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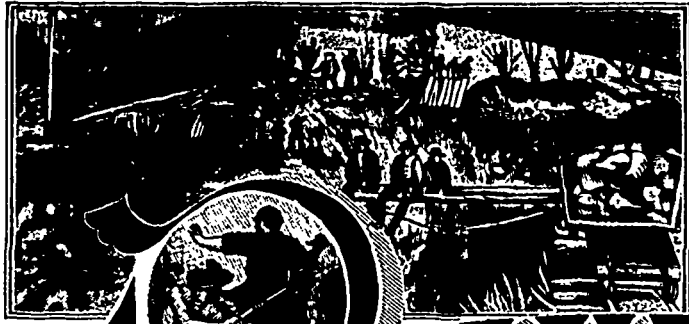
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THE

# Canadian

# Mining Review

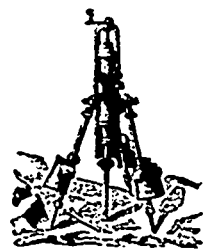


Vol. V.—No. 10.

1887.—OTTAWA, DECEMBER—1887.

Vol. V.—No. 10.

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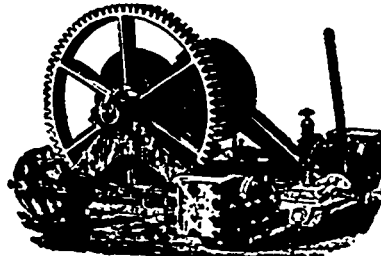
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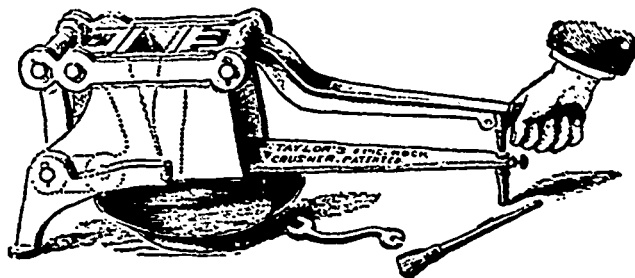
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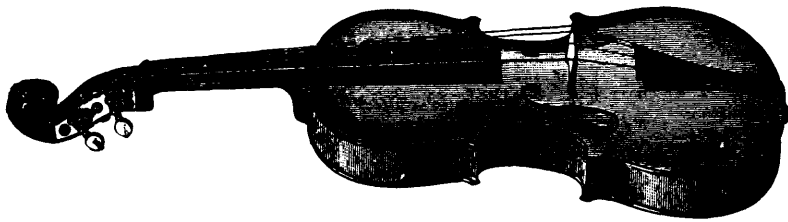


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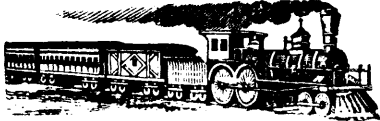


**NOTICE RESPECT'NG PASSPORTS.**

PERSONS requiring passports from the Canadian Government should make application to this Department for the same, such application to be accompanied by the sum of four dollars, in payment of the official fee upon passports as fixed by the Governor-in-Council.

G. POWELL,  
Under Secretary of State.

OTTAWA, 19th Feb., 1886.



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Nov. 22nd, 1886.



**Department of Inland Revenue.—An Act respecting Agricultural Fertilizers.**

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

The expression “fertilizer” means and includes all fertilizers which are sold at more than TEN DOLLARS per ton, and which contains 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 same 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 each jar contains a fair average sample of the fertilizer manufactured or imported by him; and such sample shall be preserved by the Minister of Inland Revenue for the purpose of comparison with any sample of fertilizer which is obtained in the course of the twelve months then next ensuing from such manufacturer or importer, and which is transmitted to the chief analyst for analysis.

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

No fertilizer shall be sold or offered or exposed for sale unless a certificate of

analysis and sample of the same shall have been transmitted to the Minister of Inland Revenue and the provisions of the foregoing sub-section have been complied with.

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

The Act passed in the forty-seventh year of Her Majesty's reign, chaptered thirty-seven and entitled, “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. MIALI,  
Commissioner.  
15th Dec., 1887.

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

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

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

*All matter for publication in the REVIEW should be received at the office not later than the 19th of the month.*

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

**Gold and Silver Ores of Ontario and Quebec.**

The oft recurring discovery of gold ores holding free gold in some new locality brings before our notice the present condition of this branch of the mining industry. Treatment by amalgamation of sulphuret ores either in the raw state or after roasting has resulted in a loss by this process of too large a percentage of the gold the ore contains, as there are few or no true free milling ores in the districts like the quartz and free gold ores of Nova Scotia. In 1850, Mr. Richard P. Rothwell, editor of the *Mining and Engineering Journal* of New York, bonded the Gatling Mining Company's mill and mines in the Township of Marmora, along with other properties for a New York syndicate, and expended some \$15,000 in testing the value of the mines, and the possibility of treating the ores profitably. Amalgamation was tried and condemned, and the chlorination process (*which is a wet one*) recommended. The Canada Consolidated Gold Mining Company was formed and worked the mines and erected extensive works for milling and treating the ore by chlorination, but in the fall of 1883 the company closed the works, which are now under a first mortgage of \$100,000, and a second one of \$300,000. Interests in the company are held by parties in Canada, United States and France, and these interests do not seem to be united on any course of action or re-organization, with a view to further working. After the operations of the company ceased in 1883, the mines and plant were leased by one of the chief stock-

holders from New York and two gentlemen from Detroit. The lessees operated it until the fall of 1884, and produced some \$30,000 in gold by chlorination, but much trouble was experienced in working the process in summer, and still worse in our cold winter climate, proving for a second time in Canada that *a wet process will not pay in winter*, as was formerly proved in copper ores in the Province of Quebec, at a cost of \$500,000. This ought to be sufficient evidence against a wet process in this climate. The ore is Arsenical Iron Pyrites (Mispickel) holding Arsenious Oxide  $As_2O_3$ , 55-40 per cent. = Arsenic 42-00 per cent, and averages \$14 per ton in gold. The Ore having been crushed and dressed, the Arsenious Oxide is driven off by roasting in revolving furnaces and lodges in chambers conducted at much expense for the purpose of saving it. Since the date the lessees stopped mining until the present time the Arsenious Acid has been resublimed in a small furnace and an exceedingly pure quality produced, yielding as high as 99.86 per cent. of Arsenious Oxide, which has been mostly shipped to the United States, where it sells at \$60 per ton and is the purest in quality which has been brought to that market. It is worthy of note also that the gold produced from these ores was the purest or that most free from alloy which has been sent to the mint of the United States. There are many other deposits of this ore in the district not held by this company. In this and other sections the gold and silver ores already found are of great variety, and are with few exceptions such as give better results when smelted than by either amalgamation or chlorination processes being sulphuret ores of Iron, Copper or Lead, with varying richness in the following: Gold, Silver, Copper, Lead, Antimony, Arsenic, Sulphur, all of which can be best utilized by roasting and then smelting along with lead. The volatile matter, Antimony, Arsenic, Sulphur, being first driven off in proper furnaces for that purpose, and the residue smelted in presence of Lead, the Iron present passing into the slag is tapped off, leaving the heavy metals Gold, Silver, Copper and Lead in the the furnaces until a value of from \$1,000 to \$2,000 to the ton of Gold and Silver is reached. A mixture of ores is required for smelting as the slate, lime and quartz, forming the gangue can be proportioned so as to produce along with the iron a good running slag. The advantages of smelting in presence of Lead are, a larger percentage of the precious metals is obtained than by amalgamation or chlorination, the great variety of ores that can be worked, also low grade Galena holding under \$10 per ton of silver can be made use of by this process. As we have an abundant supply of such Lead ore as well as some rich in silver in this district, a means of working the low grade at profit is obtained, which would prevent the impor-

tation of Lead and its manufactures into the country as is now done. The central position of Ottawa, with rail and water transportation and our vast water power made available for milling of ores, and the electro-metallurgical treatment of metals renders the Capital pre-eminent for the location of such an industry.

**The Phosphate Season of 1887.**

The shipment of phosphate by the SS. *Scotland*, on the 24th of November, for England, via a southern cotton port, closed the season of 1887 and made a total export from Montreal of 20,349 tons, against 19,298 in 1886, a gain of 1,051 tons, though less than in some previous years. The low water in the Lievres River prevented the forwarding of a considerable quantity from the mines in Portland, and some further output was held over in hopes of a better market next year for the lower grades. In addition to the amount exported to Europe should be reckoned about 200 tons used in Canada and about 300 tons sent to the United States; so that the total deliveries of the year will approximate 21,000 tons.

In reviewing the business features of the season, we may remark that

FREIGHTS have been fairly moderate in figure and sufficient in supply. Rates have ranged from 2s. 6d. for vessels going round-about voyages, to 15s. for direct steamers for Hamburg. The railway rates may be stated as 6s. 3d. to Liverpool and Glasgow, 7s. 6d. to London, 10s. to Irish ports, and 12s. 6d. to 15s. to Hamburg.

Higher prices are obtained in Ireland and Germany than in England, but hardly an equivalent for the extra freight. The steadily increasing change of the deal-shipping trade from Quebec to Montreal and from sailing vessels to steamers, largely augments the supply of tonnage that requires phosphate for ballast, and the low rates of freight that sometimes during the season obtain for grain make even the regular line steamers anxious to get phosphate for dead-weight cargo at ballast rates. When grain rates drop below 1s. 6d. per quarter the ship agents give the preference to phosphate at 7s. per ton. The large Quebec wood shippers have nearly all opened offices in Montreal, and it is expected that Montreal will continue to absorb the export trade from the Ottawa district. The prospects for favorable freighting facilities for phosphate are, therefore, very hopeful. It is also pleasing to remark that the unwise and foolish competition and antagonism heretofore existing among the Montreal phosphate shipping agents has been replaced by a spirit of co-operation and amity, and unnecessary expense has thus been avoided.

Prices opened rather weak, owing to trade depression in Europe and a large visible supply of low grade phosphates, but the price for 80 per cent. phosphate strengthened and was firm at the close. The lowest sales for 80 per cent. were made at 11½ for Ireland, which was equal

to less than 10½ in England, but the bulk of the deliveries in England were made on contracts at 1s. per unit. For Hamburg 12½d. to 13d. was obtained, and as high as 13½d. for a German outport. All these prices carried ½d. rise per unit over 80 per cent. For lower grades the prices were relatively lower, 9½d. for 75 per cent. and 8d. for 70 having been accepted, these grades being slow of sale owing to the competition of French phosphates of nearly equal quality that were of so soft a nature that they required no grinding.

THE FUTURE OUTLOOK for Canadian phosphate is favorable. 12½d. could be had now for 80 per cent. for next season, and there are some signs of a strengthening in the price for low grades. A sale of 600 tons ground phosphate has been concluded in Chicago at a price equal to about 17 cents per unit or \$10 per ton for 60 per cent. This affords an opening for the output of the mines which has not been utilized before and the increase of which will have a very beneficial effect upon the future of the industry. A good market for all the high grade phosphate that Canada can produce now seems assured. The extension of the field for low grade and pulverized phosphate and the introduction of suitable grinding machinery, with processes for separating impurities by a more effective and less expensive method than the present system of hand cobbing are the great desiderata, and it is cheering to know that on all these points there is great reason for encouragement. Several of our active and enterprising phosphate managers and agents are investigating and pushing diligently in all these directions with a combination of zeal and knowledge which is sure to be rewarded. Great interest is being excited in the use of the crude phosphate upon the soil and in the development of a home market which will largely increase the demand. The amicable spirit which, it has been remarked, exists between the Montreal shippers, is extending among the foreign selling agents. Heretofore the price of Canadian phosphate has often been unduly depressed by rivalry in effecting sales and by indiscriminate offerings of the same lots through various brokers, giving the impression that the supply was greatly in excess of the requirements. The business is now becoming concentrated and a better understanding exists as to its conduct. Altogether it may be said that the phosphate business of Canada is in a sound and healthful condition and a continuous and prosperous future seems to be assured to it.

#### Canadian Fertilizer Industry.

The only attempts so far made to utilize Canadian phosphate at home have been at the fertilizer factories in Brockville and Smith's Falls, Ontario. The factory at Smith's Falls was established originally for the manufacture of chemicals of various kinds, but a few years ago the production of fertilizers was tried as an experiment, and as a very good article was

made, with no adulterations, it got a good name and the demand has been steadily increasing. Mr. Brodie, B. Sc., a graduate of McGill College, has charge of the works which are controlled by Messrs. Brodie & Harvey, the well-known flour and milling firm in Montreal. Mr. Brodie states that he makes the sulphuric acid from pure sulphur. He gets rid of the hydrofluoric acid gas, which is produced by the action of the sulphuric acid on the apatite, by a simple arrangement of wooden chimneys, thus solving a difficulty which has embarrassed many persons in their first efforts to use Canadian phosphate. He makes a "complete fertilizer," that is, a mixture of the three principal ingredients of plant food, namely: phosphate, potash and ammonia. The demand is growing in a very encouraging manner, for when a farmer tries it once he generally comes back for more. Mr. Brodie says he could sell 1,000 tons the coming year if he could make it, but the factory is small and the facilities not very great.

There is evidently a large and extending field in this direction both for profit and usefulness. The soil of the older settled provinces of Canada has become impoverished by many years of cropping without replenishment, and districts that once yielded great stores of grain now only afford the scantiest pasturage. If one was animated only by patriotic and philanthropic zeal he could render no greater benefit to his country than to enter on a missionary crusade to enlighten the farmers as to the value of mineral manures; or if he likes to make his benevolence profitable to himself let him supply the article with which the farmer may prove the truth of his teachings. The establishment of fertilizer factories in Canada and the education of the farmer in the use of manures is a cause that invites the best attention both of the capitalist and of the Government.

#### Soluble and Insoluble Phosphate.

It is estimated that 400,000 tons of sulphuric acid 50° strength are used annually in the United States to convert insoluble phosphoric acid into soluble phosphoric acid, and that this quantity will be doubled during the next five years. Four hundred thousand tons of sulphuric acid at \$10 per ton is \$4,000,000, for cost of the acid (1,750 pounds being required for each ton of the South Carolina phosphate rock, the value of the acid is the larger of the two) to say nothing of the other expenses attending its use, the item of transportation alone being nearly doubled, adding largely to its cost to the farmer.

If soluble phosphoric acid immediately reverts to its original condition when applied to the soil, and it is so stated in bulletin No. 12 of the Maine Experimental Station, it seems to be a useless expense to use sulphuric acid when fine ground phosphates are equally available to plants at one quarter of the price.

It is estimated that there are 1,000,000 tons of fertilizers made annually of the value of \$30,000,000, thus adding by using sulphuric acid over one-half to their cost. This is not a small burden for the consumer to pay for lack of knowledge.

#### Ancient Mines and their Value.

H. B. Small, Ottawa.

It is a somewhat curious fact that in the search for mineral wealth and new mining localities, all recollection of the mines worked by the ancients should have comparatively passed away, and that in many instances the very sites of those mines have been forgotten. From the earliest pages of the Bible, where we read, "the gold of that land is good," reference is made to mineral resources, but the location is almost if not quite lost. Not long ago the writer read a work that casually fell into his hands, entitled "The Land of Midian," which described very fully researches made by Captain Burton in an almost unknown country, viz., the east coast of the Gulf of Akabah, one of the two narrow inlets in which the Red Sea terminates. Captain Moresby and Dr. Becke had been there before Burton, but until the visit of the latter it was practically unvisited and its shores unexplored. From its barren and rocky surroundings the population is scant, but there is abundant evidence of a former populous time. Ruins of large towns, not built of mud as the modern Arabian dwellings are, but of solid masonry, roads cut in the rock, aqueducts several miles long, and remains of artificial reservoirs, all point to former wealth. And this was due to the presence of minerals. Gold is there, silver, tin, antimony, and the auriferous quartz, just as in the Australia and California of to-day. Ancient mining works lie destroyed round every town ruin; heaps of scoriae still remain close to the mineral furnaces; there are mines for turquoise, and from the brief accounts of the country, the mineral wealth there is ten-fold that of the neighboring peninsular, where in a few deserted mines turquoise are still found. Yet this mining country is to-day unworked, whilst the new world to its northernmost limits is being scoured for fresh finds and fresh workings.

In Servia, in Central Europe, where the history of its mines embraces three periods, the Prehistoric, the Greek and the Roman, the old abandoned workings have quite recently been again occupied, and with every prospect of success. These mines under the Romans were worked for silver, lead and copper. Shafts and open quarries are frequently being discovered with the still standing ores, smelting furnaces, and enormous heaps of slag holding half refined ores and metals. These latter covered with ancient forests, continue well preserved. The smelting as then carried on was done by piling the ore between layers of wood in vast pyramids on the tops of the hills, and firing these in



windy weather. Half melted masses with charcoal and half burnt wood are found from time to time. These ore residues, it is said, would even now pan out well by re-treatment, as the slag still contains paying percentages of lead, rich in silver. An analysis recently made of this slag shows that the ores were first partially oxidised by roasting, and then reduced by smelting with pyrites. Calculations based on the amount of metal procured from the existing slag heaps, estimate the returns to have been 40 per cent of lead, 60 oz. of silver and 1 to 3 oz. of gold to the ton! Surely some of these ancient mines are worth looking after, and would be a better investment than many of the western "flats" or mining cities.

### The Canadian Iron Trade.

By James H. Bartlett, M.E., Montreal.

(Continued from last issue.)

A radius of ten miles from Stellarton would include the entire Pictou coal-field, four large collieries in active operation, producing over half a million tons of coal per annum, a coal particularly suitable in quality for the manufacture of coke and for iron working. Within this radius, too, would be included immense deposits of limestone, and five different varieties of iron-ore, with deposits of fire-clay and moulding-sand. It would take in Pictou harbor, the finest harbor on the south shore of the Gulf of St. Lawrence, with five loading and shipping wharves and piers, and over 75 miles of railway, radiating from Stellarton; and would also include the towns of Pictou, New Glasgow, Westville, Stellarton, and many villages and hamlets, aggregating over fifteen thousand inhabitants, together with a steel-works and forge, foundries, boiler and machine-shops, glass-works, saw-mills, stone-quarries, brick-yards, ship-yards, etc., some of the largest ships ever built in Canada having been launched from here.

The Cape Breton coal-fields are only 180 miles distant by sea. A railway to reach them is now in course of construction; another railway is building to the westward, which will reduce the distance from the Cumberland and Joggings coal-fields to 75 miles, instead of 112 miles as at present.

The Inspector of Mines for the Province of Nova Scotia, says in his last annual report: "It may be remarked that in Pictou County the conditions for making iron and steel cheaply are unsurpassed, as within a few miles are collected numerous iron-ores, fluxes, and good furnace-fuels, and there is railway and water communication with all parts of the Dominion."

In New Brunswick there is hematite iron-ore; in the county of Carleton ore and coal are to be found, and also in different districts of that Province. Bog-ore occurs in Queen's, Sunbury, York, Charlotte, Restigouche, and Northumberland Counties, in close proximity to the Intercolonial Railway.

The iron-ores in Quebec are magnetites, occurring more or less throughout the Laurentian range of mountains along the Ottawa river. At the Hull or Baldwin mines, west of the Gatineau River, the ore analyses 67 per cent. The Haycock mine ore ranges from 64 to 68 per cent. of metal; the Bristol mine 58 per cent. In Three Rivers and Drummondville there is bog iron-ore in abundance, and unlimited timber for making charcoal.

In the eastern district of Ontario, back of Kingston, Belleville, Trenton, and Cobourg, between Lake Ontario and the Ottawa River, in the townships of Marmora, Hastings Tudor, Bedford, Madoc, Wollaston, Palmerston, Bagot, Belmont, Darling, Barrie, Galway, Snowden, and many others, there is magnetic iron in abundance. This district is served by the Ontario and Quebec, Kingston and Pembroke railways, the Central Ontario, Cobourg and Peterboro', and Grand Trunk railways, and by the Rideau and Trent canals. There is plenty of timber all through this district. A surveyor who has explored through these districts, and away up 130 miles further, to the intersection of the Canadian Pacific Railway, assures me that not only was there an unlimited quantity of iron through that district, but that the forests along that line of communication could not be surpassed in any country in the world for the production of charcoal. There are also deposits of iron-ore in many other parts of the Province. In Manitoba there is iron-ore, and they have about 15,000 square miles underlaid with coal.

In the Northwest Provinces, the future great wheat-producing country of the continent, there are deposits of iron-ore reported, but the country is so vast no special explorations have been made for it. They are working large deposits of anthracite coal at Anthracite, N.W.T., of a quality which compares favorably with the best from Pennsylvania, and there are 500 square miles of this section. The climate of this country is cold, but 50,000 square miles of it is underlaid with coal of good quality, easily reached and worked, in seams estimated to yield from five to one million tons per square mile.

San Francisco is largely supplied with Nanaimo coal, and the blast furnaces in Oregon get most of their iron-ore from Texada Island in British Columbia. The eastern cities of Portland and Boston are supplied with some of their coal from Nova Scotia, and it would appear possible also to supply iron-ore to eastern furnaces from that Province.

### DISPOSITION OF THE GOVERNMENT.

There is at present an opening in Canada for the manufacture of iron. In the Canadian hand-book for the Colonial and Indian Exhibition, prepared under the direction of the Hon. John Carling, Minister of Agriculture, it is stated, "for a country having 11,000 miles of railway, with a weight of over a million tons of rails, and possessing for the manufacture of iron natural advantages which few, if any places in the world surpass, the development of Canada's iron industry is wonderfully slow. There appears to be a good field for skill, enterprise, and capital in connection with our iron industry."

Sir Charles Tupper has recently said in the Canadian Parliament: "Our present annual consumption is equivalent to 250,000 tons of pig-iron, leaving steel rails out of the question altogether. To make this quantity of pig-iron it requires 750,000 tons of iron-ore, 120,000 tons of limestone and 750,000 tons of coal to make it into iron in its first stage, pig-iron; and the freight required for the means of inter-communication in bringing these materials together amounts to not less than 1,625,000 tons. To manufacture it into puddled bars, merchant bars and the various shapes and sizes into which it is made, would require an additional quantity of 750,000 tons of coal, making a total consumption of 1,500,000."

On the ground that the development of the iron industry of Canada will tax the coal

industry of the country to its utmost capacity, in order to furnish the additional output that will be required, and with all the advantages connected with that increased development, Sir Charles Tupper was enabled to say to the House that, although making anthracite coal free will take \$197,000 away from the Government in revenue which it is now receiving, they would be perfectly justified in doing it, because the development of this iron-industry would be given to the coal-mining industry a greater advantage and boon than that which would be taken away by the removal of the duty.

The disposition of the Government is further shown by the liberal bounty already mentioned, which is given, in addition to the protection afforded by the tariff, to producers of iron from Canadian ores. This bounty is payable quarterly in money.

### THE CANADIAN COAL TRADE.

The growth and extent of the Canadian coal-trade will be seen from the following figures:

#### Total Consumption of Coal in the Dominion.

Year.	Net tons of 2,000 lbs.
1868	714,893
1869	636,704
1870	859,630
1871	852,217
1872	1,227,653
1873	1,338,403
1874	1,454,636
1875	1,362,363
1876	1,466,531
1877	1,751,031
1878	1,665,814
1879	1,748,164
1880	2,094,844
1881	2,260,630
1882	2,708,654
1883	3,085,659
1884	3,556,673
1885	3,439,745
1886	3,515,700

The total production of coal for the Dominion is shown in this table:

#### Total Production of Coal in the Dominion.

Year.	Net tons of 2,000 lbs.
1868	623,392
1869	687,527
1870	734,285
1871	804,431
1872	1,038,349
1873	1,228,852
1874	1,068,166
1875	998,104
1876	950,483
1877	1,020,875
1878	1,109,595
1879	1,152,783
1880	1,456,795
1881	1,514,542
1882	1,845,548
1883	1,831,819
1884	1,997,368
1885	1,973,987
1886	2,164,170

### APPENDIX.

The following is the new Canadian tariff on iron and steel, and articles manufactured from them (the percentages stated are *ad valorem*, and the tons are net tons of 2,000 pounds).

*Goods Subject to Duties*—Wrought scrap-iron and scrap-steel, being waste or refuse wrought-iron or steel that has been in actual use and is fit only to be manufactured, \$2 per ton; ferro-manganese, ferro-silicon, spiegel, steel bloom-ends, and crop-ends of steel rails, for the manufacture of steel, \$2 per ton; iron in pigs, iron kentledge and cast scrap iron, \$4 per ton; iron in slabs, blooms, loops, puddled bars, or other forms less finished than iron in bars, and more advanced than pig-iron, except castings, \$9 per ton; bar iron, rolled or hammered, comprising flats, rounds

and squares, and bars and shapes of rolled iron, not elsewhere specified, \$13 per ton; iron and steel wire, galvanized or not, No. 15 gauge and coarser, not elsewhere specified, 25 per cent. *ad valorem*; wire of spring-steel, coppered or tinned, No. 9 gauge or smaller, not elsewhere specified, 20 per cent.; boiler or other plate-iron, sheared or unsheared, skelp-iron, sheared or rolled in grooves, and sheet-iron, common or black, not thinner than No. 20 gauge, not elsewhere specified, including nail plate of iron or steel, No. 16 gauge and thicker, \$13 per ton; sheet-iron, common or black, smoothed or polished, and coated or galvanized, thinner than No. 20 gauge, Canada plates, and plates of iron or steel not less than 30 inches wide and not less than  $\frac{1}{4}$  in. in thickness, 12 $\frac{1}{2}$  per cent.; hoop or band or scroll or other iron, 8 in. or less in width, and not thinner than No. 20 gauge, \$13 per ton; hoop or band or scroll or other iron, 8 in. or less in width and thinner than No. 20 gauge, 12 $\frac{1}{2}$  per cent.; railway fish-plates, \$12 per ton; rolled iron or steel angles, channels, structural shapes and special sections, weighing less than 25 pounds per linear yard, not elsewhere specified,  $\frac{1}{2}$  cent per pound and 10 per cent.; rolled iron or steel beams, girders, joists, angles, channels, structural shapes, and special sections, weighing not less than 25 pounds per linear yard, 12 $\frac{1}{2}$  per cent.; rolled iron or steel beams, girders, joists, channels, eye-bar blanks made by the Kloman process, together with all other structural shapes of rolled iron or steel, including rolled iron or steel bridge plate not less than  $\frac{3}{8}$  in. thick, nor less than 15 in. wide, when imported by manufacturers of bridges for use exclusively in the manufacture of iron and steel bridges, 12 $\frac{1}{2}$  per cent. *ad valorem*; iron bridges and structural iron-work, 1 $\frac{1}{4}$  cent per pound, provided that the duty shall not be less than 35 per cent.; forgings of iron and steel, or forged iron of whatever shape or in whatever stage of manufacture, not elsewhere specified, 1 $\frac{1}{2}$  cent per pound, provided that the duty shall not be less than 35 per cent.; steel ingots, cogged ingots, blooms and slabs, by whatever process made, billets and bars, bands, hoops, strips and sheets of all gauges and widths, all of above classes of steel not elsewhere provided for, valued at 4 cents or less per pound, 30 per cent.; but not less than \$12 per ton, except ingots, cogged ingots, blooms and slabs upon which the specific duty shall be not less than \$8 per ton; when of greater value than 4 cents per pound, 12 $\frac{1}{2}$  per cent.; plate of iron and steel combined, and steel not specially enumerated or provided for 30 per cent.; (*provided*, that on all iron and steel bars, rods, strips or steel sheets, of whatever shape, and on all iron or steel bars of irregular shape or section, cold-rolled, cold-hammered or polished in any way in addition to the ordinary process of hot rolling or hammering, there shall be paid  $\frac{1}{2}$  cent per pound in addition to the rates imposed on the said materials, and *provided further*, that all metal produced from iron or its ores, which is cast and malleable, of whatever description or form, without regard to the percentage of carbon contained therein, whether produced by cementation, or converted, cast or made from iron or its ores by the crucible, Bessemer, pneumatic, Thomas Gilchrist basic, Siemens-Martin or open hearth process, or by the equivalent of either, or by the combination of two or more of the processes or their equivalents, or by any fusion or other process which produces from iron or its ores a metal either granulous or fibrous in structure, which is cast and malleable, except what is known as malleable iron castings, shall be classed and

denominated as steel, and *provided further*, that all articles rated as iron or manufacture of iron, shall be chargeable with the same rate of duty if made of steel, or of steel and iron combined, unless otherwise specially provided for); malleable iron castings, and steel castings not elsewhere specified, \$25 per ton, provided the duty shall not be less than 30 per cent.; cast-iron vessels, plates, stove-plates and iron, sad-irons, hatters' irons, tailors' irons and casting of irons not elsewhere specified, \$16 per ton, provided the duty shall not be less than 30 per cent., cast-iron pipe of every description, \$12 per ton, provided that the duty shall not be less than 35 per cent.; axles and springs of iron or steel, parts thereof, axle-bars, axle-blanks or forgings for carriages other than railway and tramway vehicles, without reference to the stage of manufacture, 1 cent per pound and 30 per cent.; iron or steel car-axles, parts thereof, axle-blanks or forgings for axles, and car-springs of all kinds, and all other springs not elsewhere specified, without reference to the stage of manufacture, \$30 per ton, but not less than 35 per cent.; fire engines, 35 per cent.; locomotives and other steam-engines, boilers and machinery composed wholly or in part of iron or steel, not elsewhere specified, 30 per cent.; (*provided*, that any locomotive which with its tender weighs 30 tons over, shall pay a duty of not less than \$2,000; portable machines, portable steam engines, threshers and separators, horse-powers, portable saw mills and planing mills, and parts thereof in any stage of manufacture, 35 per cent.; boiler tubes of wrought iron or steel, 15 per cent.; tubes not welded, nor more than 1 $\frac{1}{2}$  in. in diameter, of rolled steel, 15 per cent.; lap-welded iron tubing, threaded and coupled or not, 1 $\frac{1}{2}$  in. in diameter and over, but not over 2 in., for use exclusively in artesian wells, petroleum pipe-lines and for petroleum refineries, 20 per cent.; wrought iron tubing, threaded and coupled or not, over 2 in. in diameter, 15 per cent.; other wrought iron tubes or pipes  $\frac{3}{8}$  cent per pound and 30 per cent.; safes, doors for safes and vaults, scales, balances and weighing beams of iron or steel, 35 per cent.; skates, 20 cents per pair and 30 per cent.; wire rope of iron or steel, not otherwise provided for, 25 per cent.; screws, commonly called "wood screws," 2 in. or over in length, 6 cents per lb.; one inch and less than 2 in., 8 cents per lb.; less than one inch, 11 cents per lb.; builders', cabinet makers' and carriage hardware and locks, tinmiths' tools and harness makers' and saddlers' hardware, including curry combs, 35 per cent.; muskets, rifles and other firearms, and surgical instruments, 20 per cent.; iron or steel rivets, bolts with or without threads, or nut or bolt-blanks, less than  $\frac{3}{8}$  in. in diameter, 1 $\frac{1}{2}$  cent per lb. and 30 per cent.; nails and spikes, wrought and pressed, galvanized or not, horse shoe nails, hob nails and wire nails and all other wrought iron or steel nails, not elsewhere specified, and horse, mule, or ox shoes, 1 $\frac{1}{2}$  cent per lb., but not less than 35 per cent.; cut tacks, brads or sprigs, not exceeding 16 ounces to the thousand, 2 cents per thousand; exceeding 16 ounces to the thousand, 2 cents per lb.; wrought iron or steel nuts and washers, iron or steel rivets, bolts with or without threads or nut and bolt-blanks, and finished hinges or hinge-blanks, not elsewhere specified, 1 cent per lb. and 25 per cent.; cut nails and spikes of iron or steel, 1 cent per lb.; Swedish rolled iron nail rods, under  $\frac{1}{4}$  in. in diameter, for manufacture of horse shoe nails, 20 per cent.; iron or steel railway bars and rails for railways and tramways, of any form, punched or not punched, not elsewhere specified, \$6 per

to. manufactures, articles or wares not specially enumerated or provided for, composed wholly or in part of iron or steel, and whether partly or wholly manufactured, 30 per cent.; screws, of iron, steel, brass or other metal, not otherwise provided for, 35 per cent.; sewing machines whole, or heads or parts of heads of sewing machines, \$3 each and 20 per cent.; axes of all kinds, adzes, hatchets and hammers not elsewhere specified, 35 per cent.; chopping axes, \$2 per doz., and 10 per cent.; garden rakes, two and three-pronged forks of all kinds, and hoes, 5 cents each and 25 per cent.; hay knives and four, five, and six-pronged forks of all kinds, \$2 per doz., and 20 per cent.; mowing machines, self-binding harvesters, harvesters without binders, binding attachments, reapers, sulky and walking ploughs, and all other agricultural machines and implements, not otherwise provided for, 35 per cent.; picks, mattocks, blacksmiths' hammers, sledges, track tools, wedges and crow bars of iron or steel, 1 cent per lb., and 25 per cent.; shovels and spades, and shovel and spade blanks, \$1 per doz., and 25 per cent.

*Free Goods.*—The following articles may be imported into Canada or taken out of warehouse for consumption free of duty:

Articles imported by and for the use of the Dominion Government or any of the departments thereof, or by and for the Senate or House of Commons, including arms, military clothing, musical instruments for bands, military stores, and munitions of war, imported by and for the use of the Army and Navy; or imported by the Dominion Government or through any of the departments thereof for the use of the Canadian militia; fire-brick, for use exclusively in processes of manufactures; anthracite coal; gannister; iron or steel rolled round wire rods under  $\frac{1}{2}$  in. in diameter, when imported by wire manufacturers for use in their factories; locomotive tires of steel in the rough; rolled rods of steel under  $\frac{1}{2}$  in. in diameter or under  $\frac{1}{2}$  in. square, when imported by knob or lock manufacturers or cutlers for use exclusively in such manufactures in their own factories; steel rails, weighing not less than 25 pounds per linear yard, for use in railway tracks; steel valued at 2 $\frac{1}{2}$  cents per pound and upwards for use in the manufacture of skates; scrap iron and scrap steel, old and fit only to be re-manufactured, being part of or recovered from any vessel wrecked in waters subject to the jurisdiction of Canada; steel bowls for cream separators; steel for the manufacture of files, when imported by file manufacturers for use in their factories; wire of iron or steel, galvanized or tinned, No. 16 gauge or smaller.

The foregoing act went into force on the 13th May, 1887, and applied to all goods imported or taken out of warehouse for consumption on or after the said day; but all goods actually purchased on or before May 13th at any place out of Canada, for importation into Canada, on evidence to the satisfaction of the Minister of Customs of the purchase having been so made, and all goods in warehouse in Canada on that day, could be entered for duty until July 1st, or in the case of goods, at the rate of duty in force immediately previous. From the United Kingdom or any British possession, carried by way of Cape Horn, to be entered in British Columbia until November 1st, 1887.

It is reported that Chief Justice Henry, of Ottawa, has again opened up his gold property in the Wine Harbour district, Nova Scotia. This mine has yielded good returns in the past.

## The Phosphate Beds of South Carolina.

Mr. Frederick Stearns, Charleston, S. C. writes\* : "A short journey of fifty miles by the South Carolina Railroad brought me via Summerville (the centre of the recent earthquake action) to Lamb's, a private station on the Ashley River, where the works of the Charlestown Mining and Manufacturing Company are situated, and through the courtesy of Col. Joseph A. Yates, superintendent, and his assistant, Mr. W. M. Wallace, I was enabled to study the deposits of phosphatic rock which underlies or rather overlies this whole region, and as well to note the process of mining, washing, drying and preparing it for use. The whole coast region seems to have once been the bed of a shallow inland sea, and over a compact bed of marl, some forty or more feet in depth there lies a deposit of phosphate of lime from eighteen to thirty-six inches thick. This is just below the recent soil and sand. It is reached by ripping the surface till at a depth of fifteen to twenty inches the deposit is found. The phosphate is in the form of nodular concretions, from the size of one's head down to coarse gravel, about sixty per cent. of it being sand and marshy humus. This is loaded on to tramway cars and hauled on an inclined road to the top of the washing house. From the cars it is dumped into long troughs—inveted pyramids—at the bottom of which are large revolving shafts armed with steel teeth, which serve to break up the large lumps into smaller ones and return the whole into lower troughs, in which revolve other shafts armed with paddles, spirally arranged, to carry the phosphate forward and deliver it on to a screen inclined at an angle of 45 degrees, from which it falls to the floor. During all this time it is treated with sprays of water and the dirt and sand are borne off in a contrary direction by a suitable reverse slant in the troughs.

The damp, but clean, phosphatic rock is then shoveled into barrows and wheeled into the upper part of large brick kilns about 60x100 feet and twenty-five feet high. The kiln is first prepared by spreading on the bottom a layer of washed phosphate pebbles, two feet thick. In this are laid iron flues to give air, and over these a pile of firewood (southern pine) two feet thick, and then on this the phosphatic rock is tumbled from the barrows above until it reaches ten to twelve feet thick, about 400 tons to a kiln. The mass then being ignited from the flues, burns slowly, and when consumed the moisture of the pile is driven off, and the rock is ready for shipment and sale to the fertilizer establishments, which, by processes peculiar to each, treat it with sulphuric acid; to free or to make more soluble the phosphoric acid it contains. It is then ready for use by the planter.

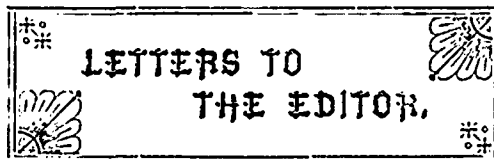
The two establishments operated by this company produce 125,000 tons of the rock annually. The profit is somewhere about 20 per cent. on the capital invested. The limit of production is only bound by the demand. The price ranges from \$7 per ton to (now) about \$4 per ton. Analysis of the washed rock show : Dirt, one to three per cent.; silica, in form of coarse white sand, twelve to fifteen per cent.; lime forty-one per cent.; phosphoric acid, twenty-seven to thirty per cent. The color of this curious deposit is from a cream yellow to a coarse brown orange, forming irregular concretions. Its source is evidently from the marine animal life, which in former geological ages abounded in this then shallow sea. The fossilized vertebra and teeth of fish and some

animals abound in it. I gathered triangular teeth of sharks measuring four inches on each size, indicating monsters of that period that must have been whalelike in size. These teeth are as perfect as when shed, highly polished, with razor-like sharp edges, finely serrated.

The discovery and development of these riches occurred soon after the war and afforded the impoverished people a source of income, and wealth that proved to be more valuable than gold mines.

Negro laborers are employed entirely and are found of late years tractable, industrious, and work to the entire satisfaction of their employers when treated justly and with consideration.

There are seven large mines in this region; the output of which goes largely to Europe. Other deposits are under water and are dredged for, but otherwise are treated as are those of dry diggings.



### The Megantic Mining Company.

MONTREAL, December 5th, 1887.

The Editor

THE CANADIAN MINING REVIEW.

SIR,—I notice in the November issue of your Journal, an exhaustive report upon the Asbestos industry of Canada, by Dr. R. W. Ellis of the Geological Survey, of Canada and as this very important branch of trade has lately received a great impetus, owing to the increased demand for this valuable product, which now enters so largely into the manufacture of certain classes of goods. I take pleasure in submitting some additional information which may be of interest to your numerous patrons.

During the time which has elapsed since Dr. Ellis' made his report, marked progress has been made in the development of several of the locations to which allusion has been made, and large quantities of Asbestos have been shipped to the United States, Germany and other foreign ports.

The Megantic Mining Company's Mine, one mile from Coleraine, which a year ago was only a mere prospect, has recently developed into a very rich property, and may be classed to-day as one of the most valuable of its kind in Canada. Judging from the innumerable veins of Asbestos, now in sight, ranging from one-half inch to three inches, and taking into account the large quantity which has been extracted and shipped, while prosecuting the work of development, leaves no doubt in the mind of any one who has seen the property, as to the great future that may be confidently anticipated for it. The company has pushed forward the work of development with great rapidity, and to facilitate the removal of the earth and rock they have laid down 668 feet of tracks, from the extreme ends of dumps. They have also opened a road from the mine to Coleraine Station, a distance of one mile and a quarter, the greater portion of which will in the future, be kept in good condition by the county, as it now forms part of a new road opened from New Ireland to Coleraine Station.

There are some very important features as to the quality of Asbestos found on this property, which deserve special mention, viz : the extreme

fineness of the fibre, which is equal to that of the finest silk, while its length makes it more valuable for spinning purposes. These desirable qualities will add materially to the value of the Canadian Asbestos when placed in competition with Italian, and largely increase the output, by securing for our product the preference, in point of excellence, as long, fine fibres command a more ready sale, at a greatly increased price over the inferior grades. The mines east of Coleraine have produced a quality of Asbestos, which has already gained a high reputation abroad, and the more recent magnificent discovery at Coleraine, places Canada in a position to compete against the world.

Great credit is due to the management of the Megantic Mining Company for the spirit of enterprise which they have exhibited in developing this important industry. They have had a large staff employed during the past season, and owing to their indefatigable efforts and the distribution of money among the labouring classes, a small village has sprung up at Coleraine, and not the least conspicuous of the many cottages is the neat and substantial looking residence of Mr. J. S. Drysdale, the Superintendent of the company, which is also used as their offices.

Yours very truly,

G. W. GRANT.

## Alleged Conspiracy to Defraud the Tumbo Coal Mining Company.

Much excitement has been created in Victoria, B. C., over the arrest of W. G. Campbell, who represents himself as a mining expert, and Geo. Kennedy of the Brunswick hotel, on a charge of conspiring to defraud the Tumbo Coal Mining Company. It is stated that the prisoners received nearly \$8,000 under false pretences.

Our space this month is too limited to admit of anything like a detailed account of the proceedings in the Police Court; but the following is a brief *resumé* of the principal evidence adduced so far :—

Chas. Gabriel, sworn, said :—Am a merchant; know the defendants; became acquainted with them in this way: Sometime about November or December last year, Mr. Olsen brought Mr. Kennedy to my store, and they informed me that they had discovered on Tumbo island croppings of coal, samples of which they showed me; after a long talk with them about the quality and quantity of the coal, I told them I would look into the matter and if there was anything in it I would get help to develop the mine. I then got Mr. Dennis Harris to go in with me to furnish the capital, in consideration that Olsen and Kennedy would give us half of the mine, to which they both agreed. Soon after that Mr. W. Lang and Mr. Olsen brought Mr. Campbell to my house on Sunday and represented him to be a coal expert. Mr. Campbell said he and Mr. Kennedy had discovered the coal and he would like me to send him up to look at it; I informed him that I had already sent some Japanese up there, when he informed me that no one but an expert like himself could give a report; he was also an assayer and could give a good report as to the quality of the coal. I told him I did not need his services. Some days afterwards Mr. Olsen brought me a piece of paper to my store, telling me it was the report of an assay made by Mr. Campbell, on the coal; I believe Kennedy was with Olsen when the assay was shown to me: I then told them that I would like to see Mr. Campbell, and when he came I asked him what was his opinion on the assay he had handed to some gentlemen; he informed me that it could not be better (Mr. Olsen and Mr. Kennedy were present). Witness told Kennedy as he had such a good opinion of the mine, if he was willing to help us develop and report on it, we would make him a partner, giving him one-sixth interest in the mine; he then told me that he would not accept those terms, as he was engaged by Mr. Sanders and others to go up and report on some anthracite coal which had been discovered, but he would go up there and report on the mine, if he had time, before the Boscowitz sailed for the north; a few days after he came to the store and asked me how much I would give him if he would go and make a report; told



him that we had decided not to send anyone there unless he would take a share in payment; he went away, but came back a few days after, and I asked Kennedy and Olsen if they were willing to give Campbell a part of their share; Campbell informed me that the parties who were to send him up north were not ready, and he would accept one-sixth share in the mine as payment for prospecting the mine; he said that he was sent up here expressly by capitalists of San Francisco, who represented thousands and millions of dollars, to look after coal and other minerals, and that on his report two men in San Francisco would invest any amount; he said the same thing in the presence of Mr. Sayward; Mr. Sayward and I then signed the agreement and sent him up on the steamer Hope, which we chartered. Mr. Kennedy, Mr. Olsen and I accompanied him. After Campbell had inspected the island, he then informed me that he was satisfied as to the value of the property; he was in company with Kennedy all the time we were on the island; I was alone on the beach, when Campbell came to me and said that the company was very foolish to give Kennedy and Olsen so much out of the mine as their share, which was half of the mine, they supplying no capital; they would find no man to give us what we were giving them; he would advise the company to buy them out and get the mine to ourselves; when we reached the steamer coming back to Victoria, I asked Campbell how much he thought it would be fair to give to Kennedy and Olsen; he told me \$10,000 would be a fair price for their share, as the property was worth not less than \$25,000, without touching a stone on it. I then asked him if he had told Kennedy the value of the mine, and he said no, as he was not employed by him but by the company; he would give no information to Olsen or Kennedy as to his report, and when he handed that in the company could do what they liked with it. He gave me to understand that he would keep his knowledge of the value of the mine from Olsen and Kennedy. About a week after our return Campbell, Kennedy and Olsen came to my store several times, and Kennedy seems to have been annoyed at me for keeping what Campbell said to me about the mine, and said that he did not think much of Campbell because he would not give him the information contained in the report; Campbell came after and said that Kennedy had insulted him and treated him shamefully for not telling him and Olsen his opinion of the mine; they were not on speaking terms, but he (Campbell) did not care for Kennedy so long as he was working in the interest of the company; a few days after Kennedy and Campbell were in the store, but they would not speak to one another; the latter brought his report and I asked him whether Kennedy or Olsen knew the nature of it and he said no; the company, composed of W. P. Sayward, T. B. Hall and myself, held a meeting; Campbell was present and so was Kennedy, but they were to all appearances bitter enemies; Campbell said that the mine was worth \$25,000 and advised the company, known as the Tumbo Island Coal Company, to buy Kennedy and Olsen out for \$10,000; on his representation we made arrangements to purchase the share of Kennedy and Olsen for \$7,500, to be paid by note for \$5,000 and \$2,500 after; we subsequently paid \$3,750 in cash, less \$100 for discount; the balance of \$1,250 was placed to the credit of Mr. Olsen; he has received it by several payments. Kennedy's interest in the mine ceased when we paid the \$3,750, as he said he wanted to go to the Alaska mine with two of his friends; he never left the city, and after several meetings of the company with Campbell as to the development of the mine, we sent him up to the island to make a survey as to where we could sink a shaft; he came back with a man named Isaac Tatton, who lives on the island, and informed the company that where the shaft was to be sunk was on Mr. Tatton's land, and that he had refused to allow the company to sink a shaft there unless they paid for it, and that he had brought Tatton down with him, so that the company could make their arrangements with him. I asked him whether we could not dig the shaft on our own land, and if we did, would it not cost less. Campbell advised us strongly to give \$500, which he said Tatton demanded; if the company did not do so it would cost them a very large amount of money; we were under the impression up to that time that we could prospect on any part of the island; after some time the company agreed to pay Tatton the \$500; I told him to call at my store and I would give him a check; he did so, and I handed him a check on the Bank of B. N. A.; when I left the meeting I left Tatton and Campbell in Mr. Sayward's office; about a couple of weeks ago I had occasion to go to Tumbo Island, and, in consequence of what I heard from Mr. Tatton, I brought him to Victoria; after we got here I saw Mr. Sayward and Mr. Hall and they advised me to take Tatton to Mr. Mills; after this I saw Mr. Olsen and took him to Mr. Mills' office, where he made a declaration; I took the same course with Mr. Lang; Mr. Campbell informed Mr. Sayward and myself that he was in correspondence with a Mr. Pearce, in England, and he was coming out to ne-

gotiate for the mine; he showed us a letter which he said he had received from Mr. Pearce, and that he was to go to Port Townsend to meet him and take him to Tumbo Island; Campbell wanted us to send a boat to the island, and as we had an occasion to send a man there, we sent Kennedy; Kennedy told me that Campbell had arranged with him to take the boat from Tumbo Island to Orcas Island. Campbell told us that Mr. Pearce and he waited two days on Oscar Island, and that Kennedy never brought the boat there and Mr. Pearce had to return. Kennedy brought a bill for his services and charged \$3.50 per day. Campbell brought a bill for the expenses of himself and Mr. Pearce.

Cross-examined—On Mr. Campbell's report we were to sink 350 or 400 feet; we have gone down 20 or 24 feet. Campbell has not received money for his services, but for his expenses; am on bad terms with Campbell; slapped his face just before I went to Tumbo.

B. Olsen sworn, deposed as follows: Know Kennedy and Campbell, the prisoners; the former was watchman on board the ship *Rosenfeld*; she was wrecked opposite Tumbo Island; I was on the island for water and provisions and got well acquainted there; the time we discovered the coal we were fishing; there was no one except Kennedy and myself on the ship; we discovered the coal about six or eight feet from the water's edge; we went for days and days after that, following the ledge up for over half a mile; came to Victoria and told that we had struck a pretty good thing; spoke to Mr. Gabriel first; Kennedy was not with me and he did not know I was going to Gabriel; the latter made the remark that I need not go to Mr. Dunsmuir, as he could find money; called on Mr. Harris, of Lowenberg, Harris & Co.; made arrangements with him and Mr. Gabriel whereby they were to take half of the mine and keep it in order; had not seen Campbell; got acquainted with him in the Grand Pacific Hotel and had a conversation with him; he acted as though he wished to buy from me; Campbell told me I was very foolish to have anything to do with Mr. Harris and Mr. Gabriel. After Campbell came down from the Island, he said there was nothing there. He came up to my house one time with Kennedy and was very down on me, because I would not stick up for every cent of the money and give half to Campbell; the latter said he would give a good report because he wanted to make money on me and on the company; they threatened to kill me if I would not do as they wanted me to do. Campbell said to Kennedy in my presence that he would make a bogus report to the company; I do not know who sent Campbell to make a report, that is the company's business; Campbell and Kennedy would tell me nothing; have received money from the company; kept the money myself; Campbell and Kennedy wanted me to do as the latter had done, take all my money from Gabriel and divide with Campbell.

B. Olsen (recalled)—After the conversation, Campbell said he had made \$5,000 out of the business and would make \$5,000 more; it was like the snap of my finger. Campbell and Kennedy came to my house after and were angry with me; I got excited; they said I was a rascal; after Campbell got the money he told me there was no coal on Tumbo island.

Wallace Lang, sworn, said: Am a carpenter; formerly boarded at the Grand Pacific hotel; that was about last March; am slightly acquainted with a man named Dick; remember seeing him and Olsen; they were talking in the hotel and beckoned me to come over; Mr. Campbell was not there, nor did he come that day; he may have been in the hotel the next week; Campbell, Olsen and myself were together and Olsen wished Campbell to see Mr. Dennis R. Harris and Mr. Gabriel; took a walk to Mr. Harris' residence, but he was out, whereupon we went to Mr. Gabriel's house and he informed us that he had had some Japanese on the island and was perfectly satisfied with their report; Mr. Olsen wished Campbell to look at the coal and give him an analysis of it and about a week after Olsen came to me at the hotel with a box of specimens; he did not know where Campbell lives and I showed him the house; when we got there, the latter looked at the specimens and said he would make an analysis, which Olsen could get in a few days; the company some time after this wanted to have an inspection of the island and Mr. Campbell, Mr. Kennedy, Mr. Gabriel and myself went up on the steamer Hope; that was on a Sunday; some time after that Olsen and I went to Mr. Campbell's house and he said the indications were good; previous to that, however, I heard him say that the mine was not of much account, although he said the croppings looked well; he told Olsen that he would have a good chance to sell and that he would make a good report; Kennedy was not present at the time; sometime after the sale was made—

Mr. Drake—Ah! how do you know about that?

Witness—Because Olsen told me he had to give a certain percentage to Mr. Campbell. I told him to keep his money in his pocket; went to Campbell's house, but

the conversation between him and Olsen was over when I got there; one thing I remember, though, is that Campbell said it was a cheap prospect; I afterwards went to Campbell's house with Kennedy and Olsen; we did not speak of the mine then, but on another occasion I had a piece of ore and Campbell said he would make a good report and have a chance to sell the mine; have seen Campbell and Olsen together four or five times; Campbell seemed very much pleased; Campbell and I did not continue on very good terms; we passed each other two or three times without speaking; remember going to Campbell's house when Olsen and Kennedy were there; there was not a friendly feeling existing towards me; remember Campbell saying after the return from Tumbo Island that the mine was not worth twenty cents; never heard him say that in the presence of Olsen; Campbell told me he was a mining engineer; he had good credentials, and as one of the Crocker family called upon him took him to be a *bona fide* engineer; neither Mr. Kennedy nor Mr. Campbell made a proposition to pay me any money at any time.

To the Court—Was promised an interest.

To Mr. Mills—It amounted to 1-12 interest in the mine

Mr. Mills—Did Campbell ever tell you he had an interest in the mine?

Witness—No.

Mr. Mills—Well, if he didn't how could he give you an interest in the mine? Why don't you tell me the truth about this when I ask you?

His Honor—Was it under any agreement that Campbell promised you the interest?

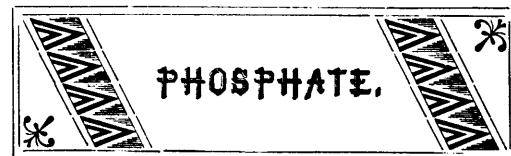
Witness—It was, as I had been the means of bringing Olsen to him.

To Mr. Mills—Spoke to Mr. Gabriel about the share I was to receive; yes, I was a little anxious about it; Campbell did not mention a price.

W. P. Sayward, sworn—I was introduced to Mr. Campbell by Mr. Gabriel, who said that he was an engineer; we wanted to know what Mr. Campbell would go the island for and I think he said he would go for \$50; this proposition was afterwards withdrawn and in lieu of it he was to get one-sixth share in the mine, to continue as mining engineer and make a report accordingly; he went up there and when he came back said the indications were as good as he had seen in any other coal mine; he said we were giving Kennedy and Olsen too much (that was one-half interest for working the mine) and thought it would be much more profitable for us to buy them out; he said he considered the property, as it stood, worth \$25,000 and by sinking and developing it he could get a large sum of money for it; he also thought if we could buy Kennedy and Olsen's half interest for \$10,000 it would be cheap enough; a bargain was finally made between Mr. Gabriel and Olsen and Kennedy for \$7,500, and one-half that money was paid to Mr. Kennedy; Campbell told me that Kennedy was offended with him and they were not on speaking terms, and gave a reason, but I do not remember what it was; he said that on more than one occasion, and he did not want to negotiate with Kennedy; this conversation took place after the return from Tumbo Island; Campbell said he was in correspondence with a man named Mr. Pearce, of London, who represented large capitalists; he said he went to Port Townsend to meet him and take him to Tumbo Island, but that the weather was so bad they got no farther than Orcas Island; the arrangements whereby Mr. Campbell and Mr. Pearce were to get to Tumbo Island were made with Mr. Gabriel; remember Isaac Tatton coming down to my office with regard to the \$500.

To the Court—Went up to Tumbo Island last December, but it was so wet that I could tell nothing about it; relied upon Campbell's judgment entirely; often had a talk with Mr. Kennedy.

The Court then adjourned.



#### In General.

Mr. F. S. Shirley, New Bedford, Mass., informs us that an horticulturalist of his acquaintance has tried ground phosphate in its raw state upon some of his plants with very encouraging results. A small quantity was mixed with the earth in the pots, and the difference in the growth of the plants compared with those not so treated has been very marked. Being cleanly and odorless ground phosphate, seems especially adapted for house plants.

Phosphate shipments from Montreal to November 23rd, 1887:—

Date.	Shippers.	Ship.	Destina- tion.	Tons
Nov. 16	Lomer, Rohr & Co.	s.s. Concordia	Glasgow.	118
" 16	Millar & Co.	s.s. Lake Ont.	Liverpool.	112
" 16	Wilson & Green	do	do	156
" 18	Lomer, Rohr & Co.	s.s. Montreal	do	200
" 19	"	s.s. Lakeluron	do	200
" 19	Gillespie-Paterson	do	do	141
" 22	Wilson & Green	do	do	132
Nov. 23	"	s.s. Scotland	U. K. via N. Orleans	195
" 22	Lomer, Rohr & Co.	do	do	200
" 23	Millar & Co.	s.s. Karie	do	40
" 23	Wilson & Green	do	do	96
Total...				1,590

Mr. Adolph Lomer, of Messrs. Lomer, Rohr & Co., of Montreal, sailed for England on the 26th ulto., on a business visit to England and Germany. This firm were the largest shippers of phosphate this year, having handled the production of the Emerald, Dominion and McLaurin & Blackburn's mines, their total shipments aggregating 8,744 tons.

Mr. F. Hilton Green, of Messrs. Wilson & Green of Montreal, sails for England on the 22d inst. This firm were the second largest shippers, being agents for the mines of the Phosphate of Lime Co., Capt. Boyd Smith and Mr. W. A. Allan. They exported 7,468 tons.

The Anglo-Canadian Phosphate Co. rank third, with an export of 2,025 tons, besides local sales, and Messrs. Millar & Co., who ship for the Union Mine, come fourth with a shipment of 1,267 tons, besides 287 tons sent to the United States.

**Du Lievre District.**

A visitor from the Emerald Mine reports that three new magnificent leads have been struck and that the older workings are doing very well. A bright green phosphate is being produced that makes a fine appearance and will give high analyses.

A vein of silicate of magnesia or mountain cork has also been found on this property. It is of the same family as asbestos and meerschau and the men have been whittling pipes out of it. It is pure white in color, very light in weight and unbreakable by a fall. The discovery has excited much interest and the material is thought to be valuable.

The old cobbing house at No. 11 pit, High Rock mine, has been superseded by a new and more commodious structure 60x30. Inside have been placed two large circular screens or sieves through which all the ore passes, and by which the cobbing, formerly done by hand, is greatly facilitated. Twice the quantity is now handled in less than half the time taken by the old process.

No. 11 pit, or more correctly speaking, tunnel, running 250 feet into the hill on a 300 ft. level, and widening out at the end to a distance of 225 ft., is as rich as ever. Four air-drills are at work, and about 450 tons per month are being raised from it. The other pits on the top of the hill are all turning out satisfactorily. 140 men are employed, and after Christmas vacation the management contemplate putting on a full night shift in No. 11. The drills will be worked night and day, and the number of hands will be increased.

Mr. W. W. Pickford has had three men prospecting for a couple of months on what is known as the Portland East mine, located near the Emerald property and owned by the High Rock Company. A very promising show has been found, which Mr. Pickford will work in the Spring.

Through an unfortunate typographical error in our last issue, it was stated that the new cobbing house at this mine was the tenth on the property. There are out three cobbing houses.

Some very promising shows have been opened on the Little Rapids property since our last. Work is carried on briskly, although with a very much reduced staff.

Despite the somewhat unfavorable nature of the weather of late, good progress has been made with the construction of the new Locks.

The ice which gave promise of being so good for travelling, has been rendered very unsafe by the soft weather and hauling has been much impeded thereby.

The Union and North Star are going ahead much as usual, but there is nothing special to report.

It is understood that during Christmas week operations will be generally suspended throughout the district.

**Perth District.**

The Anglo Canadian Phosphate Co. have had encouraging success at the Otty Lake Mines the past month, having struck a seam of good phosphate six feet in width. The output for November was 129 tons, with only about 20 men employed.

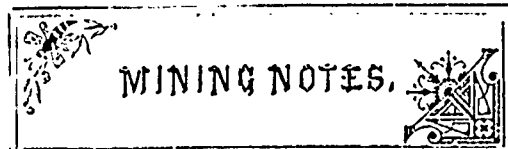
**Templeton District.**

The outlook of the Templeton and Blanche River Company of Montreal is reported encouraging. Up to the 28th of last month at least 250 tons of high grade ore have been taken out of the various pits. The Perkin's pit has been cleaned out, an excellent tramway built, two dumping wagons constructed, a first-class derrick and a comfortable cobbing house erected in connection therewith, and the pit, generally, made ready for effective winter work. Mining was begun there on Saturday the 28th ultimo, and the result has been very gratifying—four tons of the highest class mineral being the result of the first day's operations. If this pit continues productive the necessity of adding steam will have to be faced in about 30 days; and in any case, if the property is to be operated effectively, steam appliances should be brought in some time during the winter, the summer roads being impracticable for that purpose. The pits already opened are numbered 1, 2, 3, 4, 5, 6, 7, and the Perkin's pit, eight in all. Of these, 2 and 5 have temporarily given out; No. 7 and the Perkin's are being worked effectively and 1, 3, 4, and 6 still show good veins and may be taken up at any time; No. 1 has a solid floor of phosphate and is in a very advantageous position for winter work. A winter road has been constructed from the mines to the foot of Post's Hill, cutting off about 1 1/4 miles of distance and several heavy rises, and hauling to the front will commence as soon as the Lakes and swamps are sufficiently strong to carry, which will be about the beginning of January.

The only other mine at present doing any work is that of Messrs. McLaurin & Blackburn,

who are carrying on operations with a very reduced staff. Mr. McLaurin has severed his connection with the property.

Work has been suspended for the winter at the mines of the Canada Industrial Co., Mr. Jackson Rae and Messrs. Gillespie & Patterson.



**Newfoundland.**

A lot of specimens of magnetic iron ore from Sandy Point, St. George's Bay, has reached St. Johns en route for England. The deposit is said to be very extensive, the ore cropping out on the face of the hill, running with well defined walls clear to the top of it. It runs then backward for a long but as yet unascertained distance. The lode is over one hundred feet wide and thousands of tons of ore could be taken off the face of the lode in sight. A number of men are prospecting, having strong reasons for assuming that coal will be found at no great distance from the deposit of iron.

**Nova Scotia.**

The adjourned meeting of the Nova Scotia Gold Miners' Association was held in the office of the *Critic*, Halifax, on Tuesday, 6th instant. The draft constitution and by-laws prepared by the temporal committee was submitted, and after some amendment adopted. The election of office bearers was postponed until the meeting in February, and the following were appointed an interim committee:—Hon. H. L. Wadsworth, Chairman, J. M. Reid, T. N. Baker, John Anderson and John McGuire.

The Oxford Gold Mining Co., from May to November of this year, have declared dividends amounting to 16% on their capital stock of \$125,000.

Mr. F. A. Wiswell, the late superintendent of the Essex Gold Mining Co., has leased the whole of that company's property, which has lately been lying idle, and with his usual push and enterprise, has already called for tenders for work on all the partly worked leads on that property, and also for prospecting others known to exist there.

The following are the official returns so far received at the Mines Office for the month of November:—

District.	Mill.	Tons Crushed.	oz. Gold
Sherbrooke.....	Goldenville.....	205	48
" .....	Miners .....	200	71
" .....	Pactolus .....	150	23 1/2
Lake Catcha .....	Oxford .....	61 1/2	19 1/2
Whiteburn.....	Cushing G.M.Co's.	27	27 1/2
Salmon River.....	Dufferin.....	825	321

Work at the collieries of the counties of Pictou and Cumberland are particularly brisk for this season of the year, and the outlook for the future is very encouraging.

The Intercolonial Coal Mining Company are actively engaged in preparations for a largely increased output, having sunk their slopes 500 feet further, making a total depth of 3,200, probably the longest slope in the Province. They are also reopening their new shaft, the Scot Pit, the working of which will be extended as far as possible during winter, with a view to further development.

This company have recently secured the services of Mr. Charles Fergie, of Wigan, England, and doubtless this enterprising corporation will be able to compete successfully with the wealthy Acadia Coal Mining Company, operating the Acadia, Albion and Vale collieries.

The Acadia Company own a very valuable property, but in portions of it they are likely to have many serious difficulties to overcome. At the Albion, about seven years ago, a disastrous explosion occurred at the Foord Pit—a shaft 900 feet deep—after which the mine took fire, and the flames extended to the Cage Pit—another valuable mine connected with the Foord. These mines had to be flooded and abandoned. Efforts are now being made to reopen them. On 1st December the Cage Pit gave outward and visible evidence that the fire still exists, but even now that difficulty will soon be overcome, as the fire is being built off and confined as rapidly as possible. In the hands of General Manager H. S. Poole, the property ere long will probably be one of the finest in the Dominion.

At Spring Hill, Cumberland County, the Cumberland Coal and Railway Co. continue to extend their already extensive works, being at present engaged in working to another seam of coal. On November 30th the largest output of coal ever made at any mine in Nova Scotia in one day was made at these mines, the quantity being 2,683 tons.

The opening of the Joggins Branch Railway is likely to prove highly beneficial to the Joggins mines. The company has been reorganized and General Manager McNaughton is now advertising for fifty experienced coal miners.

Mr. John H. Harding, of St. John, N.B., is reported to have formed a company in Montreal to work a manganese deposit in Maitland on the Shubenacadie River. The capital of the company is \$10,000, consisting of 1,000 shares of \$10 each. Manganese is used for bleaching, painting, colouring glass and a number of other useful purposes, and the demand, therefore, is gradually increasing. Such is the enquiry for this useful metal that Mr. Harding has been offered \$80 per ton for all he can produce.

### New Brunswick.

Some quantities of ore recently taken from the Glebe Manganese property, owned by Messrs. F. J. Alley and others, of Bar Harbor, Maine, is valued at \$200 per ton.

Latest reports from the Mineral Vale mine, New Ireland, announce that concentrating machinery of the latest and most approved pattern is shortly to be put in by the proprietor.

The output from Major Markham's Manganese property continues satisfactory.

Prospecting for antimony in the neighborhood of Springfield has recently been carried on by Gilbert Grundall, of Moncton, and others, it is said, with encouraging results.

Negotiations for the sale of the extensive Manganese deposits at Jordan Mountain are nearing completion. Baltimore people are expected to give \$40,000 in cash to the present proprietors.

### Quebec.

On Thanksgiving Day Mr. O. Spencer, of Calumet Island, discovered a mineral deposit on his land, which is believed to be of a valuable character. From what we learn the ore resembles very much that of the Lawn Mine, only it is of finer grain. It is said to contain silver and a superior grade of copper, but this conclusion is merely from conjecture as no analysis has as yet been made. The deposit is situated on lots 12 and 13 in the 5th range of the island. Several tons of the ore are lying loose on the surface in the vicinity of the vein which is said to indicate the presence of a large deposit. We have heard that Mr. Spencer has refused an offer of \$600 for the mineral right.

Iron has been found on the farm of Mr. John McTieruan, Clarendon.

At the Villeneuve mica mines a new hoisting engine and another drill has been added to the plant. The present output is reported to be close upon 2,000 lbs. per week.

A typographical error last month made the output from this mine in tons instead of pounds. The paragraph should have read 3,409 lbs.

The gold mining operations in the Buckingham district have ceased. Work will be resumed by Captain Bothwell, and the Syndicate in the spring.

A dispute between Mr. C. Arch, of Aylmer, and a German named Louis Redant, about the possession of a mica property in the Township of Cawood has been settled at the suggestion of Mr. Clarke, the Crown Lands Agent. Both parties have agreed to a division of the property.

At the South Ham Antimony Mine, near Lake Nicolet, the proprietor, Dr. Reed, has, during the past season, driven in an adit 304 feet long—6+7 from the base of the hill in which the ore is located—striking the bottom of the deepest shaft, now 100 feet. All the works are now thoroughly drained and ventilated, and pumping is now no longer necessary. The mine can be most economically worked for several years by following east and west on the vein which has been traced on the surface about 1,200 feet. The adit runs nearly north, striking the vein rich at 100 feet from the surface.

Mr. A. M. Evans, M.E., of Cardiff, Wales, at the request of English capitalists, examined the property in the early part of last month and reports very favorably upon it, stating that the measure is about 70 feet broad and will yield antimony in paying quantities, some portions giving very rich ore as high as 80 per cent. An approximate estimate shows that two million tons of ore may be expected from the measure if taken at a depth of 100 yards, and so far as can be ascertained there is no reason to expect it to terminate at three times this depth. Mr. Evans advises the smelting of the ore at the mine, with charcoal, to be made out of the immense quantities of timber on the property.

The miners are now driving eastwards on the vein taking out splendid ore, which is to be piled up until five or six hundred tons of first-class ore have been mined, when the erection of suitable concentrating and smelting machinery will be considered. The property is

located in the middle of a district rich in asbestos, copper, iron, soapstone and other minerals, and hopes are entertained that the Dominion Lino Company's railway will very soon be pushed into close proximity to the property. The people of Wolfe County are much indebted to their worthy members, W. B. Ives, M.P., and R. N. Hall, M.P., for the interest they have taken in this new line. The subsidy from the Dominion Government was in very large measure due to their efforts.

New acid works are in course of construction by G. H. Nichols & Co., at the copper and nickel mines at Orford, and are nearly completed. The manufacture of sulphuric acid is expected to commence within a short time.

According to the Sherbrooke Examiner, the owners of the Orford mine are putting in new machinery on their property, which, until recently, was owned by the Orford Copper and Sulphur Company. It is now in a prosperous condition and continues to yield large quantities of ore. From 1,500 to 1,600 tons are shipped monthly to New York, and there are reasons to believe that the output will increase in the near future.

The high grade ore mined at the Cowan & Ray mine last year has been shipped to Montreal this season by Mr. S. P. Fruchot.

### Ontario.

At Malone, a station on the Central Ontario Railway, the old Feigle Mine has been worked to some extent during the past season. The quartz was milled at the Gladstone Stamp Mill and some good results obtained (the Feigle and Gladstone properties are both on the same vein), but the parties doing this work not being able to obtain a lease from the Feigle Company the work has been stopped. At the same mill several hundred tons of concentrates, left by the lessees of the Consolidated, were roasted in an experimental muffle furnace for the purpose, and it is said very encouraging results, both as to gold and arsenic, were obtained. We understand that a furnace of the same description has recently been erected at the Consolidated.

At the Richardson Mine, near Eldorado, in the Township of Madoc, a shaft has been sunk nearly 90 feet, disclosing a body of quartz some 30 feet in width, but the length has yet to be ascertained. About 100 tons of the ore was milled at the Bannockburn Stamp Mill, but we have not heard with what result.

A mica mine has been opened in the Township of Hungerford. The mica occurs in quartz or felspathic dykes, and it is clear and white while the crystals are of a good size. This property promises well, and no doubt if properly worked will yield good returns. So far insufficient capital has hindered operations being conducted to any great extent.

On lots 7 and 8, in the 11th concession of Elzevir, are found three very large deposits actinolite intermixed with asbestos of a very fair quality. The fibre is, however, short. Some 300 tons have been milled at Bridgewater for use as fire proof paint, roofing and felting.

Very little during the past season has been done in iron mining in this section of the province. Nothing has been done at any of the mines in which the Central Ontario is interested, with the exception of the St. Charles Mine, in

the Township of Tudor, where some work is being done. This mine promises well.

Explorations were made on the property of the once famous Blairton mines, near Marmora. Many new discoveries of magnetic and hematite iron have been made.

A sample of gold-bearing quartz, taken from the Ranger Mine, near Sudbury, on October 13th, has been received at the Geological Museum. It is a lump of hard grey rock about twice the size of a brick, with little splashes of yellow metal imbedded here and there in the side of a fresh fracture. The Ranger Mine is about twenty miles from Sudbury, on the Algoma branch of the C. P. R. The specimen is the property of Mr. Tough.

Local papers state that Mr. Tough & Frawley, in order to make sure of their gold location, have erected a shanty directly upon the vein and placed two men in charge armed with Winchester repeating rifles. The property includes 900 acres.

Prospecting around Sudbury has stopped for the winter, but there is much confidence felt in the gold find there, and the spring will doubtless see a good deal of activity in the mining transactions thereabouts.

A valuable discovery of silver, about 12 miles from Sault St. Marie, is reported. The vein is 5 feet thick and 2 shafts are being sunk. It is said that a company with a capital stock of \$500,000 has been formed to work the property.

A meeting of the directors of the Kingston and Pembroke Mining Company was held at New York on the 15th instant. A report of the operations for the first six months was presented. It was shown that 22,000 tons of ore had been mined at a net profit of \$14,000. The result was considered satisfactory, although not so favorable as had been expected. One mine showed sulphur, and its output was not of great value. A large sum of money was spent in development work, and in another mine a new vein has been struck which is sixteen feet thick. The company own the mineral lands along the line of the Kingston and Pembroke Railroad.

#### Port Arthur District.

The more prominent occurrences to report during the past month are the continued taking up of large tracts of iron lands, more especially by Americans, on Hunters Island, and the rich developments of the new Rothwell vein, about four miles north-east of the famous Beaver Mine.

The manager reports that he has "struck it rich" quite close to the surface—the ore showing considerable argentite and a little native. The prediction of the Director of the Geological Survey that numerous other veins would probably be found which would be just as likely to be prototypes of the Beaver is being rapidly verified.

The Beaver mine having passed into the control of the new "Beaver Milling and Mining Co.," General Hecker U. S. A. has taken the position of manager, and doubtless Mr. Kirkland will ere long try his luck on some of the other prospects owned by millionaire Peters and himself in the Whitefish Lake region, west of Silver Mountain.

Funds are being raised to improve the communication between the Silver Mountain mine—the present terminus of the government road—and the rich deposits north west of Whitefish Lake and in the Attick Lake districts. Already about \$300 have been raised and the government are expected to contribute \$600 more.

To assist prospectors and others in taking up land, the Ontario government are having a base line run from Whitefish Lake to Hunters Island on the International boundary through the Silver and Iron region, and have also made preparation to have the International boundary traversed between Arrow Lake and Hunters Island, in the Thunder Bay and Rainy River district.

The output at the Beaver, Rabbit Mountain and Silver Mountain mines, owing to the steady enlargement and improved machinery continues to grow daily more satisfactory.

In the departure of Mr. W. H. Furlonge M.E. the district loses a most reliable and experienced engineer. From his association, professionally with the famous Silver Islet and Beaver mines, and his familiarity with the various important gold mining regions of the Western States, and his studious disposition, he has acquired a vast fund of information which will be of great service in the new region he has chosen viz: the new inland gold fields of Africa, which are at present attracting so much attention.

#### Manitoba and North-West Territories.

It is the intention of the Medicine Hat Railway & Coal Company to sink a shaft on their property, and to lay a standard gauge track to connect their mine with the C. P. R. in the spring.

Mining on the Saskatchewan has not been very brisk during the past season, and the little that has been going on has now closed down for the winter. Some ten or twelve men were at work, most of them between Edmonton and Victoria, making from \$5 to \$6 a day.

On the North Saskatchewan River, in the North-West Territory of Canada, about 80 miles above the town of Edmonton, Alberta, there is an interesting example of naturally reduced iron. Along the river bank a lignite formation crops out for several miles, overlaid by clay shales and soft argillaceous sandstones containing nodules of clay ironstone. These nodules are similar to others found at Edmonton, and prove by analysis to be carbonates of iron, containing 34.98 per cent. of metallic iron. The Saskatchewan seam of lignite has at some time or other been burnt, leaving a bed of ashes, clinkers and burnt clay, in places 20 ft. thick, and now covered by a dense growth of grass and underwood. From this mass of burnt clay pieces of metallic iron can be picked out, weighing in some cases 15 or 20 pounds. They have evidently been reduced from the nodules above mentioned by the heat of the burning lignite. Most of the pieces of iron are much rusted; but when scratched with a file they show a bright surface. The observation is interesting, and to some may help to explain how primitive man originally discovered the reduction of iron ore.

#### British Columbia.

At the Quesnelle Quartz Mining Company's property work has been carried on by continuing

the shaft down 50 feet further; also a cross cut was run of about 60 feet at right angle from the main drift, the same formation continuing as at the 150 foot level. As it is difficult to get supplies and necessary machinery to work sulphurets, work will be suspended for the winter. The mine prospects well, but it will require more money and skilled labour to be expended on it before pay can reasonably be expected. The present shareholders have more faith than funds, and faith without funds goes only a short way in developing a mining property in British Columbia.

Mr. James Gray, manager for the Ophir B d-Rock Flume Company, operating in the Big Bend of the Columbia River, has obtained a considerable quantity of gold in nuggets, ranging in value from 25c. up to \$10 and \$15. Gold is found in considerable quantities on the claim which this enterprising company is working. The camp is now an established concern, and when the wash-up for the season takes place it is believed the result will be astonishing.

The outlook for quartz mining in British Columbia never was brighter. If only a few railroads were pushed through the country the results in mining would be astonishing.

The total shipments of coal by Messrs. Duns-muir & Sons, of the Wellington collieries, for the month of November, aggregated 23,832, representing an output of nearly 1,000 tons for each working day. Of this large aggregate, 17,309 tons were shipped foreign and 6,523 tons were local shipments. It is expected that even this large output from the Wellington collieries will be still further increased.

A remarkable specimen of argentiferous galena extracted from the property of the Selkirk M. and S. Co. at Illecillewaet, was recently on exhibition in Victoria. The piece, which is entirely free from quartz, weighs over a quarter of a ton, and is pure metal composed of silver and lead, carrying 81½% of the latter and 77 oz. of the former to the ton. It is a piece of a block that weighed, it is said, quite a ton.

#### United States.

The roasting of Canadian iron ores is to be prosecuted in Cleveland on a more extensive scale than heretofore. Besides the roasting oven put up some time since, a new and improved one is being erected by the Cleveland Rolling Mill Company. It will be ready for use very soon.

#### MISCELLANY.

The Algoma Silver District.—Writing to the *Mining Journal*, London, Eng., Mr. Charles W. F. Crawford contributes a very valuable article on the silver mines in the neighbourhood of Port Arthur. Here are a few extracts: "The whole country seems to teem with mineral wealth. Lead and copper, however, appear to make to the east, while the richest silver deposits would seem to lie along a line stretching away to the south-west of the White Fish Lake, 40 miles from Port Arthur, and beyond that to the Arrow Lake, 30 miles further. A very large number of rich discoveries are reported in districts along this line." Owing



to the lack of capital necessary to do the exploratory work, almost all these promising veins are lying dormant. On our visit to the Beaver Mine, 18 miles distant, Captain Williams kindly took us underground, when, after mounting some 20 or 25 feet up the hillside, we entered the deep adit. The usual mistakes seem to have been made in the early development of the mine. The vein broke up into strings and was lost for some time, till cross-cutting in the direction indicated by the upper workings, a bonanza was struck, and some \$2,000,000 worth of ore was opened up in five months. From this out the history of the mine has been a veritable romance. Levels have been driven in solid ore 6 or 7 feet wide by 7 high, worth at least \$1,000 per running foot of the level; pockets of virgin silver have been met with where the bits could not drill owing to their being stopped by lumps of the pure metal, and prills worth \$6,000 to \$7,000 a ton have been barrelled and sent to the smelting works; indeed, we were shown a single barrel said to contain ore worth £2,000. The country rock enclosing this remarkable vein is a black, very carbonaceous, and much jointed, argillaceous shale, conjectured to be of the Cambrian age. The lode, which is two or three feet wide in its narrowest part, swelling in many places to seven or eight, and averaging at least five, is enclosed between well-defined walls, and is nearly vertical. Its metalliferous contents are principally silver glance, with very considerable deposits of native silver, a proportion of rich galena carrying from 700 to 1,000 ounces of silver to the ton, together with a certain amount of zinc blend, worth quite 1,000 ounces of silver per ton, and also a small quantity of iron pyrites. Captain Williams informed us that owing to the soft nature of the vein-stuff no mine in Cornwall can do its stoping so cheaply; 7s. 6d. is all that it is estimated to cost per fathom for breaking away the lode. This rich ore chute measures quite 200 feet along the drifts, and as at present 100 feet of vertical depth of the bonanza has been developed. Taking the average width of the vein as five feet, this would give about 800 tons of rich ore in the backs above the adit. Anyone who has seen the deposit would not be surprised to hear that 250 ounces of silver per ton is considered a very moderate estimate, which would give about 2,000,000 ounces as the contents of this block of ground. Beyond this, however, the shaft has been sunk 40 feet, still continuing in rich ore. About a mile and a-half south-east from the Beaver is the Rabbit Mountain mine, owned and worked by a St. Paul company. It carries a magnificent 5-foot vein, from which a large amount of silver has been extracted. South-west of the Beaver is the very promising Porcupine vein. The adits and shafts in this mine show the same rich ore as is found at the Rabbit and Beaver. This mine has been sold to a Detroit syndicate, who intend pushing work vigorously at once. From enquiries I have made, development may be estimated at \$25 per foot, taking roughly that there would be one foot of shaft to three feet of drift. This estimate includes superintendence, building the rough log shanties, chopping out roads, and, in fact, everything. \$25,000 would, as I understand, be an adequate sum to prove or disprove the value of any one of these properties, as this would give, roughly speaking, 1,000 feet of workings. Some 16 miles west from these mines is the Silver Mountain mine, now being worked by a Liverpool company. Not having visited the mine, I cannot, of course, speak from my own observation, but from specimens shown to me it would appear to be a valuable property. It is some-

what mortifying to reflect that British capital has hitherto been forestalled, and that American companies are the proprietors of the richest of these mines; and that in the case of the Beaver, the last of the original owners having been tempted to accept an offer of \$105,000 cash for his one-eighth share of the mine, they are netting the comfortable sum of \$1,500 per diem. And further, that within a few months, when the new stamps are in operation, it is no extravagant dream to suppose £300,000 will be flowing across the frontier from this mine alone. Since penning the foregoing I have learned that contracts have actually been signed for constructing the projected railway which is to open up that splendid silver district, and which will run from Port Arthur to meet the American line at the Tower iron field."

### The Best Shape for a Blast Furnace.

—F. W. Lurmann† discusses the various interior forms of blast furnaces, with the object of determining the shape that offers the least resistance to a regular descent of the charge. The furnace which was found by experiment to give the best results was of the following dimensions: Height, 31 feet 7½ inches; diameter at the throat, 3 feet 7 inches; at the tuyeres, 4 feet 1 inch. There was no bosh, the furnace being cylindrical in shape to a height of 4 feet 1½ inch, and then gradually narrowed towards the throat, the total diminution in diameter of 5.9 inches being spread over a height of 27 feet 6 inches. The furnace had a capacity of 353.17 cubic feet, and made, during the period between the end of August, 1885, and the commencement of December, 1886—about 460 days—2781.3 tons of grey, mottled and white charcoal pig iron of the highest quality, the production being thus at the rate of about six tons in the twenty-four hours. The capacity being 353.17 cubic feet, a ton of pig iron was produced with a furnace capacity of 58.9 cubic feet, as compared with a capacity of 106 cubic feet per ton of pig iron in large coke blast furnaces in Germany, and 353 cubic feet and upwards in the Cleveland district. The consumption of charcoal amounted to 1.113 ton per ton of pig iron, the charge yielding 46.9 per cent. of metal. The temperature of the blast was 400° C. After the furnace was blown out, the internal diameter was found to have been considerably enlarged in the neighbourhood of the tuyeres. The furnace was erected at Musen, in the Siegen district. The author concludes by expressing the hope that these experiments with blast furnaces without boshes will be continued with furnaces in which coke is the fuel employed.

**Cost of Mining.**‡—Much stress is laid upon the claim of cost, extravagance and losses in mining, by a certain class when the subject is under discussion. Statements are often made concerning the amount of money put into mines in order to bring a little out, and other comparisons which are odious, not because they are comparisons, but because they are not. In the first place it may be safely stated that the money expended in the actual development is paid to a class of hard-working men and contributes not only to their support, however unwise their expenditure of what they receive, but also goes to some extent to the maintenance of other branches of business, some of which might, however, be allowed to starve to death to the advantage of the whole locality. Outside of the money expended in the legitimate development of the mines there are and have been large sums of money spent which cannot be justly charged

to the account of mining. The items under the head of expense account which a young superintendent, fresh, perhaps, from school, and knowing nothing of mines, may spend in the luxurious furnishing of an office with plate mirrors, velvet carpets and fine furniture, and the purchasing of horses, carriage, wines, etc., cannot under any strict business law be fairly added to the cost of mining. In one sense, also, the expense of inexperience, which purchases machinery before there is a mine to be worked, or erects a costly plant for milling ores where a furnace is required, should not be added to the sum total of the legitimate cost of mining. Mining, when most intelligently and economically conducted, is an expensive industry. Large capital is required to insure success even where experience and ability of the highest order directs every operation. The business of extracting ores, in and of itself, is costly and difficult under the most favourable circumstances, so that it should not be forced to bear an additional burden in this direction for which it is in no sense responsible. Already there is noticeable a marked improvement in this direction. A better understanding more generally prevails. Business men are giving personal attention to their investments and are investigating more thoroughly than ever before the basis of the enterprises into which they are invited to put their capital. Under the dispensation which is rapidly removing the development of a mine from the speculative influence of the stock board to the domain of a practical, productive industry, a cloud of evils have taken flight and others are preparing for a hasty exodus. The abolishment of a long list of unnecessary expenses, with the reduction of the cost of transporting and treating ores will add largely to the value of mines and the profits of mining. Every successful method of treatment, every new line of railway, every new facility in the way of more available mill or furnace, improved machinery and every other improvement tends to decrease the cost of mining and, as a natural consequence, increase the value of the product and extend the producing capacity of the mines. These things give promise of most wonderful results in the future and establish beyond a doubt the security and permanence of the great industry.

**What is Graphite?**—Graphite is not lead, as its name plumbago and "black lead" would seem to indicate, nor is it a carburet of iron, as some works of scientific pretension still call it. Except that some impure specimens contain about as much iron as ordinary clay, it is the purest form of carbon, the diamond not excepted. Prof. W. Mattieu Williams believes that it is nothing else than extremely finely divided charcoal or soot; and reasons upon the subject as follows: The hand-rails on the staircases of the Metropolitan Railway stations, after some use, become coated with a delicate film of graphite or "black-leaded." The same is seen, but more faintly, on suburban hand-rails, but not at all in rural stations. "Whence comes this graphite film? Why is it developed as we approach the centre of London, reaching its maximum in the most densely populated and sootiest regions of the metropolis? My answer to these questions is, that it consists of a selection of the very finest particles of London soot. The hands of passengers in rubbing along these rails conduct a debtor and creditor transaction. There is soot-carbon on the hands and soot-carbon on the rails, as on every thing, animate or inanimate, that is exposed to a London atmosphere. Some of the soot-particles



on the rails are brushed off by the hands, some rubbed down and smeared on the wood; some are abstracted by the hands, and some are contributed by the hands as additions to the smearing. It is obvious that in such proceedings the coarser particles are those that will be brushed off or carried away, while only the finest, the impalpably minute particles, will adhere as a black, varnish-like, unctuous film to the hard wood." So, when the coarsest lamp-black or ordinary soot, the finest vegetable-black, and powdered plumbag, are rubbed upon paper, the appearance of the fine black will be found to be intermediate between that of the other two substances.

**The Microscopical Structure of Iron.**

—In a paper communicated to the German Iron and Steel Institute, Dr. H. Weeding states that the presence of even a very small quantity of manganese causes a marked change in the structure of the iron, producing a peculiar crystalline structure, in which the crystals are unsymmetrically arranged. This structure compels manufacturers of high-conductivity telegraph wire to avoid the presence

of any manganese in it. The author is of opinion that iron masters over-estimate the value of manganese, since this metal ought really to be dealt with as carefully as silicon. In describing the careful way in which it is necessary to prepare the sections, the author remarks that the temperature at which surface colouration ensues is dependant on the nature of the iron, and that he has found in his experiments that an iron containing but little silicon becomes far more rapidly discoloured than one containing a considerable proportion of that element, the temperatures given in text-books in relation to this point being wholly inaccurate. Iron rich in manganese is, on the other hand, more rapidly attacked than is an iron free from manganese. The best ground colour to give the specimen is yellow. In the discussion which ensued on the reading of the paper, S. Stein remarked on the change in the form of the crystals of pig iron when manganese is present, this element causing the iron to crystallise in rhombohedra instead of in octahedra, the form in which pig iron crystallises when free from manganese. On etching, it was found that iron-phosphorus and iron silicon

alloys withstood the action of the etching agents far more than the purer pig iron. The presence of particles of these alloys in the pig iron becomes distinctly visible on etching the surface.

**Men Who Win.**

**Five Hundred Dollars Thrown Away—His Aim Was Success**

A good healthy body is almost sure to be found associated with a good conscience.

A close student of human nature is rarely willing to place large matters of trust in the hands of another, until he has seen the one whom he is to trust. He looks for the fresh health and vigor, the honest countenance and manly form, and in fact all that is attractive in men. He doubts the dyspeptic with sallow skin, drawn-out features, the evident weak and irritable nature. He feels as Shakepeare makes Julius Caesar say:

"Let me have men about me that are fat;  
Sleek-headed men, and such as sleep o' nights;  
You Cassius hath a lean and hungry look;  
He thinks too much; such men are dangerous."

He does not doubt the honesty of the poor unfortunate, but he fears disease of the body will affect the mind, bring misfortune upon the individual, and loss to himself.

It may be injustice to the weak, but if the man has not the mental strength, or if he is wrapped up in his misery, he cannot take in the situation of the world, does not see that ideas are broadening, and that isms and teachings are advancing! How can an employer hope for success from such a man? The dyspeptic look, the wax-like complexion and sallow features show disease. The far-seeing man notes all these signs, and knows that the great light of man, the brain, is affected or will be, at no distant day.

He discards the poor victim of disease, who goes wearily out into the world. Discouraged at last he takes to his sick bed. He seeks medical aid. Lacking the broad ideas of the successful man of the world, he tries the same medical treatment that he has tried before. The same bigoted council is sought, the same drugs are administered by the same old family friend that treated him months and years before and his parents before him, and in such a way he drags out his miserable unsuccessful existence.

Is he to blame? Why not? When he sees daily, and hears from every side, proclamations of a remedy known as Warner's safe cure, which is becoming more popular daily, hourly, while he is becoming weaker.

J. A. Gettys, insurance agent of Chillicothe, Ohio, suffered for nearly three years with dyspepsia in its worst forms, having periodical spells of vertigo, fainting and chills. He wrote over his own signature: "I spent about \$500, had the best medical attendance, tried all the remedies recommended without success, until I was induced to try Warner's safe cure. I used three bottles have gained twenty pounds and feel like a new man."

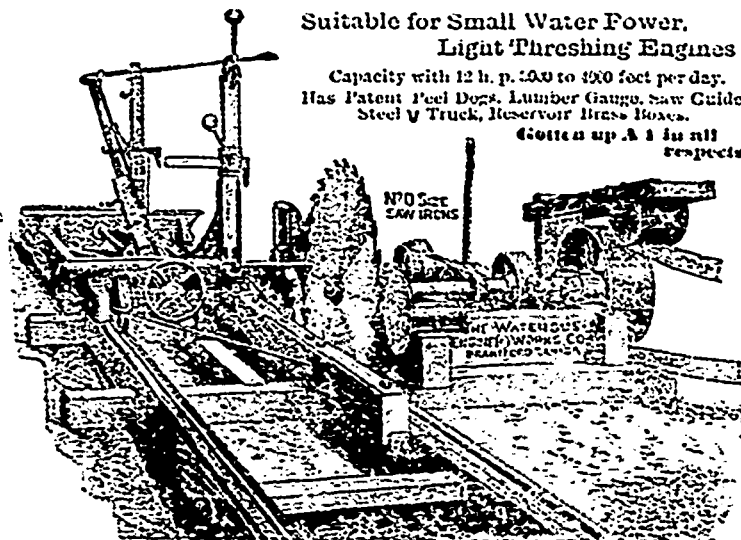
Such a man as we have described, nine times out of ten, unconscious to himself or to his physician, has a kidney disorder, which is fast wasting his body and life. He sees the merits of Warner's safe cure at every turn, and hears it proclaimed from the housetops, and yet he does not use it, because it is said by his illiterate physician that it is not professional, and not admitted by the code. Meanwhile the man of the world presses forward, cares not a fig for this or that school; his aim in life is success and he looks hopefully forward to the world beyond, believing and trusting in man in this world, and to his faith for the world beyond.

\*Detroit Free Press.  
†Chicago Mining Review.

†Trans. Am. Ins. M. E.  
‡Stahl und Eisen Vol. vii pp. 57-62.

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IN THE TOWNSHIP OF BUCK-  
INGHAM, COUNTY OF  
OTTAWA.

1st.—Lot 28, in the 6th range, containing 100 acres, in addition to the salina of the lake.

2nd.—North half of lot 23, in the 5th range, containing 100 acres.

3rd.—Nine acres of lot No. 28, in the 5th range, with water privileges thereto appertaining, being site of mill dam, etc., etc.

The property formerly belonged to the Montreal Plumbago Mining Company, and was worked successfully for several years, until the company's mill was destroyed by fire, but the mill dam remains almost uninjured, and there are on the property several houses, sheds, etc., built for various purposes when mining operations were carried out.

### The Plumbago Deposits

upon the property are regarded as amongst the richest and most extensive in the Dominion. As to the quality of the Plumbago, it has been extensively used in the manufacture of crucibles, lubricating leads, stove polish, etc., etc., and given unbounded satisfaction. This is established by the experience of consumers, and by a certificate from the celebrated Battersea Crucible Works, London, England, a copy of which is open for inspection.

### MICA

has also been discovered in quantities.

The lands are in the Phosphate region, and recent prospecting has disclosed a rich and extensive deposit of this mineral. There are unrivalled facilities for transporting the ore to and from the mines by the Ottawa River and C. P. Railway. Distance from mines to Railway Station 6 miles. Good road.

All that is required to make these valuable mines handsomely remunerative is a little capital and enterprise.

The Title is Indisputable.

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VALUABLE

# Copper Mining Properties

— IN THE —

## Eastern Townships

### TOWNSHIP OF ASCOT.

- 1st. Clark Mine, Lot 11, R. 7 Ascot ..... 187 acres  
2nd. Sherbrooke Mine, part Lots 12 and 13,  
R. 7 Township of Ascot..... 329 "  
3rd. Belvidere Mine, part Lots 9 and 10, R.  
9 and 10, R. 8 Ascot ..... 292 "  
4th. Mining Rights in same vicinity on..... 250 "

All of the above properties lie within  $1\frac{1}{2}$  miles of the Village of Lennoxville, at the junction of the Grand Trunk, Canadian Pacific and Passumpsic Railways, and have been developed to a considerable extent, and veins opened 6 to 20 feet in width, yielding 3 to 5 per cent. of copper, also silver, and 35 to 40 per cent. of sulphur. These mines are only  $2\frac{1}{2}$  to 3 miles distant from the City of Sherbrooke, and evidently are of the same class of ores found at Copelton, only four miles distant, owned and worked by the Orford Copper and Sulphur Company, and by Messrs. G. H. Nichols & Co., of New York, which have proved so remunerative.

### TOWNSHIP OF ORFORD.

- 5th. Carbuncle Hill Mine, Lots 2 and 3 R. 14, and  
2, 3, 4 R. 15, 718 acres. Same class of ore as is found in the Ascot properties above described, but yielding a higher percentage of copper.

### TOWNSHIP OF CLEVELAND.

- 6th. St. Francis Mine,  $\frac{1}{2}$  Lot 25 R. 12, 50 acres, with dwelling houses, smith's shop, ore sheds and office, large winding and pumping steam engine, with boiler, winding and pumping gear, and about forty fathoms Cornish lifting pumps complete, railway tracks, ladders, etc., situated three miles from Grand Trunk Railway. A considerable amount of trining work has been done at this mine. A well defined vein richly charged with vitreous purple and yellow sulphurets of copper traverse the entire length of the property, five feet in thickness, yielding 8 to 40 per cent. metallic copper.

### TOWNSHIP OF GARTHBY.

- 7th. Fifty-six lots of land, 2,938 acres. This property for the most part is unexplored, but copper is found on the greater part of the property. On one of the lots a vein about twenty feet in width has been found. Samples of the ore have yielded as much as 22 per cent. of copper, being also rich in sulphur. Other samples of pyrites from the same property, free from copper, have yielded as high as 48 per cent. of sulphur. The only drawback to this property is in its distance from the railway, it being about four miles from Garthby Station, Quebec Central Railway. A new line is chartered, however, which, when built, will run directly through the property.

### TOWNSHIP OF ACTON.

- 8th. The Acton Mine, 100 acres, with engine, boiler, pumps and appliances. Within three years after this mine was first opened it produced nearly \$500,000 worth of copper. It is situated about half a mile distant from the stations of the Grand Trunk and South Eastern Railways.

- 9th. Brome Mine, part Lots 2 and 3 R. 4, 50 acres.  
10th. Bolton Mine, two miles from Eastman Station, Waterloo & Magog Railway, 400 acres.

The above properties formerly belonged to the Canadian Copper and Sulphur Company, and were acquired by the present owner at sheriff's sale, giving an indisputable title thereto.

The whole or any portion of the property will be sold at reasonable prices.

For further information apply to

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# 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 Mining.

Any person having discovered a mineral deposit may obtain a mining location therefor, in the manner set forth in the Regulations which provides 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 Land 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 labor 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 the same.

No 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 of 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 to quartz mining shall be applicable to placer mining as far as they relate to entries, entry fees, assignments, marking 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, etc., etc.

### 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 1884, 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.*



### Notice to Contractors.

SEALED TENDERS addressed to the undersigned and endorsed "Tender for Post Office at Coaticook, P. Q.," will be received at this office until Thursday, 29th December, for the several works required in the erection of Post Office, at Coaticook, P. Q.,

Specifications can be seen at the Department of Public Works, Ottawa, and at the office of the Collector of Customs, Coaticook, on and after Tuesday, 13th December, and tenders will not be considered unless made on form supplied and signed with actual signatures of tenderers.

An accepted bank cheque payable to the order of the Minister of Public Works, equal to five per cent. of amount of tender, must accompany each tender. This cheque will be forfeited if the party decline the contract or fail to complete the work

contracted for, and will be returned in case of non-acceptance of tender.

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

By order,  
A. GOBEIL,  
Secretary.

Department of Public Works,  
Ottawa, 5th December, 1887.



### Notice to Contractors

SEALED TENDERS addressed to the undersigned and endorsed "Tender for Post Office at Napanee, Ont.," will be received at this office until Tuesday, 10th January, for the several works required in the erection of Post Office, at Napanee, Ont.

Specifications can be seen at the Department of Public Works, Ottawa, and at the office of F.

Bartlett, Esq., Architect, Napanee, on and after Tuesday, 20th December, and tenders will not be considered unless made on form supplied and signed with actual signatures of tenderers.

An accepted bank cheque payable to the order of the Minister of Public Works, equal to five per cent. of amount of tender, must accompany each tender. This cheque will be forfeited if the party decline the contract or fail to complete the work contracted for, and will be returned in case of non-acceptance of tender.

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

By order,  
A. GOBEIL,  
Secretary.

Department of Public Works,  
Ottawa, 19th Dec., 1887.

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### Notice to Contractors.

#### Change of Time.

THE time for receiving tenders for the construction of

**A POST OFFICE**

—AT—  
**ST. JEROME, P. Q.**

is hereby extended to FRIDAY, the 30th day of December.

By order,  
A. GOBEIL,  
Secretary.

Department of Public Works,  
Ottawa, 12th Dec., 1887.

# A. R. WILLIAMS,

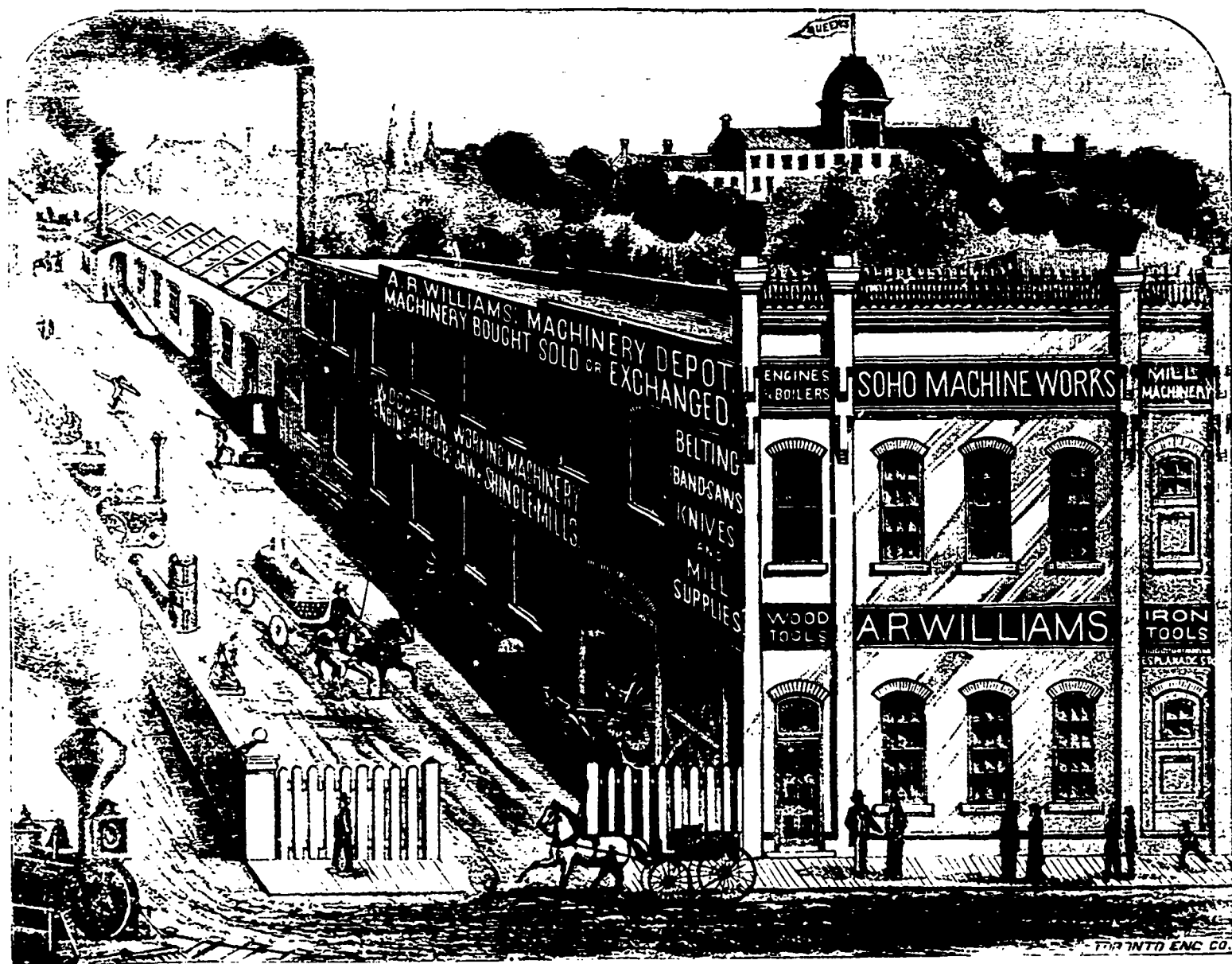
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