about 60 feet below the surface, and in doing this work a large amount of mica has been taken out. The end of the drift is now penetrating a body of feldspar and quartz thickly studded with mica crystals, and the further the drift is run the more numerous do these crystals become. During the past few months shipments have been made from the Villeneuve mine to France, Germany, England and the United States, and the mica has been pronounced by the dealers to be equal in quality to that which comes from the Ural Mines, East India, North Carolina and New Hampshire. The crystals in this mine appear to be well formed, and their average size is larger than those usually met with in other mica mines. The mica when cut into sizes and packed for shipping commands the highest market price, and the mine, when more developed, will be

capable of a large annual out-put. Samples have been forwarded to this office in plates measuring 12 x 12 inches, and have surprised many of our visitors, who had not been aware of the occurrence of so excellent a quality of mica in Canada.

Kingston Red Granite.

The owners of this valuable property, the "Canadian Granite Company (limited)," are making preparations to erect dressing sheds and polishing mills at the quarry, which is now well opened and in shape to produce stone in unlimited quantity. The granite, which is of a good medium sized grain in point of crystalline texture, is sound and uniform and of a beautiful rich flesh or salmon-red colour. The position of the quarry offers unusual facilities for working and for obtaining a reliable supply of labor. Vessels employed in the grain trade between Chicago and Kingston can carry the granite as return freight to the western cities, either in the rough or in finished blocks and paving stones. Dimension stone of almost any size can be taken from this quarry, and when the necessary machinery and mills have been put in position the company will be prepared to supply any demand. The stone commands a high price on account of its very pleasing color and the fine polish of which it is susceptible.

Dealers and workers in granite speak of it in the highest terms, and those to whom shipments have been made pronounce it equal to the red granite of Aberdeen and the Bay of Fundy. Already there is a large supply of paving blocks shaped and piled at the quarry, apparently of an extra good quality, owing to the free cleavage of the stone, of which the workmen say it enables them to earn better wages than they have been accustomed to earn at other granite quarries where they had been engaged on the same kind of work. These men, who are paid so much per hundred blocks, become very expert at their business, and the rapidity with which the blocks are turned out under their dexterous manipulation of the hammer, drill and chisel is interesting to witness.

A permanent roadway is being graded from the quarry to the Lake shore, a distance of about 200 yards, on which a tram will be laid to the Company's dock, and with water communication with the western cities during the summer months, and rail communication by Kingston and Pembroke, Canadian Pacific and Grand Trunk Railways at all seasons, it may be said that this quarry possesses advantages which places it in a perfectly independent position as regards shipping facilities. The Canadian Granite Company is composed of competent business men of ample means to place this enterprise on a sound and permanent basis, and the enterprising way in which they are endeavouring to establish so important an industry points to certain success. Nature has done much for the Kingston Red Granite Quarry. Means, intelligence and enterprise will turn it to account.

THE QUEBEC GOLD MINES.

Mr. J. Fraser Torrance, Mining Engineer, formerly attached to the Geological Survey of Canada, is at present engaged in examining the gold and silver deposits in the Beauce district. Mr. Torrance has formed a very high opinion of the productiveness of the gold-bearing quartz veins of the district, and writes from Gilbert river, Beauce, as follows:

While so much capital is lying idle it is surprising that no attention is paid to this attractive field for investment. A recent writer very truly remarked. "The production of gold is decreasing and the amount required is constantly increasing. Gold mining is almost the only industry whose product is the more valuable the harder the times and the less it costs to produce. It is almost the only mineral product that never depreciates in value and that never overstocks the markets. The full significance of these facts should be carefully weighed by our Canadian capitalists who have suffered from the reckless multiplication of cotton and woollen mills, sugar refineries, etc., etc. They are well appreciated in California, where the commercial depression has induced unusual activity in opening new quartz mines.

Unfortunately our Quebec gold field, differing from California in this respect, has no golden records of past successes in quartz mining to encourage our capitalists in fresh enterprises. Almost all the capital invested therein has been devoted to alluvial mining upon the Chaudiere and its tributaries. Some of the companies were highly successful, others came to grief from a variety of causes, but rarely through a lack of gold. For many years all mines on the Gilbert were harassed by desultory and expensive litigation as to the validity of the De Lery patent, which granted to that seignior that exclusive right to all gold within the bounds of his seignior. But this question has been finally disposed of by our courts upholding the rights of the De Lery Gold Mining Company as lessees of Mr. De Lery.

In A. D. 1864 this company was organized; and one of its first acts was to erect a quartz mill at Devil's Rapid on the Chaudiere. This was so faulty, however, in its construction, that the inexperienced manager failed to extract from the adjacent quartz veins enough gold to pay the working expenses. This led the company to speedily close the mill, although samples from more distant veins are claimed to have yielded from 15 dwts. to one ounce gold per ton. And from that day to this nothing has been done towards testing or developing the numerous large and promising quartz veins of this district beyond sinking a few shallow prospecting pits and selecting samples for assay. Some of these assays were so rich that the lucky owners asked enormous prices for their properties, while the titles were disputed. Their cupidly naturally over-reached itself.

Most people imagine that this Quebec gold field is confined to the valley of the Chaudiere. But the very profitable operations of the Hon. J. H. Pope in Dittan (about 70 miles to the south-west of Gilbert) extending over many years, and the enormous profits of the Rooks Mining Company in Vermont, confirm the statements of Sir William Logan as to its great area. Nothing has yet been done to trace and prospect it beyond Cranbourne in the opposite direction. But Sir William thought it probable that it would be ultimately traced as far as Gaspé.

Dr. Selwyn has done good service in pointing out the close geological resemblance of this region to the famous gold districts of Victoria, Australia, wherewith he should be very familiar. At the present day the placer mines of Victoria are declining in value; but the quartz mines are steadily increasing in number and productiveness. The same thing must occur here. Our miners on the Gilbert have constantly observed that their best *pay* was struck close to where the quartz veins crossed their channels or leads. The very natural inference was, that most of this gold (if not all of it) was derived from those quartz veins.

In Dakota, California and Victoria, the richest quartz mines of to-day are worked upon the site of exhausted placers. This is a good reason for believing that quartz mining is certain to become a permanent and profitable industry in this province. But there is very little use in any poor prospector attempting to test these quartz veins at his own expense. There is neither crushing-mill nor assayer in the district to test his samples for him.

The best way to undertake this work would be for men of means to employ an experienced engineer to search for such veins in accessible localities, bond them at moderate prices and properly test them. Quite a number could be tested in the course of the season at an outlay of two to three thousand dollars. Then a small portable mill of the best modern type might be erected beside the best of them, at a cost of five thousand dollars, and the work of development proceeded with. As soon as the regular mill runs had thoroughly established the value of the mine, capital could readily be found to develop it on any scale that the owners deemed advisable.

A cautious enterprise of this kind could hardly fail of success, if conducted with the proper technical skill."

THE MINES NORTH OF LAKE SUPERIOR.

Their Development Progressing with Satisfactory Results.

The mining region surrounding Port Arthur has been visited during the past few months by a vast number of practical miners, mining engineers and capitalists seeking investment, who have been a unit in pronouncing the district one possessing great mineral wealth. Prominently among the recent visitors was Mr. Charles F. Eschweiler, a stock holder in the famous Calumet and Hecla, who has had long and useful experience in the vicinity of that celebrated mine. This gentleman is eminently qualified to form an opinion of the value of mineral deposits and he has stated that this mining district deserves, more than any other on this continent, the fullest and closest attention, and added that he entertained not the slightest doubt that mining on the north shore of Lake Superior will prove as successful as anything that has yet been accomplished among the valuable iron ore and copper mines that have made the south shore famous.

The north shore district is certainly attracting a great deal of attention. Since the snow disappeared from the mountains and the ice from the lakes, no less than ten well organized and thoroughly equipped parties of prospectors have started out from Port Arthur and are distributed over the gold and silver regions, extending from the *Silver Mountain* and *Rabbit Mountain* mines to the *Huronian* mine on Jack Fish Lake. A large number of explorers are also out, and new discoveries are continually reported. This mineral district is very extensive and it will take years to thoroughly explore it. In the meantime it will be wise to develop some of the rich lodes that have already been located, and to proceed with active and properly systematized mining operations. With the assurance that has been given of the richness of the ore there is no need for *wild-cat* stock jobbing—rather the formation of strong companies to engage in honest mining under the direction of experienced and competent men, and success will follow. Ore is there in abundance, rich in gold and silver beyond the average ore of other districts where it is ruined at enormous profit; sufficient development has been done on some of the locations to

eliminate the element of uncertainty, and capital should, therefore, be available for permanent mining. The practical miner, the capitalist and the public are not to be led astray nowadays by fabulous assays of picked specimens. What they require to know is the average yield of the vein matter before they can be induced to invest their money in a mining venture. To obtain this information a shaft should be sunk to a depth of at least one hundred and fifty feet on the vein and drifts run at different levels. When this has been accomplished and the ore proved by mill test to carry metal in paying quantity, it can be said there is a mine whose value has been practically demonstrated. Capital will then be forthcoming, and will seek investment in such property, and the mining industry of the district will thus be established.

THE RABBIT MOUNTAIN MINE

is owned chiefly by Americans, and is being worked under their direction. This mine has produced a large quantity of marvellously rich silver ore, and although we have not received very recent reports of progress we have been led to understand that the vein continues to show strength, and to yield good stamp-rock in large quantity.

THE SILVER MOUNTAIN MINE

awaits development, and although there are large bodies of ore rich in silver, little has yet been done towards opening them up. The proprietors are not showing much activity or enterprise themselves, and are holding the property at much too high a value for a perfectly undeveloped claim to expect capitalists to come to their assistance.

THE BEAVER MINE

may be classed among the working silver mines of the district and its owners are preparing for a largely increased production at reduced cost. The vein on which this mine is located is a well determined fissure and is highly spoken of by experts who have visited it.

THE TWIN CUTE MINE

is capable of yielding silver ore in large quantity, and under careful management it could be very profitably produced. The whole vein-stone is good stamp-rock and the vein carries native silver in fair quantity. But of all the mines that are being worked on the north shore of Lake Superior the

HURONIAN MINE

is unquestionably the most attractive. Here there is a well defined fissure vein of gold-bearing quartz measuring from 5 to 12 feet in width, and extending for upwards of half a mile across the location. A shaft has been sunk on the vein to a depth of one hundred and fifty feet, and at the fifty foot level drifts have been run in opposite directions for about one hundred and fifty feet altogether, and some stoping has been done. The ore obtained is for the most part free-milling and has yielded gold averaging from \$18 to \$20 per ton. Dr. Selwyn, Director of the Geological Survey of Canada, and for seventeen years Director of the Geological Survey of Australia, one of the great gold-producing countries of the world, has pronounced the *Huronian* a good mine and one that will continue to be a steady producer for many years to come. Dr. Selwyn is acknowledged to be one of the ablest authorities of to-day on the origin and nature of gold veins, and, though naturally very reticent and cautious in expressing an opinion, he does not hesitate to do so with reference to the *Huronian* mine.

GOLD MINES OF THE LAKE OF THE WOODS.

So much has been said about these mines that the public would be led to suppose that important development had been made, but judging from the report of Mr. Eugène Coste, Mining Geologist of the Geological Survey, such is not the case; on the contrary, very little work has been done in the district and the so-called mines are still in an entirely primitive state, and so will they remain until they fall into the hands of practical mining men having sufficient capital to proceed with mining operations on an approved system and on an extensive scale. At all the mines in the Lake of the Woods district the openings may be described as mere prospect holes in the ground. The proprietors of the various locations have given more attention to furnishing the press with fabulous assays of the ore than to engaging in practical and honest mining. According to their reports the analyses of the vein matter never showed less than hundreds of dollars to the ton. Some of the veins in the district are undoubtedly auriferous, notably those of the "Pine Portage," the "Keewatin" and the "Winnipeg Consolidated" mines, and one of the veins of the "George Heenan Location"; but their richness is not exceptional, though sufficient to yield a handsome profit in the hands of strong companies and if worked efficiently. Serious mistakes have been made in the district, resulting in several cases in a suspension of work and abandonment of the property.

At the "Argyle" mine, for instance, the first thing to be observed is a splendid crushing-house for amalgamation and concentration, provided with ten powerful stamps and two fine concentrators; but you look in vain for the shaft, for none of the numerous holes in the ground are deserving of that name. The few thousand dollars expended in machinery on this property, before a mine had been located, would have been sufficient to have sunk a shaft at least three hundred feet in depth and to have run drifts at different levels. There would then have been a mine and the owners would have had the satisfaction of knowing its value; instead of which, after this premature outlay for a crushing-house, when there was no ore to crush, the company ran short of money and was forced to suspend its operations.

At "Pine Portage" mine a somewhat similar mistake has been made. The erection of crushing machinery should have been deferred, and when erected it should have been on the lake shore instead of on a creek which dries up every summer. At this mine, however, work has not been suspended. It is being slowly developed with rather encouraging results, and in the hands of a strong company would no doubt pay largely.

It would appear that the main object of the proprietors of the Lake of the Woods mining locations has been, from the outset, to sell their claims to capitalists at high figures, and with this in view have trusted more to sensational newspaper advertising than to the intrinsic value of their properties, which could only be established by systematic development. In this great mistake has been made, for no one will be induced to pay a high price for property which has not been tested, and of which it is, therefore, impossible to know the value.

In short no serious work has yet been undertaken in this new gold district of the Lake of the Woods. The district is, nevertheless, one deserving attention; it is intersected by numerous auriferous veins, many of which are, without doubt, capable of being profitably worked by companies if their operations were properly

conducted, and especially if they were operating on a large scale. It is the impression of competent men, who have carefully examined the quartz veins of this district, that many of the lodes will prove to have a mean value of over \$12 per ton, which is the average richness of all the reefs until now worked in Victoria, and of which official statistics have been published.

BRITISH COLUMBIA.

Decrease in Gold and Large Increase in Coal.

REPORT OF MINISTER OF MINES.

The report of the Minister of Mines for the year ending 31st December, 1884, which has just now reached us, shows that there is still another decrease in the output of gold, the total being \$736,165, a decrease of over \$58,000 from that of 1883. The number of miners engaged has also lessened, being 1,858 in comparison with 1,965 of the previous year, while the average yearly earnings per man is \$396, a decrease of \$8, and the lowest since 1858.

The highest output of gold in any one year since was that of 1864, when the total amounted to \$3,735,850, with 4,400 miners, an average earning per man of \$849. In 1875 the output was \$2,474,904, with 2,024 miners, an average wages earned of \$1,222, the highest of any year in the mining operations of the province. Since 1875 the yield has steadily decreased. The total output of gold including the last six months of 1885 has been \$48,672,128.

The reports from the various gold commissioners of the districts are printed with the report, and furnish general and statistical information in reference to the operations for the year and progress or retrograde made.

CARIBOO.

In this district there has been a slight decline in the product and a decrease in the number of white miners, and a corresponding increase in Chinese. Little prospecting was done. The miners think that the government assistance would give more substantial results if a thoroughly reliable and competent quartz expert were to examine the ledges and give a practical opinion of their value; or else bonus a company who would test deep ground on promising enterprise.

Williams creek is referred to as being about played out, with the exception of a few hill claims.

Lower Antler creek is now mined exclusively by Chinese. The Nason company has made extensive preparations to push their claim, and good results were expected. Grouse creek was doing well.

The report states that "legislation would appear to be necessary in view of large claims being held by absentees on Lightning creek under a 'real estate' title, whereby the project of bringing up a bed rock drain is completely blocked."

The closing of the assay office at Barkerville is referred to as being a loss to the community, as it was discouraging quartz prospecting. The hope was held that it would again be opened.

The approximate yield of gold in the district, exclusive of Omineca, is \$423,855, of which Barkerville division contributed \$153,600; Lightning creek, \$78,000; Quesnelmouth, \$77,600; Keithley creek, \$89,595.

Little has been accomplished during the year in developing the various quartz mines.

The high prices of provisions had been a detriment to the progress of the country, many old Caribooites having left the district. This is accounted for by the high prices of provisions, caused by excessive charges of the railway line, the rates for freight having been higher than that of ox teams. The completion of the line was anxiously looked for, when an advance in progress was expected.

A prospecting party, who had been out eight weeks, returned without having struck any pay.

W. Stephenson's report from the Forks of the Quesnelle refers chiefly to the large number of Chinese miners, who evidently had been taking out good pay.

CASSIAR.

The report of Mr. J. L. Crimp, gold commissioner, is not very encouraging. The total output during the year was \$101,600, by 180 miners, whites and Chinese being equally divided. Dease, Thibert and McDame creeks were spoken of as being about worked out, though there were a few good hill claims on Thibert creek. McDame creek contributed the largest amount, \$53,600.

LILLOOET.

Mr. F. Sones' report of this district shows a large increase in mining operations over that of previous years, the output being \$107,934, an increase of \$39,592 over the previous year. A very large amount of the increase is due to the Bridge River mines, in which section the miners are nearly all white men. The mica discovery of James McKinlay is referred to, and the prospect that it would be developed if found without fracture below the frost.

The lack of enterprise in opening up the auriferous benches of the Fraser was referred to, and also on the Big Slide lode.

YALE AND LYTTON.

The gold mining operations in this district are confined principally to the Chinese working on the Fraser. The total output in Yale and Lytton divisions would be about \$15,000, with no new developments except the record of claims opposite the town of Yale.

KAMLOOPS.

There is nothing to report from this section, except that a prospecting party who had been out for a lengthy period met with poor results.

KOOTENAY.

Mr. Vowell's report gives the output of this district at \$60,826, the largest amount being from Wild Horse creek, \$36,730. These returns are considered satisfactory as compared with last year.

Prospecting for additional placer mines met with poor success owing to the constant high stage of water.

The developments of quartz were large, 49 claims being made at Kootenay Lake and 135 in the Kicking Horse region. The prospect was that the quartz mines would be extensively developed during the season of 1885. The necessity of an assay office for the district was referred to, on account of the rapid increase in quartz mining.

COAL MINING.

The report of the output of coal for the past year shows a total of 394,070 tons, an increase of 181,070 tons over that of 1883 from the various mines of the province. This gratifying circumstance is referred to as adding greatly to the general wealth of the province.

The principal market for the coal was that of California, to which point and various others 306,478 tons were exported. The local con-

sumption amounted to 87,488 tons, 20,000 tons more than that of the previous year. Of the 1,035,076 tons of coal imported into San Francisco, British Columbia contributed the largest amount, 291,546 tons, Australia being next with 190,497 tons.

The working of the various mines of the province are exhaustively referred to in the report and a great deal of statistical information given.

The number of miners engaged is 1,214, their wages averaging from \$2.50 to \$4 per day for whites, and \$1 to \$1.25 for Chinese. Of the latter 503 are employed. The value of the plant used in mining is \$700,000 for all the mines.

GOLDSTREAM QUARTZ DISCOVERY.

THE LEDGE STRUCK IN A CUTTING ON THE ESQUIMAULT-NANAIMO RAILWAY, BRITISH COLUMBIA.

Mr. Antonelli, contractor on the Goldstream section of the Esquimalt-Nanaimo railway, arrived in Victoria early in June, with fine specimens of gold-bearing quartz, from lodes discovered by the workmen. He says that four lodes have been exposed in a rock-cutting 20 feet in depth, one of which is six feet and another four feet wide; the width of the others had not been determined. Some of the specimens shown by Mr. Antonelli contain fine gold, visible to the naked eye, and in one of these is a nugget weighing about \$2. A quartz expert from Nevada pronounces the ore free-miling and similar to that which made Grass Valley, Cal., famous. Several Californian miners have visited the ground, and speak favorably of the lodes and the country rock. Several of the Railway employes have left the works to prospect the adjacent hills. A Chinaman picked up a large lump of gold in the cutting, and, fearing that it would be taken from him, packed up his blanket and started for town.

The value of the discovery cannot be determined until considerable work has been done on the ledge. A force of miners are at work on one of the seams, and the indications, so far, are that the lodes are very rich, though they may not be proved so by a more thorough examination and development.

Mr. Perry, C.E., employed on the Island Railway, reports that the ledge has been traced for over a mile in length, the surface outcroppings being from 3 to 5 feet in width. The quartz is rose-colored in appearance, with slight traces of free gold, and shows every indication of being rich. The lodes being outside of the railway belt are open to pre-emption under the mining laws. Two locations have already been taken up, one by Mr. Jos. Hunter, C.E., and others, named the *Triumph* ledge; the other by Messrs. Perry & Pinder, now known as the *Perry* ledge. Specimens from the *Triumph* have been forwarded to San Francisco for assay; others from the *Perry* ledge will soon follow. A large box of specimens has been deposited by Mr. Perry in the Island railway office.

A number of experienced prospectors have gone to the vicinity of the *strike*, and will thoroughly examine the district. There is ample capital available for development if, after a thorough test of the ledge, it is proved to be one that will pay. Experienced miners have expressed the opinion that it will, and if such should prove to be the case, the benefit to Victoria, and the Island generally, will be great.

At present the value of all the gold in the world is counted at \$6,000,000,000.

THE KOOTENAY CO.

Their Annual Meeting in Victoria, B.C.

The annual meeting of the Columbia and Kootenay Railway and Transportation Company was held on June 4th, when a mortgage of one and one half million dollars was authorized. The directors were authorized to sell to miners their claims for \$1,000 each, that being the amount required by the government to be expended on mining claims on government lands before crown grants are issued—the \$1,000 to be paid to the government and held for the use of the company on completion of the terms of charter. This action will give the miner a crown grant on payment of the \$1,000, and enable him to organize his company should he so desire, and proceed without delay in developing and working his mine. It was stated at the meeting that the provisions of the charter have been strictly complied with, and the projectors expect to take active steps during the coming year to construct the railway as contemplated by the charter.

Profitable Mining in Low Grade Ore.

English capitalists, says one of our *Exchanges*, have no objection to putting a few sovereigns in mining enterprises whenever convinced that they will get them out again with a fair prospect of a few more. Accordingly they are working mines in nearly all the Pacific States and Territories, and the operations at the two mines in California, owned by English companies, for the last half of the year 1882, are worthy of note. These are the Plumas Eureka and the Sierra Buttes. The first named produced 29,460 tons from its respective claims during that period. All this ore was reduced, besides 30 tons previously on the dumps. The ore yielded only \$6.60 in free gold, and yet it was worked at a profit, because the expense of mining, including prospecting, was only \$3.35, while the cost of milling was only 45c. per ton, making a total expense of \$3.80. The net balance for the half year was \$141,600, and out of this sum a dividend of \$70,313 was recommended. This has since been paid. The mine has given to its stockholders to date, the sum of \$1,730,800. The Sierra Buttes mine produced 15,769 tons ore during the same interval, all of which passed through the mill. This ore yielded \$7.48 per ton, or, including tailings, \$8.18. The working expenses were \$5.56, including \$4.98 for mining and prospecting, and 58c. for milling. Excluding the work on the eighth and ninth levels, the working expenses were \$4.15 per ton. The net balance for the half year was \$43,800, from which a dividend of \$30,625 was recommended. This has since been paid, and makes a total of \$1,460,300 given to stockholders to date. Here are two low grade mines that are being worked by English capital at a profit. We have in Canada numerous quartz claims of equal value, and some much richer in gold, that are now lying idle for the want of capital to develop them. Cannot English capital be employed in Canadian territory to as good advantage to the capitalist as it can in the United States? Those who are familiar with the nature of our mineral deposits, and their accessibility, say it can, and we will be pleased to see Englishmen investing more liberally in our mining industries.

One cubic inch of gold is worth \$210; one cubic foot, \$312,380, and one cubic yard, \$9,976,762 (counting the ounce at \$18).

THE MINNESOTA GOLD EXCITEMENT.

Mr. W. M. Curtis, M.E., in a letter to the *Engineering and Mining Journal* from Detroit, Mich., says:—

"The entire collapse of this North Sea's bubble has not surprised intelligent and honest assayers to whom samples of the "gold rock" were submitted.

Just where the blame rests is a little in doubt at present; but all circumstances seem to point to an accidental concurrence of a few amateurs, dishonest, self-styled assayers, who gave high returns on any rock, simply to add a few dollars to their incomes, without knowing the similar rascality of the others, or suspecting the extent of the excitement that was to be raised.

The chief culprit in these false returns now claims simply carelessness and want of knowledge of assaying to account for giving, during the past six months, hundreds of dollars per ton to any gabbro boulder, the necessary pyrites giving him the clue for a gold return. The same rock at another time would run high in silver. One St. Paul expert, after giving 25 ounces of gold per ton, with the remark that it occurs as "chloride of gold" (in those old weather-beaten, moss-covered rocks of Lake Superior), calmly says he does not think it much of a country for gold either, but looks for large silver yield.

Besides the assaying, no one but the United States Land Office seems to have made anything. Some \$100,000 have been paid for worthless land, mostly rocks, bluffs and swamps, difficult to explore or reach, devoid of valuable timber or agricultural land. The fishing, however, is good. If it were not for the difference of the level of the lakes, it would be difficult to decide whether to call the country an archipelago of lakes or of islands.

On our trip, in canoe, from Vermilion lake to Grand Portage, we crossed 55 lakes and made 54 portages (32 miles portages), poled up six rapids, ran down many more, and yet did not go where the lakes were very plentiful, following mostly the United States boundary line of large lakes.

To the west of Emery's camp, the centre of the gold excitement, only the upper traps rise above the water, so that it is doubtful if anything will be found until the Vermilion Lake belt is reached. To the east, however, especially east of Gun Flint Lake, the Aninikie or Canadian silver-bearing belt is very well developed, so that it is possible that rich silver deposits like those of Silver Islet, Rabbit and Silver Mountains may be found. A dense underbrush and a heavy covering of moss make exploration especially difficult. There is, without doubt, a fine belt of iron ore nearer Lake Superior. For beautiful scenery, fine fishing, and opportunity to study greenstone trap in all its forms, this country is unsurpassed.

It might be justice if the United States Geological Survey would devote part of the \$100,000 obtained for these lands to determine the construction and the continuation of the veins in this district."

By an explosion on the 20th June, in the Burley Pit, at Apedale, North Staffordshire, ten persons were killed.

During the past ten years Kimberley, South Africa, has exported diamonds valued by itself at forty million pounds sterling, and by the jewellers who deal in them at a hundred millions.

MINING NOTES.

NOVA SCOTIA.

The Rawdon gold mines show 161 ounces of gold for the month of May.

The Salmon River mine at Chezzetcook has resumed operations with promising results.

The amount of gold per man employed, as reported to the mine offices, has never been greater than at present.

The Gallagher mine, in the district of Stormont, shows returns of 499 ozs. 17 dwts. gold from crushing 197 tons of quartz.

Never in the history of gold mining in this Province has the volume of paying work done been greater than at the present time.

The operations of Messrs. Hall and Owen on their property at Leipsigate Lake are progressing favourably and the vein is being proved by judicious development.

The Spring Hill collieries in Nova Scotia are raising 1,500 tons of coal per day. In one day last month 1,693 gross tons were shipped by rail. This is the largest output yet attained by any colliery in Canada.

QUEBEC.

The asbestos mines of the Eastern Townships are yielding more abundantly this season than ever before, and there is more activity noticeable, especially at the mines in the townships of Thetford, Coleraine and Broughton.

At the Bristol iron mine in the County of Pontiac, owned by the Robert's Iron Company, of Charlotte, N.Y., mining operations are actively progressing. There is a fine quality of ore on three sides and in the bottom of the shaft, and ore is being raised at the rate of fifty tons a day.

The Capelton copper mines are yielding abundantly and are being worked at large profit, notably the mine owned by the Nichols Company, New York. The ore is shipped to the company's sulphuric acid works at Brooklyn, N.Y., and after the sulphur has been extracted the copper matte is sold, chiefly in Swansea.

The Forsyth iron mine in Hull Township, Ottawa County, is still idle. The shaft is filled with water and the machinery and buildings are going to ruin. This is one more instance of want of enterprise of Canadian mine owners. The proprietors of this property will neither work it themselves nor lease it to people who are ready to work it and pay a reasonable royalty on the ore extracted.

Gold mining in Beauce continues active, and the district has been visited during the past few months by many scientific mining engineers and practical miners, all of whom have expressed the opinion that the quartz ledges could be very profitably worked, and that under a proper system of mining the alluvial deposits would yield good *pay*—many of them are doing so although the methods employed are most primitive.

At the Haycock iron mine, in Ottawa county, is another monument to misspent capital in the shape of decaying buildings and machinery,

which were located and erected before a mine was established. It is unquestionably a valuable property, containing abundance of high grade ore, but is as yet not only quite undeveloped but it has not yet been even properly prospected, and, notwithstanding this, not less than \$125,000 has been uselessly expended on buildings, machinery and ill-advised mining.

ONTARIO.

Owing to the dullness in the iron trade none of the mines in Frontenac county are being worked at present.

Two more mines will be opened this season by the Central Ontario Railway Company, and the force of workmen employed at the Coe Hill mine will be much increased.

Two gentlemen of Pembroke are opening up a copper vein in the vicinity of North Bay which promises to develop well as the surface indications of the lode show considerable mineral strength.

The Central Ontario Railway Company commenced running ore-trains before the end of May, and ore has since been forwarded daily to Weller's Bay from the Coe Hill and other iron mines for shipment to Cleveland, Ohio.

It is not improbable that a change will very shortly take place in the management of the Canada Consolidated Gold Mine in the township of Marmora. Messrs. Stevens and Newberry, who have furnished the money to carry on the work under the present lease, are much dissatisfied with results, and it is to be hoped that the contemplated changes will be the means of placing this property on the list of dividend paying mines. The vein is capable of producing abundance of rich ore that would yield gold at a large profit if properly treated.

BRITISH COLUMBIA.

Early in June a strike was made on Finley creek, about ten miles from Kootenay lakes. Rumour says the miners make from \$5 to \$7 a day.

During the past winter in Cassair district one tunnel claim on McDame's creek produced a little gold, also one on Thibert creek, but the winter was so severe as to render it almost impossible to do anything.

A dry gulch near Lorne creek is being successfully worked by several parties. Water is being brought on the ground for washing. Parties who have been prospecting the various creeks adjacent to Lorne creek report having struck good *pay*.

The Yale silver mine, owned by Mr. Teague and others, will be developed in order to test its worth and extent. Ore assaying \$75 to the ton has already been taken out and if the mine gives promise of continued richness, it will be extensively worked.

Information has been received that the silver discovery on Shuswap lake is likely to prove of some importance. It is said that the lode is sixty feet in width and that seams containing gold and silver have been found, the outcroppings of which assay from \$40 to \$80 per-ton.

In Cariboo district the Big Bonanza claim, on Lightning creek, through which the water broke, is again being worked with increased vigor, and

at William's creek good *pay* is being taken out. Bridge river miners report that they are doing very well, as also those on Kithley creek, north of the 150 mile post.

The Marquis of Lorne Co., on Dease creek, has found a hill channel which prospects from \$1 to \$20 to the pan. The company is making preparations to begin washing at once. This company has been prospecting for the past three years in the Cassair district and this is the first encouragement it has met with.

News from the miners on Lorne creek is satisfactory. A nugget weighing 104 dollars, the largest yet found on the creek, has been taken from the original Young American claim where a wing dam has been constructed. All the miners are busily engaged in making preparations to take out gold, building flumes, etc. Some Chinese miners have been driven from the creek.

R. E. Sproule shot and killed Thomas Ham-mill on the 3rd June while the latter was at work on the *Blue Hill* claim at Lake Kootenay. The murderer fled to the mountains after committing the crime and has since been captured. Sproule was looked upon as a dangerous man, having had a real or fancied grievance against the Ainsworth Company for invasion of his rights as a discoverer.

Mr. George Seymour and four men have been constantly engaged for the past nine or ten months in prospecting for coal for the West Vancouver Coal Company on Quatsino Sound. In the borings they have struck seams 3 and 4 feet thick, but none that would pay to work. Prospecting will, however, be continued as they are confident the search will be ultimately successful.

UNITED STATES

Ice was two feet thick at the bottom of some of the marble quarries in West Rutland, Vt., May 23.

A marl pit which abounds in petrified remains of animals has been discovered near Cuthbert, Ga.

A gigantic crystal of spondumene found in Dakota measures, according to Prof. Blake, thirty-six feet in length and from one to three feet in thickness.

Plymouth Consolidated Gold Mining Company, of California, has declared a dividend (No. 26) of \$50,000, or 40 cents a share, payable July 9. Total dividends \$1,300,000.

During the first five months of this year the output of the Calumet and Hecla is said to have been 23,440,000 pounds of copper, against 21,660,000 pounds for the same time in 1884.

A nugget of gold taken from the *Cœur d'Alene* mines recently was nearly four inches long, two and a half wide, and one inch thick. It weighed nineteen ounces, thirteen pennyweights and eight grains.

A stone found near Wildwood and Sumpter-ville, Fla., recently, is said to be on one side an exact imitation of a lamb's head, while the other side resembles the head of a seal. The shape of the neck, head and nose is almost perfect.

The first shipment of red slate ever made to Europe was sent from North Granville, N. Y.,

in May last. It is a fact not generally known, that the only red slate in the world is found in four towns of Washington County, New York State.

A ledge of white stone, which somewhat resembles marble, and is susceptible of a high polish, exists in Paradise Valley, Nevada. When quarried, it is said to be much lighter and softer than ordinary rock, but hardens upon exposure.

The 19th of June was a great day for Alaska, the occasion being the starting of the large quartz mill on Douglas Island. The mill began operation that day and all the stamps, 120 in number, started at one time, and is now running in full blast and works beautifully. There is great rejoicing among all the miners over the great success. There was a salute fired of 120 guns in honour of the occasion.

The *Copper Queen* mine in Arizona has been sold to an English organization, and a statutory meeting of the company, now known as the *Copper Queen United*, was held on the 8th June at the Guild Hall Tavern. No business was transacted at the meeting because of awaiting developments in a law suit, commenced by vendors of the property against the promoters, and consequently no payments have as yet been made nor the title passed.

Gold in Manitoba.

A correspondent at Shellmouth, Marquette District, Man. says:—

"Our town may now be described as an Eldorado in the North-West. Gold has been discovered in very considerable quantities on the bank of the river. It has also been found in the cellars of the houses, in the wells; everywhere is gold. Indeed, it is a veritable 'Tom Fiddler's ground.' In its present crude state an ounce or more may be easily washed out in a week, worth \$16 to \$18. Each day you may see men sitting along the bank washing out gravel in frying-pans or other vessels. Our real estate agent has written to the Government for instructions as to claims, and we are awaiting the advent of seekers after the precious metal."

New Caledonia Mineral Production.

New Caledonia is in minerals the richest of the French colonies. In 1883 it produced 9,025 tons of nickel ore, which yielded about 824 tons of nickel, worth 6,592,000 francs, or \$,000 francs (\$1,600) per metric ton. The production of chromium amounted to 3,850 tons. French Guinea in 1882 produced 1,558 kilogs of gold, worth about five million francs (\$1,000,000).

Mining Stocks as Investments.

Again we would call the attention of our readers and of their friends to the undeniable fact that mining stocks—so generally abused for some time and even derided in business circles here in New York—are comparing more than favorably, as investments, with railroad stocks and bonds. That is to say, any comparison of market results to investors will be found altogether and markedly on the side of mining securities. This fact we would specially call to the attention of the financial editors of certain of our secular contemporaries that have perversely gone out of the way to belittle mining stock investments, with the superficiality of information habitual to the *daily press*.

The experience of those who may have bought mining shares about the first of the present year and held them, will attest that within a month nearly every mining stock on the official list here in New York, and at San Francisco, has advanced from five to several hundred per cent. At the same time there is not one railroad security that has advanced as much as five per cent. A few names will tell the story so that he who runs may read it clearly:—

On the 9th of May, for example, the Consolidated California and Virginia was selling at \$1.55 and the first of the year at thirty cents, while to-day it is fetching from \$3 to \$3.20 per share.

The Eureka Consolidated at the first of the year was selling at not more than \$1.25 per share and \$7.25 thirty days ago, while at the present writing it is quoted at \$8.

The Homestake on the 2nd of January sold at \$10 per share, thirty days ago at \$11.87, while it is now quoted at \$14.12.

The Ontario, at the opening of 1885, was selling at \$18.25—a month ago sales were made at \$21.37; now it cannot be bought under \$25 a share. The Standard at the opening of the year was selling at 54 cents; a month ago it fetched \$1.30 and now \$1.60 is the quotation. Hale and Norcross was selling five months ago at \$4, a month ago at \$6.75, and at present at \$8.75. But to make the matter plain to the dullest understanding, we ask attention to the following showing of the market for all the Comstock shares at three dates of the present year:—

	Jan. 1.	May 11.	June 10.
Alta.....	05	30	90
Belcher.....	60	1 25	1 37½
Best and Belcher....	1 12½	2 87½	3 75
Chollar.....	1 87½	2 37½	2 62½
Crown Point.....	1 90	1 62½	1 75
Gould & Curry.....	1 00	1 75	2 37½
Mexican.....	50	1 12½	1 75
Ophir.....	50	1 50	2 25
Potosi.....	65	90	1 00
Savago.....	1 62½	3 75	4 75
Sierra Nevada.....	65	1 37½	2 00
Union Con.....	60	1 00	2 00
Utah....	15	2 12½	3 12½
Yellow Jacket....	1 62	3 00	3 12½

Many other mining stocks have appreciated in like fashion, as for example, the Grand Prize, the Bulwer, the Iron Silver, etc., and very few have depreciated, such as the Horn Silver, Bassick and Navajo.—*Financial and Mining Record*.

A NEW PROCESS.

London *Engineering* informs us that Mr. P. Manhes has taken out patents for a process by which he claims to extract gold and silver from copper mattes. The mattes are roasted, after grinding, with from one to three per cent. of ammonium chloride, in a muffle-furnace. The heat is to be kept so low that the matte does not get red-hot, but all the ammonium chloride must be driven out. After this, the matte is not altered in appearance, but all the gold and silver are present in the form of chlorides, while the iron and copper remain as sulphides. The chlorides of the precious metals are then to be extracted by one or other of the well known solvents, sodium hyposulphite being specially recommended.

The El Callao, the famous Venezuelan gold mine produced \$175,500 during the month of April, and paid the shareholders a dividend of \$2.50 per share, aggregating \$80,500.

A NEW CONCENTRATOR.

The *Denver Times* says that Ex-Governor Tabor has organized a company to manufacture and introduce a new concentrator which, if it shall do what is claimed of it, will cause a revolution in mining in Colorado and the West. After the crushing of the ore it is concentrated by means of pans, arranged to work like prospectors' gold pans. Each machine has about a hundred pans on it, or has a capacity of seventy-five tons a day. From 75 to 85 per cent. of mineral is claimed to be saved, and the cost of treating the ore is only forty cents per ton.

Large Pumping Engines.

One of the largest pumping engines in the Birmingham district for draining the submerged mines has been started at Princes End at the Moat Colliery. The engine, which was supplied by Messrs. Hathorn, Davey & Co., of Leeds, is a horizontal one, with a 10 foot stroke. The pumps have two 19-inch plungers with 10-foot stroke, placed at a depth of 464 feet. The bottom lifts facing the plungers are 156 feet long. At each stroke of the plungers 245 gallons of water are brought to the surface, and the engines will raise 2,000,000 gallons of water per day. Messrs. Hawksley & Co., of Sheffield, have supplied three Lancashire boilers, 30 feet by 7 feet. The engine will dispense with six smaller engines, and will drain several miles of mineral area submerged for years. The cost of the engine and works carried out by the Drainage Commissioners is about £12,000. In a very short time the new engine will render workable immense quantities of coal and ironstone which will not contribute improvement to the present depressed state of trade.

TEMPERING MINING PICKS.

There is probably no service to which steel can be put which so effectually tests its value as mining picks. The tempering of a pick is a very nice piece of work and should be done with great care. In the first place a good charcoal fire is necessary; next, good steel, and then a good light hammer with a smooth face anvil; and lastly a man is needed with a good keen eye, considerable experience and excellent judgment. No good pick can be turned out if any of the above essentials are wanting in the process. A pick should never be "upset" or hammered endwise, or raised above a full red heat. The steel should be, moreover, heated as quickly as possible, as long exposure to heat—even if the heat is not in excess—injures its texture. Many blacksmiths find great difficulty in tempering picks, because they do not choose good steel. After being heated the pick must be worked with care, special pains being taken in drawing it out, to hammer on all sides alike, in one place as much as another, and on one side as much as the other. When ready for hardening, it should be heated in the blaze of a charcoal fire until red hot, then plunged into cold rain water, and kept there until it is nearly cold; but if kept too long in the water or until it is quite cold, the corners are liable to fall off. Some blacksmiths use hot water. No salts of any kind should exist in the water, but the water should be cold; if the water is warm and a little ice should be thrown in to chill it, the tempering will be all the better. Pure soft water for hardening will make a tougher pick, and one less liable to crack at the edges than where salt water is used. The last hammering

of a pick should always be given on the flat sides, across close to the edges, and then up each side about an inch. By so doing the corners will be less liable to crack off.—*Journal of Commerce.*

The Ingersoll Rock Drill at the New Orleans Exposition.

The Ingersoll Rock Drill Company, of New York, have carried off the highest honors at the New Orleans World's Fair, where their handsome exhibit of rock drills, air compressors and other mining machinery attracted general attention. The judges have awarded them three first prizes, namely, a gold medal for the best rock drill, another for the best air compressor and still another for the best display. In making these awards, the judges, who had the best opportunity of appreciating the qualities of the different makes of machines placed in competition at the fair, side by side, have but confirmed the popular verdict and voiced the general opinion regarding the merits of the machines manufactured by the Ingersoll Company.

A RUSSIAN PLACER MINE.

A Party of Eight "Pan Out" a Pound of Gold a Day.

A recent issue of a Russian journal contains a somewhat incredible report to the effect that the latest mining news is the discovery of a remarkable placer mine about twelve miles from the river Amoor, on the China side. A majority of the miners from beyond the Baikal province, numbering about 6,000, are now at work, and as the news of the discovery spreads the force is daily augmented by fresh arrivals. The road leading to the mines is from Soatenska, the nearest town along the river Shelka and Amoor, thence a short distance across the mountains. The gold is obtained by the primitive method of washing in pans, and the work is not conducted as in well regulated mines, where the men work in rooms, but is carried on by small bands of prospectors, who work in parties of from eight to ten and take out about a pound a day. The work is not considered paying when much less than a pound a day is taken out by one party. In the villages near the mines there is no paper money in circulation, gold dust being used instead. As in all new mining camps, provisions are high, the price of meats being about \$1 a pound, and bread is the same price, while for a gallon of whiskey \$20 is the price exacted from the thirsty miners. When an offence is committed the culprit is brought before the President of the village, who acts in the capacity of Mayor. He is tried, and if found guilty is summarily dealt with. The fear of swift justice is so powerful that few crimes are committed. Gold and valuables of all kinds are left exposed without danger of being stolen.

The estimated supply of gold now available as money will not exceed \$2,600,000,000.

A few years ago a life was lost for every 30,000 tons of coal mined. Now 100,000 tons are mined per life lost.

A crane capable of lifting a weight of 147 tons is in course of construction at Hamburg. It will be the largest machine of the kind on the continent of Europe, that of Antwerp coming next with a lifting power of 129 tons.

The Gold Product of Venezuela.

United States Consul, Wm. Henderson, stationed at Ciudad Bolivar, under date of January 10th, 1885, makes a most interesting report to the State Department at Washington, concerning the resources and productions of Venezuela, from which we take the following statement of gold exported from that country, not only for the year 1884, but also for the nineteen years ended with 1884. His first table is one of the gold received from the mines and exported from Ciudad Bolivar during the year 1884, which shows that *El Callao* shipped 175,424 ounces; *Chile*, 22,970 oz.; *Panama*, 19,474½ oz.; *Potosi*, 8,509½ oz.; *Nacupay*, 574½ oz.; *Private mines*, 6,982 oz.

As usual *El Callao* heads the list; the Chile comes next, although it has not done as well in 1884 as in 1883, showing a decrease of over 9,000 ounces. Panama has done remarkably well for its first year's workings; Potosi has also done fairly well since it began work in March under the new management. Nacupay, owing to difficulties with the government, stopped work in April last and so far, Mr. Henderson says, shows no sign of starting again.

The second table shows the yearly amount of gold shipped from Ciudad Bolivar by the agencies of the gold mining companies and merchants from the year 1866 to 1884, both inclusive, aggregating, during that period of nineteen years, 1,557,567½ ounces, valued at \$29,818,000.

The chief mining field is that of Zuruary, in the State of Guayana.

It is stated that the amount produced of roofing slate in the United States alone is 500,000 squares per year. A "square" is about 100 square feet.

A Working Colliery at the Antwerp Exhibition.

The *Colliery Guardian* says:—The colliery at the Exhibition is a great attraction. It was a happy idea of MM. Desenfans and Soupart to exhibit a complete model of the underground workings of a coal mine, not in miniature, but in full size. There is the drawing shaft, down which the visitor may travel into the darkness of workings some 30 feet below ground. Here he will find every thing as it exists in an actual mine, less the fire-damp. A wag the other day suggested the propriety of introducing a little of the latter occasionally, just to show the effect of an explosion, but we have not learned that the suggestion has yet been acted upon. There are roads, faces of work, and drifts in progress; even the water and the dirt have not been forgotten, as the visitor will learn on returning to the daylight. Real miners have been provided to show how the work is performed, and horses, not less real, are there to haul the trains of ore-tubs to and fro. Such an exhibit was sure to attract by its novelty, but the result is even greater than the expectation of the promoters. The pit-bank is crowded from opening till closing time by persons patiently waiting their turn to descend. When Old London is worn out at South Kensington, a colliery might be transported thither with every chance of its turning out to be equally attractive.

The conclusion of Professor G. H. Kinahan's paper "On a possible Genesis of the Canadian Apatite," begun in our June number, will appear in the August issue of the REVIEW.

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Offers For SALE some of the best located and most promising

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In the Townships of
**BUCKINGHAM, TEMPLETON, PORTLAND
EAST AND PORTLAND WEST.**

Phosphate Bought and Sold.

Advances made on Phosphate to be shipped and Sold abroad on Commission.

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50 Square Miles.

This limit will be very valuable. Apply at the office of the MINING REVIEW for price and particulars.

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IN THE TOWNSHIP OF BUCKINGHAM,
On which are extensive surface shows and out-croppings of fine quality of Graphite. Further particulars to be had at the office of the MINING REVIEW.



NOTICE TO CONTRACTORS.

SEALED TENDERS addressed to the undersigned and endorsed "Tender for Rolled Iron Joists and Steel Plate Girders for the New Departmental Buildings, Wellington Street, Ottawa, Canada," will be received at this office until Saturday, the 25th July next, inclusively, for the Supply and the Erection of Rolled Iron Joists and Steel Plate Girders for the New Departmental Buildings, Wellington Street, Ottawa, Canada.

Plans and specifications can be seen at the Department of Public Works, on and after Monday, the 6th day of July.

Tenders must be made on the printed forms supplied.

Each tender must be accompanied by an accepted bank cheque, made payable to the order of the Honorable the Minister of Public Works, equal to five per cent. of the amount of the tender, which will be forfeited if the party decline to enter into a contract when called on to do so, or if he fail to complete the work contracted for. If the tender be not accepted the cheque will be returned.

The Department will not be bound to accept the lowest or any tender.

By order,

A. GOBEIL, Secretary.

Department of Public Works, }
Ottawa, 2nd July, 1885. }

FOR SALE.
**DEVELOPED
PHOSPHATE MINE**

ADJOINING THE FAMOUS LITTLE RAPIDS MINE IN PORTLAND EAST.

THIS location has been pronounced by experienced practical miners one of the most promising apatite producing properties in the district. There are over TWENTY SURFACE EXPOSURES of Good PROMISE, and one deposit now being worked that proves an extensive body of phosphate at a DEPTH OF FIFTY FEET.

Price reasonable and satisfactory reasons given for selling.

Full particulars obtainable at this office.



NOTICE TO CONTRACTORS.

SEALED Separate tenders addressed to the undersigned and endorsed "Tenders for Hot Water Heating Apparatus, Barrie, Ont.," will be received at this office until Monday, 20th inst.

Plans and specifications can be seen at this Department, Ottawa, and at the office of Messrs. Kennedy, Gavillier & Holland, architects, Barrie, Ont., on and after Thursday, 2nd inst.

Persons tendering are notified that tenders will not be considered unless made on the printed forms supplied and signed with their actual signatures.

Each tender must be accompanied by an accepted bank cheque, made payable to the order of the Honorable the Minister of Public Works, equal to five per cent. of the amount of the tender, which will be forfeited if the party decline to enter into a contract when called on to do so, or if he fail to complete the work contracted for. If the tender be not accepted the cheque will be returned.

The Department will not be bound to accept the lowest or any tender.

By order,

A. GOBEIL, Secretary.

Department of Public Works, }
Ottawa, 2nd July, 1885. }

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In the Township of Portland West,
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Lots 25, 26, 27 and 28, in the 3rd range. Some excellent surface shows have been uncovered on these lots and only require capital for developing. Price and particulars given at the office of the MINING REVIEW.

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White Marble Quarry on Calumet Island.

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