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CANADIAN

MINING REVIEW

VOL. 4.—No. 6. 1886—OTTAWA, SEPTEMBER—1886 VOL. 4.—No. 6

TIMBER SALE.

THE timber on certain lots in the townships of Eastnor, Lindsay, St. Edmund, Allemarle and Amabel, in the County of Bruce, and Keppel, in the County of Grey, in the Province of Ontario, will be offered for sale at Public Auction, in Blocks of 200 acres, more or less, on the 12th Day of OCTOBER next, at ten o'clock a.m., at the Indian Land Office, in the village of Wiarton.

Terms of sale to be—A bonus payable in cash, a license fee also payable in cash, and dues to be paid according to tariff upon the timber when cut.

The purchasers of timber to have the option of purchasing, without any condition as to settlement, the land on which it grows, at a price to be determined by the department, and to be made known at the time of sale, and to be paid one-third down and the balance in two equal consecutive annual instalments, with interest at 6 per cent.

For further particulars please apply to Wm. Simpson, Esq., Indian Land Agent, Wiarton, or to the Department of Indian Affairs, Ottawa.

No other paper to insert this advertisement without authority through the Queen's printer.

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

Department of Indian Affairs,
Ottawa, 30th Aug., 1886.

ORDNANCE LAND SALE.

TORONTO.

PUBLIC NOTICE is hereby given that on THURSDAY, the 16th day of SEPTEMBER, inst., at noon, will be sold at Toronto, by Mr. John M. McFarlane, Auctioneer, at his Auction Rooms, No. 8 Adelaide Street, East, the following Lots, the former sales of which have been cancelled, viz.:

Lots No. 2 and 4, South King Street, one North Wellington Avenue, and a triangular piece of land on the South-West corner of Strachan and Wellington Avenues.

TERMS OF PAYMENT.—One-fifth of the purchase money to be paid down at the time of sale, and the remainder in four equal annual instalments, with interest on the unpaid balance of the purchase money at the rate of six per cent.

Further conditions will be made known at the time of sale.

By order

A. M. BURGESS,
Deputy of the Minister of the Interior.

WILLIAM MILLS,
In charge of Ordnance and Admiralty Lands.
Ottawa, September 8th, 1886.

Canadian Mining Review.

OTTAWA.

PUBLISHED MONTHLY.

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UNION CHAMBERS, 14 Metcalfe Street.

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

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

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

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

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

It has already become a well recognized fact that the Colonial and Indian Exhibition has been the means of bringing Canada forcibly to the notice of the old world, and her very creditable display of the resources of the Dominion has earned for her a prominent, if not a foremost, place among the British Colonies. Of all her exhibits, however, none appears to have attracted more attention, or created more astonishment, than has the display which represents our vast mineral resources.

Significant evidence that much benefit will accrue to mine owners and owners of mineral lands is in the fact that, since the opening of the Exhibition, we have been recipients of innumerable letters of enquiry from manufacturers and capitalists in all quarters of Great Britain and Europe, asking for information regarding the importance of the mineral deposits of the country and the capabilities of the mines in operation.

In order that such enquiries may be replied to in an intelligent manner, it is absolutely necessary that those people who are most concerned in the development of Canada's mineral resources and the expansion of the markets for the product of her mines, should keep us continually advised on all points of interest in these connections; reporting to us every important discovery, the result of development work, and what has been achieved at working mines.

Visitors to the Colonial and Indian Exhibition who take an interest in mining matters must be struck with surprise and greatly disappointed when they learn that the Dominion of Canada furnishes no official record of mining statistics, and up to date has neglected to publish any authentic information regarding the mineral resources of the country. With this fact before them, how can it be expected that capitalists will be induced to aid us in developing and extending our mining industries, the importance of which the Government has so utterly disregarded.

A desire for speculation and investment in distant and unknown countries has hitherto been a craze among English and European capitalists. Canada possesses some of the best mining fields in the world, and her mineral deposits are sufficiently rich, varied and extensive to invite investigation at least. If the monied men of England who are seeking investments in the mining fields of other countries are skeptical or incredulous as to the richness and vastness of our deposits, we most respectfully request that they examine carefully the display of Canadian minerals at the Colonial and Indian Exhibition and from it draw their own conclusions.

We learn that among other recent visitors to the Mineral Court at the Colonial and Indian Exhibition was Mr. Percy Gilchrist, the well-known English ironmaster and metallurgist, who inspected the exhibits in his capacity as one of the committee appointed by the Iron and Steel Institute to inquire into the iron and steel producing capabilities of the various Colonies represented at the Exhibition. Mr. Gilchrist acquired much valuable information regarding Canadian Iron Ores and was furnished with numerous samples of the ores and pig-irons. These he purposes having analyzed for publication in his committee's report to the Institute.

"A curious bit of experience," says the *American Manufacturer*, "has been had recently at one of the leading steel mills in the United States. A quantity of material for a bridge was rejected by the inspector of the buyers, much to the surprise of the producers. The manufacturers decided to make an independent investigation, which resulted in showing that the rejected material did come up to the specifications. Further research followed, and developed the fact that, for a given number of hours after the material had left the rolls, its physical qualities gradually changed, reaching a period of rest only after a certain time had elapsed. If these facts are borne out by the experience of others a good deal that is mysterious in steel may be explained."

Mr. L. Tietjens, of Stassfurt, Germany, has recently patented a very ingenious method of damming back the flow of water in shafts by the application of the well known fact that certain salts increase their volume very materially by the absorbing of water of crystallization in hardening. To accomplish this, he takes either calcined soda, anhydrous alum, kieserite, or oxychloride of magnesium, mixes them into a paste, and then immediately injects them through a suitably arranged pipe into the fissures through which the water flows. As this paste hardens, it swells enough to fill all the interstices of the rock and to render it thoroughly water-tight.

THE PHOSPHATE TRADE.

Little or no change has been reported in the condition of this industry during the past three months. The foreign market continues inactive and prices rule lower than we have known them within the past four years. Miners, however, have not been discouraged by the fall in values and have not allowed activity at the mines to relax, being confident of a rising market before the close of the shipping season. For this reason also they have been in no hurry to forward their output, as is shown by shipments to date compared with those of last season. While the year's production has not fallen off, the shipments up to and including August have aggregated but 11,256 tons crude, and 1,562 bags ground, as against 14,590 tons crude shipped to same date last year; whereas the shipments for the month of August just past amounted to 4996 as against 3053 tons for the same month in 1885.

As our quotations show, in the subjoined report, prices have fallen as low as 11 pence for 80 per cent. with one-fifth of a penny rise; but this condition of things is not likely to last, as high grade phosphate is becoming scarce and *Canadian* must, therefore, command a higher price so soon as this fact is realized. There has been a shrinkage in values of all commodities, but apart from the effect of this, and the general agricultural depression, the price of phosphate has been further reduced by competition among the sellers of *Carolina* which is in such large supply that it regulates the market in a great measure. These people have been ruining each other and we have received information that they have become tired of the contest and are planning a combination to raise prices, so that an upward movement for all grades is anticipated for next season.

Indications of a firmer market are apparent already and better prices may be looked for this fall for *Canadian* though the improvement is not likely to occur in any marked degree.

The popularity of Canadian phosphate is now very general with manufacturers, and there is no longer any question as to a large future demand for it in Great Britain and on the Continent. A demand for the ground article is also expanding, and if this is furnished in satisfactory form its use will be speedily extended. The Northern United States must furnish a large market in the near future, and Canada, too, must awake to the necessity of using our mineral phosphate as a fertilizer.

An eminent authority in London, Eng., referring to the Canadian deposits, says:—"There is one thing to be relied on; there "will be always a large and increasing "demand for mineral phosphates. Nitrogen "can be obtained from wood and a multi- "tude of other substances, but the only "largely available and cheap source of "phosphoric acid is from these minerals."

The facts above enumerated go to show that there will be no falling off in the demand, but that it will increase in proportion to the increased production of our mines, and, referring to the supply of

Canadian phosphate, Dr. Selwyn, during his visit to the Colonial and Indian Exhibition, in his capacity as Director of the Geological Survey, made the following statement:- "I can see no limit to the "depth of the phosphate deposits of Canada. "Of course there is a limit to the depth at "which profitable working can be carried "on, but practically there is no limit to the "supply; it extends over an enormous area "horizontally, as well as to great depth, "and it must take centuries to exhaust it."

Practically then, the demand for the product of Canadian phosphate mines is unlimited, and the mines of the Perth and Kingston districts, and of Ottawa county, are inexhaustible. The annual production is rapidly increasing, and phosphate mining gives bright promise of becoming one of the most important industries of the Dominion.

Phosphate Quotations.

Prices for mineral phosphate have not varied much since our last report, except when the price of *Canadian* dropped to 11d. for 80 %, with one-fifth of a penny rise. It has since rallied, and now stands at 11½d for 80 %, with a more hopeful outlook for a revival of the market later in the season. No marked improvement is anticipated this year, but a firmer feeling is apparent and better prices are expected all round next year, especially for the higher grades, which are becoming scarce. In the English and Continental markets Canadian phosphate has gained much favor of late, and will always be in demand.

Phosphate Shipments from Montreal to August 26th, 1886.

Date.	Vessel.	Destinat'n.	Shippers or Agents.	Tons
May 12	S.S. Kehrweider	Hamburg	W. M. Knowles	1562 sacks
" 25	S.S. Oxenholme	Liverpool	Wilson & Green.	787
" 27	S.S. Oxenholme	"	Lomer, Rohr & Co	320
June 4	S.S. Ashton ..	Sharpness	Wilson & Green	220
" 5	Bg. Rhine	London	Wilson & Green	220
" 10	Bg. Dictator ...	"	Wilson & Green	130
" 11	Bg. Lake Leman	" ..	Lomer, Rohr & Co	300
" 12	S.S. Berbin	Liverpool	Lomer, Rohr & Co	100
" 15	S.S. Mat. Beddington	London ..	Lomer, Rohr & Co	150
" 28	Bg. Moss Rose	"	Lomer, Rohr & Co	95
" 26	S.S. Carmona	"	Lomer, Rohr & Co	400
" 30	S.S. Benbrach	Liverpool	Wilson & Green.	416
July 2	S.S. Cairo	London .	Lomer, Rohr & Co	57
" 7	S.S. Oxenholme	Liverpool	Lomer, Rohr & Co	70
" 13	Bg. M. E. Seed.	"	Wilson & Green.	523
" 13	Bg. M. Mitchell	"	Wilson & Green.	150
" 15	S.S. Benrion ...	"	Lomer, Rohr & Co	200
" 22	S.S. Tel King ..	London ..	Lomer, Rohr & Co	330
" 21	S.S. Dracona...	Avonm'th	Wilson & Green.	422
" 30	S.S. Acton	London	Lomer, Rohr & Co	535
Aug. 3	S.S. River Indus	Liverpool	Wilson & Green.	507
" 4	S.S. River Indus	"	W. M. Knowles.	189
" 7	S.S. Juliet.....	London	Wilson & Green.	150
" 10	S.S. Kehrweider	Hamburg	Wilson & Green.	500
" 9	S.S. Benacre..	Harrow	Lomer, Rohr & Co	225
" 11	S.S. Benhope...	Liverpool	W. M. Knowles.	256
" 12	S.S. Carmona...	London .	Lomer, Rohr & Co	150
" 14	S.S. Crete.....	" .	Lomer, Rohr & Co	332
" 19	Ship. Primus..	Liverpool	Lomer, Rohr & Co	510
" 20	Bg. Ferggerson.	London ...	Lomer, Rohr & Co	252
" 20	S.S. Canonbury.	"	Wilson & Green.	220
" 27	S.S. Canonbury	"	Lomer, Rohr & Co	2230
" 21	S.S. Oxenholme	Liverpool	Lomer, Rohr & Co	630
" 28	S.S. Plessey ...	London	Lomer, Rohr & Co	480
" 26	S.S. Benbrack	Liverpool	Lomer, Rohr & Co	435
				11256

Total..... .....11256 tons crude, 1562 bags ground.

A new gold field in the northern part of Western Australia has been discovered, which is estimated to extend over an area of nearly 4,000 square miles. Already there is a rush of diggers toward the place.

PHOSPHATE MILLING.

Amongst recent additions to the mining industries of the Ottawa district may be mentioned those of the Du Lièvre Phosphate Mining and Milling Company. This company bids fair to do an extensive business, as its undertaking is a most timely one, and of such a nature as is likely to prove of practical economy to the producer as well as to the consumer.

Not long since a correspondent of the REVIEW had the privilege of going through the new mills and witnessing the "Blake" crusher and other machinery in operation, for which, and for the explanations given, we are under obligation to Mr. Geo. H. Bacon, the Managing-Director of the company.

After the phosphate has been broken into fragments of the size of a walnut, it is made to pass through a long inclined cylinder, heated to a high degree in order to rid the mineral of moisture, which feeds it into a crusher to be pulverized. It is then brought in small tin buckets on a belt, as is the case with flour in an ordinary grist mill, and gathered in bags for shipment. There are several grades of ground or pulverized phosphate, depending upon the pulverizer or crusher used. In one instance the ore when dried is made to fall into a revolving chamber, where, through friction and rapidity of motion, it becomes reduced to a minute or impalpable powder. This is the best and highest grade. Its fineness is exceedingly great, and it may be used as a fertilizer in its raw state to great advantage.

Many shipments of ground phosphate have already been made by the Du Lièvre Company, notably to St. Catharines, Ontario, to be used in grape culture, &c., and to the United States. It is not unlikely that agriculturists in the northern and western United States and the Province of Ontario will become large consumers of our ground phosphate in the near future, and a large demand may be looked for in Great Britain and Europe.

A number of buildings have been erected on the west side of the Rivière du Lièvre, in proximity to the crossing of the Canadian Pacific Railway, consisting of the cylinder and boiler-room, the mill proper and a store-room, all of which are admirably fitted up for the purposes for which they are required.

Under proper management this will no doubt prove a successful and profitable enterprize, and we hope its promoters will receive a large share of patronage from the agriculturists of the Dominion.

The annual production of gold in the world has been on the decrease for a number of years. California's production reached its height in 1853, and that of Australia in 1856.

NATIVE COPPER IN IRON PYRITES.—A curious mineral association is reported as occurring in the *Champion* copper mines in New Zealand. The copper ore occurs in the fissures of the alumina-magnesia silicate, known there as serpentine, and native copper is found filling all the fissures in the white iron pyrites, making it almost impossible to break such pieces with a hammer. These pyrites themselves contain only from ¾ to 4 or 5 per cent. of copper. There are also good copper pyrites in the vein; but the native copper is rarely found in them, but is confined almost exclusively to the poor white pyrites.

MICA MINING IN CANADA

A GROWING INDUSTRY.

The British and Canadian Mica and Mining Company

OWNERS OF

THE BEST MINE IN AMERICA.

This industry has been engaged in in a desultory fashion more or less during the past ten years, and until within a recent date has been confined to deposits in Central Ontario. Throughout the Perth and Kingston districts, especially in the Townships of North Burgess and Longhborough, deposits of amber mica of various shades occur, and from these there has been a limited annual production, which, for the most, part, has been used to replace the better quality in stoves which have been for some time in use, or, in other words, for the purpose of repair. One deposit, however, in North Burgess, known as Pike Lake Mine, has yielded a very large quantity of excellent mica with so pale a tinge as to appear almost white when split to the required thickness for stove use. An almost unlimited supply can be obtained from

THE PIKE LAKE MINE,

and the product is far superior to any which has been extracted from the other deposits in the districts referred to. A fairly profitable trade was carried on by the owners of these mines until within the past two years, when the price of the higher grades of mica *(Muscovite)* were reduced on account of the discovery of extensive deposits in the United States and in other localities in Canada. Of these recent discoveries none have been recorded to compare with the deposit in the Township of Villeneuve, Ottawa County, which is now being worked by

THE BRITISH AND CANADIAN MICA AND MINING COMPANY.

This company own and operate what is known as the *Villeneuve Mine,* situated five miles east of the Rivière du Lièvre, and about twenty miles north of the village of Buckingham. The mine was acquired by its present owners in March last, previous to which it had been exploited only to a limited extent, but sufficiently to prove the existence of a vast body of feldspar and quartz intersected by micaceous veins carrying well formed crystals of mica in great quantity, capable of producing plates of various sizes from the ordinary dimensions required for stove purposes up to 10 x 12 inches.

THE QUALITY OF VILLENEUVE MICA

is not excelled in any part of the world; and this has been attested to by experts who saw the samples exhibited at the Antwerp Exhibition last year, and by those who have seen the samples now on exhibition in London at the C. & I. E.

In April last the British and Canadian Mica and Mining Company began active operations, and proceeded at once to develop their mine in order that they might be prepared to supply consumers with their requirements for the present season. No difficulty was experienced in convincing dealers, and others, of the superior quality of the mica, and as soon as they were satisfied of the capabilities of the mine, as regards quantity, the demand became so brisk as to tax the company's facilities for producing it to their utmost extent.

A mine cannot be developed in a few months, but under the superintendence of Mr. L. H. Shirley, C. E., the Managing Director, the mine is being put in shape to enable the company to employ a large force of miners. The micaceous leads are so extensive that the supply of mica is practically unlimited, and when more ground has been opened this mine will be capable of yielding all that will be required for consumption in Canada, as well as a large annual production for exportation.

Already many of the large stove manufacturers in Canada have obtained their season's supply from the *Villeneuve* mine, and a large quantity has been shipped to the United States where it competes with the North Carolina mica.

The B. & C. M. & M. Co. have organized with a view to carrying on a permanent industry in connection with their Villeneuve property, proof of which we have in the substantial character of the buildings which have been erected at the mine, the well constructed roadway thence, for a distance of five miles, to the river, and

THE CUTTING HOUSE AT BUCKINGHAM.

This latter feature is the most interesting addition to the company's property and is complete in all its appointments. No cutting-house in connection with any other mica enterprise in America can be compared to it. Each day's output is forwarded from the mine thither in crystal form and handed over to the sorters, splitters, cutters and packers who prepare it for market. To each man and woman employed in the cutting house is apportioned his or her special work, and everything in connection with the building has been so ingeniously arranged and thoroughly systematized that this branch of the business is conducted like clock-work. The difficulty at first experienced in obtaining skilled labour was overcome by importing

TRAINED HANDS FROM FRANKLYN, NORTH CAROLINA,

under whose instruction all the employees have become expert in the special work assigned them. Everything is conducted with a view to economy, and in this connection, it may be said, the company have very good prospects of establishing a profitable market for the feldspar, of which the gangue is, to a large extent, composed. Its superior quality makes it adaptable to the manufacture of porcelaine, and its association with the mica renders it necessary to raise hundreds upon hundreds of tons in the ordinary course of mining. In addition to this, the distorted and fractured crystals, cuttings, and all waste mica is ground and sold to manufacturers of fire-proof paint, roofing cement and lubricants, and by utilizing these by-products the company will reduce the cost of producing the mica plates to a minimum.

The value of this property is no longer problematical; it has been thoroughly established, and of the mica, it may be said that its perfect transparency and its refractory nature, as well as the unusually large size of the plates obtainable, and the careful way in which it is cut, cleaned and otherwise prepared for market, has made a reputation for the product of the *Villeneuve* mine which must render it a scource of large profit to its owners, of whom it is said, they possess THE BEST MICA MINE IN THE WORLD.

A New York scientist says that the earth's polar ice is penetrating the interior of the globe, like a wedge, and that as soon as it reaches the furnace there will be an explosion that will split the world into pieces too small for truck patches.

THE UPPER LIEVRE.

A Search for Gold and Silver now Going on in the Region.

It is only since the opening up and successful working of the phosphate industry that the attention of the outside world has been turned to the at one time avoided and rocky regions of the Lièvre Valley. Especially in the Upper Lièvre country is it beginning to dawn upon the few and far separated settlers that while nature has not been lavish in the bestowal of agricultural resources, yet she may have more than compensated for this by storing up mineral wealth in the vast masses of igneous rock that everywhere abound. With such a conviction Mr. William Riley Clement, of White Fish Lake, after a somewhat extended experience in the Huronian Gold and Silver mining regions, set to work with a will to search the rocks. It is quite probable that he will soon reap a tangible reward for his dilligence and enterprise, as he has succeeded in discovering what seem to be very good specimens of both gold and silver quartz. These findings are located on White Fish Lake, in the townships of Bigelow and Bowman, and were last week inspected by Messrs. Edward Watts and Patrick Powers, of Buckingham, both of whom were very favourably impressed with the prospect, and who will likely be heard from in this connection shortly. Good specimens of gold and silver quartz have also recently been found on the properties of Messrs. William and Rodney Smith, at the upper end of White Fish Lake. A prominent phosphate miner and lumberman has already entered into negotiations with the latter gentlemen for the purchase of their claim.—*Aylmer Times.*

CORRESPONDENCE.

Editor Canadian Mining Review :

SIR,—Herewith find report of the manager of the Quesnelle Quartz Mining Company (limited). This mine is situated on Hixon Creek, Cariboo, British Columbia, about 43 miles north of Quesnelle Mouth. The property, as it now stands, consists of five locations of 1,500 feet each in length by 600 feet each in width, containing about 102 acres, to all of which the company have obtained a Crown grant, thereby giving them an absolute title, subject to taxation, as levied on all mineral property.

There are 300 inches (miners) of water recorded in favor of the Company. A five stamp mill complete, engine and boiler of about sixteen horse-power, are in place; also hoisting gear, wire-rope, necessary pumps, &c., for sinking 500 feet.

This mine was first located twenty years ago, but owing to excessive cost and lack of knowledge of such undertakings at that time, it was abandoned. Five years ago the present company was organized, and after expending $32,000, found their manager was incompetent, in addition to which their funds were at a low ebb. The works were closed down, but *not* abandoned, as the company were satisfied that with sufficient means and a competent manager, success would crown their efforts.

The present manager, Mr. Koch, was engaged last October, and, in addition to the work as set forth in his report, put all the machinery and mill in place.

Yours truly,

JAMES REID,
(M.P. for Cariboo, and President of the Quesnelle Quartz Mining Co. (limited).

REPORT.

To the Trustees of the Quesnelle Quartz Mining Company, (Limited.)

QUESNELLE, BRITISH COLUMBIA.

Gentlemen,—Yours of a late date requesting me to make a full report on the Hixon Creek Quartz Mine is to hand, and I will endeavour to comply with your request in such a manner as to be well understood by each one of you, and will be as explicit and impartial as possible in reference to the mining property you control. I am pleased to state that while I was not favourably impressed with the general surface appearance of your ground, I did not allow my prejudiced opinion to become fatal to my judgment whilst making a study of the ground as work progressed. I am now pleased to inform you that you have discovered, and to a limited degree developed, a true contact fissure vein. The surface being covered with a large amount of gravel sedementary wash and mining debris, made it difficult to trace the course of the vein. After getting the machinery in place and pumping out the deep shaft (100 feet) I found that nearly all the quartz which has been mined and milled was taken from the cross veins, properly termed feeders to the main or true fissure vein; all of these have a general N. E. and S. W. course and terminate at the true vein; but, being in vein porphyry, they are irregular in course and size, and if in their course towards the vein they chance to come in contact with a large vein they are led off in a hap-hazard way through the porphyry until they come in contact with the true vein where they always terminate. To the west and south-west of the fissure the country rock is talc slate which forms the foot wall of the vein and into which the feeders never penetrate, always merging into and ending at the point where they intersect the true vein. At many places in the cross veins the ore assays very high, varying from $25.00 to $150.00 per ton. Between the two shafts, a distance of 160 feet, there are no less than ten large and small feeders traversing the country and intersecting the porphyry until they come in contact with the true vein. Again, in the tunnel, which is on the same course as the two shafts, the inner end being 450 feet distant from the furthermost shaft, quite a number of cross veins, one of them measuring four feet in thickness, have been exposed, all of which have a N. E. and S. W. course toward the true vein. Some of these cross veins prospect very rich in gold, thus showing 450 feet of vein ground prospected and thickly interspersed with strong veins, or feeders, containing gold. All ground lying N. E. of the vein, for a distance of 50 or may be 1,000 feet, is vein porphyry, composing the hanging-wall of the fissure, impregnated with gold, iron, copper and silver, independently of the large and small veins which serve as feeders to the main fissure vein.

The vein is what is termed a true fissure vein and also a contact vein, and in California, Montana and Idaho, mining men cannot be induced to invest in a silver or gold vein, unless it is a true fissure vein, whilst others seldom have unlimited confidence in a vein unless it is not only a true fissure but also a contact vein. When a pay chute of gold quartz has been discovered in a fissure or contact vein it is likely to continue for several hundred or a thousand feet along the vein and to an indefinite depth, giving perfect assurance of a valuable mine. I am pleased to inform you that the main vein of your property on Hixon Creek, so far as developed, proves to be a true fissure contact vein, between slate and vein porphyry walls.

I will now give you a description of your mine so far as developed. The extreme S. E. work on one of your claims is a shaft 150 feet deep on a vein of quartz which yielded well in free gold. At a depth of about 20 feet this vein dipped to the S. W. and away from the shaft. The shaft was continued vertically and at a dept of 100 feet a level was driven to the S. W. until the contact between the slate and porphyry was reached. Several veins which paid well were exposed by this work, but, not knowing that a vein existed at the contact, your manager very naturally mined and milled the ore from the veins in sight. I am informed that, subsequently, a misunderstanding arose between the manager and the company which led to the suspension of work.

As soon as I was entrusted with the management of your property I placed the machinery at the shaft which you appeared to know most of (so far as you had been informed by the former manager and others), rather than at a shaft only 50 feet deep and which had been sunk twenty years or more ago. In the course of my investigation of the shaft I discovered the contact of the slate and porphyry, but no vein, and being totally ignorant of the character and formation of the country I proceeded to open up ground by drifting through the porphyry and cross-cutting the slate in search of a more permanent vein than any of those which had been met with. Meeting with no success, beyond cutting through many small veins (some of them rich) in the porphyry, I concluded that a true fissure vein existed near by which controlled the movements of such a network of small veins, and into which these small veins would eventually find their way and act as feeders to it. I then proceeded to examine the other shaft, 160 feet to the N. W., and at a depth of 50 feet I discovered a drift which had been driven for 88 feet in the direction of the other shaft in vein porphyry. This drift intersects ten quarts veins, the largest two of which have been driven on to the S. W. until they ran into what I have discovered to be the true fissure contact vein. From this vein the quartz of the neighboring country has its source, and the millions of dollars of gold taken from the placer diggings of Cariboo have their origin in this and other true fissure veins of the district.

The vein is contained between talc-slate and porphyry and into it the two cross veins, or feeders, have been deposited. Beyond the fissure vein, and in the slate, not a sign of quartz is to be seen, proving not only its true and permanent character, but also that all the cross veins in the 88 feet drift and those at the bottom of the shaft serve as feeders to it. The vein proper has a N.W. and S.E. course and dips 75° to the N.E. with the vein porphyry acting as a hanging-wall and the talc-slate as a foot-wall. The tunnel, at a distance of 75 feet from the last mentioned shaft, has been driven 200 feet into the mountain and, like the two shafts, exposes many seams of quartz in the vein porphyry all trending towards the contact and several of them have been followed for short distances in its direction.

After making a careful survey and study of the formation and character of the vein at and near the bottom of the 50 feet shaft, where the true vein had been exposed to view, I decided to sink a shaft near the entrance to the tunnel. At a depth of 16 feet I encountered the slate in which I proceeded to drift in the direction of where I considered the vein would be found encased between the slate and porphyry. Continuing for 16 feet I came upon the contact with the vein standing up at an angle of 75° surrounded and covered by surface slide and debris. At this point the vein is wide, well formed and contains more or less quartz. Its present appearance leads me to the belief that it will develop into a splendid gold mine and will make larger and become more reliable as a regular producer, as it leads N.W. and into higher ground. Another shaft can be sunk some 300 or 400 feet to the N.W. which will open up a very large extent of the vein and eventually make a thoroughfare and serve to ventilate the mine. The shaft I am now sinking is 8'4"x3'8" (inside of timbers), double compartment, timbered and properly secured. I have good and substantial hoisting frame over it for steam or water power. I have remodeled the water power and am now utilizing it for hoisting porposes. The shaft is now down 20 feet on the vein and the vein matter becomes harder as we go deeper. Much quartz is coming in (quartz belonging to the vein), while we are never without the quartz that cuts in from the porphyry, thus showing that we are in the midst of mineral.

I am very confident of being able, at no distant period, to supplement the foregoing with a report of good milling quartz in abundance.

G. A. Koch, Manager.

CANADA'S MINERAL WEALTH

REPRESENTED AT THE

COLONIAL AND INDIAN EXHIBITION.

The Display Attracts much Attention and the Richness of our Ores Creates Surprise.

No event has occurred in recent years so likely to promote the interests of Canadian industries as the Colonial and Indian Exhibition now in progress in London, England. The display of the product of the mine, which so well represents the mineral wealth of the Dominion, has attracted the attention of mineralogists and capitalists of the old world who will doubtless institute further investigation and ultimately be induced to advance capital to aid in the development of our vast mineral deposits Nature has provided us with all the natural elements of national wealth and prosperity, and the C. & I. E. may be the means of furnishing us with those artificial elements, capital and enterprise, which are so indispensable to the successful development of great mining industries. The *Canadian Gazette* has been untiring in commenting on the Canadian exhibits, of which it speaks in the most laudable terms, and of Canada's mineral display it says:—

THE PRECIOUS METALS.

Among the gold exhibits the obelisks form a leading feature. The British Columbian structure contains 252,000 cubic inches, and represents the amount of gold taken from auriferous deposits in the Province during the last twenty-five years, of a total value of $49,342,900. The Nova Scotian obelisk represents a total of 395,180 oz. obtained in the Province up to date, of the value of about $7,500,000. Many interesting specimens of alluvial gold from different parts of the Dominion are also shown in a case in the approach. Among them is one from the parish of St. George, Beauce County, Quebec, found in an old river 200 feet below the surface. The specimens from Granite Creek, Similkameen River, British Columbia, are the largest from the Province, and from a new district they promises well. A handsome sample in quartz comes from the Albion gold mine of Montague, Nova Scotia. Exhibits of gold-bearing ore may also be seen from the Huronian mine, in the region of Port Arthur, of which so much has been heard of late years. Of silver the chief exhibits are made by Mr. T. A. Keefer, thanks to whose enterprise a most comprehensive and interesting mineral collection is shown from Port Arthur, in twelve handsome cabinets made of wood found in the same district. The silver from this region is, it will be noted, not so much native silver as blendes with copper pyrites, &c. A large number of veins have been discovered in various parts of the district, from most of which specimens are shown; but little has been done in providing capital and enterprise to develop the industry. The Beaver mine has as yet been worked to the largest extent.

PHOSPHATE AND ASBESTOS.

There are, however, in the whole collection few exhibits of more practical interest to Englishmen at the present moment than those of phosphate of lime, or apatite, as it is at times called. The development of the trade in this mineral is most remarkable. In 1873 but 195 tons were obtained from the Ottawa mining district, where the chief bearing rocks are found; in 1883 the supply had reached 19,466 tons; and last year the total was 23,908, with every prospect of as great advance in future years. From the Emerald mine, Buckingham, Quebec, a crystal is shown some twenty inches in width, probably the largest individual apatite crystal yet found. In quality the mineral is one of the richest known, very similar to the phosphate of Norway, and yielding a high amount of phosphoric acid. For instance, the South Carolina phosphates give 40 to 50 per cent. of phosphate of lime, while in the Ottawa region a carefully conducted mine yields upwards of 80 per cent It is now largely exported to Great Britain and Germany, and already practically holds the field, with the exception of the product of Norway, for the Spanish phosphate is of a different nature, with a different method of occurrence. Another most interesting exhibit is the case of the Anglo Canadian Asbestos Company of Montreal, devoted to the mineral in its crude and manufactured state. First is the raw asbestos, then powdered for the manufacture of fire-proof paints, also woven into tape, wick and rope—in short, it can be made into almost everything into which cotton is manufactured. The fibre of the Anglo-Canadian Company's asbestos is comparatively short, but the exhibit of other firms, such as Messrs. Johnston & Sons, from the same district of the Eastern Townships, is larger and more similar to the Italian article with which Canadian asbestos has to compete in European markets. No general statistics are apparently available as to the extent of the output, for the industry is a new one; but the demand is such in Europe alone that few better investments could be found. Some of the chief mines are at present worked by Americans, and indeed throughout Canada it will be found that English money, which should perhaps be first, is often last in developing industries of a similarly profitable nature.

MINOR MINERAL EXHIBITS.

Mica and soapstone are also well-represented among the exhibits. The latter is attracting much attention as a stone where great resistance to heat is acquired, such as in stoves. The material now in use in Great Britain comes chiefly from Germany, and from what practical

Englishmen who have examined the samples say, there is every reason to anticipate a good export trade in the Canadian article. The mineral is found in the same district as the asbestos. Graphite is another mineral possible of large development in Canada. The largest exhibit is that from the Buckingham (Quebec) plumbago mine, comprising disseminated ore, pure lump plumbago from as many as fifteen different veins, and various manufactures. Few people, for instance, would think of asking in English shops for Canadian lead pencils, and yet they may be seen to be at least as good as those in general use, and probably quite as cheap. Crucibles and such-like manufactures of no little variety are also made of this mineral. Of precious metals the Mineral Court can also show specimens of much excellence. The amethysts from Thunder Bay shown by the Canadian Executive Commissioner and by Mr. Keefer are remarkable for their size and beauty. Canadian freshwater pearls are well shown by Mr. G. Seifert, of Quebec, in a small case in the approach. These pearl mussels are found in most of the small streams of Quebec, and weigh from 3 to 70 grains.

It will thus be seen that the Canadian mineral exhibit is one of great interest and merit. It is also a very practical effort to encourage English capitalists to assist in opening up some of Canada's immense wealth. Some English money has in the past been embarked on mineral ventures, and many such have failed. The cause of this is obvious. In the first instance far too large a sum has often been given for the property—so much so as in many cases to make profitable working only possible in the remote possibility of the mine proving a true "bonanza." With, however, proper care and judgment in the purchase, and economical and experienced working, there is great field in many directions for the profitable employment of English money in the Canadian mining industry.

CANADIAN GEOLOGICAL EXHIBITS.

Probably no Canadian industry has suffered so much from over-speculation, and in many cases from gambling, than that of mining. Indeed, among certain classes the industry has been regarded in no other light, until the impression has found wide acceptance, if not in Canada at least in Europe, that the honest investor had best keep himself free from attempts to derive from it any permanent and satisfactory source of revenue. The display at the Colonial Exhibition is eminently suited to dispel such an illusion, and it will do so by showing clearly enough that, while in mining, as in lumbering and farming, absence of practical knowledge and capital have in the past led to many unprofitable ventures, yet the native material, comprising 97,000 square miles of coal-bearing rocks, is such that mining may and will be made in Canada, as it is in the older countries of the globe, a steady and increasing source of wealth.

The mineral exhibits occupy a large space in the annexe to the approach to the western transept of the Central Gallery and in the approach itself. The collection numbers upwards of 725 specimens of ores and minerals and their products, and was for the most part gathered during the past year in all sections of Canada by the Dominion Geological Survey. It is under the charge of the Director of the Survey, Dr. Selwyn, assisted by Mr. F. D. Adams and Mr. C. Willimott.

THE COAL WEALTH OF CANADA.

Treating the exhibits in the natural order into which they seem to fall, one finds in the approach an immense block of bituminous coal from the Wellington mine, Vancouver Island, representing the whole thickness of the seam. Another block is from the Nanaimo mine. These two are the most important mines of British Columbia. From the former, 220,000 tons were obtained last year, worth $4 per ton at the wharf; while from the latter the output was 137,500 tons, and, considering the sparseness of the population, this is a fair development. There is also bituminous coal from Vancouver Island and from the Union mine, Comox; and anthracite from Queen Charlotte Islands, interesting as the only known deposit of its kind on the Pacific coast. The extent of coal in British Columbia is but partially ascertained, and yet enough is known to show that the supply is practically inexhaustible. Its market is at present in Victoria, San Francisco, Honolulu, and Alaska, but it is greatly restricted for want of enterprise and transport facilities. In this respect much is hoped for from the completion of the Canadian Pacific Railway in opening up profitable markets, not only in the prairie cities of the Canadian North-West, but also in China and Japan, where the supply is now largely met from Australasia. As one passes from the Pacific coast eastward the deposits tend to a lignitic nature. From Banff, on the line of the Canadian Pacific Railway, in the mountains, a semi-anthracite is obtained, as may be seen by the specimen shown. The Banff mine, which is known to comprise two seams of about 4 feet in thickness, has but recently been discovered. In quality the fuel compares with some of the best anthracite in Pennsylvania, and is about to be mined in such a way as to ensure its extensive use. Further west on the line of the great coal-bearing rocks of the North-West comes the Lethbridge mine. This is now being actively worked by the North-West Coal and Navigation Company in connection with the operation of the railway from Dunmore, on the main route of the Canadian Pacific Railway to Lethbridge. The specimen shown from the Galt mine, as it is popularly called, is from a seam 5 feet 4 inches in thickness, situated so near the surface as to obviate the necessity of any shaft, and make working a simple and comparatively inexpensive process. The extent of this coal region is enormous. At Lethbridge alone the quantity underlying one square mile is estimated by Dr. Dawson at five million tons. And it must be clearly borne in mind that the Geological Survey has only as yet examined the southern regions of the plains, which form one vast coal bed tending from bituminous to lignite as one proceeds from west to east. The coal shown by Messrs. Pocock, Freath and Pocock, from the Souris Valley, Southern Manitoba, is thus a lignite with about 20 per cent. of water, as against about 10 per cent. in the Lethbridge coal. And yet the Souris coal is of the utmost value to settlers, and also in view of manufactures, for the fuel used by the Germans for like purposes is to a large extent much inferior.

From Ontario and Quebec no specimens are forthcoming, because no coal is found in those provinces. New Brunswick sends but one exhibit from Grand Lake. This coal lies near the surface, and the seams are so thin that, seeing the close proximity of the vast coal areas of Nova Scotia, it is used only for local purposes. The extent of the coal fields of Nova Scotia may be gathered from the fact that last year the total output was 1,352,000 tons, and the local Government have done well in seeing the province so well represented as it is. In all thirteen mines contribute—the Sydney, Bridgeport, Reserve, Glace Bay, Gowrie, Old Bridgeport, Springhill, and Albion, and the mines of the Low Point Barasois and Lingan Mining Company, the Joggins Coal Mining Company, the Vale Coal Company, the Acadia Coal Company, and the Intercolonial Coal Mining Company. The coal is of the true bituminous class and of immense extent, at present worked to supply the demand of the Maritime Provinces and as far west as Ottawa, beyond which it is not at present profitable to send it.

IRON AND COPPER EXHIBITS.

The exhibits of iron comprise every kind of ore from all parts of the Dominion, Nova Scotia prominently, as well as New Brunswick, and parts of Quebec, Ontario, and British Columbia. From the largest iron works in the Dominion, Londonderry iron mines, of Colchester, Nova Scotia, a good exhibit of ores and products is made. In quality Canadian, and especially Nova Scotian, iron must be considered a great deal better than the general run of English iron. It is, in fact, very pure and rich; the magnetites compare somewhat with those from which the celebrated Swedish iron is made. And an idea may be gained of the immense market available in the Dominion itself for this abundant metal from the fact that in 1884 the iron and steel imported into this country in various forms reached a value of $14,790,727, and the total of imported iron and steel during the seventeen years since Confederation amounts to a value of no less than $230,741,434, a demand which the resources of Canada are well able, with proper development, to meet. Sulphites of copper come from Quebec, British Columbia, and Ontario, the latter including two exhibits of native copper from the Lake Superior district, which should, now that it is opened up by the Canadian Pacific Railway, attract capitalists to work what is declared to be one of the most extensive copper deposits in the world. Of antimony some fine specimens are shown from Rawdon, in Nova Scotia, as well as from Prince William, New Brunswick, from which much is hoped.

There can be no doubt but that the mineral exhibits have aroused considerable enquiry among visitors generally to the Canadian section. The specimens of iron ores, manganese ores, asbestos, soap-stone, graphites, and granites have attracted particular attention, and there have arisen several offers to buy largely if satisfactory quotations can be obtained. In all such cases inquirers are put into direct communication with the Canadian producers. One gentleman who has carefully examined the iron ores recently, is about to leave for British Columbia to erect, at considerable cost, works for smelting purposes. Mr. Sugg, of the Vincent Works, Westminster, a member of the well-known firm of gas engineers, has also recently been placed in communication with the miners of soap-stone in the Eastern Townships of Canada. Large quantities of this material are at present imported by Messrs. Sugg from Germany for use in their works, and it is hoped that an article of as good, if not better, quality may be obtained from Canada at favourable prices. Other inquiries have related to Canadian ochres, and many samples of this mineral have been furnished for experimental purposes and for report to the Geological Survey.

While workmen were engaged in blasting rock recently at the limestone quarry at McAffee, in Orange County, New York, a seam in the rocks was opened, in which was found a number of bones among others some that are alleged to be those of a man. There are pieces of the vertebræ of an ox, and a piece from some huge beast's jaw containing a tusk.

Progress in the Development of Canada's Mining Industries

DEPICTED BY

ALFRED R. C. SELWYN, F.R.S., F.G.S., C.M.G.

Director of the Geological Survey of Canada.

The collection of the economic minerals of Canada forms one of the most interesting and important exhibits at the Colonial and Indian Exhibition, and is strong evidence of the progress in the development of the country's mineral resources since the displays made at the Philadelphia Exhibition in 1876 and at the Paris Exhibition in 1878, in both of which the Director of the Survey took a prominent part. In comparing the collection now on exhibition with those displayed in Philadelphia and Paris, Dr. Selwyn, speaking on the subject, is reported to have said:

"The exhibits are much more numerous, to begin with. We have here upwards of 725 specimens of ores and minerals and their products, whereas at Philadelphia we had but 487. Then our space is double that at Paris, and larger than at Philadelphia. The exhibits themselves are, I consider, finer, too, and of a more practical nature. It is also a great help to have the exhibits concentrated in one Mineral Court as we have here, instead of separated in the general display as at Philadelphia. Then, again, we had, in 1878, practically none of the fine asbestos and much less of the phosphate exhibits than we now show, for the important industries in these minerals have greatly increased."

He says, in referring to the

ASBESTOS AND PHOSPHATE DEVELOPMENTS,

"The market is unlimited: it is merely a question of capital to open up and develop mines. The workings are confined to one district—the eastern townships—where asbestos and soapstone lie very much together. Of course it is found elsewhere, but, so far as known, these are the only deposits of mercantile importance. As to quality, I am informed that the Canadian asbestos is quite equal to that produced anywhere, though not quite so long in fibre; but the fineness of the fibre and its quality are said to be quite as good for all practical purposes. It is now manufactured in Canada, and owners of mines would do well to remember that in exporting the raw material they are really exporting a good deal of refuse and refuse, too, that has to pay freight. Manufacture the asbestos before shipment, in accordance with the requirements of European markets, and the advantage will be with Canada all round. Of course capital is wanted for machinery and the facilities for manufacturing; this is the great difficulty, for exporting the raw material means small outlay and quick returns, which is a consideration to many owners. But, if taken up by men of capital in a reasonable way, and properly managed, the manufacture should offer a good opening for investment and be conducted with complete success. The trouble is, that the moment any English or American capitalists try to buy mining property in Canada, the owners say to themselves, 'Ah! there must be something exceptionally valuable here,' and they cannot open their mouths wide enough. The consequence is, as many instances have proved, the capitalists will not look at the property, knowing full well that the price is unreasonable; or, if they purchase, they often find it impossible, unless it prove a real 'bonanza,' to work it at a profit, and at last give up the undertaking in despair, to the disparagement of the property and the industry. The most owners of Canadian mining property are not willing to make what seem to me reasonable and fair arrangements, such as royalty on the output, or to make the purchase conditional upon the result of the workings coming up to expectation.

"When I speak of the asbestos workings being confined to one district, it is a Canadian, not an English district, to which I refer. An English district is at most a small affair, but a Canadian district may be pretty well as large as half of England. The asbestos district, for instance, in the Eastern Townships is about 200 miles in length, and, I suppose, some six to eight miles in width. It is, therefore, a vast area.

"With regard to the phosphate deposits in Canada, the way they are being developed is shown by the growth of exports. I can see no limit to the depth of the deposits. Of course there is a limit to the depth at which profitable workings can be carried on, but practically there is no limit to the supply, for it extends over an enormous area horizontally as well as in depth, and must take centuries to exhaust."

PROGRESS IN COAL DISCOVERIES.

"The discoveries which have been made in coal during the last decade are entirely confined to the North-west and Rocky Mountains. There is no doubt that the North-west deposits are all that could be desired in every possible way. The Souris coal is a lignite; but the coal from the North-west Territory is found on the upper branches of the two Saskatchewan Rivers, away to the foot of the mountains, between Medicine Hat and Calgary, and even west." The question of freight is an important one and in this connection I understand the Canadian Pacific Railway is carrying the North-west coal at a cent a ton per mile, and the result of the opening of the mines has already been to bring the price of coal in Winnipeg from $18 to $7½, and proportionately cheaper as one goes west. The people in Manitoba now use about as much of North-west coal as they do of that from Ohio and Pennsylvania. Some say the American coal is slightly better, but the Canadian article should certainly supersede it in the towns of Manitoba. Government can easily effect such a change, and a little patriotism on the part of residents would also do it. This is a patriotism that pays and benefits the whole country—at least, it must seem so to those who can look beyond their own noses. As to quantity, there is certainly enough coal in the North-west to supply the country for centuries; of that there is not the slightest question. The Canadian Pacific Railway Company is now itself using the Saskatchewan coal in the place of the American, which comes in by way of the lakes to Port Arthur. As to the Banff semi-anthracite deposit, of which so much has been heard, we hardly know the quantity as yet, and are not quite certain whether the deposits represent several seams or only one. It may possibly be that one single seam is folded, so that the two or three deposits represent several seams or only one. It may possibly be that one single seam is folded, so that the two or three deposits found at different spots are but parts of the one folded seam, and not individual seams of themselves. This question of course largely affects the quantity.

DISCOVERIES OF OTHER MINERALS

have not, for the most part, been very extensive. One very fine deposit of antimony was found at Rawdon, in Nova Scotia, in 1883, and also some manganese at Walton and Cape Breton in the same Province, where mines were opened in 1880. In the Port Arthur district, however, very considerable discoveries of silver ore have been made, and many of them promise to be very important, especially in the Rabbit Mountain district, about 28 miles west of Port Arthur, near White Fish River. Much has been said of this district but the actual results of mining have been small so far, accounted for by the bad condition of the roads which makes it difficult to get to the mines at present. It is a curious fact that a similar mining excitement arose fourteen years ago much nearer Port Arthur. A great number of silver mines were reported; splendid specimens were taken out of native silver and sulphuret of silver. Capitalists spent large sums of money, but the ventures were not successful. And yet these veins look just as promising as any I ever saw in my experience; but I cannot explain what seems hitherto to have been the unsatisfactory result in the older mines, such as Pie Island, Thunder Bay Mine, and others."

For the Geological Survey to undertake exhaustive examinations of the veins, to ascertain their exact extent, and thus enable capitalists to judge, would involve a great outlay, and difficulties would arise between the various owners; and then, if you ascertained a fact concerning one mine, it would prove nothing as to another. The matter is therefore, we think, better left to private enterprise.

"The only discoveries in the Rocky Mountains are on the west side, in British Columbia. Granite Creek, for one, has a very rich alluvial gold field; and doubtless many other creeks in the region from immediately west of the summit of the Rockies to Kamloops; but here, as everywhere else in Canada, they are waiting for capital."

AMERICAN VERSUS ENGLISH ENTERPRISE.

"If I remember rightly, the British Columbia Government have sold to Americans the whole of the coal lands along the eastern coast of Vancouver Island around Nanaimo. It is here that the men-of-war coal. And through the whole country mining and other industries are often largely, or entirely, worked by American capital. This is so, for instance, with one of the greatest lumber manufactories in Canada—that at Hull, Ottawa—which is, to some extent a slight upon English enterprise. But American capital is more plentiful than Canadian, while distance and ignorance of the country operate against the introduction of English capital. It is to be hoped, however, that much of this want of knowledge of the undeveloped resources of Canada, and the opportunities they offer for profitable investment, will be removed by means of the present Exhibition."

DIAMONDS IN NEW SOUTH WALES.—Diamond mining in New South Wales is likely to become of much importance. Upwards of 12,000 diamonds are reported to have been found up to the present time. They have been chiefly obtained from the Tertiary gravels and in the more recent drifts, in the Bingera, Inverell and Cudgegong districts; and a few have also been found in the Mittagong, Wellington and Uralla districts.

The production of chemical manure from the slag of Thomas-Gilchrist steel works promises to be successful in Belgium. Works have been started near Liége, which use all the basic slag from the Angleur Steel Works. Hitherto all that has been done is to pulverise the slag, and after roasting, the ground slag is sold to works where the natural phosphates of Hainault are dealt with, no difficulty being experienced in finding a market for it.

MINING NOTES.

NOVA SCOTIA.

On the 20th ult. the property belonging to the Blockhouse Mining Company, Cow Bay, Cape Breton, was put up at auction by order of the Commissioner of Mines, and sold for $7,000.

The order, which was for unpaid royalties amounting to some $12,706.35, dated as far back as June, 1885.

It is rumoured that the Government purpose taking up the rails and machinery with a view to abandoning the mine. If this is so, and the mine is allowed to fill up, many hundred thousand tons of coal can never be reclaimed.

Recent reports show that the works of the New Albion Gold Mining Company of Nova Scotia are at present at a standstill, gold in the worked leads having given out. Strong hopes are entertained that capital may be raised to develop other good leads on the property, but a report that an effort in this direction had proved successful lacks confirmation. It is unfortunate that the first Nova Scotia gold mine to receive English capital should have proved so far unsuccessful. Great results were expected from it, and these expectations were fully justified by the outlook when the property was sold. In July the stock was quoted in London at from $1.50 to $4.75, but according to advices during the latter end of August it sold at from $1.25 to $1.87½. Had the venture turned out well a great stimulus would have been given to English capitalists to invest in the mines of this province.

PORT ARTHUR.

The *Miner* has changed hands, and is now published by Mr. I. Dickinson.

Mr. Harvey, of Toronto, has given encouraging tidings regarding the mining property near Mackenzie Station on the C. P. R. east of Port Arthur. The vein recently discovered is said to be four feet wide at the surface, carrying galena and zinc blende, the same as 3A mine. It is also stated that a syndicate of English and Hamilton capitalists will work the property.

The works at the *Porcupine* mine now consist of a shaft on the northeast side, which is down about 60 feet, and on the southwest side the vein is stripped from the top to the bottom of the hill for 100 feet with four drifts into it, and the ground stoped out between the centre drifts, thus exposing a large body of ore to view. Recent specimens brought in show pink and green quartz and fluor spar, full of heavy black silver—argentine. The *Miner* says it has long been the opinion of mining experts that the cross-vein at the Beaver, which has proved so rich, the *Silver Creek* vein and the *Porcupine*, are all one, and the finding of the rich pink and green fluor spar seems to set the matter at rest.

During their recent visit to Port Arthur Sir John and Lady Macdonald and party visited the office of Mr. T. A. Keefer, and at the request of the Reception Committee inspected a very fine collection of specimens of the mineral wealth of the district.

The arrangement of the minerals was complete. On the first table in one row were arranged rich specimens of ore, lead, zinc, copper and gold and silver-bearing ores. In another row other economic minerals were shown, viz., free stone, asbestos, mica, roofing slate, marble, serpentine, Nepigon sandstone, and baryta; and in other places solid nuggets of native and black silver, and nuggets of gold in the rock; all from the district of Thunder Bay. This table had a card on it which reads follows: "Table exhibiting some of the minerals found on the North Shore of Lake Superior, near Port Arthur."

In the centre of the next table there was written on a large card the following: "The working ores of the working mines near Port Arthur," underneath which was written the following: "To work with assured success and to increase the output of these mines a railway is essential. We need increased or special Government aid." On this table were exhibited the working ores of the following mines: The *Huronian* gold and silver mine, the *Rabbit Mountain* silver mine, the *Porcupine* silver mine, the *Beaver* mine, the *Jarvis Island* silver mine, the *Silver Mountain* East End mine, the *Silver Mountain* West End mine, the *Crown Point* mine, *McKellars Island* baryta mine, the *Chicago & Verte Island* sandstone quarries, *Silver Falls* silver mine. On this table were also shown the *Huronian* mine mill concentrates and a brick of silver from *Rabbit Mountain* mine. On a third table there was written on a large card placed in the centre of it the following: "Surface ores of proposed mines near Port Arthur," underneath which was written, "To successfully develop these prospects a railway is essential. We need increased or special Government aid." Around this table were surface specimens from the following prospects: the *Highland* gold and silver, the *Neebish* gold and silver, the *Kam Kam* gold, the *Tip Top* gold, silver and copper, the *Big Bear* silver, the *Little Pig* silver, the *Indian* silver, the *Palisades* silver, *Slate River* silver, the *Parnseau* silver, *Rabbit Mountain, Jr.*, silver, *Corbett* and *Crawford's* silver, *Melotles* Black Bay argentiferous galena, and the *Zenith* zinc mine.

On another side of the office were shown varieties of ores in large masses and quantities, and the gold-bearing and silver-bearing slates of the district, together with a very fine collection of photographs of all the working mines, taken by Mr. Barrie.

There were also on exhibition *Huronian* mine mill concentrates in bags, also trees cut down by beavers from the *Beaver* silver mine, and a number of interesting geological curiosities.

Sir John expressed his great surprise at the variety and richness of the minerals, and each of the party carried away some fine specimens as mementos of their visit.

Notes on the Progress of Mining in Europe.

By E. J. Ball, Ph. D.,

(Assistant in Metallurgy at the Normal School of Science and Royal School of Mines, London.)

Written specially for the Canadian Mining Review.

After an enquiry which has lasted seven years, the Report of the Royal Commission on Accidents in Mines was issued on April 10th It is of considerable length and gives the results of a large number of experiments made to determine the best methods and appliances to be adopted in order to obtain increased safety from accidents in mines. It is stated in the report that with regard to the firing of shots, electrical exploding appliances present important advantages over their competitors, and it is added that the experiments instituted to show the percentage of fire-damp that might be present in the air without rendering it explosive, showed that 4 per cent. and upwards might lead to dangerous explosions, while if coal dust be simultaneously present the danger is still further increased. The commissioners recommend the use of Livings' Fire-damp Indicator, and they advise: 1st. That all work involving blasting in mines should be entrusted only to experienced workmen. 2nd. That in order to lessen the risk from blown-out shots, particular care should be taken that each shot should be assisted by under-cutting and nicking or shearing whenever it is practicable. 3rd. That the tamping, stemming, or ramming should consist of very damp or non-inflammable material. 4th. That, where strong tamping is needed, the compression of air at the bottom of the hole should be avoided by pushing in the first part of the tamping in small portions. 5th. That, where safety lamps are used, and powder is employed, the shots should be fired only by specially appointed shot-men, who, before firing the shots, shall satisfy themselves that the foregoing instructions are observed, and shall also satisfy themselves by carefully examining all accessible contiguous places within a radius of twenty yards of the shot to be fired, that fire-damp does not exist to a dangerous extent. The commissioners further add: "That it is most important that all mines should be carefully examined by means of indicators capable of detecting as small a proportion as 1 per cent. of gas; such examinations to be made before the announcement of each day-shift, and, in case of an interval, also before the succeeding shift, and that in all dry mines where the air may be laden with coal dust, and where fire-damp is either known to be given off from the strata, or may from experience be reasonably expected to exist. The Secretary of State may require safety lamps to be used, unless the owners and workmen of such mines prove, to the satisfaction of a Court of Arbitration to be appointed by the respective parties, that less liability to accident generally will be involved by the working of the mine with open lights than by the use of safety lamps. It should be a special instruction to such Court that the circumstances of each mine be taken into consideration."

In drawing attention to the experiments which have from time to time been made with a view to reduce to a minimum the inflammable action of a shot, H. Stapenhorst remarks that the results attained have been more satisfactory when dynamite was the explosive agent than when powder was employed.

As a complement to the discussion which has been carried on at such a length of late as to the action of coal dust in tending to produce, or in intensifying colliery explosions, the Austrian Government has offered a prize of 1,000 ducats for a process for getting coal which shall be free from all danger of explosions, and which must be neither costly nor troublesome to employ. The process may either do away with shot firing altogether, or it must be of such a nature as to prevent all danger from shot firing in dusty or fiery mines. Existing methods may compete, and all projects must be forwarded to the Berghauptmannschaft in Vienna before the end of the present year. Amongst the methods which have of late been proposed for the purpose is one described by Dr. Kossmann of Breslau, in *Oesterreichische Zeitschrift für Berg und Hüttenwesen*. He proposes to replace the ordinary dynamite or gunpowder cartridge by one in which the force is exerted by the rapid evolu-

tion of hydrogen due to the action of sulphuric acid on zinc dust. The case of the cartridge is divided into two chambers, the inner of which is filled with the zinc powder and the outer one with the sulphuric acid, the shot being fired by a blow on a pin forcing out a plug, and so opening a passage between the two chambers. The process is stated to be inexpensive.

In the same Journal it is stated that comparative experiments with compressed and with ordinary powder, recently officially carried out at Wieliczka, ended in favor of the compressed powder.

With regard to the various new forms of explosives, heliholite, mention of which was made on a former occasion, is stated to consist of one part of dinitrobengole and 1.5 part nitric acid, or of one part of nitrobengole and 2.5 parts of nitric acid. It is a dark red to brown colored liquid, and was originally used in thick glass or paper cartridges, but was afterwards employed after absorption by kieselguhr, and in this state it possesses considerable advantages over kieselguhr dynamite, both as regards lessened danger in the firing of gas or dust in collieries, and in producing a greater proportion of large coal; further, it is not so liable to sweat as the dynamite is, and even if the oil does become free, there is not much danger, as it cannot be exploded by concussion. The gasses also, which are produced on explosion are less noxious than those produced by dynamite. Heliholite, however, is liable to become decomposed after the lapse of a comparatively brief interval of time, and its manufacture has consequently been abandoned, another explosive—carbonite—being introduced in its stead. This material, while not being subject to decomposition, possesses all the relative advantages of heliholite, like which it also consists in part of nitrobengole. It is also cheaper than all these other explosives, which, as is stated to be the case with carbonite, do not cause explosions in the presence of ten per cent. of firedamp.

The experiments of A. Kas on the tensile strength of wire drawing-ropes were divided into three classes: 1, new ropes; 2, ropes already used but free from broken strands; 3, old ropes with some strands broken; this third class being again subdivided in connection with the position of the broken strands. A large number of experiments were made with several varieties of ropes and the results are given in tabular form. The author remarks that his experiments show that the tensile strength of the wire used in the manufacture of wire rope, far from being diminished, as has been supposed, by the twisting together of the wires, is, in reality, somewhat increased by that operation.

In a paper recently read before the Mining Institute of Scotland, Mr. A. Hill describes the Rio Tinto mine and discusses generally the mining industry of the province of Huelva, in the south of Spain. That portion of the province through which the mineral zone of the Sierra Morena passes is about 100 miles long and 40 miles in breadth, and it consists principally of Paleozoic schists associated with felsitpathic quartz, porphyry, and granite. Ores of copper, lead, zinc, and manganese, are found in considerable quantities. There are large masses of cupriferous iron pyrites and the more important ones, at Rio Tinto and elsewhere, are all worked by open-cast, although in several of the mines ordinary pillar and stall work is also carried on in those portions of the mass where the over-burden was too deep to be cheaply removed. The deposits at Rio Tinto are fully described, as are also the methods of mining adopted, and the metallurgical treatment of the ore. This last is very simple as it chiefly consists in heap-roasting and then washing out the copper sulphate, the copper being thrown down by iron.

In another letter read before the same Institute Mr. J. S. Dixon gives the results of a large number of experiments he has made at the Bute Colliery on the subject of the amount and mode of occurrence of subsidence and draw from working the coal. The examination related to the working of the Ell coal, which the author states was worked stoop and room up until the middle of 1881, when stooping was begun, but it was some time before it reached the line along which the section was taken. The excavation, which is complete, averages 5ft. 6in. in height and the superincumbent strata are allowed to fall and to fill up the space thus made. The experiments showed that the subsidence attained its maximum towards the centre of the excavated space, and that it gradually diminished in either direction. The wave of maximum subsidence regularly followed the working face and at an average distance behind it of 186 ft., this being equivalent to 1 ft. horizontal for every 3¼ ft. perpendicular. The country rock is generally of a firm nature, and the surface chiefly boulder clay. In describing, before the Manchester Geological Society, the section of a shaft sunk through the middle coal measures at Parkside Colliery, Ashton-Under-Tyne, Mr. G. Wild mentions an interesting discovery of calamites, at a depth of 640 yards from the surface, the shoots of many of which were still attached to what, the author considers, were undoubtedly subterranean rhizomes.

A. Iwan describes in the *Oesterreichische Zeitschrift fur Bery und Hüttenwesen* the Val de Travers Asphalt mine, Switzerland. The deposit occurs in the Jura formation between limestone and marl; it has a length of about 10 kilometres and a breadth of 2.5 kilometres. The annual production is about 60,000 tons. The bed has an East-West strike and dips to the South at an angle of from 1° to 3°; it is 5 to 7 metres thick and is worked by ordinary post and stall, the pillars being left 4 metres thick.

F. Hartnigg describes in the same Journal the mining industries of the Upper Feistrity Valley, Styria, and of the neighboring districts. The chief rocks are gneiss and micaceous schist, and in these are found coal and ores of iron, lead, zinc and other metals. Limestone also occurs.

The Mining and Metallurgical Industries of Hungary have, of late, been attracting considerable attention both in Britain and on the Continent of Europe, and in a paper recently read before the Society of Arts, London, Mr. R. H. Brough gives a great deal of statistical information concerning these industries which he gathered during a visit to the Buda-Pesth Exhibition and to the mining districts of Hungary. He states that all mineral deposits of technical value are the property of the Crown, and that prospecting can only be undertaken with the permission of the Government mining authorities; a number of the more valuable mines are worked by the State. Mr. Brough describes the different deposits both geologically and historically, and remarking on the gold and silver mines of Schemnitz, he states that in 1620 they produced as much as 17,000 oz. of gold. The lodes occurring in the Schemnitz district proper are in biotite-trachyte. They course in a north-east, south-west direction parallel to one another and dip 45° to 80° towards east. They are filled with decomposed trachyte, quartz, or calcspar, containing auriferous silver and lead ores, iron and copper sulphides and zinc blende. The dressing works at Schemnitz were constructed by Rittinger, and the most recent innovation is a second stamping of the ore; all that does not pass through a one-fifth inch mesh being automatically treated again. The Salzburg, or Lower Hungarian percussion table is found to be better than the Rittinger continuous percussion table, and although there are at the works three American iron stamps weighing 900 lbs. each, which do as much work as twelve continuous wooden ones, still these latter are on the whole considered more satisfactory. A great deal of statistical information relating to these mines is given by Mr. Brough. This is also the case in connection with the other mining districts of Hungary, and with regard to Transylvania he remarks that the oldest rock of this mining division is crystalline schist, above which is deposited mesozoic limestone and tertiary sandstone, through which burst various eruptive rocks which are traversed by gold veins, the gold being either free or associated with tellurium and sulphur. The largest quantity of gold is found where the rock is of average grain, and where the vertical main lodes intersect the veins with slight dip.

The tellurides from Nagyág are treated by boiling them with sulphuric acid pouring into water, allowing this solution to become clear and then precipitating the silver with hydrochloric acid, and, from the residual solution, the tellurium by zinc. In Transylvania stamps weighing 100 lbs. to 140 lbs. are used in the crushing of silver ores. The heads of stamps are of hard quartz blocks, and it is stated that the quartz answers tolerably well. The metallurgical industry of Hungary is also treated in the paper at some length.

Mr. P. L. Litchauer in an article in the *Bery und Hüttenmännische Zeitung* discusses various questions relating to the mining of the various Hungarian deposits of coal and of lignite. Coal, he says, occurs in Hungary in the carboniferous and Lias beds, lignite being found in the cretaceous and Tertiary rocks. The first colliery in Hungary was opened up in the year 1750, and the author describes at some length both the history of coal mining in Hungary and the laws connected with the subjects which have been, or are now in vogue there.

A translation from the Russian appears in the same Journal of a paper by N. Jossa, of St. Petersburg, on the reasons for the decline of mining and metallurgical industries in the Altaï Mountain District. He describes in detail the different deposit of ore and of coal, and gives statistical information relating to the production of gold, silver, copper, iron and lead during the years 1855-1884.

In the *Revista Minera of Metallurgica* appears a description by A. G. Espin of the mining industry of Portugal, and he describes the deposit of poor copper pyrites occurring at the Santo Domingo mine. This mine is situated at a distance of 14 kilometres from the Guadiana and about 50 from the sea. The ore deposit is of somewhat curious shape, and at its widest part has a width of about 60 metres, and a length of 600 metres. The ore averages about 2.75 per cent. of copper, though the percentage of this metal occasionally reaches 12. The present state and future prospects of the mining industry of Spain is discussed in the same paper by I. B. Vicens.

A series of articles on the mechanical principles of the modern stamp mill, by H. Louis has appeared in the *Mining Journal* and the subject is dealt with at considerable length.

BOOK NOTICES.

An English authority just to hand gives the following review of Mr. Griffith's 1886 edition of "The Iron and Steel Brand Book." "It is a valuable rather than interesting compilation. Nobody will think of turning over the pages of the book in search of amusement for an idle hour, and yet the work contains a vast amount of technical information for business men, handily arranged, and set forth in a manner that betrays no motive save a desire to produce a work of ready reference. Statistics of the output of iron and steel are excluded from Mr. Griffith's scheme, which aims at showing the kind and not the quantity, of the manufacture of iron now existent in Great Britain. A list is given of all the iron smelting works in England and Scotland whose iron is in the market. These amount to one hundred and sixty, and they contain seven hundred and seventy-one furnaces, of which one hundred and sixty have been standing idle since December, 1885. Charcoal iron is now produced by but one firm—located at Ulverston; and anthracite iron, since the stoppage of the Yniscedwyn Works, is represented only by the Ystalyfera Company of Swansea, which, however, also closed in December, 1885. Of cold blast iron there are now but twelve makers left, four in West Yorkshire, four in South Staffordshire, two in Shropshire, and one each in South Wales and North Lancashire. The hematite trade is represented by thirty-four firms, only ten of which combine the manufacture with that of other kinds of iron. Two hundred and twenty firms are included in the directory of mills and forges, sixty-five in that of steel converters, and thirty-three in that of steel rolling mills. For the record of brands, Mr. Griffith claims that though it does not set forth every description of iron, the headings are so comprehensive as to indicate the works likely to roll any section of iron that may be required. This of course, is a matter to be tested in practice, but of the general clearness of the arrangement and apparent completeness of the book there can be no doubt."

MINING REGULATIONS

To Govern the Disposal of

Mineral Lands other than Coal Lands.

1886.

THESE REGULATIONS shall be applicable to all Dominion Lands containing gold, silver, cinnabar, lead, tin, copper, petroleum, iron, or other mineral deposits of economic value, with the exception of coal.

Any person may explore vacant Dominion Lands not appropriated or reserved by Government for other purposes, and may search therein, either by surface or subterranean prospecting, for mineral deposits, with a view to obtaining under the Regulations a mining location for the same, but no mining location or mining claim shall be granted until the discovery of the vein, lode, or deposit of mineral or metal within the limits of the location or claim.

QUARTZ MINING.

A location for mining, except for iron, on veins, lodes, or ledges of quartz or other rock in place, shall not exceed forty acres in area. Its length shall not be more than three times its breadth, and its surface boundary shall be four straight lines, the opposite sides of which shall be parallel, except where prior locations would prevent, in which case it may be of such a shape as may be approved of by the Superintendent of Mines.

Any person having discovered a mineral deposit may obtain a mining location therefor, in the manner set forth in the Regulations which provide for the character of the survey and the marks necessary to designate the location on the ground.

When the location has been marked conformably to the requirements of the Regulations, the claimant shall, within sixty days thereafter, file with the local agent in the Dominion Lands Office for the district in which the location is situated, a declaration or oath setting forth the circumstances of his discovery, and describing, as nearly as may be, the locality and dimensions of the claim marked out by him as aforesaid; and shall, along with such declaration, pay to the said agent an entry fee of FIVE DOLLARS. The agent's receipt for such fee will be the claimant's authority to enter into possession of the location applied for.

At any time before the expiration of FIVE years from the date of his obtaining the agent's receipt, it shall be open to the claimant to purchase the location on filing with the local agent proof that he has expended not less than FIVE HUNDRED DOLLARS in actual mining operations on the same; but the claimant is required before the expiration of each of the five years, to prove that he has performed not less than ONE HUNDRED DOLLARS' worth of labour during the year in the actual development of his claim, and at the same time obtain a renewal of his location receipt, for which he is required to pay a fee of FIVE DOLLARS.

The price to be paid for a mining location shall be at the rate of FIVE DOLLARS PER ACRE, cash, and the sum of FIFTY DOLLARS extra for the survey of same.

Not more than one mining location shall be granted to any individual claimant upon the same lode or vein.

IRON.—The Minister of the Interior may grant a location for the mining of iron, not exceeding 160 acres in area, which shall be bounded by north and south and east and west lines astronomically, and its breadth shall equal its length. Provided, that should any person making an application purporting to be for the purpose of mining iron thus obtain, whether in good faith or fraudulently, possession of a valuable mineral deposit other than iron, his right in such deposit shall be restricted to the area prescribed by the Regulations for other minerals, and the rest of the location shall revert to the Crown for such disposition as the Minister may direct.

The Regulations also provide for the manner in which land may be acquired for milling purposes, reduction works, or other works incidental to mining operations.

Locations taken up prior to this date may, until the 1st August, 1886, be re-marked and re-entered in conformity with the Regulations without payment of new fees, in cases where no existing interests would thereby be prejudicially affected.

PLACER MINING.

The Regulations laid down in respect of quartz mining shall be applicable to placer mining as far as they relate to entries, entry fees, assignments, working of localities, agents' receipts, and generally where they can be applied.

The nature and size of placer mining claims are provided for in the Regulations, including bar, dry, bench, creek or hill diggings, and the RIGHTS AND DUTIES OF MINERS are fully set forth.

The Regulations apply also to

BED-ROCK FLUMES, DRAINAGE OF MINES, AND DITCHES.

The GENERAL PROVISIONS of the Regulations include the interpretation of expressions used therein; how disputes shall be heard and adjudicated upon; under what circumstances miners shall be entitled to absent themselves from their locations or diggings, &c., &c.

THE SCHEDULE OF MINING REGULATIONS

Contains the *forms* to be observed in the drawing up of all documents, such as:—"Application and affidavit of discoverer of quartz mine." "Receipt for fee paid by applicant for mining location." "Receipt for fee on extension of time for purchase of a mining location." "Patent of a mining location." "Certificate of the assignment of a mining location." "Application for grant for placer mining and affidavit of applicant." "Grant for placer mining." "Certificate of the assignment of a placer mining claim." "Grant to a bed-rock flume Company." "Grant for drainage." "Grant of right to divert water and construct ditches."

Since the publication, in 1883, of the Mining Regulations to govern the disposal of Dominion Mineral Lands, the same have been carefully and thoroughly revised with a view to ensure ample protection to the public interests and at the same time to encourage the prospector and miner in order that the mineral resources may be made valuable by development.

COPIES OF THE REGULATIONS MAY BE OBTAINED UPON APPLICATION TO THE DEPARTMENT OF THE INTERIOR.

A. M. BURGESS,
Deputy Minister of the Interior.

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; 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. II 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. MALL,
Commissioner.

Tenders for a License to Cut Timber on Dominion Lands in the Province of British Columbia.

SEALED TENDERS addressed to the undersigned and marked "Tender for a Timber Berth," will be received at this Office up to noon on *Monday*, the 1st day of November next, for four timber berths of ten square miles each, more or less, numbered respectively 4, 5, 8 and 9, situated on Kicking Horse River, and Otter Tail Creek, a tributary of the Kicking Horse River, near Field and Otter Tail Station, on the line of the Canadian Pacific Railway, in the Province of British Columbia.

Sketches showing the position, approximately, of these berths, together with the conditions on which they will be licensed, may be obtained at this Department or at the Crown Timber Offices, Winnipeg, Calgary, N.W.T., and New Westminster, British Columbia.

A. M. BURGESS,
Deputy of the
Minister of the Interior.

Department of the Interior,
Ottawa, 14th August, 1886.

Tenders for a License to Cut Timber on Dominion Lands in the Province of British Columbia.

SEALED TENDERS addressed to the undersigned, and marked "Tender for a Timber Berth," will be received at this Office up to noon on *Wednesday*, the 1st day of December next, for three timber berths of fifty square miles each, more or less, numbered respectively 16, 17 and 18, situate on the west side of the Columbia River, near Golden City Station, on the line of the Canadian Pacific Railway, in the Province of British Columbia.

Sketches showing the position, approximately, of these berths, together with the conditions upon which they will be licensed, and the forms of tender therefor, may be obtained at this Department or at the Crown Timber Offices at Winnipeg, Calgary, N.W.T., and New Westminster, British Columbia.

A. M. BURGESS,
Deputy of the
Minister of the Interior.

Department of the Interior,
Ottawa, 7th September, 1886.