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MINING REVIEW

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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 it is to appear.

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

CANADA is now, and for some time has been, making rapid strides towards the development of her mineral resources, and in almost every Province of the Dominion a vast amount of capital is employed in mining operations and in the reduction of the product of the mines. In Nova Scotia, Quebec, Ontario, Manitoba, the North-West Territories and in British Columbia, discoveries are made, almost daily, of economic mineral deposits, and foreign capital is not unavailable for their immediate development. As it has been carried on to any extent, so as it has been in Canada; many

mines have proved unprofitable and much money has been wasted through inexperience and the absence of suitable machinery for the proper treatment of the ores mined. That some, in fact many, of the properties, long since deserted might to-day be worked to advantage with the modern improvements in machinery and the facilities afforded by the advancement in science, there is not the slightest doubt, but a property once abandoned is afterwards looked at with suspicion, and it requires more than ordinary courage to endeavour to revive what has for years been looked upon as a "dead horse." Some mines, however, that had lain idle for a quarter of a century, have been reclaimed within the past few years, and work resumed with most satisfactory and encouraging results to those who were not tardy in seeing where the original operators had fallen into error and where discarded ores had become valuable under modern treatment. People of to-day who are disposed to engage in mining enterprises have many advantages that were denied the pioneers of the industry, from whose experiences valuable information can be derived. With the use of the Diamond Drill, prospecting can, in many localities, be reduced to a minimum of cost; steam drills and powerful explosives are important factors in the reduction of the cost of mining; recent scientific discoveries by chemists, metallurgists and mechanical engineers, render the reduction of ores less expensive, and the rapidly increasing demand, through the many new uses to which various minerals are applied, combine to increase

the value of the mines' production, and to offer better inducements for the investment of capital in mining enterprises of the present day than at any former period.

The mineral deposits of economic extent, that are distributed from ocean to ocean over the Dominion of Canada, comprise a large portion of her natural wealth, and the forming of companies and the importation of foreign capital, for the purpose of developing this wealth, should be with a view to the permanent working of our mines on a fair mercantile basis rather than with the expectation of reaping immediate fortune. Bonanzas are not to be found every day, but prospectors are ever searching with the hope that each day brings them nearer to fortune, in consequence of which mineral deposits of extraordinary richness are occasionally, though not frequently, met with.

It is but natural that, during a mining boom, people should be apt, under excitement of the moment, to exaggerate the importance of discoveries in which they are personally interested, but all those who have Canada's interests at heart should aid in suppressing the organization of wild-cat schemes and the operations of intriguing manipulators. If Canadian mine owners adopt an honest policy at the outset, in their transactions with the public, it will lead to the establishing of confidence abroad, and continued prosperity for themselves and their fellow countrymen will follow.

The Engineering and Mining Journal, New York, in its issue

of October 13th, publishes, editorially, as follows:—

"Those who have invested capital in the phosphate lands of the Province of Ontario are considerably alarmed at a recent decision in the Quebec courts. The Local Legislature had passed an Act cancelling the title to certain Crown Lands, on the ground that the necessary settler's improvements had not been made, and had sold them as phosphate lands. This Act has now been set aside by the courts, and, should their decision be sustained, on appeal, by higher courts, the titles, under which many phosphate mines are worked by American capital, would be destroyed."

There is no doubt that the recent decision of Mr. Justice Macdougall, at Aylmer, in the case of Holland Brothers vs. Ross, involves a nice point, bearing on the administration of Crown Lands in the Province of Quebec. The judgment sets aside an Act of the Local Legislature cancelling the titles to certain Crown Lands in the County of Ottawa, on the ground that the necessary settlement duties had not been performed in conformity with the conditions governing the grants. This Act applies to thousands of acres of land, and if Judge Macdougall's decision holds good in one case, it must nullify the legality of the Act as affecting all other lands similarly held. The Local Government were not a party to the suit, and allowed it to be conducted as between individuals, but, as the Judge's decision has brought the constitutionality of the Act into question, it will be tested, if necessary, before the highest tribunal, in the interests of the Province, and it is not improbable that this recent decision will

be reversed, and the title to the phosphate lands, referred to in the *Engineering and Mining Journal*, thus ratified; in the meantime there is no cause for alarm. That any action of the Quebec courts could affect the titles to Crown Lands in Ontario is impossible, and the illusion to them in the article published in the *Engineering and Mining Journal* is an error.

THE OUTLOOK FOR PHOSPHATE MINING IN CANADA.

In the September number of the REVIEW, reference was made to the high standard of the summer's shipments of phosphate from Canadian mines, as shown by analyses returned by English buyers. Communications received from London and Liverpool during the month are less satisfactory, as they report the recent receipt of several heavy shipments of ore which, upon being analysed, proved to be of an inferior grade, and had much to do with the falling off in the demand for Canadian phosphate in the English market. This unfortunate circumstance is due in no measure to inferiority of the deposits, but can be attributed exclusively to a desire on the part of miners to increase their output beyond the capacity of the mines. No greater mistake can possibly be made, and it becomes necessary to reiterate the advice already frequently given to owners of mines, to economize neither time nor labour in separating their ore from refractory matter and other objectionable matrix. The complaints that have reached us from abroad are of a very serious nature, and consignees, in criticising recent shipments, describe the mineral as being badly mixed with iron pyrites and mica, and to such an extent that some manufacturers who purchased have been exposed to serious extra expense in its manipulation. This attempt to increase the bulk of shipments is a shortsighted policy, and is having the

effect of prejudicing manufacturers against Canadian phosphate and of lowering its value in foreign markets. That all miners should suffer from the carelessness of the few is unjust, but, unless prompt steps are taken to prevent low grade mineral from going forward as "1st quality," such will be the inevitable result, and this important industry will be permanently injured. Canadian apatite can be shipped as free from refractory matter as can that from any part of the world, and the expense of cleaning up, so as to bring it to a high state of purity, is much more than counter-balanced by the increased value of the output. During last year one of the most valuable mines of Ottawa County produced a large quantity of ore, and the shipments during the summer show by analyses a variation of seven per cent., all taken from the same deposits. The mineral from the mine referred to should run of a uniform grade of not less than 82 per cent., whereas some of the cargoes sent forward returned analyses varying from 72 to 79 per cent., showing plainly that some one had been responsible for gross carelessness at the mine.

The mines are to-day more capable of producing high grade mineral than they have ever been, and they are yielding abundantly. Owners are equipping their properties with machinery suitable for carrying on permanent operations, and many of them are introducing valuable facilities for the more expeditious and economical handling of the output. The market abroad shows signs of improvement; higher figures are already offered for next spring delivery, and there is every reason to believe that prices will range as high during the winter as they did during the same season a year ago. Much, however, will depend on the quality of the ore sent to point of shipment, as it will there undergo close inspection before being forwarded, so as to avoid a repetition of the recent experiences above referred

to. Let miners look carefully to their own interests, and those of others, and not jeopardize future prospects nor depreciate the value of their properties by shipping phosphate of an inferior grade.

THE MINES.

Nothing could be more encouraging than the present appearance of the mines in the Ottawa district, and owners have begun to prepare for work during the approaching winter. During the autumn season much new ground has been prospected and many promising deposits have been discovered which will afford employment for a large number of miners. At

"HIGH ROCK"

nothing of importance has taken place during the month. The output continues much the same as formerly, viz., about 15 tons daily, and it is not improbable that this will be the average yield for some time to come.

THE UNION P. M. AND L. COMPANY'S

property adjoining "High Rock," is developing as well as could be expected, in fact the most sanguine members of the company could not but be highly pleased with what has been accomplished since the company broke ground last spring. The deposits continue to increase in size as work proceeds, and many new openings of a promising character have been made on the property, while the improvements, in the shape of buildings, docks and a trainway, do much credit to Captain Smith, under whose immediate supervision this work has been carried on. Stockholders and others interested in this company's prosperity will do well to visit the property and judge for themselves of the extent of the developments and of the substantial character of the improvements. A large quantity of mineral is being raised daily and is being forwarded in a state of purity that does credit to the manager of the mine, and that will establish a reputation for the property.

"NORTH STAR."

At this mine a shaft is now down 30 feet in phosphate and several new deposits have been met with equal to, if not better than, anything that has yet been discovered on the company's location. To work this property to advantage at least 100 men might be employed as it has been put in good shape to ac-

commodate a large force. We learn that at present not more than 20 miners and other labourers are engaged, which is, to us unaccountable for we look upon the property as next, in yielding capacity, to the "Emerald" and when properly developed will prove to be of great value. We have pronounced the mineral already shipped from the mine of exceptionally high grade, and in this particular there is no falling off in what is being now raised.

THE "EMERALD"

is looking as rich as it ever did, and the quantity of mineral raised each day is about twenty tons, or much the same as it has been for months past. The quality of the mineral is above the average, and, as it is being carefully picked, there is little doubt but that shipments will run uniformly 82 per cent. This mine is now well known to phosphate miners, and it is generally conceded by them to be the most valuable property in the district. Certainly no property has yet been developed that is capable of yielding the same amount of high grade mineral at small cost. With proper management there should be nothing to prevent the ore being mined and delivered at the railway depôt at a maximum price of \$4.00 per ton, and taking this as a liberal estimate, it would not be difficult to calculate the net daily profits on the output.

THE "MCLAURIN" MINE

continues to give employment to a fair force of men and yielding freely, there being apparent diminution in the quantity of ore in sight nor in the daily output. The mineral is of the same high grade as that which is cobbled to the uniform standard that has long since marked the output from this mine since after in the English market.

THE "POST" MINE

shows no signs of weakness, and is equally productive as it has been at any past period; the mineral is of almost a similar grade to that of the McLaurin Mine, but that less care is taken by those in charge at the mine to forward it in as high a state of purity is visible to anyone who may have inspected that portion of the summer's output lying at Templeton Station.

THE "HALDANE" MINE

is yielding well, but the output is not as clean as could be wished. Other pits are, however, sending out very good mineral.

and by keeping them separate, as two distinct grades, the owners need not suffer from the inferiority of one. The property is capable of producing large quantities of 1st and 2nd quality, and, ere long, it is to be hoped a convenient market will be established for low grade ores from all the mines in the district.

THE "GEMMILL" MINE

is looking better to-day than at any time during the past year; in fact, it may be said that those in charge are of opinion that heretofore they have been working on mere spurs, or strings, and that present indications lead them to the belief that they are only now approaching the main body. This has been a very profitable property to its owner. Several thousand tons have been shipped and the quality of the mineral is of a very high grade—shipments having run uniformly about 83 per cent.

OTHER MINES

have done nothing of much importance during the month, though report of progress is very satisfactory, and a large amount of mineral is accumulating for winter transportation to points of shipment. The average yield continues to be about the same, and the popular opinion is that the Canadian Pacific Railway Company will be compelled to provide increased facilities at the stations for stowing the output until it can be forwarded. The company have already received applications from four mine owners for accommodation for 15,000 tons, and the erection of a large number of bins for the purpose is contemplated. This gives some idea of the quantity of phosphate that will be shipped from Canada next season.

Phosphate Quotations.

It was stated in the last number of the REVIEW that those who could afford to hold over their summer's output would unquestionably realize better prices for next season's delivery, and the correctness of the statement has been fully proved during the month by offers from dealers in England to make contracts for spring delivery at prices well in advance of what has been tendered producers during the past four months. It must be borne in mind, however, that high grade phosphate is what manufacturers look for, and shippers of inferior quality need not expect to find ready sale at current prices. The latest quotations received for im-

mediate delivery on dock at Liverpool, London and Glasgow, are 1s. 2d. to 1s. 3d. per unit for 80 per cent. guaranteed.

Freight to Montreal.

It is gratifying to learn that the Canadian Pacific Railway Company are likely to reduce the rate of freight on phosphate, responsive to a petition by the more important shippers. The reduction anticipated will be about 12½ cents per ton, or about \$1.12½ per ton from Buckingham Station to the Montreal terminus. The railway company are also preparing to construct additional bins for the accommodation of the steadily increasing output of mineral, which looks as though they proposed holding the carrying trade at all hazard; but, as owners of barges are bidding for this patronage, and are prepared to cut prices, the Railway Company will so well to consider the question of rates. In shipping by water much handling is avoided by barges discharging alongside the vessel.

GENERAL MEETING

A special general meeting of the Dominion Phosphate Mining Company will be held at the office of the company in Montreal on the 14th of November, for the purpose of increasing the capital stock. This corporation holds its charter under a special Act of Parliament, passed during the session of 1882, and has for its officers, Henry Earle, Esq., President; A. F. Riddell, Esq., Vice President; Chas. Kyte, Esq., Secretary-Treasurer; A. J. Hantoon, Esq., Managing Director. The company's property is known as the "North Star," situated in the Township of Portland East, and is one of the most promising locations in the County of Ottawa.

ACCIDENT

On the Riviere du Lievre.

It was only last month that we called attention to a new scow on the Riviere du Lievre that had been constructed by Messrs. Allen & Bothwell, capable of carrying sixty tons of phosphate. On her first trip an accident overtook her in the Little Rapids on the way to Buckingham Landing. While in the narrow channel she struck a rock, staving a hole in her bottom, and, after drifting a short distance, sank in fifteen feet of water, taking with her about fifty tons of phosphate belonging to the Union Phosphate Company. Divers have since been at work endeavouring to raise her, but without success. It has at last been discovered that she lies embedded in clay, and all hope of moving her has been abandoned until the water lowers. That such an accident should have happened is unfortunate, and that it should have been attended by the loss of valuable property is to be much deplored.

A TEST SHAFT.

Not long since a report was current that Mr. Vennor had expressed an intention of sinking a fifty feet shaft on property adjacent to the Emerald Mine, in the Township of Buckingham, with a view to demonstrating a theory that the large body of phosphate exposed by the development of the Emerald Mine extended beyond the boundaries of Mr. Allan's location, and would be found at a calculable distance below the surface. It is to be earnestly hoped that this theory, or "conjectured turn-over of the bedding" as it has been termed, is a correct one, and that the test spoken of will be made without loss of time; but the sinking of a shaft of suitable dimensions does not appear to be absolutely necessary, more especially as it is said to be the intention to sink continuously until the required depth has been reached, regardless of any mineral deposit that may be met with that does not appear to be the main body sought. If there exists any serious intention, on the part of owners of property contiguous to the Emerald Mine, to adopt this means of searching for the phosphate bed within the limits of their respective claims, we would suggest that a co-operative movement might be set on foot, and the several properties prospected with a Diamond Drill at a minimum of cost, thus avoiding the expense of shaft sinking. Should this suggestion meet with favour, we will be happy to provide owners with estimates of the probable cost attending this effectual method of prospecting.

TREATING LOW GRADE PHOSPHATE.

Since the publication, in the September number of the REVIEW, of an article on this subject, we have had an opportunity of personally visiting many of the phosphate mines, and were much impressed with the vast amount of low grade ore that is lying at the mouths of the pits, and at the seemingly large quantity of mineral mixed with the rock in the dumps, all of which is cast aside as unmarketable in the absence of suitable machinery to separate them. We have recently been favoured with a detailed explanation of the *modus operandi* by which the separation may be accomplished, and the low grades converted into merchantable condition, and, unless some grave miscalculation has been made, the machinery which is to do the work appears to be well adapted for the purpose. That this proposed new industry would be of great benefit to the district, it is admitted on all sides, and even those who are most skep-

tical as to its feasibility are open to conviction. That the ore can be successfully manipulated it will shortly be practically demonstrated, after which a company will be formed with sufficient capital to carry on operations on a large scale. Much of the stock has already been applied for.

NAVIGATION OF THE RIVIERE DU LIEVRE

About three years ago this important question received attention from the Department of Railways and Canals, and some work, of an experimental nature, was done at the Little Rapids with a view to deepening the channel and rendering that part of the river navigable. A considerable quantity of rock was removed from the river-bed and, to a certain extent, the work done proved efficacious, but the traffic, in connection with the mining interest contiguous to the river, increased to such an extent the following season that improvements of a more permanent character became necessary, and it was resolved to petition the Government to cause a lock to be constructed at the point above referred to, that would answer the double purpose of raising the water sufficiently at the Long Rapids and of making the Little Rapids navigable, without regard to high or low water, for any vessel suitable to the requirements of the ordinary traffic of the river. The petition was favourably received and an appropriation of \$10,000 made for the purpose of the immediate carrying out of the proposed improvements, but, through the intermeddling of an individual, or individuals, it was subsequently represented to the Minister of Railways and Canals that the expenditure of the appropriation, for the purpose for which it had been voted, was unnecessary, and that the small amount of work that had been done was sufficient to render navigation on the river practicable and safe. The intention of constructing the lock was, therefore, abandoned, and all the property owners and miners in the vicinity of the Riviere du Lievre have been allowed to suffer in order that the selfish object of an individual might be attained. The first casualty that has been recorded, on account of the absence of the improvements asked for, occurred but a few days ago, when an attempt was made, for the first time, to run the rapids with a barge laden with fifty tons of phosphate; it resulted in the craft going to the bottom with her valuable cargo, particulars of which will be found in another column, and may be the means of convincing its owners that the construction of a lock at this point is not altogether unnecessary. We trust it will be followed by a movement to revive the cry for the speedy execution of the much needed improvements.

GRAPHITE.

For years Ceylon supplied the world with plumbago; the celebrated Cumberland Mine in England is well nigh exhausted, after having been worked for over a century; the United States have of late years taken fair rank in its production, but it is in Canada that deposits of plumbago exist, the richness and purity of which, and freeness from lime—an impediment detrimental to the manufacture of good crucibles—if properly developed, would place Canada, if not in advance of Ceylon, at least before all other countries of the world now producing this mineral. Its abundant existence in the County of Ottawa and throughout eastern Ontario is conclusively established. In Ottawa County it occurs in three distinct forms, viz: as disseminated scales or plates; as lenticular or disseminated masses imbedded in limestone, and as fissure veins cutting the enclosing strata. The plumbago deposits in this district must sooner or later become known the world over for their vastness and for the superior quality of the mineral, as they offer strong inducements for the investment of capital, with every prospect of fortune.

To illustrate the important position Canada might occupy among the plumbago producing countries of the world, and that the superiority of her mineral is recognized outside of the Dominion, we publish the following article on graphite which appeared in the *New York Engineering and Mining Journal* over the signature of Mr. John A. Walker.

"As a mineral, graphite is widely distributed in the United States; as an ore it is found in but few places in sufficient quantities and purity to be profitably worked. It is found in the older rocks of the Appalachian chain from Alabama to Canada. Several discoveries of it have been reported from Michigan. Mr. F. F. Chisholm reports its occurrence in "great purity in five different localities in Albany County, Wyoming Territory, in veins from 18 inches to five feet thick. In Colorado, it is found in different parts of the State. At Pitkin, in Gunnison County, it occurs in beds two feet thick, but very impure. In New Mexico, pure graphite is found in small quantities in the Coal Measures, where it is probably the result of metamorphism. Graphite occurs sparingly in the Black Hills of Dakota." It has been mined at the Senoia Mine, Tuolumne County, California.

Of the eastern deposits, those of Pennsylvania, New Jersey, New York, and Canada are of the crystalline or foliated variety, are the best known, and are the only ones which are at present worked. The deposits occurring in Alabama, North Carolina and Virginia are of the amorphous variety. These are of such a nature that purification is economically impossible. They can be used only in the crude state and for but few purposes. The western deposits are still undeveloped.

Origin and Characteristics.—Graphite is now generally conceded to be of organic origin—the result of the metamorphism of some of the products of destructive distillation of vegetable tissue. It occurs in veins, beds, and disseminated through strata (graphitic schists). The veins occur principally in New York, Canada, and the far West. They are true fissures in gneissoid rock. The vein graphite is usually associated with calcite and quartz. Pyroxene, mica, and apatite are sometimes found with it. Crystals of calcite are found which, on being split, show scales of foliated graphite along the planes of cleavage. Graphitic schists are found in the same regions as the veins, and also in New Jersey and Pennsylvania. These are metamorphosed sandstones with foliated graphite very evenly disseminated throughout in small flakes. The graphite found in beds is amorphous, and occurs principally in the south. It is in a sedimentary formation, is quite impure, and on account of its fineness cannot be successfully purified. Geologically, graphite occurs from the Coal Measures back to the oldest rocks.

Productive Localities.—The only place in the United States where graphite is now mined successfully is at Ticonderoga, New York. This property, owned originally by the American Graphite Company, now belongs to the Joseph Dixon Crucible Company, of Jersey City, New Jersey. The American Graphite Company worked the vein deposits to a depth of 600 feet. The Dixon Company now mines a graphite schist 15 feet thick, carrying from 8 to 15 per cent. of graphite, practically an inexhaustible supply.

Numerous attempts have been made to work the similar deposits of Pennsylvania and New Jersey, with only partial success. The parties interested in these attempts are: The Pennsylvania Plumbago Company, the Eagle Plumbago Company, and the Phoenix Plumbago Company, all of which have worked deposits in the Pickering Valley, Pennsylvania; the American Chemical Manufacturing and Mining Company, of Rochester, New York, which has worked the deposits of Northern New Jersey; and Mr. A. Z. Ryerson, who in 1882 worked the deposit at Bloomingdale, New Jersey. Mines of merit are known in Georgia and California, but these cannot now be worked on account of the expensive transportation.

Ore Dressing.—Several methods (both wet and dry) of dressing the ore have been attempted. The process used by the Dixon Company, at

Ticonderoga, owes its success to careful supervision. It is a wet process in which the ordinary practice is reversed, the "tails" being the useful product, while the "heads" are thrown away. All attempts at dry concentration have failed.

Production.—In 1882, the output of the Ticonderoga mine was 400,000 pounds. The output from the other mines have been so spasmodic that it is impossible to give them accurately. Probably 25,000 pounds would cover them all, making a total output in 1882 of 425,000 pounds. For 1883, the Dixon Company have arranged to produce 500,000 pounds; and again estimating the product of the others at 25,000 pounds, we have for 1883 a total output of 525,000 pounds. The average spot value may be stated at eight cents per pound.

Kinds.—On account of the peculiar advertising it has had, graphite is commercially known as German black-lead, Ceylon plumbago, and American graphite. German black-lead is a product of Bavaria. It is of the amorphous variety, and is dressed chiefly by washing. Its price depends on its percentage of graphite and the nature of its impurities, varying from \$1 to \$10 per hundredweight in cargo lots. It is used in the manufacture of pencils, stove-polish and foundry facings. Ceylon plumbago is mined at Travancore, Ceylon, and is shipped from Colombo to all parts of the world. It occurs in immense veins of great purity. Cobbing and sizing are the only preliminary operations it undergoes. It appears in the market graded according to size, as large lump, small lump, chip, and dust. Its price varies from \$2 for dust to \$10 per hundredweight for prime lump, in cargo lots. It is used for all the purposes of the trade, except the manufacture of pencil leads. American graphite, from the nature of its occurrence, appears in the market only in the dressed condition. Its price ranges from \$2 to \$10 per hundredweight wholesale according to purity and fineness. Fineness exercises considerable influence on the price of graphite, on account of the difficulty of pulverizing it. American graphite is used for all purposes of the trade, and excels all kinds as a lubricant. It is the same geologically, etc., as the Canadian. Before the development of the American and Canadian mines, the Ceylon mineral was the standard.

Analyses.—In 1876, the Canadian government authorized an extended survey and investigation of the comparative merits of the Ceylon and Canadian varieties. The following table of analyses of carefully prepared samples is from the report of the survey:

ANALYSES OF CANADIAN AND CEYLON GRAPHITES.

LOCALITY.	Specific gravity.	Volatile matter.	Carbon.	Ash.
		Per cent.	Per cent.	Per cent.
Canada, Buckingham, vein graphite; variety, foliated.	2.2689	0.178	99.675	0.14
Canada, Buckingham; vein graphite; variety, columnar.	2.2679	0.594	97.626	1.72
Canada, Grenville; vein graphite; variety, foliated.	2.2714	0.109	99.815	0.07
Canada, Grenville; vein graphite; variety, columnar.	2.2659	0.108	99.757	0.14
Ceylon; vein graphite; variety, columnar.	2.2671	0.158	99.792	0.03
Ceylon; vein graphite; variety, foliated.	2.2664	0.108	99.678	0.23
Ceylon; vein graphite; variety, columnar.	2.2546	0.900	98.817	0.23
Ceylon; vein graphite; variety, foliated.	2.2484	0.301	99.284	0.43

These analyses prove the oft repeated claim of the dealers in Canadian and American graphite that it is equal to the best Ceylon.

Manufactures.—The properties of graphite make it useful for the following general purposes: The manufacture of refractory articles, lubricants, electrical supplies, pigments, and pencil leads. A detailed table of the articles made from it is annexed, with an estimate of the percentage used for each purpose:

PROPORTIONATE AMOUNTS OF GRAPHITE USED FOR DIFFERENT PURPOSES.

MANUFACTURES.	Kinds of graphite used.	Per cent.
Crucible and refractory articles, as stoppers and nozzles, crucibles, etc.	Ceylon, American.	0.03
Stove-polish.	Ceylon, American, German.	0.03
Lubricating graphite.	American, Ceylon.	0.03
Foundry facings, etc.	Ceylon, American, German.	0.03
Graphite greases.	American.	0.03
Pencil leads.	American and German.	0.03
Graphite packing.	Ceylon, American.	0.03
Polishing shot and powder.	Ceylon, American.	0.03
Paint.	American.	0.03
Electrotyping.	American, Ceylon.	0.03
Miscellaneous—piano action, photographers', gilders', and hatters' use, electrical supplies, etc.		0.03

The earliest use of graphite was for pencil leads. La Moine cites a document of 1387 ruled with graphite. Its use for this purpose has become so extended that in 1882 over 150,000,000 pencils were made in the world. Previous to 1827, black-lead crucibles were made only in Germany. In that year, the late Joseph Dixon began their manufacture in this country, using graphite from New Hampshire. He afterward saw samples of Ceylon plumbago, and appreciating its value, he secured a shipment from Ceylon in 1829. This was the first importation of Ceylon plumbago into this country; since that time, its use has steadily increased. In the fiscal year 1882, 16,047,100 pounds of plumbago were imported, most of which was from Ceylon; the rest from Germany.

Graphite has long been used as a lubricant. This is one of its most useful applications and one which promises most for the future. Formerly, it was offered to the engineer only in the form of a dry powder; now it is compounded, or mixed with fats and oils in many ways, some of which are patented. This use of graphite is attracting the attention of all interested in the problem of the reduction of friction, and promises to outstrip all others. The barriers which have prevented its extensive use in this direction have been the price and the difficulty of securing purity and freedom from all grit. These are now both overcome, the price being now less than 25 per cent. of what it was fifteen years ago. The purity which now is absolute, was then only approximate. For all heavy work, graphite is undoubtedly the lubricant of the future.

The growth of the graphite industry has kept pace with the age, each new development in metallurgy and engineering offering some new field of usefulness for graphite. For instance, it furnishes the pots for the manufacture of cast-steel, and the nozzles and stoppers used in the Bessemer process. It is used in the manufacture of electrical supplies, etc. Fifty years ago, graphite was little known and misnamed. Now, it is of constantly increasing importance. From an insignificant beginning in the present century, the industry has grown to its present proportions.

MINING NOTES.

The Chili Gold Mine, of Venezuela, owned by an English company, sent to London, between the 1st of January and the 28th of June, gold bullion to the value of \$228,000. At this rate the property will give about \$456,000 during 1883.

It is stated that the Cumberland Coal and R.R. Co., N.S., will, by next year, be able, by means of increased facilities, to raise 1,500 tons of coal per day. It now supplies, it appears, 8,000 tons per month to the Inter-colonial Road. Some 700 men are employed by the Company in the mines and on the railway.

A new silver mine has been opened near Little Placentia, Newfoundland, under the management of Mr. F. Ellershausen, who purchased the claim from the discoverers for £4,500 sterling. Some of the richest specimens yielded, on analysis, 300 ounces of silver to the ton. It is considered a most promising mine. A large number of men are employed in working it.

British Columbians are not wanting in enterprise, as has been shown recently by the action of Messrs. Livesley & Co., Contractors, for sinking a shaft for the Vancouver Coal Company, who increased the wages of the workmen twenty-five per cent., as an incentive to them to drive the shaft as rapidly as possible to coal level. This was done with a view to getting a cargo shipped to San Francisco before Christmas.

Gold mining on the Chaudière River, Beauce County, Province of Quebec, is reported as having been

fairly prosperous this season, and preparations have been made for extensive operations next year. There is now a sanguine individual busily at work sinking a deep shaft in full reliance upon its indications. If he succeeds in striking pay-ground he will be paid a fixed sum by the owners of the property. If he fails he will lose his time and expenses.

The Roberts' Iron Company have shut down for the present at their mine in Frontenac County, having raised all the ore that was in sight in the main drift. During the summer the company thoroughly prospected their property with a Diamond Drill and, we understand, succeeded in striking promising deposits in new ground which will probably be opened up within a short time. We will be glad to hear that the company have resumed work on as large a scale as formerly, and will look with interest for reports of progress.

The Winnipeg Consolidated Gold Mining Company, at the Lake of the Woods, were reported last month to be drifting at the fifty and one hundred feet levels. From the former they were drifting westward in rich ore about three feet in width. On the one hundred feet level they were driving eastward in an ore body, about six feet in width, heavily mineralized. Stopping in the west drift has been commenced with the intention of continuing through to the fifty feet level, in order to have better circulation; the ore thus mined will keep the stamp-mill going.

The Nova Scotia Gold Mines are

reported to be yielding fair profits now-a-days. The "Gallagher," the "Empress," the "Pactolus," the "Oxford" and the "Salmon River" Mines are said to be in a fair industrial condition. Of the two last named, the Oxford is paying handsome dividends, if report be true, and the Salmon River Mines are bringing in a large revenue to the present holders. It is, however, not improbable that a movement will be on foot shortly to dispossess those who are now operating the location, there being a dispute as to the proprietorship, in which the Local Government is mixed up, and serious complications are anticipated.

THE OXFORD GOLD MINING COMPANY, N.S.—This pushing and enterprising association has just opened upon its property near Lake Catcha, Chezetepok, a new lode which promises to eclipse the famous "Mill Lode" which the company has been mining very successfully for some time. When the "Mill Lode" was first opened, some eighteen months since, we predicted a brilliant future for it. The subsequent working of it, as shown by the regular dividends declared by the company, proves the correctness of our judgment. The new find above referred to is about 60 feet north of the "Mill Lode." It has been measured for a distance of fifty feet along the lode, and presents to view a vein of quartz from one to two feet in width. In wealth of gold it probably surpasses anything uncovered in this Province for many years. The gold is free—both coarse and fine, and it permeates the rock so thoroughly and uniformly that we cannot but conclude that it will prove to be a real "Bonanza."—*New Era*.

HAYCOCK IRON MINE.

That work on this valuable property will be resumed has become an assured fact, and the news will doubtless be received with gratification, not only by those directly interested, but by the Ottawa people in general. The new company, which is composed of English capitalists, have expressed their intention to work the mine on an extensive scale, though in a systematic and husbandly manner. Suitable furnaces will be constructed and extensive rolling mills, for the manufacturing of steel rails, will be erected. Skilled labour and the most modern machinery will be employed in all the branches of the company's business, and an enterprise such as this promises to become, supported as it will be by capital, almost unlimited and, having such unusual natural advantages, cannot fail to prosper, and the section of the country in which it will be established must of necessity derive immeasurable benefits. The managing director has been for some time, and still is, in Canada, and gives

every assurance that the day is not far distant when the vicinity of the Gatineau will become the scene of unprecedented activity, and the sound of drill and the report of explosives will be again heard at the Haycock Iron Mine.

DR. SELWYN'S RETURN.

What He has to Say about Our Western Coal Mines and the Lake of the Woods Gold Regions.

(From the *Winnipeg Times*.)

Dr. Selwyn, of the Dominion Geological Survey, arrived in the city last evening. He was interviewed this morning by a *Times* representative as to the result of his travels. The gentleman refused, however, to say anything regarding his researches in the Rocky Mountains until his report had been sent in to the Government. As regards the deposits of coal at Medicine Hat and Calgary, he said:—

"The Medicine Hat coal exceeded my expectations, and I consider it a splendid bituminous coal, and the quantity will be sufficient to supply the North-West for ages to come. The coal in Mr. Anderson's cascade mine is a magnificent sample of anthracite, and can be easily mined."

"What about the statement which has been published to the effect that there is no coal deposit near Brandon?"

"I am satisfied that there is no coal in that vicinity."

"Are there any deposits of iron there?"

"There are certainly traces of mineral, but it can never be mined in paying quantities."

"There is a feeling abroad that you are prejudiced against the Lake of the Woods country as a mining region?"

"I am not prejudiced against anything, but would prefer not to give my opinion on that district. Regions with a similar rock formation have, however, been proved not to possess minerals in paying quantities."

The doctor did not wish to say anything regarding his future movements, as they would not be decided on until his report had been submitted.

Manitoba and the North-West Territories.

Many applications have been received at the Department of the Interior in Ottawa for mineral locations in the North-West Territories, chiefly in the Bow River District, and additional applications come in almost daily. Gold, silver and coal have been prospected more assiduously than any other minerals, and the claims already located are said to be very rich. The areas allowed are limited to twenty acres each, but no grants have yet been

made, although it was provided for, by Act of Parliament last session, that, until the Mining Regulations for Manitoba and the North-West Territories should come into force, regulations to govern the disposal of mineral lands in the North-West might be made by Order in Council. In the meantime all applications, which have been made in conformity with the proposed regulations, remain on file in the Department at Ottawa awaiting the action of the Government.

BRITISH COLUMBIA.

CARIBOO.

News from All the Creeks.

There was an exceedingly dry summer, the driest since 1868. Principal mining is hydraulic. The absence of water has prevented the claims from running off much ground and almost entirely stopped them from cleaning up the bed rock.

On Antler Creek the disastrous fire that occurred, coupled with the absence of water, has almost stopped mining operations until the damage can be repaired and the fall rains give water. There are about 20 Chinese companies working on the lower end of Antler taking out a great deal of gold.

The Waverly Company, on Crouse Creek, whose operations had been entirely suspended for the lack of water, have begun piping again. Among the claims that have done fairly well this season may be mentioned the Simms & Jarvis Brown, Stevenson & Reid, Larry & Bunden Co's. The Jenny Lind Co. having acquired the first right to the water at the upper end of William Creek, have begun to clean up. They have some good ground which is expected to pay well.

The old Barker Co. are preparing to work and with good reason for thinking they will be on pay all winter.

On Jack of Clubs Creek the Two Sisters Co., the controlling interest in which is held by Messrs. Mason and Daly, have succeeded in draining their upper diggings, and will begin taking out gold immediately. This company will be able to work all winter, as will also the Discovery Company, whose claim adjoins the Two Sisters at the upper end.

On the Mosquito Creek the Discovery claim, owned by the Flynn Bros., has done well for the season. The Alabama Company took out their first gold this year after five years' work in running a cut to open their mine and in bringing water on it. They have a splendid bank of gravel and the prospects obtained, during the time that they were able to pipe, promise a rich harvest for their pluck and energy. It has

been an exceedingly heavy piece of work to open the claim, and reflects the greatest credit on the shareholders. Butts & Co. are also doing good work and taking out gold.

The Sugar Creek Hydraulic Co's. claim also promises well for the future if getting considerable gold may be considered a fair indication.

The Black Bull claim on Lowhee has also been paying well all summer. At least one half of the gross product is in the hands of the heathen, who are slowly absorbing much good mining ground without any beneficial result either to the province or the people.

The Burns Mountain Company are pushing their tunnel ahead vigorously. The prospects obtained in the ledge are very encouraging. — *British Colonist.*

MISCELLANEOUS.

The steamer *Gallia*, of the Cunard Steamship Company, which sailed from Liverpool for New York on the 27th of October, had on board a half million in gold.

It was reported during the month that prospectors were following up indications of galena in Ottawa County, and that they were hopeful of discovering valuable deposits. We will be glad to hear that they have realized their expectations.

Messrs. Adams & DeCamp have purchased the property east and adjoining the Oxford Gold Mining Company's property, at Lake Catcha District, East Chezetcook, N.S., for the sum, it is reported, of twenty thousand dollars.

The reported value of the diamonds from the African fields, sent chiefly from the Cape of Good Hope by mail, since the 1st of June 1876, to the close of 1882, as officially estimated, has been about \$102,047,924.

It is stated that English capitalists are seriously contemplating investing in gold mining properties in the Lake of the Woods district, and will shortly dispatch experts across the ocean for the purpose of examining and reporting on several valuable locations which have been selected.

Eight railroads, with a capital stock aggregating \$84,934,300, declared dividends, payable in October in Boston, amounting to \$913,414. A single mining company, the Calumet & Hecla, will pay a quarterly dividend of \$500,000 in November, in the same city. — *N. Y. Mining Record.*

At the office of the REVIEW may be seen specimens of white marble from the Ottawa district that are equal in the closeness of the grain to any Italian marble that has been

imported to this country. It takes a beautiful polish and is said to lie in beds that are capable of producing blocks of almost any dimension.

Specimens from recently discovered plumbago deposits have reached us, and the ore appears to be equal in point of richness to anything yet reported on. The deposits, which exist on the Upper Ottawa, are said to be capable of producing an unlimited supply of high grade ore, in fact, if report be true, they should be practically inexhaustible.

IRON WATCHES.—Messrs. Crowther Pros. & Co., of Kidderminster, in order to prove the malleability and ductility of their iron, have constructed a watch entirely of that metal, which keeps excellent time. Claudius Saunier, in reporting this fact in the *Révue Chronométrique*, adds: "There is nothing new under the sun. We have a watch upon which is engraved the date of 1504, and in which all the wheels and pinions are made of iron."

Search for mica is unabated, and the discovery of deposits of some extent are reported. The quality of the mica, if we may judge from samples forwarded to this office, is superior to any that has been met with in Canada heretofore, but the quantity is problematical and will not be known until some development work has been done. The most promising deposits are in localities contiguous to the Ottawa River, and one in the County of Hastings is said to be valuable.

DIVIDENDS.

THE CALUMET AND HECLA COPPER MINING COMPANY, of Michigan, has declared its regular quarterly dividend of \$5 per share, aggregating \$500,000, making the total amount paid to date \$24,350,000.

THE OSCEOLA CONSOLIDATED COPPER MINING COMPANY, of Michigan, has paid another dividend of 50 cents a share, or \$25,000, making a total of \$150,000 in dividends paid this year.

THE SIERRA GRANDE MINING COMPANY, of New Mexico, has paid \$500,000 in dividends this year; the last being 25 cents per share, aggregating \$100,000 was paid on the 3rd of October.

THE PLYMOUTH CONSOLIDATED MINING COMPANY, of California, have paid during the month their fifth consecutive monthly dividend of 50 cents a share, aggregating \$50,000. Total of dividends this year \$250,000.

THE COPPER QUEEN MINING COMPANY, of Arizona, declared their regular quarterly dividend of 50

cents a share, or \$125,000, payable on the 16th of October, making a total of \$500,000 paid this year.

THE HOMESTAKE MINING COMPANY, of Dakota, should have paid during October their sixty-third successive monthly dividend of 20 cents a share, aggregating \$25,000. Total of dividends this year \$175,000.

PICTURESQUE CANADA.

A gentleman, identified with Canadian mining industries, was in Ottawa recently and gave a most graphic description of the scenery at the western end of the eastern division of the Canadian Pacific Railway. He had occasion to spend a short time at Lake Nipissing and was perfectly enchanted with what he had seen, especially in the immediate vicinity of North Bay, where there is a magnificent sand beach, and from which point the view of the Lake, studded with innumerable islands, surpasses, in scenic grandeur, anything he has met with on this continent, and he predicts that, ere long, North Bay will be known as the Canadian Saratoga.

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NOTICE

A NUMBER OF SETTLERS WERE unable for one cause or another to avail themselves of the offer made by the Department to grant a reduction of 25 per cent. on all arrears of interest paid up to the 25th of June, it has been decided to extend the time during which this extension will be granted, up to and including the 31st December next, to all settlers who pay to the agents the sums due by them.

After that date legal proceedings will have to be taken against all those who have not the same paid.

W. W. LYNCH, C.C.L.

Department of Crown Lands,
Ottawa, August 24th, 1883.



NOTICE TO CONTRACTORS.

SEALED TENDERS, addressed to the undersigned, and endorsed "Tender for Collingwood Works," will be received until Friday, the 16th day of November next, inclusively, for the construction of a further length of Breakwater at Collingwood, Ontario, according to a plan and specification to be seen on application to Adam Hudcon, Esq., Mayor, from whom printed forms of tender can be obtained.

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 Honourable the Minister of Public Works, equal to five per cent. of the amount of the tender, which will be forfeited if the party declines to enter into a contract when called upon to do so, or if he fails 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,
F. H. ENNIS, Secretary.

Department of Public Works,
Ottawa, 22nd Oct., 1883.



NOTICE TO CONTRACTORS

SEALED TENDERS addressed to the undersigned, and endorsed "Tender for Cheverie Works," will be received until Friday, the 16th day of November next, inclusively, for the construction of a Breakwater at Cheverie, Hauts County, N.S., according to a plan and specification to be seen on application to John G. Burgess, Esquire, Cheverie, from whom printed forms of tender can be obtained.

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 Honourable the Minister of Public Works, equal to five per cent. of the amount of the tender, which will be forfeited if the party declines to enter into a contract when called on to do so, or if he fails 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,
F. H. ENNIS, Secretary.

Department of Public Works,
Ottawa, 22nd Oct., 1883.

PHOSPHATE PROPERTY
For Sale in North Burgess.

Mining Rights of W $\frac{1}{2}$ of 13, in the 5th range. About 100 tons of very high grade Phosphate have been shipped from this property. Will be sold to an immediate purchaser for \$750. Apply at the office of the MINING REVIEW.



ST. LAWRENCE CANALS.

Notice to Contractors.

SEALED TENDERS, addressed to the undersigned and endorsed "Tender for St. Lawrence Canals," will be received at this office until the arrival of the eastern and western mails on TUESDAY, the 13th day of NOVEMBER next, for the construction of a lock and regulating weir and the deepening and enlargement of the upper entrance of the Cornwall Canal.

Also for the construction of a lock, together with enlargement and deepening of the upper entrance of the Rapido Plat Canal, or middle division of the Williams-Burg Canals.

Tenders will also be received until TUESDAY, the 27th day of NOVEMBER next, for the extension of the pierwork and deepening, etc. of the channel at the upper entrance of the Galops Canal.

A map of the head or upper entrance of the Cornwall Canal and the upper entrance of the Rapido Plat Canal, together with plans and specifications of the respective works, can be seen at this office, and at the Resident Engineer's Office, Dickenson's Landing, on and after TUESDAY, the 30th day of OCTOBER next, where printed forms of tender can be obtained.

A map, plans and specification of the works to be done at the head of the Galops Canal can be seen at this office and at the lock-keeper's house, near the place, on and after TUESDAY, the 13th day of NOVEMBER next, where printed forms of tender can be obtained.

Contractors are requested to bear in mind that tenders will not be considered unless made strictly in accordance with the printed forms, and—in the case of firms—except there are attached the actual signatures, the nature of the occupation and residence of each member of the same; and further an accepted bank cheque for the sum of Two Thousand Dollars must accompany the tender, which sum shall be forfeited if the party tendering declines entering into contract for the works at the rates and on the terms stated in the offer submitted.

The cheque thus sent in will be returned to the respective parties whose tenders are not accepted.

This Department does not, however, bind itself to accept the lowest or any tender.

By order,
A. P. BRADLEY, Secretary.

Department of Railways and Canals,
Ottawa, 28th Sept., 1883.



NOTICE TO CONTRACTORS.

SEALED TENDERS addressed to the undersigned, and endorsed "Tender for Examining Warehouse, Montreal," will be received at this office until WEDNESDAY, the 31st instant, inclusively, for

RECONSTRUCTION OF FLOORS

—TO—

EXAMINING WAREHOUSE

—AT—

MONTREAL.

Plans and specifications can be seen at the Office of J. Nelson, Esq., Architect, Montreal, and at the Department of Public Works, Ottawa, on and after MONDAY, the 22nd instant.

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 Hon. the Minister of Public Works, equal to five per cent. of the amount of the tender, which will be forfeited if the party declines to enter into a contract when called on to do so, or if he fails 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,
F. H. ENNIS, Secretary.

Department of Public Works,
Ottawa, 15th Oct., 1883.

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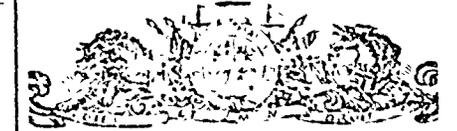
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PARTIES intending to make application to the Legislature of the Province of Quebec for Private or Local Bills, either for granting exclusive privileges or conferring corporate powers for commercial or other purposes of profit, for regulating surveys or boundaries, or for doing any thing tending to affect the rights or property of other parties, are hereby notified that they are required by the Rules of the Legislative Council and the Legislative Assembly respectively (which are published in the Quebec Official Gazette), to give ONE MONTH'S NOTICE of the application (clearly and distinctly specifying its nature and object), in the Quebec Official Gazette, in the French and English languages, and also in a French and English newspaper published in the District affected, and to comply with the requirements therein mentioned, sending copies of the first and last of such notice to the Private Bills Office of each House, and any persons who shall make application shall within one week from the first publication of such notice in the Official Gazette forward a copy of his Bill, with the sum of one hundred dollars, to the Clerk of the Committee on Private Bills.

All petitions for PRIVATE BILLS must be presented within the "first two weeks" of the Session.

L. DELORME, Clk. Leg. Assembly.

Quebec, 1st October, 1883.

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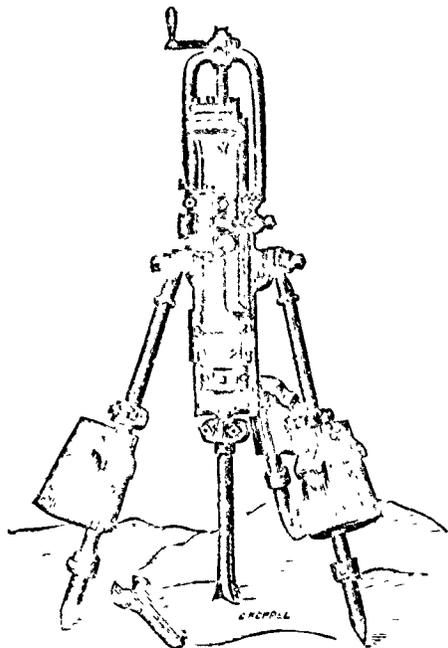
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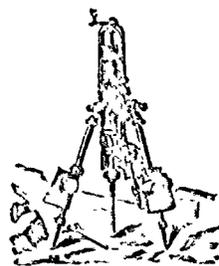
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W $\frac{1}{2}$ and N. E $\frac{1}{4}$	35	14	23	480
N $\frac{1}{2}$ and S. E $\frac{1}{4}$	19	15	23	480
S $\frac{1}{2}$ and N. E $\frac{1}{4}$	15	16	23	480
E $\frac{1}{2}$ of N. W $\frac{1}{4}$	15	16	23	80
S $\frac{1}{2}$	3	17	23	320
N $\frac{1}{2}$	9	15	23	320
S. W $\frac{1}{4}$	31	18	26	160

**PHOSPHATE PROPERTY TIMBER LIMIT
 FOR SALE. FOR SALE.**
 In the Township of Portland West,
 ON LAKE WINNIPEG

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 de-
 veloping. Price and particulars
 given at the office of the MINING
 REVIEW.

PLUMBAGO LOT FOR SALE
 IN THE TOWNSHIP OF BUCKINGHAM,

On which are extensive surface shows and
 out-croppings of fine quality of Graphite
 Price \$1,000 Further particulars to be
 had at the office of the MINING REVIEW.

**PHOSPHATE PROPERTY
 FOR SALE**

IN THE TOWNSHIP OF WAKEFIELD
 Mining Rights on S $\frac{1}{2}$ of Lot No. 10
 the 1st Range
 " " on Lot No. 23, in
 2nd Range
 " " " No. 26, in
 4th Range
 " " " No. 20, in
 5th Range

FOR SALE,
**White Marble Quarry on Calumet
 Island.**

At this quarry there is an inex-
 haustible supply of most beautiful
 white marble. Price \$800. Sam-
 ples to be seen and information ob-
 tained at the office of the MINING
 REVIEW.

The fee simple of Lots Nos.
 and 23, in the 4th range, (16
 acres). All these lots have been
 carefully explored by experts
 very favourably reported on;
 are virgin properties and in
 heart of the Phosphate Belt
 further particulars and price
 at the office of the MINING REVIEW.

Take direct from the Crown.

For price and field notes apply at
 the office of the MINING REVIEW.