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CANADIAN MINING REVIEW

VOL. 3.—No. 1.

1885—OTTAWA, FEBRUARY—1885

VOL. 3.—No. 1

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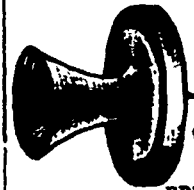
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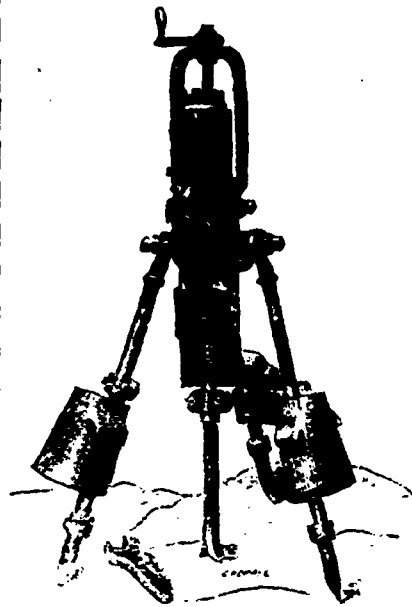
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TO

MINERS, QUARRYMEN

—AND—

RAILWAY CONTRACTORS

We have been appointed Agents for the
sale of the Celebrated Explosives
manufactured by **The Nobels
Explosives Company,**
Limited, of
Glasgow, Scotland,
and we are prepared to supply
from Stock their

No. 1 Dynamite

—\$ AND \$—

Patent Blasting Gelatine

In quantities as may be required.

—ALSO—

NOBELS' TREBLE DETONATORS

Suitable for use with the above

Our No. 1 Dynamite contains Seventy-
five per cent. Nitro Glycerine and
our Patent Blasting Gelatine, the
Strongest and Safest Explosive known, is
fully Fifty per cent. stronger.

The Nobels Explosive Co. have sent
to Canada, Mr. Robert Bell, one of their
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be prepared to demonstrate the Superi-
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POWDER, DUALIN, FUSE, DETONATORS,
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SHOVELS, PICKS, WHEELBARROWS,
And all Miners' Supplies For Sale at
THOS. BIRKETT'S,
Rideau Street, Ottawa, Ont.

GRAPHITE.

Wanted, fair average
samples of about 1 lb. each,
with prices, F.O.B. Address
J. S. Merry, Assay Office,
Swansea, Wales.

PERKINS' FOUNDRY OTTAWA.

FORGINGS AND CASTINGS
OF EVERY DESCRIPTION, TRUE
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Wheels and Axles for Tram
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NOTICE TO CONTRACTORS.

SEALED Separate Tenders (including plans and specifications), addressed to the undersigned, and endorsed "Tender for hot water Heating Apparatus, Brockville, Ont.," will be received at this office until MONDAY, the 16th proximo.

Plans, specifications, &c., can be seen at this office, and at the Clerk of Works' office, new Post Office building, Brockville, on and after Monday, 2nd proximo.

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 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. GOBELL,

Secretary.

Department of Public Works,
Ottawa, 24th Jan., 1885.

SITUATION WANTED.

A YOUNG CHEMIST, graduate of Germany, who speaks German, English and French, and who has worked at furnaces and steel works in Belgium and England for several years, desires a similar position in this country. The highest recommendations given.

Address,

FELIX BECKER,

ARROW,

BELGIUM, EUROPE.



NOTICE TO CONTRACTORS.

SEALED Separate Tenders (including plans and specifications), addressed to the undersigned and endorsed "Tender for hot water heating apparatus, Kingston, Ont., Post Office," will be received at this office until MONDAY, 16th proximo.

Plans and specifications can be seen at the Department of Public Works, Ottawa, and at the office of Messrs. Power & Son, Architects, Kingston, on and after Wednesday, 25th 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 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. GOBELL,

Secretary.

Department of Public Works,
Ottawa, Jan. 24th, 1885.

PHOSPHATE CRYSTALS.

Farmers, Miners and Prospectors, having unbroken Phosphate Crystals for Sale, can find a cash purchaser by applying at the Office of

THE CANADIAN MINING REVIEW,

Union Chambers, 14 Metcalfe Street, Ottawa.

Parties offering crystals for sale will please mention the colour, length and diameter--large ones preferred.

MINING STOCK

FOR SALE.

MR. R. C. W. MacQUAIG, Auctioneer, will offer by Auction, if not previously sold by Private Sale at his Office, No. 15 Elgin Street, Ottawa on Wednesday, 24th February, 1885, at one o'clock,

Twenty Shares of \$100.00 each fully paid and unassessable stock in the Ottawa Phosphate Mining Co., formerly known as the Emerald Mine, Buckingham.

TERMS CASH.—The fame of this Mine is fully established. It is yielding large results, and is considered the **Bonanza of Phosphate Deposits** by those who know.

Mr. MacQuaig is open meanwhile to offers for the stock by Private Sale.



NOTICE.

TENDERS will be received by the undersigned until MONDAY, 16th February, prox., from parties desirous of leasing the privilege of ferrying across the River Ottawa, between Pappanville Wharf in the Township of St. Angélique, in the County of Ottawa, in the Province of Quebec, Dominion of Canada, and Brown's Wharf, in the Township of Plantagenet, County of Prescott, in the Province of Ontario, Dominion of Canada, in accordance with the terms and under the conditions set forth in the Regulations—copies of which can be procured at the Department of Inland Revenue, Ottawa, or from the Collector of Inland Revenue, at Ottawa.

Each tender must state the amount which the party tendering is willing to pay per annum for the privilege referred to, which amount will be payable in advance, the terms of the lease being for five years from the 1st May, 1885.

Each tender must be accompanied by a cheque marked "good" on one of the chartered banks, doing business at Ottawa, for one-half of the amount of the per annum tender. This amount will be credited on account of the first year's rent in the case of the accepted tender, and all other cheques will be returned except in the event of withdrawal, in which cases no refunds will be made.

All communications must be addressed to the undersigned and endorsed on the envelope "Tender for the Pappanville and Brown's Wharf Ferry."

E. MIALL,

Com. of Inland Revenue.

Department of Inland Revenue,
Ottawa, January 24th, 1885.

Mica for Sale.

ABOUT FOUR HUNDRED POUNDS

GOOD QUALITY, DARK MICA

has been consigned to us for sale. It is cut into sizes 2 1/2 x 6 to 5 x 9 inches (the larger sizes predominating) and is offered at a very low price.

Also, ABOUT 2500 LBS. OF SAME QUALITY IN THE ROUGH SLAB, OR CRYSTAL.

Apply at this office.

Cook Wanted

FOR A STEAM DREDGE on the St. Lawrence. A good Man Cook, for the season of 1885—beginning 1st April next. Apply at this office.



TO ICE CONTRACTORS.

SEALED TENDERS, addressed to the undersigned, and endorsed "Tenders for Ice, Public Buildings, Ottawa, and Government House," will be received at this office until TUESDAY, the 17th February, for filling the ice house at the Old Military Store Building, Rideau Canal Locks, Ottawa, and that at Government House.

Tender to state price per block of the following dimensions, viz.: 3 ft. by 1 ft. by 1 ft., which price must include cost of packing and of the saw-dust required for that purpose. The ice to be measured before being packed in the ice-house and payment to be made accordingly.

N.B.—The ice must be taken from the Ottawa River, above the Chaudière Falls.

By order,

A. GOBELL,

Secretary.

Department of Public Works,
Ottawa, 24th February, 1885.



INTERNATIONAL AND COLONIAL EXHIBITIONS.

ANTWERP IN 1885—LONDON IN 1886.

IT is the intention to have a Canadian representation at the International Exhibition at Antwerp, commencing in May, 1885, and also at the Colonial and Indian Exhibition in London in 1886.

The Government will defray the cost of freight in conveying Canadian Exhibits to Antwerp, and from Antwerp to London, and also of returning them to Canada in the event of their not being sold.

All Exhibits for Antwerp should be ready for shipment not later than the first week in March next. These Exhibitions, it is believed, will afford favourable opportunity for making known the natural capabilities, and manufacturing and industrial progress of the Dominion.

Circulars and forms containing more particular information may be obtained by letter (post free) addressed to the Department of Agriculture, Ottawa.

By order,

JOHN LOWE,

Secy., Dept. of Agric.

Department of Agriculture,
Ottawa, December, 19th, 1884.

Wanted.

A second-hand "Ingersoll" Rock Drill, three inch cylinder, with couplings, &c. Any person having one for sale will please communicate with the publishers of the CANADIAN MINING REVIEW.



PUBLIC NOTICE.

All persons, including lessors of grazing lands, are hereby required to take notice that the cutting of timber on the public lands without authority from the Minister of the Interior, or the Local Crown Timber Agent of Dominion Lands for the District, is forbidden by law, and all timber so cut without authority is liable to seizure and to be dealt with as the Minister of the Interior may direct.

Each settler on a homestead quarter section not having timber on it, may, on application to the Local Agent of Dominion Lands, purchase a wood lot not exceeding twenty acres in extent, at five dollars per acre.

Any person, other than a homestead settler desiring permission to cut timber, must make application therefor to the Minister of the Interior, who will deal with such application according to law.

Persons who have already cut timber without authority, must pay the dues thereon to the Crown Timber Agent at his office, on or before the 1st of May, 1885; otherwise the said timber will be confiscated under the provisions of the Dominion Lands Act.

(Signed,

A. M. BURGESS,

Deputy of the

Minister of the Interior

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Union Chambers, 14 Metcalfe St.,

OTTAWA.

Canadian Mining Review.

OTTAWA.

PUBLISHED MONTHLY.

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OFFICE:

UNION CHAMBERS, 14 Metcalfe Street.

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.

The intention of the Commissioner of Crown Lands for the Province of Quebec to cancel the sale of certain lands in the County of Ottawa, public notice of which has appeared in the Quebec Official Gazette, has elicited much correspondence on the subject from parties who consider themselves aggrieved by the action of the Government in cancelling the sale of a number of lots within the phosphate belt, owing to the settlement duties not having been performed in compliance with the regulations of the Crown Lands Department, said lots having, meanwhile, fallen into the hands of other parties who had purchased the settlers' rights in good faith. So far as we can judge from the correspondence which has appeared in public print, directed at the Commissioner of Crown lands, and the Hon. Mr. Lynch's replies to the same, we must, in fairness to the Commissioner, say that, in our opinion, he has vindicated the Government in so far as its actions relate to the cases which have been brought to his notice.

There are, however, instances which we could cite where settlers, who had taken up locations, and had made payments to the Government on account of same, had afterwards discovered it to be practicably impossible to cultivate a farm of sufficient extent to yield them a living on the lots they had selected, nine-tenths of the area being bare rock. In some cases, such as these, deposits of phosphate were discovered on the locations, and the settlers transferred their claims to miners for certain considerations.

The Government at Quebec accepted the transfers, together with the balance of the money due, and in so doing become a party to a contract which, according to Justice Macdougall's judgment in the case of Holland Bros., could not be violated, and the power to cancel was no longer vested in the Commissioner of Crown Lands.

In such cases as we refer to the hardship is not with the settler, but with the miner, whose interests it is our duty to protect as far as it lies within our power. It is a somewhat remarkable fact that all the lots in certain townships which have reverted to the Government, through cancellation of sale by order of the Commissioner of Crown Lands, are those upon which phosphate deposits have been discovered, and where improvements for agricultural purposes could not reasonably be expected; yet the neglect of the settler to make the improvements in strict conformity to the regulations, has been the plea for cancellation. The lots, so cancelled, have in nearly every instance been re-sold by the Government as phosphate lots, some at private sale, and others at public auction. The Commissioner of Crown Lands may not be personally cognizant of it, but it is nevertheless true that, in almost every instance, where properties have been acquired in this manner, they have fallen into the hands of speculators—the very thing he claims it is the desire of the Government to guard against. The term speculator we infer to apply to individuals who acquire phosphate lands from the Government, and hold them in an undeveloped state until such time as the more enterprising class (the miners), by working their mines and developing deposits in the district, will have enhanced the value of the lands acquired for speculative purposes. If the Government of the Province of Quebec desires to develop the phosphate industry in the county of Ottawa, and in other parts of the province, it would be a wise policy to encourage the enterprising miners, who have already done so much towards opening up the mineral resources, and, by so doing, making heretofore worthless lands of great value to the Government. Where patronage or favour can be bestowed, those who have advanced the mining industry by engaging in active operations have the first claim to it. Mining is acknowledged by everyone to be speculative, but active mining men are not speculators in the sense the term has been applied in the discussion which has arisen out of the late decision of the Commissioner as expressed in the notice in the Gazette above referred to.

By REFERENCE to an advertisement in this issue, for miners in Nova Scotia for the Oxford and the Essex Gold Mining Companies, it appears that the supply of mining labor in that Province is not equal to the demand there. We understand that mining labor is quite uncertain owing, to a great extent, to the fact that a large number of the miners are also fishermen, and during the fishing season desert the mines to take their chances on the water. Also, the supply of labor does not keep pace with mining development. At present the following Gold Districts exhibit a very active appearance: Lake-Catcha, Carribou, Darr's Hill, Tangier, Lunenburg, Stomont, Montagu, Fifteen Mile Stream, and the Rawdon District; the latter only now opening up.

Twenty shares of the stock of the Ottawa Phosphate Company are offered for sale, as will be seen by reference to another column. If not disposed of at private sale before the 24th of February, they will be sold at auction on that day by Mr. R. C. W. MacCuaig, at his office on Elgin St.

Dr. G. T. ORTON, M.P., who has resided for some time past in Manitoba, is giving much attention to the mineral resources of that province and the North-West Territories. Being the medical attendant to the Canadian Pacific Railway employees, he has occasion to make repeated trips to the Rockies, and has thus been afforded facilities for collecting information concerning the mineral resources of the North-West that must prove valuable to him. Dr. Orton is already interested in several mining enterprises in that locality, and it is to be hoped that his investments have been judiciously made.

The New York mining stock and National Petroleum Exchange has decided to deal in railway securities of all descriptions—bonds as well as stock. This decision has been arrived at on account of the Stock Exchange having departed from the terms of an agreement by which it was bound not to deal in other mining stock than those that were "listed" at the time the agreement was entered into. The public will, by this new departure of the Mining Stock Exchange, be enabled to buy or sell or hold railway securities with so small a unit for transaction as *ten shares*, or \$1,000 par, which is the same as 1,000 barrels of oil, the unit for dealings in petroleum.

The number of new mining companies registered in England in 1884 were 148, with a nominal capital of £14,952,207, as compared with 151 in 1883, with £14,712,398 capital.

The largest emerald in the world has been found in the celebrated Muzo Emerald Mines, in the State of Boyaca, United States of Columbia. The largest specimen of the gem, heretofore known to lapidaries, is in the collection of the Duke of Devonshire, and weighs between eight and nine ounces—it came from a mine in the same neighbourhood.

OUR PHOSPHATE INDUSTRY.

Another year has opened in the history of phosphate mining in Ottawa County, and the present appearance of the mines leads to the conviction that a much larger quantity of mineral will go forward during the shipping season of 1885 than was shipped last year. The mines which have been the chief contributors to the general output of recent years are better equipped, and are showing more mineral now than at any former period, and those two facts are sufficient reasons why we should expect an increased annual production. Nothing has tended to stimulate this important industry so much as the investment of foreign capital and the organization of powerful companies composed of men of practical business ability, of intelligence and of means. This combination of three important qualifications has been the means of overcoming difficulties by which the smaller operators in the early history of phosphate mining were beset, and which rendered the industry unprofitable to many of them. Only by one of these hindrances have been removed by the introduction of steam power, modern machinery and increased facilities for transporting the product of the mines. The study of economy in the business management of every branch of the industry, and the recognized necessity of shipping the mineral in a high state of purity, are rapidly having the effect of placing the phosphate mining industry of Canada on a sound and permanent commercial basis, and now that our mine owners have succeeded in establishing an indisputable value for their properties, and by the judicious investment of capital have placed themselves in a position to supply a large annual demand, they find themselves face to face with a serious problem, and one that is of vital importance, viz.: What is the most advantageous means of reaching the consumer? From the inception of phosphate mining in Canada up to the present time, producers have been very lax on this point, and have left themselves at the mercy of middle-men in Montreal and abroad. The profits derived from their operations have been so largely in excess of those obtained from any ordinary investment that they were willing to accept the result, without criticising how it came about, and to leave the employed agent with unrestricted control of their interests. The inexpediency of such a course has naturally been suggested to the stricter business men who have invested their capital in this enterprise, and who are watchful of every minutiae connected with its management. A more careful scrutiny during the shipping season of 1884, of transactions between principals and agents, has brought to light gross irregularities, redounding to the disadvantage of the former, and swelling the coffers of the latter by amounts in comparison with which the legitimate commissions are insignificant; and this will always be an insuperable drawback to the success of our phosphate mining industry, until mine owners have been induced to co-operate and agree upon a system of purchase and sale that will afford them proper protection. The establishing of a central assay and shipping office in Montreal, and appointing a trustworthy receiving agent in each of the principal cities abroad, where Canadian phosphate is most in demand, to whom shipments could be assigned, would be

the most economical means of insuring full value to producers for the output of their mines, and we venture to predict that some such reform will be adopted in the near future.

THE MINES.

High Rock Mine.—This valuable property is owned by the Phosphate of Lima Company, whose head office is in London, England, and has been the most productive phosphate mine in Canada. Since it fell into the hands of its present owners not less than 20,000 tons of high grade mineral has been its production, and notwithstanding the fact that \$82,500 was the price paid for the land now owned by the company, apart from the cost of the machinery and plant, with which the mine is equipped, the profits of the past three years' operations have been sufficient to recoup the shareholders all their outlay, and to admit of a dividend being declared at the close of last year of twenty-five per cent. on the capital stock, besides which \$10,000 was set apart as reserve. This mine is in excellent shape now for producing mineral, and to judge from the quantity that has been raised during the past year, it is not unlikely that its output will reach 7,000 tons for shipment this year, being 2,000 in excess of any former year's production.

Star Hill Mine.—The Union Phosphate Co. has every reason to be satisfied with the result of last year's operations at its mine, known as Star Hill, but the developments that have been made on this property, and the increased facilities afforded for handling ore, will enable this company to largely increase the output this year over that of 1884. At this mine, as well as at High Rock, the boarding-house accommodation has been extended during the past twelve months, and is sufficient now to provide for the employment of as large a force of miners as can advantageously be employed on the ground that has been opened. The Union Company has ample territory, rich in phosphate, to warrant extensive preparation for vigorous mining for many years to come.

North Star Mine.—The present condition of this mine should be highly gratifying to its owners, the Dominion Phosphate Company, who have adopted a system of mining which is thoroughly proving the value of the property. The manager, Mr. W. H. Smith, acting under instruction of the directors, has been engaged for some time past in sinking a shaft in the centre of the location, without reference to the mineral in sight, to practically test the depth to which the phosphate deposits extend, in that particular locality, in paying quantity. Acting under these instructions Mr. Smith caused a shaft to be started at a point where a small string of mineral, about three inches wide, appeared on the surface. At a depth of 100 feet this small exposure has increased five feet in width, and now extends from end to end of the bottom of the shaft. At this level drifting will be commenced and a large and steady output may be looked for. This affords one more positive proof that the phosphate deposits increase in volume as lower depth is attained, and that the mineral improves in point of purity. The Dominion Company has now upwards of 2,000 tons raised, a portion of which has already been forwarded to the bank of the Riviere du Lievre for shipment when navigation opens.

Little Rapids Mine.—The developments of this mine during the past few months have proved it to be one of the most valuable properties in the entire phosphate region. It has been visited by such men as Prof. W. Boyd

Dawkins, of Manchester, England; Prof. G. A. Kinahan, of the Geological Survey of Ireland; Dr. T. Sterry Hunt, of Montreal, and by the majority of the practical miners in the phosphate district, all of whom have been most pronounced in expressing the opinion that this mine is one of great value. At no other phosphate mine in Canada have such well defined veins of mineral been met with, nor has the phosphate been followed elsewhere to such a depth as at the Little Rapids. The quality of the mineral is of the highest grade and is brought up to a standard of 85 per cent. by hand cobbing. Its convenient situation to the river and proximity to railway communication is also greatly in its favour. The mine is well equipped with suitable machinery and comfortable buildings of a substantial character have been erected on the property. A large quantity of excellent mineral is now being raised.

Mr. W. A. Allan, of Ottawa, owner of the Little Rapids Mine, purchased the adjoining property about a year ago, and is now opening it up. It is the continuation of the same band, but at a lower elevation, and innumerable outcroppings are noticeable leading from the vein on which the deep shaft of the Little Rapids Mine is located. An opening has been made, at about two hundred feet lower elevation, that has exposed a large body of very excellent phosphate, similar in colour and texture to that which has been raised from the deep shaft on the adjoining property. The supposition is that this is a continuation of the same vein, and if the theory is correct it not only establishes a high value for this new mine, but is strong evidence that the value of the *Little Rapids* has not been overestimated.

The Emerald Mine.—The reputation that this mine bears is so widely known that no newspaper criticism can serve any purpose. It continues to yield abundantly, and that it will do so for years to come is not questioned. The property is now thoroughly equipped with suitable plant, and large additions have been made to the buildings. Phosphate is coming to the surface rapidly and the output of the mine that will go forward this year will exceed that of 1884, but it is rather early in the season to form an estimate of what it will actually amount to. The Ottawa Phosphate Company, who purchased this property some eighteen months ago, has good reason to be pleased with its investment. The result of the first season's operations has been very gratifying to the shareholders who attach a high value to their property.

The Washington Mine.—adjoining the Emerald—is another property owned by the Dominion Phosphate Company. It was formerly known as the *Lansdowne*, but as the company is chiefly composed of American capitalists the mine was re-christened. Since it fell into the hands of its present owners a quantity of dead work has been done, and deposits of mineral of considerable extent have been developed on the property. The amount of phosphate mined will not be sufficient to cover the outlay for work done, but under the careful management of Mr. Smith, the company's superintendent, the expenditure has been judiciously made. He looks for satisfactory results from this year's operations.

Battle Lake Mine.—The Lievre River Phosphate Company is working a deep shaft at this mine with encouraging results. The vein on which the shaft has been sunk to a considerable depth holds out very strong, and has the appearance of a well defined fissure. Although it was late in the season when the company began operations on this property there is already a fair quantity of mineral raised and awaiting

transportation. Later in the year extensive mining will be carried on at other locations in the phosphate district owned by this company, and under the able management of Captain R. C. Adams, the business manager and President of the Company, all operations are likely to be successfully conducted.

With the exception of the mine in Templeton, owned by Messrs. McLaurin & Blackburn, those we have mentioned are of the most importance in Ottawa County, and are the chief producers. From all of these mines large quantities of phosphate are being forwarded to the bank of the Rivière du Lièvre and being piled there at convenient points from whence it will be forwarded in scows, during the season of navigation, to the Canadian Pacific Railway at the landing north of Buckingham village, and thence to Montreal to await ocean transportation. The force employed at the mines above-mentioned aggregates about 300 men.

PHOSPHATE QUOTATIONS.

The most recent European advices quote, for Canadian Phosphate, thirteen pence half-penny for 80 per cent. mineral, with one-fifth of a penny rise, but as no phosphate is offering at present it is difficult to arrive at a market value. We are informed that producers are not attempting to make contracts and will hold out for higher prices than have yet been spoken of.

SHORT LINE RAILWAY.

Before the close of last year the Canadian Pacific Railway Company completed the grading of the branch from the main line at Buckingham Station to the landing on du Lièvre river, north of the village, a distance of about three and a half miles. As soon as the frost leaves the embankments in the spring the rails will be laid and ballasting proceeded with, so that the company will be ready to carry passengers and freight over this branch on the first of May. The transportation of phosphate from Buckingham Village to the Railway Station, a distance of only three miles, has always been a serious drawback to the industry, owing to the bad condition of the road at all seasons, and to its being practically impassible during the spring and autumn months. The construction of this branch line will be a boon to phosphate miners, as it will afford them facilities for shipping at all seasons of the year, and will reduce the cost of transportation quite seventy-five cents per ton. To the C. P. R. Co. it will surely be a profitable investment, as by its construction the entire output of the mines contiguous to the Rivière du Lièvre will hereafter be carried by rail to Montreal, whereas thousands of tons have heretofore been sent each year to the Ottawa River and forwarded thence in barges to Montreal. The railway Company is now erecting receiving bins at the landing for the accommodation of shippers, in which the ore will be deposited before being put on board the cars. It is understood that it is the intention of the company to have steam cranes at convenient points, by means of which phosphate can be transhipped in the summer season direct from the scows to the cars. Such facilities for handling ore are very desirable. With the construction of the Lock at the Little Rapids all obstructions to the cheap transportation of phosphate will have been removed, and larger profits will accrue to mine owners.

The first copper mine worked in the United States was in Connecticut in 1709.

NEW USE FOR PHOSPHATE.

A portion of last year's output of the Canadian phosphate mines was purchased by a firm in England and employed in the manufacture of phosphorous. The gentleman who made the sale to this firm asserts that a large quantity would be consumed for this purpose if high grade mineral, running 80 per cent. and upwards, could be assured to the manufacturers. This should have the attention of miners.

MICA MINING IN CANADA.

This is rapidly developing into an industry of much importance in the country, and is assuming larger proportions each year. Since our last article appeared on this subject some significant discoveries have been reported of mica veins and deposits that promise to yield a very fine quality of the mineral, in fair merchantable sizes, and of superior quality. One of these locations has been purchased by a gentleman of this city, who is organizing a joint stock company with a view to beginning mining operations at the close of the present winter. The sample plates we have seen from this property, and the flattering reports we have read, are evidences that the deposit to which we refer will become an important producer.

M. Allan's Pike Lake mine is yielding very excellent mica in large quantity and in sizes to supply any demand, the crystals being of unusually large dimensions, and exceptionally perfect in their formation. The yield of merchantable mica from this mine is an unusually large percentage of the crystals actually mined, and commands a high price.

Mr. Allan's Villeneuve mine is producing a very fine quality of muscovite, equal to any that has been mined in any part of the world, in point of clearness and its resistance to heat, and the crystals are capable of being cut into plates of the ordinary sizes used by stove manufacturers, and running as large as 6 x 10 inches. The body of crystals in sight at this mine is very extensive and the micaceous vein, in white quartz, is traceable for several hundred feet, shows a very strong lead at the surface.

The mine being worked by Smith & Co., in the Township of Loughborough has yielded a large quantity of an amber coloured mica, and continues to be very productive. The crystals are massive and in most cases regularly formed. Several thousand pounds of merchantable plates were shipped from this mine last year, and a portion of the output was sold in the United States. The owners of the property have realized large profits from their operations.

Another mica location in the township of March was prospected late last autumn, and several openings that were made in the vein showed it to be a strong one and of some extent. The development, however, up to the time work was suspended on account of frost and snow, was insufficient to enable us to speak positively of the yielding capacity of the deposit, the crystals near the surface, though well formed, being too small to produce merchantable plates in any quantity. The quality of the mica is very fair, it stands heat well and is perfectly clear. One peculiarity of this mica is that portions of crystals, one half inch in thickness, are quite transparent.

When the mines above referred to have been more developed they will be capable of supplying the entire Canadian demand, and will have a surplus to ship to foreign countries. At

present, however, better prices can be obtained from home consumers than from foreign markets, and until the production increases none will go abroad.

A NEW USE FOR MICA.

Experiments have been made lately for transforming mica into brocades or bronze colors, whereby a new field is opened to the utilization of this mineral. To this end the mica is well crushed, boiled in muriatic acid, washed and separated according to the size of the scales thus obtained. The obtained lamina exhibits a beautiful glass-like lustre of silver white appearance, and are denominated in commerce, brocades, crystal colors, or mica bronze. The four kinds of silver white, or color brocades, which are met with in commerce, are sorted according to the size of the lamina.

They possess the following advantages over the ordinary lubricants:—First, they do not contain any ingredients injurious to health. Second, they possess the metallic lustre of the metal brocades, and even surpass them in brilliancy of color. Third, brown, black, blue, green and rose are represented in a rare lustre, which is not the case with metallic brocades. Fourth, they deport themselves perfectly indifferent towards sulphurous exhalations; they retain their lustre in moist air; have small specific weight, and possess more body. These fabrics might find application on metal, bristol board, wood and glass, consequently they may be adopted for the manufacture of these and other fancy articles, for coloring artificial flowers, wall paper, sealing wax; in short, in all techniques where colors are employed. In applying them, it is to be recommended to cover the articles with a paint similar in color to those of the brocades. For silver, for instance, white lead; for blue, ultramarine. In using blue color the paint is ground with a mixture of four parts of glue and one of glycerine, upon this field, when hard, the brocade is spread. The most suitable binding material for the last mentioned, is a paste composed of four parts of starch and one of glycerine. In using oil paints as ground color, a good dammar or pale copal varnish is more suitable than the paste described. When finally coated with a proper spirit or turpentine varnish these articles take a lustre far surpassing in splendor and durability those ordinarily obtained. Articles coated with asphalt varnish, and afterwards spread over with silver brocade, take a granite-like appearance. If employed in the preparation of isinglass, magnificent crystallizations are obtained, well suited for inlaying in buttons and other articles. Furthermore, they recommend themselves for imitating gold, rain and snow in theatres, on account of their small specific weight and cheap price. Finished porcelain and glassware might be coated with the above brocades, if brought again to the heat of their melting point.

Mica was first used as a substitute for glass in windows, then, on account of its durability when exposed to high temperatures, it came to be extensively used for stoves, and for this purpose it was largely imported from Europe up to the year 1855, when the beds in the United States were first taken advantage of. Mica is also made into reflectors, sea compasses, inlayings for wood instead of enamel, and many other articles. But one of the most important uses is a substitute for glass in spectacles, which are intended to protect the eyes of fire and metal workers against sparks and fragments of metal and rock.

KINGSTON RED GRANITE.

The red granite quarry at Kingston, Ontario, owned by gentlemen of Ottawa, promises to yield an abundant supply of very valuable stone. Quarrying was begun on this property early in December, and by the time the snow has disappeared there will have been sufficient opening made to admit of a large force of quarrymen being employed. Several thousand feet have already been quarried and placed in position ready for shipping. The quality of the granite improves in colour and texture below the surface, and the large blocks that have been taken out compare in every respect with the best Peterhead and Bay of Fundy red granite that we have seen. Notice has been given in the *Canada Gazette* of the intention of the owners to apply for letters patent of incorporation under the Canada Joint Stock Companies Act, and during the present month a strong company will be organized to work this valuable quarry on an extensive scale. There exists no doubt that it will be a paying enterprise from the fact that coloured stone is being largely adopted in western cities in the construction of public buildings and private residences, and granite, such as is being taken from the Kingston quarry, is now much sought after for basement stories, columns, &c., as it harmonizes with the colour of the popular sandstone now being used. The favourable location of this quarry, as regards water and railway communication, places its owners in a position to compete with any known red granite quarry in the world for supplying the western demand. As has been before stated, the crystalline texture of the stone is a good medium-sized grain; the colour a most pleasing rich salmon-red, of uniform shade, and the quantity in sight is almost inexhaustible. The company is in a position to supply Canadian cities with granite blocks in any quantity for street paving.

There is no question that, in time, granite will be generally adopted in the construction of important public buildings and substantial dwellings wherever it can be procured at moderate cost. An article on building stones, which has appeared in the *American Architect* of a recent date, refers to the subject in the following terms:—"Regarding the granites, they have been used now sufficiently long to be considered regular standbys. The best and strongest specimens were tested—and we had samples from almost everywhere—some from Rhode Island; Richmond, Virginia; and Port Deposit, Maryland. These will severally stand a pressure of 17,750, 21,250, and 19,750 pounds to the cubic inch. Of all the stone in general use, we consider the granites the most desirable; besides, they are the simplest and the richest, and, so far as durability is concerned, glass would be about the same. Of the red granites the best specimens come from Peterhead, not far from Aberdeen, Scotland, and a few good blocks come from the Bay of Fundy."

The red granite quarry at Kingston is capable of producing blocks, in size and quality, equal to those from the localities referred to, and in the opinion of many people the colour is more pleasing.

Silver circulates in Europe and British India to the extent of \$2,000,000,000.

Twenty years ago copper was worth fifty-five cents a pound in New York city. From that price it receded to fifteen and one half cents a pound subsequent to the panic of 1873. It is now worth eleven cents a pound.

PERSONAL.

Mr. Angus Cameron, of Buckingham, has returned from across the Atlantic, having spent some weeks endeavoring to organize a company in Scotland who would purchase and work some phosphate locations of which he is owner. We are informed he has been partially successful.

Mr. F. J. Falding, M.E., of New York, who is well known to the phosphate miners of Ottawa district, is at present in Europe where he is employed in the interest of some Canadian mine owners. Mr. Falding has been instrumental in directing a large amount of capital to our mines and it is to be hoped he will be again successful.

Mr. S. P. Frauchot, business manager for the Ottawa Phosphate Company, has recently returned from England and is again watchful of the company's interest at the Emerald mine. Mr. Frauchot, during his visit to England, came in contact with the principal dealers in Canadian phosphate and gained an insight into their mode of handling consignments.

Mr. William Coe, of Madoc, Ont., and Mr. S. J. Ritchie, of Akron, Ohio, were in Ottawa recently on business connected with their enterprises in the iron region of Central Ontario. Mr. Coe and Mr. Ritchie are largely interested in the celebrated Coe Hill Iron Mine, and the latter is President of the Central Ontario Railway Company whose line, starting from Weller's Bay, on Lake Ontario, terminates at the mine.

Mr. P. S. Higgison, of Ottawa, has returned from the Rocky Mountains where he had been for the past eight months prospecting and examining the various mineral locations in that district. Mr. Higgison has taken up a mining claim on which he has discovered what he considers to be a rich lead of argentiferous galena. He is now endeavoring to obtain the necessary capital to enable him to begin active mining operations in the spring and is sanguine of success.

NORTH-WEST COAL.

During the past few months contradictory statements have appeared in public print respecting coal discoveries in that portion of the North-West Territories contiguous to the line of the Canadian Pacific Railway. It has been stated that a good quality of anthracite coal has been discovered on the property of the Railway Company, about four miles to the north of a point known as Blackfoot Crossing, and that it answers the purpose of fuel equally with American hard coal. Were this the case it would indeed be a discovery of much moment to the C. P. R., for the seams that have been exposed at the point referred to are capable of yielding a very large quantity of coal. As a matter of fact this coal is not anthracite but a fair quality of lignite, and it may here be added that the only seams of anthracite that have yet been discovered in the North-West Territories are at Cascade River, at the Bow River Pass of the Rocky Mountains, about 150 miles to the westward of Blackfoot Crossing and about a mile and a half from Banff Station, C. P. R. This last mentioned deposit of coal has been referred to in two able articles from the pen of Dr. C. D. Wilber, of Chicago, which have appeared in the *Chicago Mining Review*, under the head "King Coal," and as Dr. Wilber is recognized as one of the most reliable authorities on coal mines, in the United States, it is safe to accept what he has written about the Cascade

anthracite as being correct and without prejudice. A glance at the comparative analyses of the coal from the Cascade mine and that from Blackfoot Crossing is sufficient to convince any one of the superiority of the former. The following statement shows the result of analyses by Professor Hoffman, of the Geological Survey, of the anthracite and lignite coals above referred to.

LOCALITY.		ANALYSES BY PROF. HOFFMAN, OF THE GEOLOGICAL SURVEY OF CANADA.			
Bow River, south side, about four miles below Blackfoot Crossing.....	Cascade River, Bow River Pass, Rocky Mountains.....	1.4272	Specific Gravity.		
		lbs. 89.20	Weight of one cubic foot calculated from the specific gravity.		
By Slow Combustion.	Composition per cent.	0.71	Hygroscopic Water.		
		10.55	Volatile combustible matter.		
		81.14	Fixed Carbon.		
		7.57	Ash.		
		1:1.57	Ratio of volatile to fixed combustion.		
		38.71	Percentage of Coke.		
		noncoherent.	Character of the Coke.		
		By Fast Combustion.	Composition per cent.	0.71	Hygroscopic Water.
				10.73	Volatile combustible matter.
				80.93	Fixed Carbon.
7.57	Ash.				
1:1.50	Ratio of volatile to fixed combustible.				
88.50	Percentage of Coke.				
noncoherent.	Character of the Coke.				
Reddish White.	Color of the ash.				

The number of mining companies incorporated in Canada during 1884 exceeds that of any former year.

The average output of a French miner is 152 tons per annum, while in England that of a Durham miner is 333 tons, or more than double.

Minerals of the Ottawa District.

Abstract of a paper read before the Ottawa Field-Naturalists' Club on the 15th January, 1885, by Charles W. Willimot, Esq.

Specially reported for the Mining Review.

Mr. Willimot, of the Mineralogical Staff of the Geological and Natural History Survey of Canada, in the valuable paper which he presented, gave an extended account of all the minerals which he had personally observed in portions of the Townships of Templeton, Hull, and Wakefield, in the County of Ottawa, and we regret that want of space prevents us from reproducing his remarks in full. His notes upon the economic minerals met with are, however, given at some length.

Native Gold was reported by the late Mr. Vennor, who obtained a specimen from Captain Cates, of the Peche Village, said to have been picked up by him during a journey through the neighboring woods, on the east side of the Gatineau River in Wakefield. The specimen was seen by the lecturer, and consisted of fine visible native gold in a ferruginous quartz, associated with green apatite. It assayed 11.725 oz. gold and 52.323 oz. silver to the ton.

Lead and Zinc. The only representatives of these metals observed in our district are the two sulphides, galena and blende, which are found associated in a greyish-white crystalline garnet that occurs in lenticular masses in a crystalline limestone on lot 6, Range 1, of Wakefield. The blende, which is in black, shining, cleavable masses, is often so intermingled with the galena as to give apparently more prominence to the latter mineral, a feature that must ever be guarded against by speculators.

Copper. The only mineral representing this is the yellow sulphide (Chalcopyrite) found in small imperfect crystals in some veins of apatite.

Iron. The magnetic oxide, or magnetite, is found in all three townships, but the most workable deposits yet discovered are in Hull Township, where mining has been carried on for the last thirty years. The ore from the mines here is coarse in texture and often traversed by veins of red hematite, besides occasionally enclosing scales of graphite and mica. Lenticular patches of the ore occur in a dark green pyroxenite on the south half of lot 7, Range 1, of Wakefield, and on the north half of the same lot it fills a vein in limestone. Here the outcropping portion is highly crystalline, and good crystals, often variously modified, may be obtained in consequence of the crumbling nature of the walls.

Specular Iron Ore occurs at the Haycock location in Templeton and Hull, in parallel beds in a highly feldspathic gneiss. This ore is often mixed with the magnetic oxide, frequently to such an extent as to almost wholly replace it. A white granular apatite and a translucent variety of greenish fluor are often associated. The finest crystals of specular iron ore found in Canada come from this location.

Limonite occurs in a vein about a foot wide, resulting from the alteration of iron pyrites, and flanked by a less altered pyritous substance enclosing black shining crystals of tourmaline. It is probably not in sufficient quantity to be of economic value.

Boj Iron Ore is found in several places in Templeton and Hull but the extent of its distribution is not known.

Of the two sulphides of iron, *Pyrrhotite* and *Pyrite*, the former is uncommon, but occurs in small veins and masses in some of the apatite mines, while the latter is widely distributed and

is rather an objectionable substance. It frequently permeates apatite deposits to such an extent as to detract greatly from their value. In some places it occurs in large bedded masses, enclosing various minerals, of which the most noticeable are crystals of apatite and scapolite with their angles somewhat rounded; in other places it is evenly distributed through large deposits of apatite.

Molybdenum. The sulphide of this metal (Molybdenite) has been detected in small foliated masses at McBryde's mine in Wakefield. Until within the last few years this mineral commanded a price ranging as high as \$4 a pound, being employed for the production of a blue dye for calico printing, but since the substitution of aniline colors it is scarcely saleable at any price.

Graphite or Plumbago bears a strong resemblance to the last named mineral, but is scarcely as bright in lustre, and does not give the peculiar greenish streak of molybdenite on porcelain; but to be certain of its identity chemical tests are necessary. Graphite occurs in disseminated folie throughout the bands of limestone and pegmatite that traverse the three townships, but not in paying quantities. On lot 7, R. 1, of Wakefield, lenticular masses of serpentine enclose graphite in foliated masses as well as disseminated folie. On the same lot a fine granular variety, somewhat similar to the Cumberland plumbago, occurs in pockets of a crystalline limestone.

Apatite. Outcropping veins or beds are by no means so conspicuous as freshly broken specimens, being usually indicated merely by a whitish weathering that might easily pass unnoticed. Its resemblance to pyroxene has often caused much annoyance to pseudo-miners. This mineral, locally known as phosphate, is found of almost all colors, from white to almost black, passing through various shades of green, red, yellow and blue, this last being the most uncommon. The green and red varieties predominate, and in many mines are interblended. At the Jackson Rae mine in Templeton and at the Spring mine a quantity of beautiful transparent sea-green apatite has been extracted, comparatively free from foreign inclusions. A very pure reddish mineral, assaying as high as 86 per cent. tribasic phosphate of lime occurs in bedded masses at Gemmill's mine in Wakefield. A block, estimated to weigh four tons, was blown out by a single blast from one of these masses. Moore's mine, in the same township, is remarkable for the abundance of crystals extracted during the past four years. Huge crystals, hundreds of pounds in weight, have been met with, imbedded in a pink cleavable calcite. At this mine two years ago a beautiful vein of inter-locking crystals of a transparent sea-green color had been developed. The gangue had been dissolved to the depth of a foot, giving great prominence to these forms, which, owing to their fragility could rarely be removed intact. The rounding of the angles of apatite crystals has drawn forth many theories, fusion being offered as an explanation by some mineralogists, whilst others attribute the disfigurement to solvent action. Whichever theory we adopt serious objection may arise, as minerals easily fusible are found preserving their sharpness of outline, associated with rounded crystals of a less fusible apatite; and again rounded crystals of pyroxene are met with, though much more rarely, imbedded in limestone, also enclosing rounded crystals of apatite. It is hard to understand how the apatite and pyroxene alike should be attacked by a solvent while the latter is almost insoluble. (Some aluminous varieties are decomposed with great

difficulty with sulphuric acid at a temperature of 250° C.) It frequently happens that crystals of apatite having sharp angles are imbedded in the same limestone with others that have been rounded. On the other hand it rarely happens that crystals lining the walls of fissures have their angles rounded, although one or more of their faces are frequently obliterated or otherwise contorted, probably in consequence of interrupted crystallization. Bent or broken crystals that have been re-cemented are of common occurrence. The same crystals often enclose calcite, and others again have cavities extending the whole length of the crystals, with sometimes a rounded pebble of cleavable calcite contained in them.

At an opening known as the Gow Mine, in Hull, a pit has been sunk 150 feet in limestone, parallel to the wall of a large fissure which may be said to characterize this band for miles, it being made the more conspicuous by the abundance of crystals everywhere adorning its walls. Several mines have been established on this band with gratifying results. The apatite, which is chiefly of the greenish variety, runs in most cases conformably with the limestone, although some small veins were seen intersecting it. The aggregate yield of this band in the Township of Hull may be roughly placed at 4,500 tons.

We also find this mineral an ingredient of the orthoclase band running through the same township, and likewise characterized in places by a contact wall covered with crystals of pyroxene, apatite, phlogopite, &c. No remunerative mines are reported in this band, though many attempts have been made to work the small veins that occurs.

At Haldane's mine in Wakefield a pit has been sunk 125 feet on what appears to be a vein, cutting the stratification of a dark green granular apatite, impregnated with pyrites and often enclosing epidote, scapolite and pyroxene. This last is frequently of a cavernous nature, the cavities being filled with chabazite and a silky fibrous mineral resembling natrolite.

At Wilson's mine, in the same township, a fine granular strongly coherent reddish apatite, mixed with a green, cleavable variety, filled a vein 12 feet wide in gneiss, which however soon became "nipped."

In following some of the crystal beds at Moore's mine, large cavernous "rugs" were struck, walled with beautiful crystals of pyroxene, phlogopite and apatite. One of these caves was 30 feet long, 6 feet wide and 8 feet high, roofed with a pink crystalline limestone, studded with green scales of apatite standing out in relief on its partly dissolved surfaces.

The comparative dullness of the phosphate trade has caused a partial cessation of mining operations, especially noticeable in the western parts of the apatite region during the past twelve months, and has tended to concentrate and systematize the work, and to restrict success to those having practical experience. In Hull, up to date, 5,000 to 6,000 tons have been obtained; Wakefield has probably afforded between 8,000 and 9,000 tons, and Templeton between 16,000 and 17,000 tons. The total output of all the mines in Canada for 1884 is 22,143 tons; and if we deduct 1,790 tons obtained from the Perth and Kingston districts, the remainder, 20,353 tons, represents the product of Ottawa County for one year.

Wallstonite, a fibro-tabular mineral, occurs on lots 7 and 11, R. 1, Wakefield.

Pyroxene, in its various forms is the most common associate of apatite.

Uralite, found in Templeton, apparently forms a transition mineral between pyroxene and hornblende.

Hornblende is of course found in all the townships in many forms, including *actinolite* and *trémolite*.

Garnet. One variety was mined to the extent of about two tons on lot 18, R. 2, Wakefield, being mistaken for red apatite. An amber colored variety, probably *Essonite*, occurs on lot 14, R. 1, Wakefield. This, too, was mined for apatite, but has since been sold in the States, and the locality has been visited by dealers from Philadelphia and New York, who have now almost exhausted the mineral.

Handsome crystals of a *Lime Garnet* are found a few miles farther west, and *Chrome Garnet* on lot 29, R. 4, Wakefield.

Zircon is found in the development of the apatite deposit. A crystal 15 inches long and worth \$200 was found on lot 23, R. 13, Templeton, and destroyed by a miner ignorant of its value.

Idocrase is found in Templeton and Wakefield.

Cavoclasite is the name given to a mineral described by Prof. Lewis, occurring on lot 7, R. 1, Wakefield, in square prisms with their solid angles unsymmetrically truncated. Color, white, generally stained with oxide of iron; lustre, resinous, sometimes inclining to pearly, opaque. Mr. Willimott claims that the name, which implies poor cleavage, is misleading, inasmuch as the mineral has no cleavage, and that the phosphoric acid given in Mr. Lewis' analysis is due to contained apatite prisms.

Scapolite may be regarded as one of the most constant associates of the apatite deposits, and generally occurs in bedded masses.

Wilsonite is believed to be an altered scapolite. *Epilote* occurs in the stratified rocks and as crystals in mixed veins.

Mica is a name which includes a number of doubtful minerals, all having one perfect basal cleavage. Besides being disseminated through the schistose and gneissic rocks it often constitutes large volumes in some of the phosphatic veins, either distributed in small scales through extensive masses of apatite and pyroxene or forming large aggregations, sometimes affording plates two feet square, in a calcareous gangue. The mica fever, encouraged by flattering reports of irresponsible persons, will always be regarded with suspicion by shrewd capitalists. The existence of the mineral in unlimited quantities in the neighboring townships is undeniable, but with few exceptions the plates are unmarketable in consequence of dark color, inclusion of minerals, or contortion. On the south half of lot 10, Range 10, Templeton, plates two feet square were taken out during the development of an apatite deposit, which were perfectly free from folds, inclusions or opacity, and yet were unsaleable because they would not stand the New York fire test. This same mica has been exposed to the heat of an ordinary stove for two years, and although it became slightly discolored, it compares favourably with some grades of the commercial article. At Chitty's mine in Wakefield great quantities of this mineral were met with, capable of supplying very large plates, though occasionally marred by lateral joints. What this mineral lacks in a commercial point of view is counterbalanced by the magnificent prisms available to the scientific world, the crystals lining the walls of fissures or enclosed in limestone being for symmetry unrivalled in the Dominion.

Oligoclase is found on lot 16, Range 12, Hull.

Albite is mentioned by Dr. Harrington as occurring in Templeton.

Orthoclase is found in all the Townships.

Titanite or *Sphen* is a common associate of apatite veins.

Tourmaline is met throughout the neighborhood. The finest crystals occur on lot 15, Range 12, Hull.

Talc, or something having its aspect, occurs at McLaurin's mine, Templeton.

Steatite is found in small bedded masses in all the townships.

Serpentine occurs in the limestone bands. No mention is made of any workable location.

Chrysotile, or serpentine asbestos occur near Chelsea, forming concentric veins in a serpentine limestone, with fibres sometimes $1\frac{1}{2}$ inches long, but rather too strongly coherent to be of commercial value. Other localities near Templeton have afforded asbestos with more separable fibres. A quantity was mined from this locality some years ago.

Rhipidolite is found on the west half of lot 18, Range 9, Templeton.

Prehnite was noticed at Post's mine, Templeton.

Stilbite, *Chabazite*, *Natrolite* and *Hemlandite* are four representatives of the zeolite group which have been noticed.

Barite, or sulphate of barytes, is the only sulphate which has been found in these townships. It is used extensively for the adulteration of white lead in consequence of its high specific gravity and cheapness, often replacing 75 per cent. of the lead. A vein of this mineral was worked some years ago in Hull. There is another deposit on lot 12, Range 12, Templeton, in white lamellar bedded masses in gneiss.

Calcite is the only representative we have of the carbonate group. Extensive beds of amorphous and crystalline calcite or limestone characterize this neighborhood, more especially the western portion.

Fluorite or fluor spar is amongst the associated minerals of the apatite veins.

Spinel and *Rutile* represent the anhydrous oxides in addition to the members of this group included with iron ore.

Quartz is one of the commonest constituents of our rock masses and fills many of the veins.

Jasper occurs in a bed 2 feet thick, overlain by gneiss, on lot 15, Range 10, Hull.

Agate in the form of chalcedony is found on lot 17, Range 9, Templeton.

In the discussion which followed the conclusion of the paper Mr. Lawson stated that he had not quite caught the lecturer's idea respecting the rounding of angles of pyroxene and apatite. Mr. Willimott again pointed out that as pyroxene and apatite occurred together it was strange that the agent, whether it were fire or water, that had power to dissolve the angles of the very refractory pyroxene should not entirely dissolve apatite crystals. Mr. Lawson thought water at very high temperatures, would dissolve almost anything.

Mr. W. P. Anderson understood that the inferior quality of our mica was a result of its being phlogopite, a mineral containing a small percentage of water, whereas the best commercial mica was muscovite, which contained no water. He had been informed that workable deposits of muscovite had been found in the Perth district, and asked if it were the case. The lecturer stated that muscovite was undoubtedly found in this locality; and also in answer to questions, that the New York fire test was recognized throughout Canada, and that muscovite was not affected by the blow-pipe.

In reply to Mr. Small the lecturer stated that his apatite statistics had been taken from the export returns, and, therefore, were exclusive of the quantities mined but yet in the country, and also exclusive of the 800 tons used last year by the Brockville chemical works.

During the discussion it was elicited that whereas now it did not pay to mine anything

poorer than 70 per cent. apatite, arrangements had been made for shipping 65 per cent. stuff for treatment by a new process. Members of the British Association had told Prof. Macoun that some of the refuse of the Templeton mines was superior to anything worked in England, and that in the future middlings would be of great value.

Mr. Lawson, Geological Survey, said that untreated ground phosphate was proving better for fertilizing than superphosphate, and asked if any official statement to that effect had been made.

The lecturer thought there was no such statement, but agreed in the superiority of untreated apatite, which would resemble ground bone in its action.

Mr. Small instanced the report of the Department of Agriculture, which gave the results of tests by the Agricultural College at Guelph. There the untreated fertilizer was found to have good effects on root crops in the third year after application, but not on cereals. He added that Scotch authorities were endorsing this view, also that there was a large demand for the ground mineral in Belgium for fertilizing sugar beet districts.

Mr. Fletcher thought that under these circumstances the farms in the apatite districts should be particularly fertile, which did not appear to be the case.

Rev. Prof. Marsan said that on the Upper Gatineau were many particularly fertile patches which he attributed to the existence of apatite deposits in the vicinity. He thought that the theories of those who contended for the use of superphosphate were quite reconcilable with those of the advocates of the raw material, as in spring all the phosphorus was in the roots of cereals, in July in the straw, and at harvest in the fruit; and as cereals required the phosphorus quickly, superphosphate would show the best results on them, while roots required it more gradually, and had time to absorb it from the slowly disintegrating rock.

In the reports of the French agricultural schools superiority was given to the raw material, and the French newspapers were advising its use.

He endorsed the lecturer's remarks as very exact in every point. He had studied the minerals near the Desert, where the geological formation is very similar to that of Chelsea, no tract being so uniform as the crystalline limestone band. The survey had gone 60 miles north of Ottawa; 90 miles farther the same formation continued.

He had found gold on Trout Creek, which empties into Egle River. When he first heard of it, although the formation is a favorable one for gold deposits, he paid little attention to the report, as the farmers often mistake pyrites and mica for the precious metal, and would show him great finds of these glittering particles; but having a favorable opportunity he brought a sample of sand to the college and found traces of gold in it, but has since been unable to obtain a further supply in consequence of the water being too high when he was there.

A Peace River pioneer states that gold is now being discovered in good paying quantity along the various tributaries of the great Unpyah.

The Edmonton *Bulletin* speaks very encouragingly of the prospects for alluvial gold mining in the vicinity of Point le Pied, on the Saskatchewan, and states that Mr. Jerome Boudrea, formerly of New Brunswick, is preparing for active operations next spring.

THE OUTLOOK FOR COPPER.

Commenting on this important subject the *Engineering and Mining Journal*, (N.Y.), states that—"The disturbing element in the world's copper market is undoubtedly the production of the United States. From every other quarter, England's importations show only moderate fluctuations; a falling off from Spain of 2,600 tons, despite the promise of increase; a gain of 3,800 tons from Chili, despite the prediction of the total extinction of her copper industry by low prices; 1,100 tons increase from Australi, compensated for by a decline of 1,000 tons from Newfoundland. But the record of the United States for the last three years is startling: 745 tons exported to England in 1882, 9,410 tons in 1883, and 17,309 tons in 1884. And this from a country which, in 1880, in order to meet an extraordinary demand of its home market, had to import Chili bars.

Such a sudden addition to the world's supply has of necessity checked speculation by introducing a new and uncertain factor into the calculations on which speculation is based, while the steady decline in price has induced manufacturers to run on low stock. And yet the world's consumption has kept pace so closely with the world's production that the average visible supply for 1884 was 3,865 tons less than in 1883, and 17,199 less than in 1880. It is, therefore, the anticipation of a still larger production from North America that alone depresses prices in the face of reduced stocks. If we should continue to increase our output at the rate of the last few years, the balance between supply and demand would undoubtedly be seriously disturbed. If, on the other hand, the tide of our copper production is at its flood, we may expect the tide of prices to rise; and there is reason to suppose that possibly the maximum of production and probably the minimum of price have been reached."

After referring to the copper producing districts and the mines throughout the United States, and to the rapidity with which some of the more recently developed mines have become enormously productive, the *E. and M. Journal* adds, "that every mineral deposit in the west is worked on a high-pressure system that aims at making output great, no matter at what waste, and no matter how much more economically the work could probably be done in the future. The result is that the practical capacity of a mine or district is rapidly reached. It must also be remembered that all the work heretofore has been done on the rich, partially decomposed sulphurets, which overlie the unaltered ores; and that the percentage of the ores now treated is probably so much higher than those the company will have to handle before many years have passed, that the plant, now capable of producing from 20,000 to 25,000 tons a year, will have to be greatly augmented in size to turn out a like quantity from the deep, leaner ores.

There still remains to consider the course of the Lake Superior companies. At the present price of copper, there are probably only four or five mines that more than cover expenses. These, if they deem it best, can increase their mechanical appliances so as to handle a greater quantity of ore; but only one at the present time, the Calamet & Hecla, expresses the intention of adopting this policy of making these light profits heavier by largely increasing the output. Any gain, however, from this quarter will be nearly balanced by loss of production through the closing of a number of smaller mines, should the depression last. No new mining enterprise of any consequence now

under way in the Lake District will add to this year's production, and the times are not propitious for the starting of fresh ventures.

We believe, therefore, as we have already remarked, that in the United States, the largest producing market of the world, the maximum of production has been nearly reached, and if so, it almost follows that the lowest limit of price has been touched; for, even more remarkable than the rapid production of the past four years, has been the complete absorption of the enormous surplus. If, therefore, this growing source of supply be checked, and the new industries that have absorbed it continue to grow, the inevitable result must be a rise in price."

Taking into account the present condition of the market, and the outlook for copper mining in North America for some time to come, it would be unwise just now to open new mines.

COPPER EXPORTS.

During the fiscal year ended June 30th, 1884, there was exported, in ore, to the United States, from the copper mines of the Eastern Townships 2,234,642 pounds of fine copper. This was the actual quantity of copper contained in the pyrites shipped, chiefly from the Capelton mines, for the manufacture of sulphuric acid and the subsequent extraction of the metal.

The total amount of copper exported from Canada during the period above mentioned amounted to 3,589,135 pounds, as follows:—

	Pounds.
Fine copper (in ore) exported to the United States.....	2,241,685
Fine copper (ingots and old copper) exported to the United States....	248,846
Fine copper (chiefly regulus) exported to England.....	1,095,604
Total.....	3,589,135

LAKE SUPERIOR MINING NOTES.

The Town Council of Port Arthur has endorsed a petition from the mine owners of the district to the Commissioner of Crown Lands, praying that the Ontario Government will construct a bridge over the Kaministiquia River, between Murillo Station on the C. P. R. and Rabbit Mountain. Such an improvement would greatly facilitate access to the mines.

It is reported that the Silver Mountain Mining Company has received an offer from the Silver Islet Mining Company to purchase the property known as *Silver Mountain*. The price offered is said to be \$300,000—\$50,000 to be paid in cash and the balance within one year. It is thought, however, that the sale will not be completed as the company prefers to work rather than to sell the mine.

W. H. Furlonge, Mining Engineer, who has made an examination of the Beaver Mine, states that he gathered five samples of ore which represented the average of the vein, as then exposed for thirty feet in perpendicular height, and that these samples yielded to Mr. Chas. Kreissman, assayer, an average of \$995.75 in silver to the ton of 2000 pounds; the assays yielding \$660 at the outcrops on the top of the hill, and \$2,749.47 thirty feet below. We question very much that this is the average of the vein.

Mr. Furlongé also reports, after visiting the localities, that rich silver ore is now being taken

from the drift and cross-cut at the Rabbit Mountain mine, and that he saw fine native silver being blasted out at the Twin City. He is of opinion that the whole vein stone of both these mines is good stamp-rock.

A valuable discovery of gold bearing quartz has been made by the veteran explorer J. McKellar, of Fort William, District of Lake Superior, in a new locality. Specimens are now in the hands of Prof. Hoffman, of the Geological Survey, for full and complete analysis. Application for the location was duly made and has been granted by the Ontario Government, who show a much more liberal spirit than the Quebec Government in their disposal of mineral lands. A number of Ottawa capitalists have undertaken the developing of this latest find of Mr. McKellar.

GENERAL MINING NOTES.

NOVA SCOTIA.

The Hall-Anderson company began to ship bullion before the first of the year.

The Salmon River gold mining company will, if report be true, increase its milling capacity by twenty stamps.

The Superintendent of the Essex gold mine reports that early in December he had extracted 58 ounces of gold from 51 tons of quartz.

There has been recently received at this office a very handsome specimen of gold quartz from the Oxford Gold Mine, Lake Catewa District, Nova Scotia. We hope the vein, from which it was taken, carries similar quartz in quantity.

According to the official returns to the Commissioner of Mines for Nova Scotia, there was raised in that Province during 1884: 1,389,295 tons of coal, and 16,079 ounces of gold, against 1,422,553 tons of coal, and 15,456 ounces of gold in 1883.

QUEBEC.

Iron mining in the Township of Bristol is being prosecuted with vigour. The ore is being conveyed by teams to Braeside, and thence by Canadian Pacific Railway to Renfrew, from which point it is forwarded to Kingston over the Kingston and Pembroke Railway.

A new company, under the name of Johnson & Co., has been organized in the Province of Quebec for the purpose of working Asbestos mines in the Eastern Townships, and carrying on other mining operations, with headquarters in the Township of Thetford, county of Megantic. The capital stock is \$250,000.

Prospecting for silver is being vigorously proceeded with by Messrs. Ross & Torrance on a property owned by them, situated about 25 miles from the village of St. George, county of Beauce, Province of Quebec, and not far from the border line of the State of Maine. Mr. Torrance was formerly engaged on the Geological Survey, and is a mining engineer of some skill; he is personally superintending operations, and has 15 to 20 competent men employed. Galena, carrying silver in paying quantity, has been met with, and Mr. Torrance is sanguine that the property will develop into a mine of great value.

ONTARIO.

A small force of miners is employed at the *Co Hill* iron mine for the winter months. It will be increased again in the spring.

The Cleveland Mining Company, (limited), has been incorporated for the purpose of carrying on operations in the Counties of Hastings and Peterboro', Ontario, with head quarters at Trenton. The capital stock is \$750,000, divided into 7,500 shares of \$100 each.

A good quality of lithographic stone is being quarried in Hastings County, but the sizes of the blocks are of too small dimensions to command a high price. The quality is so good that the owners are encouraged to proceed with quarrying and are hopeful that more solid beds will be met with at a greater depth from the surface.

Work has been again suspended at the Canada Consolidated Gold Mine, in Hastings County, Ontario. The cause for the suspension is attributed to a disagreement between Mr. W. H. Stevens, consulting manager, and Mr. R. P. Rothwell, active manager. It is understood that Mr. Stevens has been advancing the money to carry on mining operations, and having become dissatisfied with the results has stopped the supplies. According to the Secretary's report, this Company's indebtedness is \$300,000.

BRITISH COLUMBIA.

The Burns Mountain Quartz Company continues to drive the tunnel.

Coarse gold diggings have been discovered on Forty-nine Creek, a tributary of Columbia River, and miners are at work.

The Yellow Lion Company have been prospecting during the winter, in order to ascertain where the best *pay* is, and to be ready to wash in early spring.

In the Cariboo District there has been almost too much water in the creeks for winter mining. The Barber, the King, and three other companies have, however, been working on William Creek and are taking out *pay*.

A large vein of silver-bearing quartz has been discovered near 108-mile house, 61 miles above Clinton, on the Cariboo wagon road. The discoverer is Wm. Walker, the telegraph operator, and the vein is said to assay quite rich.

About twenty miners are making preparations to visit Lorne Creek mines as soon as the weather is favourable. Some of them are among the number who were in during the first year, and are very sanguine of large returns during the coming seas.

The miners of Lillooet district have taken out \$108,000 during the past season—rather more than is expected of Cassair. It is \$10,000 more than Lillooet yielded the previous year, and the miners are hopeful of making a still better showing this year.

Fine specimens of silver ore have been brought from Kootenay Lake. It is said that about fifty companies have taken up claims and intend to work the mines vigorously. A New Haven company has secured mineral land on the lake and, if they can hold the claim, speak of putting up smelting works in the spring.

On Antler Creek the Nason Company has sunk a shaft fifty feet, and will drift one hundred feet in rock to reach the channel. It has no doubt been reached by this time. This company has used 59,000 feet of lumber in constructing a flume 3,400 feet long by four feet wide. If the Nason Co. is successful, other portions of the creek will be prospected.

It has been decided to flood Nos. 3 and 4 shafts, at the Wellington Collieries, high enough to close the connection between the two mines, and by this means it is hoped the fire will be extinguished and an opportunity afforded to work the upper portion of No. 3 mine. Mill-stream will be turned into the shafts and it will take a week to flood them.

The returns from the three principal fields of gold production are in, and, considering the limited number of miners engaged in the industry, the results are gratifying. A total output of \$691,000, although small when compared with the great returns of 1862 and 1863, still, when taken into account with the other productions of the province, it is by no means to be despised. During the year just closed the yield was as follows:—

Cariboo.....	\$124,000
Lillooet.....	108,000
Cassair.....	103,000
Kootenay.....	56,000
Total.....	\$691,000

UNITED STATES.

Thirty-one million dollars worth of gold was obtained from the United States mines last year.

The cost of strikes in the Hoehing Valley coal mines for the last six months of 1884 amounted to \$1,000,000.

It is expected that the Calumet and Hecla alone will shortly be crushing at the rate of 3,300 tons of rock a day equivalent to 50,000,000 pounds of copper yearly.

The shipment of iron ore from Lake Superior mines, including the Menominee district, amounted to 2,455,924 gross tons in 1884, showing an increase of 103,636 tons over the shipments in 1883.

The Calumet and Hecla Copper Mining Co. will pay a dividend of five dollars per share on the 2nd of February, aggregating \$500,000. A year ago the stock of this company was selling at \$234. The present price is \$153.

The money value of the output of the gold and silver mines of the state of Colorado for 1884, will aggregate about \$20,750,000, or \$5,500,000 less than last year's, due to the depreciation in the price of silver, lead and copper.

The production of the precious metals in the States and Territories west of the Missouri River during 1884, was as follows:—Gold, \$26,256,512; silver, \$45,799,069; copper, \$6,086,252; lead, \$6,831,091—aggregating \$84,975,954.

The money value of the product of the Con- stock mines for 1884, was as follows:—Andes, \$1,722; Ophir, \$81,841.77; Potosi, \$200,000; Savage, \$13,058.88; Union Consolidated, \$5,065.13; Gould & Curry, \$19,206.18; Hale & Narcross, \$102,712.62; Mariposa Mill, \$21,

\$90.30; Belcher, \$386,243.73; Crown Point, \$539,522.73; Kentuck, \$370,361.27; Yellow Jacket, \$656,915; Monte Cristo, \$28,356.34; Lady Bryan, \$9,934.58—aggregating \$2,436,833.33, being the largest product in any one year since 1879.

The discovery in California lately of considerable quantities of the peculiar stone used by lithographers is the subject of much remark in papers of that State. Heretofore the best lithographic stones have been found at Kelheim and Solenhofen, near Pappenhim, on the Danube, in Bavaria; but they have been found also in Silesia, England, France, Canada and the West Indies. They are found in beds, commencing with layers of the thickness of paper till they reach the dimensions of one and several inches in thickness, when they are easily cut, being yet soft in the quarries, to the sizes required for printing purposes.—*N. Y. Mining Record*.

REDUCED WAGES.

Early on the morning of January 19th, writes a correspondent of Medicine Hat to the *Nor-Wester*, the miners employed in the Saskatchewan coal mine went, as usual, down the incline, and were about to enter the mine, when the pit foreman asked if there was any loose coal in, and those who had some go' to work and had it up by noon. The other men were told to see well to the propping of the passages, and to bring out all their tools. These orders were all carried out, the men not knowing what was going to happen, until the following morning, when the general manager informed the men that all the miners could get for their work was 60 cents per ton, and the men to sign articles making a large deduction from each small car of coal, for dust in slack, also that if miners wished to leave the Coal Co's. service they were to give two weeks' notice, etc. Most of the disgusted miners left the town next day, and are now located in the "Hat" waiting for something to do. Many would return east to their families if they had the means to purchase tickets. On the night of January 25th about sixty miners from Pittsburg arrived at Medicine Hat by a special train, a passenger coach being attached for their convenience. The train went through and disembarked its passengers at Stair, one mile and a half from the mines. These men are under engagement to work in the Saskatchewan mine. Whether they will work for the new price, 60c. per ton, remains to be seen. In the meantime about seven score of the old miners who last week were getting 90c. per ton have remained to work at 60c.

A Mountain of Silver.

An interesting exhibit has been sent from Mexico to the New Orleans Exposition. It consists of a cast of a mountain, made of silver, resting upon a base about five feet long, three and a half feet wide, and eight inches thick. This base is of solid silver, and bears upon each side a medallion of Hidalgo and the words in Spanish: "From the State Ohihuahua to the New Orleans Exposition." The cast of the mountain, which is hollow, but nevertheless massive, is about three and a half feet high. It has two peaks, is quite natural in appearance, is covered with cacti and other Mexican vegetation, and has a party of soldiers scaling its sides and an Indian shooting a deer with a bow and arrow at its base—all cast in silver. This beautiful display of workmanship weighs about three tons, and is valued at \$92,000.

The "Sierra Nevada."

In all the history of human folly in our belief, says the *N. Y. Mining Record*, rarely has anything gone further in that direction than has the expenditure made by the shareholders of this property since September 1878, when by some inexplicable jugglery, the management at that time succeeded in running up the price of the stock from \$68 to \$270 per share. At that time the sum total of assessments upon the property was \$2,100,000 the fruits of fifty-five swiftly following levies, increased to \$2,400,000 on the 22nd October, 1878. Since that date, no less than forty-five assessments have been levied, aggregating \$3,550,000, which have been drawn from the pockets of the shareholders, making the sum total levied \$5,650,000 to be expended in as bootless and foolish a pursuit as that of the endeavor to square the circle—at least for the stockholders.

THE TOLIMA.—A silver mining company, the stock of which is owned in England and the property of which is in Tolima, one of the States of Columbia, has yielded during the thirteen months ended June 30, 1881, 1,552½ tons of silver ore estimated to be worth \$620,313; the ore was shipped to England; cost extraction and exportation was \$371,410. This ore as exported ranged from 373 to 261 ounces the ton; average was 298.08 ounces per ton. Of course, this property pays dividends regularly on 20,000 shares; one dividend, \$1.25 per share, was paid in September and another of the like amount was paid on the 15th of December.

GOLD MINES IN INDIA.

Interest in the India gold properties, which thus far have proved such a lamentable failure, has revived in consequence of the success of the Mysore Gold Company in the Mysore gold-field. From June to November, both inclusive, the Mysore Company crushed 622 tons of rock, which yielded 907 ounces of gold, the result of stamping 121 tons in November being 3 ounces per ton. Several defunct companies in the district, the Ooregum, Nundydroog, and Madras companies, are making preparations to reorganize, and it almost looks as though, after all, something might come out of the great bubble so disastrously pricked two years ago.—*N. Y. Engineering and Mining Journal*.

A \$50,000 AUSTRALIAN NUGGET.—At one of the tents sat four men—the 10th of June, 1858—talking earnestly of their future and bemoaning the past. For several months these four men had worked together in the same claim, sometimes getting barely sufficient for daily wants; sometimes not even that. For several weeks, indeed, they had labored without any result. Not a speck of the precious metal had they seen. Their credit was stretched to the utmost limit; but until this evening they had hoped, as diggers do hope, that on the morrow something would turn up. Now they had ceased to hope; the storeman had refused further credit, and here they were without either bread or tobacco. "This," said one, "is the last straw." "True," replied another; "we cannot work with empty pipes." "I vote," said a third, "that we go down in the morning for our tools and peg out in some other quarter." After a long and serious discussion this suggestion was decided upon; and early next day, long before the camp was astir, three of the

men descended the old mine, the fourth remaining at the windlass. Down in the mine, the three looked gloomily around, with a kind of sulkily regret at having to leave the scene of so much useless toil. "Good-bye," said one, "I'll give you a farewell blow." And raising his pick he struck the quartz, making splinters fly in all directions. His practised eye caught sight of a glittering speck in one of the bits at his feet. Stooping, he examined it and the place he had struck, when, with a loud exclamation, he knelt, and satisfied himself that it was gold! He then commenced picking vigorously. His mates caught the meaning and followed his example. In dead silence they worked on—they had discovered a monster nugget! Then a wild, glad shout sounded in the ears of the one at the windlass, who had sunk into a half-dose, feeling, probably, the want of his breakfast. To his inquiry, "What is going on?" the cry came "Wind up" and as he did so there rose to the surface a huge mass of virgin gold. When fully exposed to view, the men were almost insane with joy. After watching it through the day and live long night, they had it conveyed in safety to the bank. It was named the Welcome stranger, and yielded the fortunate discoverers of it \$50,000. On the site of that spot—within a few yards of which the writer resided—we now find a broad and busy street, a noble temple dedicated to public worship; a free library; and monster marts and warehouses, containing vast stores of the old world's merchandise. The forest and the scrub have disappeared and their place is occupied by the finest city on the celebrated gold fields of Victoria.—From *Cassell's Saturday Journal*.

GOLD NUGGETS.—The largest gold nuggets ever found were said to be as follows:—The Sarah Sands nugget, found at Ballarat, weighed 130 pounds Troy, or 1,560 ounces. This, at £4 pounds per ounce, would be worth £6,140. The Blanche Barkly nugget, dug up at Kingower, weighed 115 pounds, and was worth £6,960. The Welcome nugget, found at Ballarat, weighed 184 pounds and was sold for £9,325. This latter is the largest ever found—a model of the same can be seen at the Geological Museum in Ottawa.

A GOLD FIND.—A story comes from Nottawa, Ontario, to the effect that Mr. Taylor of that place has discovered in the Collingwood mountain what is likely to prove the best gold mine in America, and that he has been offered \$20,000 by a Californian to show him where it is, but he declined, as \$20,000 is nothing to be compared to the wealth that is within his grasp.—*Exchange*.

We are in receipt of a letter from Nottawa on this subject to the effect that Mr. Taylor claims to have discovered gold in the locality above referred to, but owing to the depth of snow he has been unable to make an extended examination of the ground, and is, therefore, unable to say if the gold occurs in paying quantity. It is Mr. Taylor's intention to thoroughly prospect the locality in the early spring, and to test the richness of the vein he has already found.—*Et.*

The Cleveland Gem.

It is stated that Mr. S. Dessau, of New York, has cut a diamond weighing seventy-eight carats. It has been named "The Cleveland gem," and is said to be the largest diamond ever cut in America. The diamond was found in one of the mines at Kimberly, South Africa, but by

whom is not known. It was smuggled into London and purchased by a syndicate that held it for eight years, until it was purchased by Mr. Dessau. Upon leaving the polisher's hands it will be considered worth \$50,000.

The full text of a paper by Prof. W. Boyd Dawkins, M.A., F.R.S., on the Phosphate Deposits of the Ottawa District, read before the Manchester Geological Society, has just reached us. We regret that want of space has rendered it impossible for us to publish this valuable paper in this issue, but it will appear, *in extenso*, in our March number.

THE METAL MARKET.

Messrs. E. W. Carling & Co., of 16 Philpot Lane, London, England, report under recent date:—

METALS.—There has been little animation in this market except in copper and tin, the former showing increasing business.

COPPER.—Firm. Chili bars, good ordinary brands, cash £18 15s. to £19. 2s. 6d., three months £19 7s. 6d. to £19 15s.

YELLOW METAL.—Sheets, (4x4 ft.) for India, 1½d. to 5d.; sheathing 4½d. to 5½d.

TIN.—Steady. fine foreign, cash: Straits, £74 12s. 6d. to £75 2s. 6d.; Australian, £75 2s. 6d. to £75 12s. 6d.; three months, £75 2s. 6d. to £75 12s. 6d.

LEAD.—Flat: English ordinary brands, £11; Spanish, £10 15s.

IRON.—Scotch pig. 42s. 2d. cash; Staffordshire f. o. b.—Bars in London, £6 to £7; nail rods, do., £6 to £7; hoops, do., £7 to £8; sheets, do., £7 10s. to £9.

TIN PLATES.—Charcoal, 1 C (f. o. b. London), 17s. to 22s; coke, 1 C do., 14s. to 17s.

SPELTER.—Foreign, ordinary brands, ex. ship, £14 to £14 5s.

QUICK SILVER.—£6 15s. per bottle.

ANTIMONY.—Regulus, f. o. b., £40.

For the information of those of our readers who have invested in U. S. Mining Stocks we publish the following:

ASSESSMENT DIRECTORY.

(N. Y. Mining Record.)

This table is prepared from the official advertisements published by the organ of the San Francisco Stock Exchange.

[Stocks are sold in New York with assessments paid fifteen days anterior to the date of delinquency at office of the Company, as given in the table below.]

COMPANY	When levied.	Delin-quent in board.	Delin-quent in office.	Day of Sale.	Am't.
Kohler S.M. Co.	Nov. 2	.....	Jan 24	Feb 13	50
Excelsior W. & M.	Sept 1	.....	Feb 11	Mar 2	50
Scorpion.	10 Dec	.....	Jan 13	Feb 13	10
Copper Mountain.	1 Dec	.....	Jan 13	Feb 10	65
Sunsets Con.	2 Dec	.....	Jan 21	Feb 12	65
Happy Valley R.G.	3 Dec	.....	Jan 19	Feb 9	65
Silver Lining.	1 Dec	.....	Jan 19	Feb 19	97
Utah.	1 Dec	.....	Jan 19	Feb 19	50
Black Bear Qtz.	1 Dec	.....	Jan 29	Mar 17	25
Virginia Creek H.	1 Dec	.....	Jan 29	Mar 17	25
S. Bernardino I. L.	1 Dec	.....	Feb 1	Feb 1	15
Sutter Co. Land.	1 Dec	.....	Feb 1	Feb 1	100.00
Omitak.	1 Dec	.....	Feb 1	Feb 1	10
Puget Snd Iron.	10 Dec	.....	Jan 29	Mar 6	1.00
Prospect.	10 Dec	.....	Jan 31	Feb 14	15
Eschequer.	21 Jan	.....	Feb 2	Feb 23	25
Arnold.	21 Jan	.....	Feb 2	Feb 23	1.50
Eintracht Gravel.	17 Dec	.....	Feb 1	Mar 6	95
El Refugio.	1 Jan	.....	Feb 10	Feb 10	20
Silver Hill.	21 Jan	.....	Feb 15	Mar 6	65
N. Gould & Curry.	1 Jan	.....	Feb 15	Mar 21	25
Hilber Con.	1 Jan	.....	Feb 15	Mar 21	25
Peerless.	3 Jan	.....	Feb 14	Mar 13	75
Peer.	11 Jan	.....	Feb 14	Mar 13	50
Ame.	8 Jan	.....	Feb 9	Mar 13	61
Con. Cal. & Va.	9 Jan	.....	Feb 13	Mar 13	20
Martin White.	19 Jan	.....	Feb 15	Mar 13	15
Mammoth G. Bar.	7 Jan	.....	Feb 9	Mar 13	10
Alpha Con.	19 Jan	.....	Feb 20	Mar 13	50
Mayflower Gravel.	2 Jan	.....	Feb 20	Mar 13	10
Hazard Gravel.	6 Jan	.....	Feb 20	Mar 13	65
W. Vancouver C.	6 Jan	Feb 20	Mar 13	65
Independence.	11 Jan	Feb 21	Mar 13	15
Guera Santa.	5 Jan	Feb 21	Mar 13	25

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