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CANADIAN

MINING REVIEW

VOL. 4.—No. 3. 1886—OTTAWA, MARCH—1886 VOL. 4.—No. 3

Notice to Contractors.

SEALED Tenders addressed to the undersigned, and endorsed "Tender for Infantry School, London," will be received at this office until MONDAY, 29th proximo, for the several works required in the erection and completion of

Infantry School, London, Ont.

Plans and specification can be seen at the Department of Public Works, Ottawa, and at the office of Messrs. Durand & Moore, Architects, London, Ont., on and after Monday, 15th 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 Honourable the Minister of Public Works, *equal to five per cent.* of the amount of the tender, which will be forfeited if the party declines to enter into a contract when called upon to do so, or if he fail to complete the work contracted for. If the tender be not accepted the cheque will be returned.

The Department does not bind itself to accept the lowest or any tender.

By order,

A. GOBEIL,
Secretary.

Department of Public Works, Ottawa, 24th Feb., 1886.

Canadian Mining Review.

OTTAWA.

PUBLISHED MONTHLY.

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

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

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

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

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

Early in the present month an influential deputation, composed of representative men, waited on the Minister of the Interior to call his attention to the dissatisfaction that prevails among those who are interested in mining in Canada by reason of the past indifference of the Geological Survey to the collection of statistics and information connected with our mines and minerals, and urged upon him the importance and necessity of establishing a Bureau of Mines in connection with the Survey. A short account of what was said and done by the deputation is reported in another column, and it will be seen by reference to the list of names that the gentlemen who have taken up the subject are for the most part members of Parliament representing constituencies largely interested in mining, and all of them, twenty in number, are directly or indirectly interested in the development of Canada's mining industries. This is not the first time that the central government has been requested to establish a Bureau of Mines and Mineral Statistics, nor is it the first time that its attention has been called to the lack of some such means of collecting and classifying facts as to the sites and yield of our economic minerals. What is desirable is a complete series of statistics relating to the minerals of the Dominion, issued at regular intervals and corrected and enlarged as new information is obtained. It is worthy of note that at the meeting in Montreal in 1884 of the British Association, the President stated that the collection of statistics was of very great importance, and he thought it would be a good thing if the Canadian Government would take the matter into their serious consideration and find a way to the establishment of a Bureau for the purpose.

MR. CLEMENT LE NEVE FOSTER of Wales, at the meeting of the British Association above referred to, said that the system in vogue in England for the collection of mineral statistics was the result of a meeting of that Association, and he considered that their visit to Canada will not have been thrown away if the only outcome of it is to be the establishment of a system for the collection of statistics of the mining interests throughout the Dominion. He suggested that a similar system to that in England might be adopted by the Canadian Government, and stated that at the last meeting of the inspectors of mines, in England, a table of the mineral statistics of the British Colonies was compiled for the Home Office, and great difficulty was experienced in collecting any statistics of the Canadian minerals.

Surely it is right that a country with so much wealth of the mine such as Canada possesses should have a proper system for the collection of its mineral statistics, and it is fervently hoped that a suggestion on that head, coming with all the weight of the economic section of the British Association, shall not have been made in vain. Any suggestion supported by such authority should not be without its influence on our central government, and now that this need has received the confirmation of the representatives of our mining communities, and has been brought by them so forcibly to the notice of the Minister of the Interior, it is expected that through him it will receive the early attention of the Government, and that a Bureau of Mines and Mineral Statistics will shortly be announced as a recognized and permanent feature of the Geological Survey of Canada.

Some weeks ago there appeared in one of the leading Ontario morning papers the following paragraph, which should be of especial interest to the mining community:

"WHY PROF. SELWYN IS DISLIKED."

"Professor Selwyn, in charge of the Geological Museum, will leave on Tuesday next for England to make preliminary arrangements for Canada's geological exhibit. From what can be learned from reports made against Prof. Selwyn, it would appear they have been prompted by those who, having personal interests to serve, were thwarted by this officer. During the coming session of Parliament some startling revelations are likely to be made, in which it will be shown that several individuals occupying seats in the House of Commons have endeavoured to tempt Prof. Selwyn with bribes to report favorably on mineral properties they held, and which they wished to develop. Hence the attacks on the Professor."

This appears to have been inspired on good authority and has not been contradicted. It is a serious charge, insidiously and vindictively made, and the paragraph has probably escaped the notice of those who would be most interested in reading it.

In our last issue, referring to the cause of the strike at the Springhill coal mines, Nova Scotia, it was put down as owing to the unsafe condition of part of the workings. We are informed that this was not the case, but that the trouble arose through the alleged harder quality of the coal in certain working places. These mines have hitherto been noted for the care and attention given to the safety of the workingmen, a praisworthy character, which has been frequently commented on by visitors, and notably on the occasion of a visit recently paid to them by an English Inspector of mines, who remarked that the occupation of mine inspectors would be dispensed with if all English mines were conducted with equal care.

Elsewhere we give a short account of what transpired at the meeting in Hull, called for the purpose of pressing the Gatineau Valley Railway Company to resume the work of construction and to push it vigorously with a view to the early completion of the road. If the President's promises and assurances are to be realized it will be necessary that the Quebec Government proceed at once to locate the land grant, on which, according to Mr. Mackintosh's statements, depends the consummation of his negotiations for the building of the road. The Gatineau Valley Railway would be an important factor in opening up and stimulating great mining industries in the county of Ottawa, and we earnestly hope that the Government will, so far as it lies within their power, remove every obstacle that serves as an excuse for the incompletion of the road.

The advisability of grinding Canadian phosphate rock and shipping it in a pulverized state has for some time occupied the attention of mine owners, and the experiment is about to be put to a practical test by the Portland, P.Q., Phosphate Mining and Milling Company. This company have erected and furnished a mill at the Basin du Lièvre, near Buckingham, and will grind and ship a large quantity of phosphate during the coming season. The mill is very conveniently situated for shipping as regards railway and water communication, and the water power for driving purposes is unlimited. The Portland, P.Q. M. & M.Co. have everything in their favour, and if this branch of our phosphate industry is practicable from a commercial point of view, and can be profitably carried on under any circumstances, their enterprise should and no doubt will be rewarded by successful results.

If this first attempt to establish a separate branch to our phosphate industry proves a success it will give an impetus to mining in the district and will be an incentive to others to erect mills for crushing and grinding phosphate rock. We are not informed as to what description of mill the Portland company has procured, but we have seen samples of the rock it has ground to an impalpable powder, from which we judge

that it does good work. Our attention has been directed recently to the many advantages the "Sturtevant" mill possesses for this particular class of work. It has been designed for crushing and grinding phosphate, emery and all hard and refractory ores, and practical mill superintendents who have used it on all descriptions of ores have attested to its unquestionable merits. The "Sturtevant" is a crusher and stamp-mill combined, and it is of extremely simple construction. It is arranged to grind to any fineness desired, from one and one-half inch mesh to *an impalpable powder*, and is so compact in its construction that it occupies less space than any other mill we know of having the same capacity. It is a powerful, efficient and durable machine, and can be operated with great economy, which, in addition to its simplicity, execution and capacity, should recommend it to people who are engaged in crushing and grinding ores. We would advise those who contemplate engaging in grinding phosphate to examine the "Sturtevant" mill, as we deem it a very suitable machine for this purpose.

We are indebted to Mr. Chas. W. Willimott, Curator of the Geological Museum, for a copy of his paper on the *Minerals of the Ottawa District*, read before the Ottawa Field Naturalists' club. In dealing with this interesting subject, Mr. Willimott confines himself to the three neighbouring townships, Templeton, Hull and Wakefield, as his own observations had extended only over that portion of the county of Ottawa. He enumerates the various minerals that occur within that area, and gives an intelligent, general outline of the more important characters of each, dwelling more particularly on the features of the deposits of Apatite, Iron and Graphite. Mr. Willimott informs us that about sixty minerals are known to occur in the three townships referred to, many of which are unrivalled in the Dominion, and adds that it is doubtful if the same extent of country elsewhere in Canada can claim one-half that number.

THE PHOSPHATE TRADE.

There is no disposition on the part of mine owners to check the output of their mines—on the contrary, they are working their properties to their utmost capacity, and many thousands of tons of ore are now awaiting transportation. The present appearance of the mines and the activity which has characterized operations since the close of the shipping season of 1885 justifies us in predicting, as we did in our last month's issue, that the quantity of phosphate that will go forward this year will be several thousand tons in excess of the shipments of any former year since this industry was inaugurated in Canada. The accumulation of ore at the various mines also indicates that this will be the case, and close inspection of the contents of the ore-bins leads to the conviction that this year's shipments will be of superior grade, and will average, as they did for 1885, over 80 per cent. Careful dressing of the ore is a *sine qua non* to the success of Canadian phosphate mining, and mine owners having learned by experience how necessary such precaution is, if they wish to obtain high prices for their output, it is not likely they will retrograde and become careless on this essential point.

The principal contributors to the general output of Ottawa county for this year will be The Phosphate of Lime company, the Union Phosphate company, the Dominion Phosphate company, the Ottawa Phosphate company, W. A. Allan, Ottawa, the Du Liévre River Phosphate company, the Glasgow-Canadian Phosphate company, and Messrs. McLaren & Blackburn. Of these it is not improbable that the Dominion Phosphate company will be the heaviest producers, while all the others will undoubtedly send forward large shipments. Another powerful corporation, the Anglo-Canadian Phosphate Company, will engage in active operations in Ottawa county and in the Perth district early in the spring, and will help to swell the general output. This company has been recently organized in England under most favourable auspices, and will henceforth engage extensively in phosphate mining in Canada. Every day, we might say, brings us fresh evidence of the expansion of this important industry, and a few remarks from us on

THE FUTURE OF CANADIAN PHOSPHATE

may interest our readers.

When Canadian phosphate first entered the English market, it encountered much disfavor and some serious objections. Its hardness made it difficult to grind; the fluorine that it contained gave out offensive odors and injured the workmen's throats; after being made soluble by sulphuric acid it became partially insoluble again, or in technical phrase "went back;" in fact every manufacturer had his pet grievance against it, and for some years it was difficult of sale. Its high quality and comparative cheapness after awhile enforced attention, and the assurance of steady supplies, owing to enlarged working and the low rates of freight obtainable by vessels that required ballast under their deal cargoes, made it an object for manufacturers to overcome the difficulties connected with its use The result is that although the shipments for the past year were the largest ever known, a month after the season had closed there was not a ton of Canadian phosphate to be had in England in answer to the demands of buyers, the whole having gone at once into the hands of consumers. The largest manufacturer in England states that he now uses as much Canadian as Carolina rock. He not only uses it largely with Belgian and other low grade phosphates to serve as an enricher, but he makes a high class superphosphate from Canadian rock alone. His chemist is said to have a "wrinkle" by which he gets better results than some others obtain and his success leads to further experiment.

In Germany Canadian phosphate has likewise been winning its way and all the 80 per cent. phosphate that Canada can produce with the present facilities can be readily sold in that market.

In spite of the favor it has gained, prices are exceptionally low; this is partly due to the competition of Curacoa and Aruba phosphates from the West Indies, but chiefly is owing to the intense agricultural depression that now prevails. Much land has been thrown out of cultivation and many farmers are too poor or too discouraged to buy fertilizers. This leads the numerous manure manufacturers into sharp competition to dispose of their products; the prices they sell at leave no profit and their efforts become intensified in the direction of cheapening the raw material. It is, however, significant that the Chemical Manure Manufacturers' Association, which is a combination of all the leading manure makers in Great Britain, at its annual meeting proposed combined action, not to buy cheaper, but "to keep phosphates at their present low level," showing that in their opinion bottom prices for raw material had been reached.

In Europe Canadian phosphate must always meet with strong competition, but there is a hitherto neglected field where it is destined to reign without a rival. The report of the National Fertilizer Association of the United States shows that over a million tons of fertilizers were made in the United States in the past year and that the output is increasing at the rate of 100,000 tons per annum. About three-fourths of the whole was used in the States adjoining the Carolina phosphate beds, while but little was used in the extreme Northern States, although the lands there equally demand it, and almost none was used in Canada in spite of the utter impoverishment of the once prolific wheat fields of Quebec. As knowledge of scientific farming extends, artificial fertilizers will be largely used in these sections and Canadian phosphate is the natural source of supply. By the return grain vessels from Kingston phosphate can be sent through the great lakes to the northern cities of the United States for a freight of $1.50 to $2 per ton, whereas the Carolina phosphate must pay $5 to $6 per ton by rail to these points, besides which the Carolina contains only about 55 per cent. of phosphate of lime as against 80 per cent. in Canadian phosphate.

The establishment of fertilizer works in Canada and the Northern States will doubtless be speedily accomplished, and a large market must open for Canadian phosphate in addition to the expanding demand in Europe. These facts and considerations show that a good future awaits this industry, and as the output of Carolina phosphate has grown from 20,000 tons in 1870 to over 430,000 tons in 1885 with an ever widening market, so we may expect a similar increase in the output of Canadian phosphate.

Phosphate Quotations.

The most recent advices from abroad report the phosphate market sluggish, although 1s. ½d. is freely offered for future delivery for 80 per cent, with *one fifth of a penny rise*. The present condition of the phosphate market is owing to the depression in all branches of trade, but it is expected to be more buoyant after the opening of navigation, and when shipments begin to arrive at Liverpool, London and European ports.

Large Phosphate Contracts.

Two weeks ago we reported sales of Canadian phosphate for spring shipment, and we have now to note contracts to the extent of 8,000 tons for shipment at this port (Montreal) during the coming season. It is understood that these large contracts have been made by the Dominion Phosphate Company, through Messrs. Lomer, Rohr & Co., mostly for Continental ports. The prices are strictly private, but it is believed that the sales of Canadian apatite mentioned in the *Trade Bulletin* of March 5th had reference

to a portion of the above contracts, which was on a basis of 13/8d per unit with a fifth of a penny rise for 80 per cent. rock delivered at Hamburg. The shipments of the above phosphate company last year were about 3,000 tons, so that the output this year will show a remarkable increase in one mining company alone.—*Trade Bulletin.*

Anglo-Canadian Phosphate Company, (Limited).

We are pleased to announce the organization of this corporation and to acknowledge the receipt of the company's prospectus. The Anglo-Canadian Phosphate Company has been formed for the purpose of consolidating Captain R. C. Adams' interests in phosphate lands in the Perth district, with those of some Englishmen owning phosphate locations in the same neighbourhood, and the entire interests of the Lièvre River Land and Phosphate Company, whose properties lie in the Lièvre district of the county of Ottawa. The company has been incorporated under the Companies Acts of Great Britain, 1862 to 1883, with a capital of £65,000 (about $325,000), in 6,500 shares of £10 each, and is composed of wealthy and influential English capitalists and merchants of Montreal, as follows:—

Directors.

SIR JOHN MORRIS, Wolverhampton.
JOSEPH THOMPSON, Esq., Manchester.
WILLIAM CROSFIELD, Esq., Liverpool.
P. MOIR CRANE, Esq., Manchester.
R. A. JOB, Esq., Liverpool.
W. T. COSTIGAN, Esq., Montreal.
CAPT. ROBERT C. ADAMS, Montreal.

Bankers.

THE CITY BANK, London, E.C.,

Solicitors.

Messrs. LAYTON & STEEL, Liverpool.

Auditors.

Messrs. LEWIS & MOUNSEY, Liverpool.

Secretary and Agent in England.

BRAINERD RADCLIFFE, Esq., Liverpool.

Offices.

3 Chapel Street, Liverpool.

Much credit is due to Captain Adams who has been most active in organizing this powerful company. He has been one of Canada's most enterprising phosphate miners for the past ten years, and although he has been deservedly successful since he first engaged in the industry he has always been of the opinion that operations conducted on a large scale would be more profitable. The Anglo-Canadian company will shortly proceed to do extensive work in the Perth and Lièvre districts, where Captain Adams and the Lièvre River L. & P. company have been merely prospecting awaiting this enlargement. We have no doubt this new company will prove the theory of extensive operations to be a correct one and we wish them every success.

BRITISH AND CANADIAN MINING AND MICA COMPANY.

Application has been made by this company for Letters Patent of Incorporation, under the Canada Joint Stock Companies Act, with power to mine for mica, feldspar, asbestos, phosphate of lime, plumbago, iron and other metals and minerals in the Province of Quebec. The incorporators are Messrs. W. A. Allan, L. H. Shirley, and B. H. Buckstone, London, England. The company have secured some valuable mining locations, and will engage in active operations without loss of time.

The Phosphate Mines of Canada.

BY DR. SMALL.

(In the Mining Journal, London, England).

This is a common mineral in the limestones of the laurentian rock, sometimes disseminated in minute blue or green crystals, and at other times so abundant as to make up a great proportion of the rock, and in some cases to form beds of a nearly pure crystalline apatite. Of late years the increasing demand for phosphates as fertilisers of the soil has drawn attention to the use of this mineral in a prepared form, and the large supplies existing in Canada are now receiving considerable attention. In the "Geology of Canada" the apatite deposits of the district lying back of Kingston are described as beds. Dr. Sterry Hunt, in his early reports of 1863-66, when attention was first called to the existence of this mineral in Canada, stated that though it did occasionally occur in beds, the workable deposits were "with few, if any, exceptions confined to the limestones." His reasons for regarding most of the deposits as concretionary veinstones depended upon such facts as "banded structure," the "presence of drusy cavities," and the rounded forms of certain crystals, indicating, as he styles it, "a process of partial solution succeeding that of deposition." Professor Harrington says in his report on the apatite district of Ottawa, as a rule the apatite-bearing veins are characterised rather by "a want of regularity or order in the arrangement of their constituents than by any degree of symmetry." Instances do occur, however, where they show a banded structure. Veins with sharply defined walls, as in metalliferous lodes, are rarely seen, the vein and counter rock merging into each other. Dana says such a blending of a vein with the walls is a natural result when its formation in a fissure takes place at a high temperature during the crystallization of the containing rock. Dr. Sterry Hunt regards many of the apatite veins as fissures or cavities which have been filled by the deposition of materials derived from the adjacent strata. In reply to the question so often put "what is the nature of phosphates, and how have they been formed?" it may not be out of place to mention the two sources of supply given by Dr. Dawson, an eminent authority on this point—the concentrated deposits of phosphatic matter known as guanos, which form two subdivisions, nitrogenous and phosphatic, such as the bird excrements occurring only in the exceptionally dry climates of the South American coast, and the crystalline deposits of Canada, Norway, and elsewhere. In the nitrogenous phosphates the organic matter converted by decomposition into ammonia salts remain as part of the mass. In phosphate guanos the rain has removed the soluble ammonia salts, but has left the phosphatic material. This class of guanos is met with in the West India Islands, and Dr. Dawson thinks the deposits in the South of France known as Bordeaux phosphate are of a similar nature, and may be also traceable to mussel mud, or the accumulations in shallow tidal estuaries of mollusca and other marine organisms. Coprolite beds, such as those of the eastern countries of England and of South Carolina, have resulted from concretionary action, the slow process of drawing together of like particles in the mass, fragments of shells, bones, &c., serving as a nucleus, and when the material is abundant such concretions coalesce, and form layers. The word coprolite, however, should be confined to the fossil excrements existing in abundance in certain localities on the eastern coast of England of various animals, notably the saurian monsters of the antediluvian shores. In the Laurentian rocks of Canada, says Dr. Dawson, are a great volume of sediments deposited in the earliest ocean of which we have any trace, but which originally, resembling those of later seas, have been so completely altered that their materials have entered into new combinations, and have become entirely crystalline, resembling now the original deposits as little as do the crude ingredients of glass the finished product. There can be no doubt of the original sedimentary origin of these Laurentian rocks, mussel muds, sands and coprolite layers being changed by volcanic or igneous action to wholly crystalline rocks. To substantiate this it is shown how limestones thus acted on would assume a crystalline character as marbles, beds of a peaty or coaly nature would pass into crystalline carbon or graphite, and phosphatic layers would appear as crystalline calcic phosphate or apatite. All these substances are found in close contiguity in the Ottawa district, an evidence pointing directly to the correctness of the theory. The greatly disturbed character of the Laurentian rocks explains the great irregularity of the apatite deposits, layers and veins, which may, before the great folding and kneading together of these rocks, have possessed regularity and uniformity, but through excessive disturbance have been dislocated in every sense, leading to the production of large pockets and irregular masses connected only by narrow and twisted seams; they may even appear to occupy completely isolated portions. The broad zones containing workable deposits of apatite and intervening belts offering little encouragement for the miners are shown in a map published by the late Mr. Vennor in the Geological Survey Report of 1876-77, and a reliable clue is thus given to prospectors where to direct their researches.

Mr. Torrance, lately on the Geological staff, states that the heaviest apatite deposits lie along the valley of the Lièvre, but proceeding eastward or westward from this river the deposits become more and more mixed with calcite, until they finally cease to be profitable for mining. The various forms in which apatite presents itself in the Ottawa district are as crystals, sometimes of large dimensions, in masses varying from compact to coarse granular, in strata of a lamellar texture, and in a friable variety which is abundant, known as "sugar phosphate." The latter on account of its friability is much easier to grind than the compact masses, but is more apt to undergo loss in handling. This could be obviated by barrelling, or by putting it up in coarse bags. The color varies, being various shades of green, blue, red and brown of different shades, yellow and white. Hoffman, the analyst of the Geological Survey, says that from its usual high percentage of phosphate of lime, Canadian apatite may be regarded as a most eligible material for the manufacture of superphosphate. Generally speaking it contains only small quantities of oxide of iron.

ONTARIO.—In his report on the county of Hastings Mr. Vennor, of the Geological Survey staff, in 1871, called attention to large workable deposits of phosphate existing there that had been quarried on and off for over 20 years, which he denominated as "the North Burgess Phosphate Basin," and "the Bedford, Storrington and Loughboro Basin." The former of these extends through the townships of North Burgess, South Crosby, and Bedford, and was found to have a thickness of from 2,600 to 3,000 feet, forming a belt or zone running from the north-east to the south-west corner of Burgess, south-westward through Crosby; the latter runs

through the south-east corner of Bedford township and on through the townships of Storrington and Loughboro. The width of basin is about 6 or 7 miles, and narrows in places to half that width. The available deposits of phosphate appear to occur towards its outer side. The richest deposits of this mineral occur in the townships of North Burgess, where a large number of phosphate mines, or "openings," are worked with very fair returns. Of these, 145 in number, are described in Mr. Vennor's report. (Geological Survey, 1873-74). Phosphate is met with, more or less, all through the district lying north of Kingston and Belleville, and analyses made from specimens taken in different localities gave on an average 88 per cent. of phosphate of lime.

QUEBEC.—The laurentian mountains of the province of Quebec seem to offer greater advantages than elsewhere for mining this mineral, especially in the Ottawa district of the province of Quebec. Here, however, this industry is of comparatively recent date, and is carried on for the most part in the townships of Buckingham, Templeton, Portland, Hull and Wakefield, in the county of Ottawa. There is no doubt that this mineral is to be met with in a much wider district than the townships above mentioned, but mining it has so far been confined to these localities running in a north-easterly direction from the Blanche river across the Lièvre river into the adjoining country east of the latter. This belt is very productive, yielding a very fine quality of apatite.

(To be Continued.)

COLONIAL AND INDIAN EXHIBITION.

The Government of Nova Scotia by special arrangement with Sir Charles Tupper, have secured the privilege of exhibiting a collection of the minerals of that Province *en bloc*. This will show the mineral wealth of Nova Scotia in a much more satisfactory manner than the more scientific but less practical arrangement adopted by Dr. Selwyn for the general exhibit of the Geological Survey. The exhibit of the Provincial Government will be strong in coal and iron, and some fine gold samples will be shown, but as the work of collecting was not begun until the last of December, it is far short of a complete representation. There will be over one hundred exhibits, all of which have been shipped. The annual report of the inspector of mines will contain a short account of the minerals of Nova Scotia, in addition to the annual summary of mining progress, and an extra edition will be sent to London for distribution at the exhibition.

Among the most important and interesting exhibits that have been forwarded from Canada to the C. & I. E, went from Ottawa city. The Canadian Granite Company have sent many exceedingly handsome designs in serpentine, granite and marble, as well as specimens of the stone in the rough from their quarries.

The Dominion Plumbago Company have forwarded a very creditable exhibit, consisting of prepared stock for pencils, lubricating, electrotyping, crucibles, stove polish, foundry facings, refractory goods, pencils in the various stages of manufacture from the lowest to the highest grades—also specimens of crude graphite, including one solid block, weighing 3000 pounds.

Mr. W. A. Allan has contributed a very valuable collection of apatite crystals, one weighing upwards of 500 pounds; his exhibits of mica will not be excelled, as regards its lustre and transparency, its refractory nature or the size of the plates, some of which measure 13x8 inches; while his contribution of gold from his mines at St. George East, Beauce County, will surprise visitors at the exhibition. It consists of a large number of beautiful nuggets, weighing from several pennyweight up to 1¾ ounce, a quantity of coarse gold, and a fine display of gold dust.

AN INFLUENTIAL DEPUTATION.

Representative Men Interested in Mining Wait Upon the Minister of the Interior.

THEY WANT A BUREAU OF MINING AND MINERALOGY ESTABLISHED

For a long time it has been felt by those immediately concerned in the development of our mineral resources that insufficient attention has been given in the past to the collection of statistical and other information relating to these resources and the mining industries of Canada. The eminent geologists, mineralogists and mining engineers, who visited us in 1884, as members of the British Association for the Advancement of Science, expressed surprise and regret that some such desirable records did not exist, and strongly urged that prompt steps should be taken towards supplying this want.

This has been felt to be a well-merited reproach, and prompted by a desire to see it removed a large and influential deputation, composed of representative gentlemen from the mining sections of Canada, from the Atlantic to the Pacific, waited on the Minister of the Interior on the morning of the 4th inst. for the purpose of pointing out to him the necessity of establishing a mining and mineralogical department in connection with the Geological Survey for the purpose of collecting and compiling, under an organized system, information and statistics regarding the important mineral deposits and mining in Canada. It was clearly shown how valuable public records of this nature would be to every one interested in the mineral development of the country, to whom the same should be always available. The members of the deputation, numbering 21 in all, were a unit on all points raised, and the Minister, who is ever ready to listen to and act on the suggestions of practical men, gave assurance that the matter would receive careful consideration, and practically concurred with the deputation on the essential points that were brought up in the course of discussion.

The following gentlemen composed the deputation and left with the Minister the subjoined memo., on which they desired that prompt action should be taken:—S. J. Dawson, M.P., Algoma; R. N. Hall, M.P., Sherbrooke; Jas. Reid, M.P., Cariboo, B.C.; C. H. Tupper, M.P., Pictou; Dr. G. T. Orton, M.P., Wellington, E.R.; C. J. Townsend, M.P., Cumberland; C. A. Everett, M.P., St. John; John McDougald, M.P., Pictou; H. F. McDougall, Cape Breton; T. S. Sproule, M.P., Grey, E.R.; Wm. McCraney, M.P., Halton, B. Allen, M.P., Grey, N.R.; H. Cameron, M.P., Inverness; H. N. Paint, M.P., Richmond, N.S.; C. E. Kaulbach, M.P., Lunenburg; Murray Dodd, M.P., Cape Breton; M. B. Daly, M.P., Halifax; R. G. Leckie, Spring Hill, N.S.; W. Hamilton Merritt, M.E., Toronto; David McKean, Manager Glace Bay Mines; E. Grant Powell, Ottawa.

"Whereas, it is believed that the information and statistics regarding mining and mineral developments in Canada furnished by the Dominion Government are not in keeping with the desire of those interested in such developments, and are neither sufficient nor accessible enough to supply the public with full, authentic and prompt information on these subjects; we do, therefore, wish to respectfully bring to the attention of the Government the following defects of a section of our community:—

"1. To have full and reliable information of the mining and mineral developments, and statistics connected therewith, for the whole Dominion, published each year, as soon after the end of the year as possible.

"2. To have a medium through which information relating to our miners in all parts of Canada can be given to the public—such medium to be a monthly publication.

"This would have a tendency to bring our mining industries constantly before the public and to educate them to take an interest in sound and legitimate mining enterprises, besides giving to the world at large constant information about mineral development in Canada compiled from records and reports of a mining bureau under Government control which would be authentic and reliable."

SUGGESTIONS.

1. That a mining and mineralogical branch of the Geological Survey be established which will publish its reports separately and annually, such a branch to be presided over by an independent officer.

2. That separate reports be published at the beginning of each year of all work accomplished during the preceding year under this head throughout the Dominion.

3 That agents be appointed in the mining districts of all the provinces for the purpose of collecting and forwarding to Ottawa a monthly report containing information and statistics in connection with mines and minerals in their respective districts; also, that such information should be given in advance sheets to the public.

4. That a clause might be inserted in the Census Act, compelling miners to make periodical returns to the Government, annually or more frequently.

5. That a public assayist be appointed with residence at a central point for the convenience of prospectors in Dominion Territory in the North-west, and railway belt of the Rocky Mountains, whose duty it would be to forward to Ottawa monthly reports of the work done.

Mr. Dawson, of Algoma, stated to the Minister that Mr. W. Hamilton Merritt, Mining Engineer, had given this matter attention for some years back, and he, therefore, called upon him to explain the purpose and desire of the deputation.

Mr. Merritt stated that the important deputation was composed of gentlemen who were personally interested in mining development, or represented constituencies having large mineral interests, and that they wished to draw attention to the advisability of organizing a mining bureau or a separate branch of the Geological Survey, to give exclusive attention to mines and minerals, which had been much neglected in the past, and of which there were practically no records available at present. He also drew attention to the memorandum submitted to the Minister, and reminded him of the opinions expressed at the meeting of the British Association held in Montreal in 1884, when some of the leading members of the Association regretted that there existed no available records of Canadian mining and minerals, or statistics connected therewith, and spoke very strongly in favor of prompt steps being taken to supply this want.

Mr Dawson, of Algoma, followed by stating that as he represented a constituency interested in mining he was in a position, as a result of many years experience, to know the great necessity of devising some policy that would advance the mining interests of Canada more or less in the direction as set forth in the memorandum which had been submitted.

Mr Hall, of Sherbrooke, stated that this influential deputation had waited on the Minister more for the purpose of introducing this important subject to him than of dictating any definite policy. He said that the information he had received while acting on the Committee on Geological Survey convinced him that it was necessary to take some steps toward advancing the development of our mining interests.

Mr. Leckie, manager of the Spring Hill, N.S., coal mines, and Orford Copper mines in the Eastern Townships, pointed out the benefit of a

law compelling miners to make returns of mining statistics as practised in Nova Scotia.

Mr. Reid, of Cariboo, B.C., made some forcible remarks and expressed himself in sympathy with those gentlemen who had spoken before him.

Each gentleman present said something in favor of the movement, and after a few cordial remarks from the Minister, the deputation withdrew.

GATINEAU VALLEY RAILWAY.

The President of the Company Reports Progress.

CAUSE OF DELAY REMOVED.

WORK TO BE CONTINUED IN MAY.

A meeting was convened in the City Hall, Hull, on the 11th inst., to discuss the present position of the affairs of the Gatineau Valley Railway Company and the prospects for the early completion of the road.

The meeting was attended by quite three hundred persons, mostly residents of the district, among whom were many of the leading men of the County and City of Ottawa, including Messrs. Alonzo Wright, M. P.; C. H. Mackintosh, M.P.; Dr. Duhamel, M.P.P.; F. McDougall, Mayor of Ottawa; A. Rochon, Mayor of Hull; Rev. Father Guay, of Wright; Rev. Father Harnois, O. M. I.; Rev. Father Faure, of Masham; and Aldermen Heney, Cox, Durocher, and City Engineer Surtees, of Ottawa.

The chair was occupied by Warden Cormier, who stated that the meeting had been called for the purpose of giving the representatives of the Gatineau Valley Railway Company an opportunity to explain what was being done towards resuming the work of construction, and added that he hoped, in the event of the company showing that they were prepared to proceed with active work in the spring, the county would give them substantial assistance and encouragement.

On motion of Mr. Joshua Ellard that Mr. C. H. Mackintosh, M.P., President of the company, be heard, that gentlemen addressed the meeting. After giving a resumé of the company's past history, Mr. Mackintosh referred to his constant and earnest appeals to the Provincial Government to locate the lands granted as subsidy, and pointed out how impossible it had been to establish a value for this important subsidy until the lands had been definitely located. He was gratified, however, to be able to inform the meeting that the Premier, Mr. Ross, had become convinced that the location of the lands must precede the survey, and had, jointly with Mr. Lynch, Commissioner of Crown Lands, written him a satisfactory letter on this question. Mr. Mackintosh concluded by saying that he had promised to carry the enterprise through, and that he firmly believed the completion of the road would be an accomplished fact within a year and a half.

Mr. Alonzo Wright, M.P., followed with some practical suggestions and reminded the meeting that works of this magnitude could not be constructed without obstacles presenting themselves. He was aware that the delay had been largely due to the Quebec Government's action in refusing to locate the lands, and said that from what he had learned from Mr. Mackintosh he felt confident that this important scheme would shortly be carried to a successful issue. He thought that if Mr. Mackintosh did not realize his expectations within a reasonable time he would be willing to hand over the charter.

Rev. Father Guay wished to know what might be considered a reasonable time, and was informed by Mr. Mackintosh that a reliable company had entered into a binding agreement to begin the work in May if the Quebec Government would but locate the lands.

Dr. Duhamel, M.P.P., expressed his pleasure at hearing that the Quebec Government had at last consented to locate the lands, and added that if the government subsidies were insufficient he hoped the people of Ottawa county and the cities of Hull and Ottawa would do all in their power to induce the Government to give more aid.

After some remarks from Mayor McDougall, McLogue and others, Mr. Joshua Ellard moved the following resolution which was carried unanimously:

Resolved, that after having heard the explanations of Mr. C. H. Mackintosh M. P., and his promise to continue the construction by the 15th of May, 1886, and to rapidly complete the road, this meeting and the inhabitants of the Gatineau will be satisfied and gratified if that promise is carried into execution, and that this meeting warmly and earnestly urges the Provincial Government to finally locate the land subsidies, and to prepare a map showing the same."

THUNDER BAY SILVER MINES.

A St. Paul Co'y at Silver Mountain.

AN ENCOURAGING OUTLOOK.

The representative of a St. Paul syndicate, Mr. P. M. French, arrived in Port Arthur on 23rd February to prepare for early mining operations in the Silver Mountain district on a location in which he and several St. Paul capitalists are interested. They have ample capital and every confidence in the future of this mining section. Supplies and heavy freight will be taken in before the winter roads break up and buildings are already in course of construction. As soon as navigation opens a large force will be engaged in developing a promising lode, and mining will be proceeded with uninterruptedly. Some prospecting work has already been done, the result of which has determined the gentlemen now interested to prepare for permanent and systematic operations.

Regarding the Rabbit Mountain group, a correspondent of the Montreal *Herald* has written an interesting account to that paper of his observations during a comparatively recent visit to that locality. He says: "Referring to the mining district of Thunder Bay, Lake Superior, I have recently visited the Rabbit Mountain series of mines and beg to submit these notes of personal examination and enquiries about the mining industries in that section, first premising that I went there purely from curiosity, and have no personal interest in the country.

RABBIT MOUNTAIN,

so-called, is on a cluster of hills and bluffs located about 25 miles from Port Arthur and 12 miles from Murillo station, on the Canadian Pacific Railway. I found in this vicinity, and within a radius of three miles, five working silver mines, viz, the Rabbit Mountain, Beaver, Silver Creek, Porcupine and the Rabbit Mountain Junior, the latter doing prospecting work on an adjoining claim or location, which carries the original Rabbit Mountain vein (which is exceedingly rich), and is owned and quietly operated by a company composed largely of St. Paul gentlemen. The main shaft of this company is down 140 feet, which is as far as they can operate it with the machinery on the ground. They are about erecting a stamp mill, and have a large quantity of good stamp rock in the dump ready for its operation. They have selected the high grade smelting ore, which will pay the expense of hauling to the station, and rail to smelting works at New York, and have already shipped several car loads, which have returned a handsome profit, and have several more ready to ship, although the fact is apparent that they have only been playing with the property thus far.

A share of

THE BEAVER MINE.

has been recently purchased by a wealthy lumberman of Manistee, Michigan, who is developing it in earnest and is already getting the machinery on the ground for steam drills, and the Manager is in New York purchasing stamp machinery. The "Beaver" vein, which cuts a bluff 240 feet high, seems to be most admirably and conveniently situated for working. On the northern slope of the bluff the vein has been uncovered downward a distance of fifty feet, showing rich silver ore all the way from the first fifteen feet, where the vein is in the trap rock. At the bottom of this open cut, fifty feet from the top of the bluff, is the first "adit level," which has been cut into the hill some sixty feet and has produced good stamp rock all the way. At the base of the bluff a tunnel has been driven 265 feet, the last twenty feet being on the vein which is very clearly defined between the slate and is here apparently rich in silver. On the southern slope of the bluff another level has been started to meet the upper level on the northern side before referred to. This level is in forty-five feet and produced good stamp-rock all the way, so there is plenty of material for the mill as soon as it can be erected. It does not require an expert to see that the "Beaver" vein is a good one, as its extent is so plainly visible and it has paid its way upon every working, and the location seems to possess every natural advantage that could be desired for cheap mining.

THE SILVER CREEK VEIN

also cuts a bluff which is now being penetrated by an adit level driven on the vein in the silver slates immediately under the trap rock of the surface. It is now producing good stamp rock in considerable quantity, which will be treated by the Beaver mill, and has also produced quite an amount of high grade ore in native and black silver. This property seems well situated for cheap and extensive mining, with Silver Creek flowing through it and furnishing abundance of good water.

The picturesque and convenient location of

THE PORCUPINE MINE

is within a mile of the Whitefish River and very much resembles the Silver Creek Mine, and, like it, is producing rich smelting ore in both native and black silver, and all of its vein rock will pay for working. It has a large dump of stamp rock ready for the mill, and a large value of high grade smelting ore has been shipped away. I was informed that an interest could be purchased in this mine, but did not learn the figure.

Around this cluster of working mines there are said to be several other outcrops of veins which are not yet developed. The good results which have been obtained from the work now going on at these mines have increased the interest in them by their respective owners to

that extent as to probably lead to a decided improvement in their manner of working and correspondingly rich results the coming season.

Further to the west again, about fourteen miles from the Porcupine mine, and in the same geological formation, is

THE SILVER MOUNTAIN,

which the writer did not visit, and will, therefore, say nothing about, or about the gold country still further west, and about 70 miles from Port Arthur. There seems to be every requisite for successful mining in this section of Canada, and it seems very strange that Canadians do not investigate its value. Investments so far have been mostly by capital from the States, and the investors appear particularly satisfied, as none of them wish to sell.

It was a surprise to find so much land in the vicinity of these mines which was apparently well adapted

FOR AGRICULTURAL PURPOSES.

With a miner's market for his products, the farmer who locates here will find a better investment than any prairie land, provided he has energy enough to clear the timber, which alone would pay for his farm. It is said that this country has been but little explored. It certainly warrants a careful examination, and what is already developed indicates great mineral resources which are only awaiting capital and better highway and railway facilities to compete with Colorado production."

Mr. A. F. Fletcher, M.E., who has had a wide experience in mine development in the principal mining centres of the world, has recently visited the Silver Mountain district in the interest of New York capatilists. On his return to Port Arthur, he expressed himself to a *Sentinel* reporter in the following terms:

"I am much pleased with the very rich showing of silver ores I have seen at the mines during my visit to Silver Mountain, and consider that capital, under the management of wise and experienced mining men, is all that is required to make the locality a flourishing and prosperous mining region in a short time.

The rock formation consists of slightly inclined strata of trap and sedimentary black, argillaceous and silicious slates, intercepted by true fissures, in which the silver occurs. The character of the formations is such that more than ordinary knowledge of formations is required by the management of mining development, otherwise much waste of capital is likely to result.

I may also mention that considering the much need of capital to open up these mines, and the undeveloped state and character of the same, I consider that the owners of mining claims in general are placing too high an estimate on their properties to induce the desired capital into the district."

Owners of mining claims will find it to their advantage to seriously consider the wisdom of Mr. Fletcher's opinion and the justice of his rebuke. It should be always borne in mind that a *prospect* is not a *mine*, that a mining claim does not possess intrinsic value until developed, and that to carry on development work requires capital. Owners will, therefore, find it greatly to their advantage, and it certainly would be an advantage to our mining industry in general, if they will be but reasonable in their demands, and hold out inducement to capitalists to come forward and develop their claims in order that they may become productive and profitable.—[ED.]

NOVA SCOTIA GOLD FIELDS.

"PAY STREAKS."

The Editor Canadian Mining Review:

DEAR SIR—I have been much interested in Mr. Kinahan's letter on this subject in your last issue. I think that he does not quite understand the pecularities of our gold districts. We have an immense number of comparatively small veins, running almost without exception parallel to the beds of slate and quartzite composing our gold measures. Thus a trench 150 feet long has exposed twenty veins, and similar results have been observed at depths up to 400 feet. These veins occur along the denuded crests of anticlinal folds, and it is considered that they occupy the fissures and lines of minimum pressure presented during the progress of the folding. It will be noted that our worked veins seldom exceed fifteen inches in width, and a pay-streak occupies the whole width of the vein. Thus each of these veins is practically a separate lead, and I cannot recall an instance of two neighboring veins having pay-streaks at all parallel. I gather from Mr. Kinahan's remarks that he refers to wide ore grounds. We have instances of this in the large vein of ankerite carrying limonite at Londonderry, and in the Precambrian of Cape Breton where lenticular bodies of copper pyrites occur in a thick bed of felsite. In both these mines the arrangement of the ore bodies is as described in the mine of Ovoca,—and the system of prospecting by crosscuts is regularly practised. The pay-streak in our gold veins may be described as a line or point of maximum richness surrounded by somewhat less auriferous quartz, which gradually becomes poorer until the pay-streak ends at the line of profit. Such pay-streaks, with occasional exceptions, have a dip approaching the vertical, and in one instance at least have been followed for about 600 feet. As the veins are those of seggregation, and possibly contemporaneous with the folding already referred to, the source of the gold must be looked for in the surrounding rocks. It is well known that the slates are frequenntly, the quartzites occasionally, auriferous; and that in each district there is a rule that all the pay-streaks dip either to the east or to the west, (the veins having an approximate east and west course.) The cause, therefore, producing these pay-streaks must be uniform throughout each district. With an apparent uniformity of distribution of gold through the encasing beds the enrichment of the veins might be sought for in local lines of comparatively greater transverse disturbance having a uniform dip due to the conditions of folding and upheaval in each district. By this means gold might be concentrated more readily along certain favouring lines and the enriching effect of feeders and flat leads lends ground to this view. If, however, the gold has been originally precipitated, possibly through the effects of organic matter, along certain lines, *e.g.* of a shore or beach, in comparatively narrow and frequently limited zones, then in each district, after the beds had been hardened, elevated, folded, etc., it might be assumed that portions of the veins nearest to this rich ground would receive the gold in a concentrated form. However such original causes may have laid the foundation of pay-streaks, subsequent faults, movements, etc., have in all probability greatly modified them. Practically, cross-cuts have been repeatedly driven across the measures when these rich zones have been worked out, but hitherto unsuccessfully. And now the miners agree that the chances of success lie in trying for the possible downward extension, after a barren interval of the pay ore.

Possibly, Mr. Editor, some of your readers better qualified than I am, may throw some light on this subject of pay-streaks which is exciting a good deal of interest in our mining circles at present, and I remain,

Yours very truly,

E. GILPIN, JR.

SELL COAL BY ASSAY, LIKE ORES.

Mr. C. A. Ashburner has given, in a paper read before the American Institute of Mining Engineers, an interesting discussion of this subject.

The figures obtained by Mr. Ashburner from average samples of anthracite coal just as it is shipped to market are very interesting, as showing that the percentage of ash is always much higher than is generally supposed, and as showing that the commonly received analyses must be taken as representing only picked samples. It would be a very easy matter to sample the coals as they are shipped by an automatic sampler that would give a correct average. And we hope something of the kind will be done. In the meantime, Mr. Ashburner's sampling and analyses are extremely instructive if not startling, and show the advisability of buying coal by analyses, as ores are purchased. This is the only way in which the purchaser will be sure of getting what he wants. There would be no difficulty in establishing a scale of fuel ratios that would represent the actual economic value of coals containing given percentages of ash and fixed carbons, and the sampling and analyses could be very cheaply and easily made.

It is certainly very remarkable that so important and expensive an article as coal should be purchased without any test whatever of its value, and merely on the "say so" of the vendor.

The company that will introduce this system of selling coal by analyses, or by its economic value as determined by actual test, will be a public benefactor, and will certainly gain a large business.—*Engineering and Mining Journal.*

On next page will be found an article, by Mr. A. Tourchot, on this very subject, descriptive of the practice of purchasing coal by analysis which has been rigorously adhered to by the large railway corporations of France for many years back.

The discovery of gold in Honduras is likely to prove as important as any of the great placer districts of California. The new gold field is in the eastern portion of the republic of Honduras, about 150 miles from the Atlantic coast and adjacent waters of the Guayope River. In some places the ground yields $7 to $10 per cubic yard.

La Trinidad (of Sonora): We regret to see that the English promoters of this property persist in paying dividends that are not derived from the product of the mines, one having been declared on the 28th of January, 1886, of $1.25 per share on the capital stock, or $125,000. We once more warn our English friends against being gulled in this transparent way. Including this dividend, this company now stand before the English public as having paid the shareholders three dividends, each of $125,000, or in the aggregate $375,000, an amount that we confidently assert was not derived in bullion from La Trinidad mines in 1885 over and above cost of extraction.—*Financial & Mining Record.*

All correspondence under this head, and scientific exchanges, must be addressed to the Science Editor, Canadian Mining Review.

Descriptive and Determinative Mineralogy.

The science of mineralogy has few students and fewer proficients; it is certainly one of the most neglected amongst the natural sciences. Yet its influence and importence would be obvious if public attention were once drawn to the many services our science renders to modern society. In fact, without mineralogy it is difficult to conceive what would become of our boasted civilization. Lack of beauty and interest cannot be consistently urged as a plea for the surprising neglect to which this science is consigned by otherwise well educated persons.

In our opinion the only reason why mineralogy is so little appreciated is the inattractive form in which it is presented to the beginner. Many a study once deemed unbearable to the youthful mind is now to be found in every programme of studies, even those of public schools. Why? Simply because skilled educators discovered the proper method of instruction in that particular line of study. Sooner or later the same success must attend the teaching of mineralogy.

Two methods dispute the field of mineralogical teaching, the descriptive and the determinative. The former presents at a single glance the complete system of the science, ranges each species in its natural order, and then enters into the details and characteristics of each; the latter at the outset only draws certain lines of classification, and opens up many divergent paths, which if faithfully followed, will finally lead the mystified student by numerous ramifications and cross-roads, to this or that species without a single kindly allusion to its place in the mineral kingdom. The one throws at once upon the subject the full light of classified knowledge, and lays at the feet of the student the treasures painfully acquired by toiling generations of scientists; the other ushers the tyro into the dark labyrinth of determinative tables, presents him with a smoky taper and a frail thread and with a sparing hand doles out to him only such information as he has manfully battled for. The descriptive method is a beautiful list of answers richly illustrated; the determinative a series of knotty problems with jet black interrogation points for answers. The first is universally adopted in classical courses, and whenever only a limited time can be devoted to the study; the second is a favorite with all practical men and scientific students in general.

Now, which of these methods should be preferred for the young man who enters upon the elements of the science, for the man of the world who once in a while diverts his attention from daily duties to direct it to the study of nature? Which is preferable for the student for whom mineralogy is only one stone in the stately building of our high school and college educational systems? As we have already said, the descriptive method has been heretofore preferred in these circumstances; and many reasons tend to justify that choice. Clearness and precision are the two important qualities looked for in teachers and text-books, and in this respect descriptive mineralogy has an uncontested advantage. After laying down the general principles of the science, explaining what is meant by the crystallographic, chemical and physical characteristics of minerals, it describes the species, each in the particular group in which its analogies have placed it, and after a uniform plan which permits the student to find immediately any property of such minerals as he may want to study.

Yet this method is objectionable in more than one respect. First, chemistry, the source of all the laws which regulate the intimate relations of matter, the ground-work of all natural history, but in a greater degree of mineralogical science, has been almost totally excluded from our text-books of descriptive mineralogy. The result of such omission can easily be anticipated. The description of minerals becomes little else than a long and tedious catalogue of species, with no other binding link than the heading of the group, the reason of which is no better understood than many of the characters which are so minutely detailed.

Again, if mind culture must be considered in the choice of a method, the descriptive, precisely because it removes all difficulties from the student's path, proves very defective; for it is the maxim of all educators that everything must be presented to the young in the interrogative form, and the solution be given as a reward for patient inquisitiveness. Without that, the learning of mineralogy is simply a work of the memory which tries to store away in the shelves of the mind those long lists of cacophonious names and obnoxious figures which, though they may represent hardness, specific gravity, fusibility, etc., are withal an acquisition of doubtful utility for the young mind. Be that as it may, mineralogy thus presented is totally devoid of interest, and experience teaches that if a student preparing for examination or otherwise is compelled to learn this kind of science, he soon rids himself of such a burden the moment the pressure is removed from his mind.

What adds to the aridity of this method is the absence of personal experimentation on the part of the student. For even though you should place in his hands the necessary instruments and reagents, he is not inclined to verify properties so clearly affirmed by the learned author. But give him a specimen to determine, then as the solution depends upon the accuracy of his observations, curiosity, the inheritance of all men, gives a lively interest to every test and experiment. In this Determinative Mineralogy has a decided advantage. Must we, however, on that account, give it the preference? We hope, in our next issue, to give a satisfactory answer to this question.

Organization of Testing Departments in Railroad Companies.

The need and necessity of determining the value of everything, of ascertaining the purity of products or of metals, or of discovering falsifications or frauds, have been so generally recognized in France and in several other European countries, that all great companies, manufacturers and merchants, buy or sell nothing except on a bulletin of analysis, signed by a well known chemist.

The great railway companies that have their central administrations in Paris, have a very complete organization.

The testing department renders a continual service to these establishments, by causing such substances to be accepted as answer by their purity, or degree of purity, to the requirements and to the conditions imposed on the contractor; or again, by causing all defective substances to be rejected.

Each railroad company has a perfectly organized laboratory, and an experienced attendance charged with the chemical tests, and mechanical trials.

Railroad companies, as is known, consume a great quantity of fuel,—coal, coke, etc.; and consequently make important contracts with their suppliers.

Each contract is made by indicating the quantity of fuel to be delivered daily or by the month, at determined points: and the quantity of ashes, for a thousand parts, that these combustibles should leave after incineration, the quantity of gas produced, and that of coke obtained from the combustibles, as well as their calorific power are equally determined and stipulated in the contract.

What is more, the ashes are tested to determine the quantity of potash they contain; the ashes rich in potash are called fusible, they attack by corroding the bars of the grate of a locomotive and thus greatly diminish their durability.

When the fuel delivered is of better quality than stipulated for in the contract, the supplier receives a premium calculated according to the richness and price of the combustible; if on the contrary the combustible is inferior to what it should be, the contractor incurs a fine which is deducted from the payment, and which, like the premium, is calculated so much per cent. below the value that the fuel should have.

It is seen that this system is very equitable, as much so for the vender as for the buyer; everything encourages the contractor to deliver good combustibles.

As soon as the fuel arrives at the ports or stations, a sample is taken from each shipment and put in a special case which is then sealed and forwarded to the laboratory to have it appraised.

For those combustibles transported by cars, a sample is taken from each car; for *briquettes* a brick is taken from each car; for coal or coke a basket; each brick bears an incription indicating the name of the contractor, the date of delivery, the number of the car, and the name of the station at which it was received; the *briquettes* as well as the coal and coke, are put in boxes and forwarded to the laboratory of the company where the chemists proceed to examine them.

The laboratory addresses every day to the principal inspector of the company, a detailed report of the combustibles tested, and every quarter a general table is drawn up, so as to settle with each contractor.

When a new contractor is accepted by a company, the laboratory is charged to seriously examine the value of the combustible that he offers, to see whether it does not contain property injurious to the working of the machine; in a word, the laboratory makes a complete analysis, and a thorough examination; it is this report that serves as the base for the conditions of the contract.

A. Tourchot.

Mineralogical Society.

There is not a city in the Dominion which, in proportion to its population, affords more facilities to the lover of science than Ottawa.

Apart from its many other advantages, its literary and scientific societies are so numerous and prosperous as to deserve special recognition. One of these in particular, the Mineralogical Society of the College of Ottawa, cannot fail to interest the readers of the Mining Review.

To the kindness of its Director we owe the following interesting details concerning its object and constitution.

The general object of that association is to promote the study of mineralogy and the allied sciences, chemistry and geology. It attains that object in a twofold manner—first, by encouraging personal investigation and discovery, and affording persons already conversant with scientific subjects an opportunity of exchanging and discussing ideas on the same; secondly, by fostering a taste for these studies among the students of the college and other young men, and, at the same time, acquainting them with the fundamental principles of mineral chemistry and geology.

The membership of the Mineralogy Society is open not only to students of the University, but to all outsiders interested in science. It includes Professors of the Faculty and other scientific gentlemen, as well a students and other young men standing on more or less advanced steps of the scientific ladder. Persons wishing to become members should apply to the secretary.

Meetings are held every Wednesday at 5 p m., at which original papers are read and discussed, and popular science lectures are given, accompanied by experiments. Admission to the meetings is free, and a general admission ticket may be obtained by applying to the President of the Society. The chemical and mineralogical laboratory and museum of the College, which will soon be completed, are put at the disposal of members; and all necessary apparatus and reagents are furnished on special conditions.

In order to increase its sphere of usefulness, the Mineralogical Society respectfully requests the co-operation of the science-loving public, and particularly of those interested in mines, quarries, etc. Information of any kind and specimens of minerals, rocks and fossils are thankfully received; in return, the Society makes a determination of such specimens when requested and inserts the names of the donors in its publication. The society, having secured the services of the College Professor of Chemistry and of an eminent French chemist and analyst, is now in a position to supply the daily increasing demand for mineral analyses.

The Society was formed in March, 1880, by the Rev. C. F. Marsan, O.M.I., M.A., Professor of Chemistry, Mineralogy and Geology in the College of Ottawa, with the assistance of Mr. (now Honorable) P. S. Poirier, and other scientific gentlemen. Hon. Senator Poirier, whilst Postmaster of the House of Commons, occupied the presidential chair of the Society till the beginning of the present year, when his removal to the Maritime Provinces made it impossible for him any longer to conduct the business of the Society.

The following are the officers for the present year:—

Director: Rev. Prof C. F. Marsan, O.M.I., M.A.

President: Mr. Walter A. Herckenrath, of Mamaroneck, N. Y.

Vice-President: Mr. Wade Smith.

Recording Secretary: Mr. Jas. Foley.

Scientific Secretary: Mr. Alfred Lavoie.

Treasurer: Mr. Patrick Griffin.

Chemist: Mr. Anatole Tourchot.

Librarian: Mr. David Pinlen.

Curator of Museum: Mr. Duncan Campbell.

Scientific Committee: Rev. James Moloney, O.M.I.; Rev. Germain Gauvreau, O.M.I.

Pennsylvania made 68 per cent. of all the Bessemer steel rails, and 65 per cent. of all the ingots produced in the United States in 1885.

SCIENTIFIC NOTES.

Sulphur.—It is reported that large deposits of sulphur have been recently discovered on the southern slopes of the Caucasus Mountains.

Quartz.—There seems to be a dispute, at present, as to whether the permanent polarity of quartz, lately discovered by Dr. Tumlirz, is diamagnetic or paramagnetic.

Vesuvius.—After the late eruption of Vesuvius, on Feb. 6, the chloride crusts of lava in the vicinity were found to be very rich in copper, so that the bootnails of visitors to the spot became thickly plated with it.

Water Gas.—A series of experiments in the reduction of iron ores, carbon monoxide, superheated steam, and water gas being employed as reagents, gave the following total results of oxidation for one series of specimens: Carbon monoxide 81.12 degrees, steam 84.75 degrees, water gas 86.48 degrees, thus giving water gas an advantage of 5.38 degrees over carbon monoxide, and 1.73 degrees over superheated steam.

Heat.—A recent writer in the *Geological Magazine* ventilates an idea that is certainly novel and original, viz.: that the interior heat of the earth will yet be utilized by man. He is of opinion that the crust, which separates us from the molten mass below, is not so thick as is generally supposed, and considers it one of the possibilities of the future that we shall "bore down to the liquid layer, and conduct our smelting operations at the pit's mouth."

Mineralogy.—The author of the *Rudiments of Mineralogy*, recently published by Crosby & Lockwood, London, has devised a new torment for beginners. In addition to the specific gravity of elements as compared with water, which learners usually find sufficiently difficult to remember, Mr. Ramsay gives the specific gravity taking hydrogen as the standard unit. As an example of what students are required to tax their memories with, the specific gravity of native silver is given as ranging from 115,123 to 117,369.

Geology.—The latest as well as one of the most important contributions to geological science is *Geology, Chemical, Physical and Stratigraphical*, by Prof. Prestwich, of Oxford University, the first volume of which has just been issued from the Clarendon Press. Those portions of work are particularly valuable, which embody the results of the learned Professor's original researches. Prof. Prestwich belongs to the non-uniformitarian school of geologists, holding that the action of physical forces in the geological periods constantly varied in degree and intensity.

BOOK NOTICES.

An Introduction to the Study of the Compounds of Carbon, or Organic Chemistry, By Ira Remsen. Ginn, Heath & Co., Boston, 1885.

This excellent text book, though published a few months ago, is very little known in Canada, we have therefore much pleasure in bringing it to the notice of our readers. It is impossible, in a brief sketch, to enumerate all the merits of this book. The author has evidently written it for students beginning the study of the compounds of carbon with or even without a teacher. He carefully avoids, in the beginning, long theoretical considerations from which the beginners can derive no benefit. Throughout the book the relations of various series, the general properties of groups, and important laws of formation, are indicated only after the facts illustrating them have been described and experimented upon. Nothing so confuses the student as the grouping together of a mass of laws and speculations before acquainting him with facts, thus giving him the very false notion that natural science is a kind of castle in the air, too distant for clear observation. Another very common defect, from which Mr. Remsen's work is free, is excessive comprehensiveness. All cannot be told in a text book, so that if an author attempt to give the abridged history of every compound, his work becomes nothing but a dry nomenclature of facts and formulas. It is far better to choose some typical compound in each series, and give a full description of it; the knowledge then conveyed will be complete in its kind, and the student may afterwards, by himself, repeat the same work upon each of the other members of that series. To those acquainted with Wentworth's Geometry, or any other of the classical publications of Ginn & Heath, it is needless to say that this edition is a masterpiece of typographical neatness and beauty.

Ottawa Field Naturalist's Club: Transactions No. 6; Vol. II, No. 2.

We have just received this, the best publication yet issued by our local scientific club. It has only one defect, it comes too late, and the reader cannot but feel disappointed when he finds out that all the papers included in that volume were delivered before March, 1885. Many of those papers are very interesting. We published in our issue of February, 1885, the paper of Mr. Chas. Willmott, "Minerals of the Ottawa District." Among other valuable papers Mr. William Lett's very interesting essay on the "Canadian Otter" deserves special notice. Mr. Latchford's "Observations on the Terrestrial Molluscs of Ottawa and Vicinity," must necessarily be in the hands of all students of our shells. Finally, geologists will find a valuable addition to our knowledge of the Trenton fossils in the notes on "Two New Species of Crinoids," by Mr. Walter R. Billings.

NOVA SCOTIA.

It is reported that a rich gold lead has been discovered in Yarmouth county, not far from Pubnico.

Active prospecting was carried on in Lunenburg and Queen's counties last autumn, and the discovery of some important gold-bearing quartz veins was the result.

During the past month gold was discovered at Carlton, Yarmouth County, and applications for licenses to work have been made to the mines department at Halifax.

Early in February, two gold bricks were brought to Halifax from the Salmon River and Rawdon mines. That from the former weighed 1,297 ounces, and from the latter, 155 ounces.

The discovery near Nictaux, Annapolis County, made some months ago has led to the discovery of several other quartz veins showing free gold.

A stamp-mill is to be established at the McGuire gold mine at Whitburn, Pictou County, and owners of adjoining areas have consented to co-operate in defraying the cost of its erection and equipment.

Mr. James Fraser is making a determined effort to have the mining laws of the province amended. As they stand at present, they are in some respects inconsistent, although generally liberal and equitable.

The Pleasant River gold mine has been sold to a Duluth firm for $19,000. The property has been fairly developed and promises well. The main shaft is down 35 feet, and some of the quartz now being taken out, carries 2 oz. in gold to the ton.

Recent operations by the Kempt Gold Mining Company at their mine at Little Lake, near Kemptville, have disclosed a remarkably rich lead. This has had the effect of establishing the value of Yarmouth County gold mines and the shareholders of the Kempt Company are much encouraged.

In the Oldham district there are 40 gold-bearing leads, and the output, up to the present time, has been about 2,500 oz. For many years, gold-mining in Oldham was carried on in a primitive style, trenches being made to the depth of 20 feet, which, after the quartz was taken out, were allowed to fill with water.

NEW BRUNSWICK.

There is every prospect that activity will be seen during the coming summer at the Manganese mines in this province, notably in Albert County.

Development work will in all probability be started shortly on some important leads of stibnite discovered last autumn. Samples of the ore were assayed in New York, and found to carry 65 per cent. of antimony.

A sample of quartz from a three inch lead recently discovered near Sackville, Westmoreland County, has been analyzed in New York, and found to contain 5 oz. of gold to the ton. Experts believe that the lead increases in width below the surface.

QUEBEC.

An average of 65 men have been employed at the "Emerald" mine, Ottawa County, during the winter, and by the time navigation opens there will be upwards of 3,000 tons of phosphate ready for shipping.

The Phosphate of Lime Company have given employment to 120 men during the winter at their "High Rock" mine in Portland West, Ottawa County, and will have 3,200 tons of ore on land for shipment when navigation opens.

Since the shipping season closed last autumn the Dominion Company have raised 3,000 tons of phosphate from their "North Star" mine in Portland West, Ottawa County, and have given employment to an average of 75 men.

We are informed that the Union Company have done good work during the winter at their mines in Portland West and have a large quantity of phosphate ready to go forward, but we have not received further particulars.

Great activity prevails at the Coleraine Asbestos Mines. The Anglo Canadian Asbestos Company have a large force at work and are putting in air-compressors, steam-pumps and drills, and other expensive machinery, with a view to equipping their mine for permanent and extensive working.

At the St. Onge Gold Mining Company's Mine, at St. George East, Beauce, work has progressed rapidly during the past month. A drift is being run from main shaft towards the centre of the old river bed. Much rich ground has been crossed by the drift and a quantity of coarse gold taken out. The objective point is now but a short distance from the end of the drift, and when reached it is confidently expected that marvellously rich ground will be found on bed rock.

ONTARIO.

(Thunder Bay District.)

Many specimens of rich ore from the east end of Silver Mountain have been forwarded by the mineral committee to the Colonial and Indian Exhibition.

Surveyor McDougall and party have returned from a new discovery which they have surveyed and Surveyor Russell is now engaged in laying out still another.

Work has been resumed on the east end of Silver Mountain and it is stated that silver is visible in the ore taken out and lying in the drift made by the Cleveland company.

It is currently reported that the Crown Point mine, a quarter of a mile north of the east end of Silver Mountain, has been sold to American capitalists who intend erecting a stamp-mill without delay.

The Peerless Mining Company, of Lake Linden, Michigan, affirm that they will soon begin to operate a claim located by their agents last year about 3 miles S. W. of the Porcupine mine.

The Algoma Mines Company have received estimates for crushing and concentrating machinery to be erected at their mines near Black Bay, about 35 miles east of Port Arthur, and will, it is thought, proceed with active mining and milling early in the spring.

Medicine Bluff, at the southwest end of Whitefish Lake, is described as a valuable location, 400 feet in height, slate capped with trap, and having veins carrying silver, gold, copper, iron, alum, etc. A tunnel some thirty feet in length has been driven into the hill to cut the vein about 250 feet below the summit.

BRITISH COLUMBIA.

There are over 1,500 miners in the Granite creek, Colville and Similkameen districts, and it is expected that the number will reach 20,000 before the middle of summer.—*Yakimer Signal.*

Twenty odd white men and a number of Chinamen have started in to prepare for active mining on Scotch Creek. Reports from this camp are very favourable, and the Shuswap drift is progressing well.

The advisability of establishing a trail between Yale and Granite Creek mines is being seriously considered. It is claimed that a practical trail can be found from Yale to the mines that will not be more than half the length of the present route.

Miners have started in to work on Granite Creek and are getting good returns. Other creeks, viz., Slate, Cedar, Champion and Collins, are nearly all taken up and active preparations are going ahead for mining as soon as the ground is clear of snow.

The Tulameen river seems likely to be the principal mining ground during the coming season. The Chinese last year took out a large amount of gold; but the whites got in too late to allow of working their claims—they were, however, all well prospected.

NEWFOUNDLAND.

Capitalists have taken up the Placentia mines and will work them to some extent in the near future.

A new and valuable discovery has been reported at Bett's Cove, where the copper mines have been comparatively idle of late.

The Brigus gold field has been favourably reported on by mining experts, and as auriferous quartz occurs in quantity in that region, it is expected that gold mining will be engaged in ere long.

At Little Bay copper mine, operations have been resumed under a new management. Two hundred men are now at work, and when spring opens, it is not improbable that 600 to 700 men will be employed.

Last summer Newfoundland was visited by a number of mining engineers for the purpose of inspecting certain mineral deposits. They were favourably impressed with the prospects for the future of mining industries on the island.

UNITED STATES.

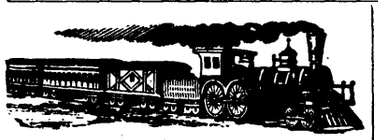
All of the iron mines in the vicinity of Hillarton, Lehigh Co., Pa., are in active operation.

The present outlook for ignot copper is favourable, there being very little spot coppers now on hand.

Dividends to the amount of $1,152,450 were paid by United States mining companies in the month of January.

Of the 4,529,869 net tons of pig iron produced in the United States in 1885, Pennsylvania made 2,445,195 tons, or over 56 per cent. of the total.

The report of the Father de Smet mine, presented at the annual meeting, shows that 106,855 tons of ore, of an average value of $3.57, were milled during 1885. The receipts were $381,697.41; disbursements $226,100.66, leaving annual profit of $155,596.75.



THE INTERCOLONIAL RAILWAY OF CANADA.

The Royal Mail Passenger and Freight Route,

BETWEEN

CANADA AND GREAT BRITAIN,

AND

direct route between the West and all points on the Lower St. Lawrence and Baie des Chaleur, also New Brunswick, Nova Scotia, Prince Edward Island, Cape Breton, Newfoundland, Bermuda and Jamaica.

New and elegant Pullman Buffet Sleeping and day cars run on through Express trains.

Passengers for Great Britain or the Continent, by leaving Toronto at 8.30 A.M. Thursday, will join Mail Steamer at Halifax A.M. Saturday.

Superior Elevator, Warehouse and Dock accommodation at Halifax for shipment of grain and general merchandise.

Years of experience have proved the Intercolonial in connection with Steamship lines to and from London, Liverpool and Glasgow to Halifax, to be the quickest freight route between Canada and Great Britain.

Information as to Passenger and Freight rates can be had on application to

E. KING,
Ticket Agent,
27 Sparks St.,
Ottawa.

ROBT. B. MOODIE,
Western Freight and Passenger Agent,
93 Rossin House Block,
York St., Toronto.

D. POTTINGER,
Chief Superintendent.

Railway Office,
Moncton, N.B., Nov. 13th, 1885.

NOTICE TO CONTRACTORS.

—o—

CHANGE OF TIME,

THE time for seeing the plans and specifications for the

INFANTRY SCHOOL

—AT—

LONDON, ONT.,

Is hereby changed to TUESDAY, the 23rd instant, and the time for receiving tenders to WEDNESDAY, the 7th APRIL.

By order,
A. GOBEIL,
Secretary.

Department of Public Works,
Ottawa, 12th March, 1886.

SEALED TENDERS, marked "For mounted Police Clothing Supplies," and addressed to the Hon. the President of the Privy Council, Ottawa, will be received up to noon Thursday, 18th March, 1886.

Printed forms of Tender, containing full information as to the articles and quantities required, may be had on application to the undersigned.

No tenders will be received unles made on such printed forms. Patterns of all articles may be seen at the office of the undersigned.

Each Tender must be accompanied by an accepted Canadian bank cheque for an amount equal to ten per cent. of the total value of the articles tendered for, which will be forfeited if the party making the tender declines to enter into a contract when called upon to do so, or if he fails to complete the service contracted for. If the tender be not accepted the cheque will be returned.

No payment will be made to newspapers inserting this advertisemint without authority having been first obtained

FRED. WHITE,
Comptroller,
N. W. M. Police.

Ottawa, Feb., 24th, 1886.

DEPARTMENT OF INLAND REVENUE.

AN ACT RESPECTING AGRICULTURAL FERTILIZERS.

THE public is hereby notified that the provisions of the Act respecting AGRICULTURAL FERTILIZERS came into force on the 1ST OF JANUARY, 1886, and that all Fertilizers sold thereafter require to be sold subject to the conditions and restrictions therein contained—the main features of which are as follows:—

The expression "fertilizer" means and includes all fertilizers which are sold at more than TEN DOLLARS per ton, and which contain ammonia or its equivalent of nitrogen, or phosphoric acid.

Every manufacturer or importer of fertilizers for sale, shall, in the course of the month of January in each year and before offering the said fertilizer for sale, transmit to the Minister of Inland Revenue, carriage paid, a sealed glass jar, containing at least two pounds of the fertilizer manufactured or imported by him, with the certificate of analysis of the same, together with an affidavit setting forth that such jar contains a fair average sample of the fertilizer manufactured or imported by him; and such sample shall be preserved by the Minister of Inland Revenue for the purpose of comparison with any sample of fertilizer which is obtained in the course of the twelve months then next ensuing from such manufacturer or importer, and which is transmitted to the chief analyst for analysis.

If the fertilizer is put up in packages, every such package intended for sale or distribution within Canada shall have the manufacturer's certificate of analysis placed upon or securely attached to each package by the manufacturer; if the fertilizer is in bags, it shall be distinctly stamped or printed upon each bag; if it is in barrels, it shall be either branded, stamped or printed upon the head of each barrel, or distinctly printed upon good paper and securely pasted upon the head of each barrel, or upon a tag securely attached to the head of each barrel; if it is in bulk, the manufacturer's certificate shall be produced and a copy given to each purchaser.

No fertilizer shall be sold or offered or exposed for sale unless a certificate of analysis and a sample of the same shall have been transmitted to the Minister of Inland Revenue, and the provisions of the foregoing sub-section have been complied with.

Every person who sells, or offers or exposes for sale, any fertilizer, in respect of which the provisions of this Act have not been complied with,—or who permits a certificate of analysis to be attached to any package, bag or barrel of such fertilizer, or to be produced to the inspector, to accompany the bill of inspection of such inspector, stating that the fertilizer contains a larger percentage of the constituents mentioned in sub-section No. 11 of the Act than is contained therein,—or who sells, offers or exposes for sale any fertilizer purporting to have been inspected and which does not contain the percentage of constituents mentioned in the next preceding section,—or who sells or offers or exposes for sale any fertilizer which does not contain the percentage of constituents mentioned in the manufacturer's certificate accompanying the same, shall be liable in each case to a penalty not exceeding fifty dollars for the first offence, and for each subsequent offence to a penalty not exceeding one hundred dollars: Provided always, that deficiency of one *per centum* of the ammonia or its equivalent of nitrogen, or of the phosphoric acid, claimed to be contained, shall not be considered as evidence of fraudulent intent.

The Act passed in the forty-seventh year of Her Majesty's reign, chaptered thirty-seven and intituled "*an Act to prevent fraud in the manufacture and sale of agricultural fertilizers*", is by this Act repealed, except in regard to any offence committed against it or any prosecution or other act commenced and not concluded or completed, and any payment of money due in respect of any provision thereof.

A copy of the Act may be obtained upon application to the Department of Inland Revenue.

E. MIALL,
Commissioner.

NOTICE.

TENDERS will be received by the Department of Inland Revenue until Monday, 12th April, prox., from parties desirous of leasing the privilege of ferrying across the Ottawa River, between the village of New Edinburgh, in the Province of Ontario, and the village of Waterloo or Gatineau Point, in the Province of Quebec, 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.

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 four years and eleven months, from 1st May, 1886.

Each tender must be accompanied by a cheque marked "Good" on one of the chartered banks doing business at Ottawa, for one-half 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 withdrawals, in which cases no refunds will be made.

All communications must be addressed to the undersigned and endorsed on the envelope "Tender for the New Ediuburgh Ferry."

By order,
WM. HIMSWORTH.
Secretary.

Department Inland Revenue,
Ottawa, March 18th, 1886.

NOTICE.

TENDERS will be received by the Department of Inland Revenue until Monday, 12th April prox., from parties desirous of leasing the privilege of ferrying across the Ottawa River, between the City of Ottawa, in the Province of Ontario, and the City of Hull, in the Province of Quebec, 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.

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 lease being for four years and eleven months from 1st June, 1886.

Each tender must be accompanied by a cheque marked "good" on one of the chartered banks doing business at Ottawa, for one-half the amount of the per annum tender. This amount will be credited on account of the first year's ren in the case of the accpted tender, except in the event of withdrawals, in which case no refund will be made.

All communications must be addressed to the undersigned and endorsed on the envelope "ender for the Ottawa and Hull Ferry."

By Order,
WM. HIMSWORTH,
Secretary.

Department of Inlard Revenue,
Ottawa, March 18th, 1886.

North-West Mounted Police

TENDERS FOR HORSES.

SEALED TENDERS, marked "Tenders for Horses," and addressed to the Hon. the President of the Privy Council, Ottawa, will be received up to noon, Monday, March 29th, 1886, for supplying 100 SADDLE and 100 TEAM HORSES for the Mounted Police, to be delivered at Regina, North-West Territories, not later than April 24th.

Tenders to state the price per horse in each class, team or saddle, and may be or any number not less than one car load.

An officer of Police and a Veterinary Surgeon will examine the horses prior to shipment from Ontario and Quebec, but they will be at Contractor's risk and expense, and will not be paid for until delivered at Regina. Horses injured or falling sick in transit will not be taken over at Regina until fully recovered.

Parties tendering must state the date on which their horses will be ready, and the Railroad Station in Ontario or Quebec they select for inspection.

DESCRIPTION.

Team Horses, age 5 to 7 years, about 1,250 lbs., short-legged active horses, sound and free from blemish, well broken, and good walkers.

Saddle Horses, age 5 to 7 years, height 15 to 15-3, well-bred sound horses, free from blemish, with good substance, appearance, and action, and well broken.

Each tender must be accompanied by an accepted Canadian bank cheque for an amount equal to ten per cent. of the total value of the horses tendered for, which will be forfeited if the party making the tender declines to enter into a contract when called upon to do so, or if he fails to produce suitable horses for inspection on the date specified in his contract, or to deliver them at Regina not later than the 24th April. If the tender be not accepted the cheque will be returned.

No payment will be made to newspapers inserting this advertisement without authority having been first obtained.

FRED. WHITE,
Comptroller,
N. W. M. Police.

Ottawa, March 13th, 1886.

NOTICE.

SEALED TENDERS addressed to the undersigned and endorsed "Tender for Indian Supplies" will be received at this office up to noon of TUESDAY, 20th APRIL, 1886, for the delivery of Indian Supplies during the fiscal year ending 30th June, 1887, consisting of Flour, Bacon, Beef, Groceries, Ammunition, Twine, Oxen, Cows, Bulls, Agricultural Implements, Tools, etc., duty paid at various points in Manitoba and the North west Territories.

Forms of Tender, giving full particulars relative to the Supplies required, dates of delivery, &c., may be had by applying to the undersigned, or to the Indian Commissioner at Regina, or to the Indian Office, Winnipeg.

Parties may tender for each description of goods (or for any portion of each description of goods) separately or for all the goods called for in the Schedules.

Each tender must be accompanied by an accepted cheque in favour of the Superintendent General of Indian Affairs on a Canadian Bank for at least five per cent. of the amount of the tenders for Manitoba and the North-west Territories, which will be forfeited if the party tendering declines 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.

Tenders must make up in the Money columns in the Schedule the total money value of the goods they offer to supply, or their tender will not be entertained.

Each tender must, in addition to the signature of the tenderer, be signed by two sureties acceptable to the Department, for the proper performance of the contract.

In all cases where transportation may be only partial by rail, contractors must make proper arrangements for supplies to be forwarded at once from railway stations to their destination in the Government Warehouse at the point of delivery.

The lowest or any tender not necessarily accepted.

L. VANKOUGHNET,
Deputy of the Superintendent-General of Indian Affairs.

Dept. of Indian Affairs,
Ottawa, 3rd March, 1886.

WANTED

Two Experienced Mica Cutters.

Steady employment and good wages.

Apply at Office of

CANADIAN MINING REVIEW,
Union Chambers, 14 Metcalfe St., Ottawa.

DEVELOPED AND UNDEVELOPED MINES, AND MINERALS OF COMMERCIAL VALUE, BOUGHT AND SOLD.

Mining Companies Organized and Prospectuses prepared. ADDRESS: E. G. POWELL, UNION CHAMBERS, 14 Metcalfe Street, Ottawa.