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THE Canadian

Mining Review



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1888.—OTTAWA, MARCH—1888.

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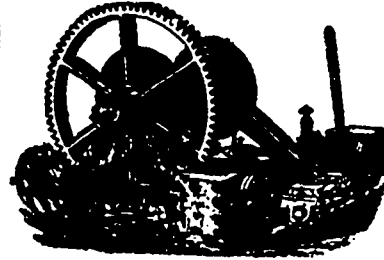
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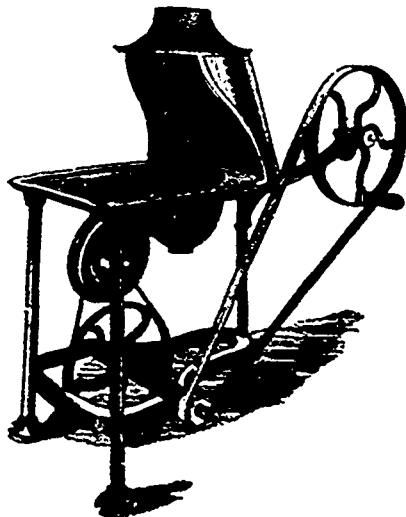
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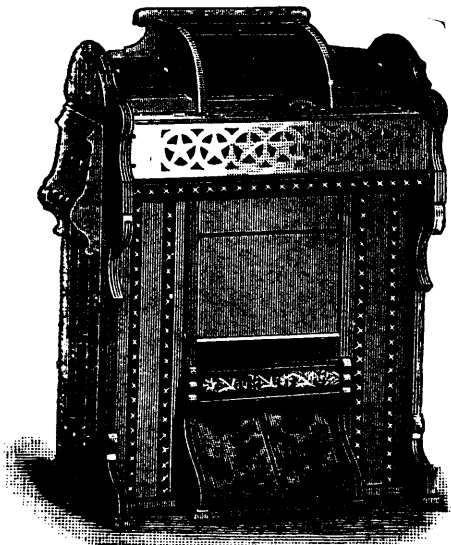
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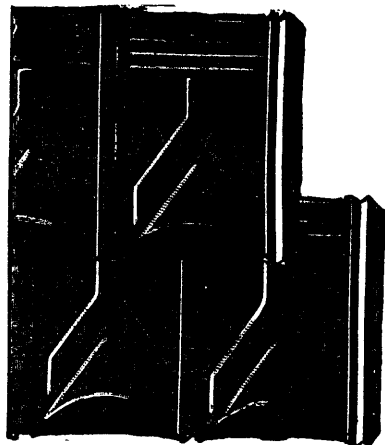
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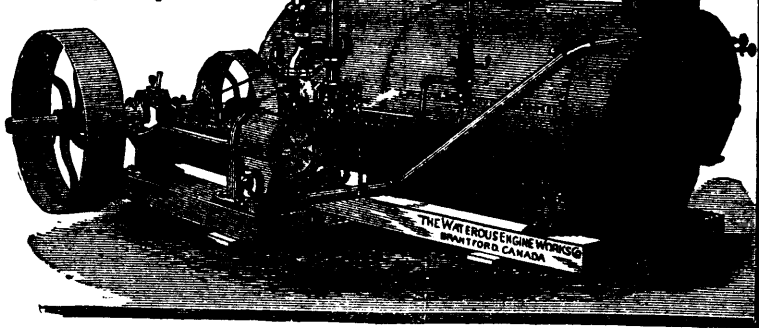
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older portions of the Province find furnishing a less remunerative occupation than in bygone days; their representatives at Quebec are removing from the Laurentian hills the forests which protect the sources of the rivers and preserve the moisture necessary for the steady development of their farm products. Some day the eyes of the people will be opened to the mischief which has been wrought, and to the necessity of adopting a measure of forest protection before all is lost. What is wanted is an amendment to the Mineral Act which will give the proprietor of the land the ownership of the timber upon it from the day of purchase, thus making it his interest to exert himself to save such portions of the forest as do not interfere directly with his operations.

How Commercial Union Would Effect Our Industry.

At a meeting of the Toronto Commercial Union Club held in that city at the end of February last, a valuable paper on the mining interests of Canada, and how they would be effected by Commercial Union was read by Mr. T. D. Ledyard. In this paper he alluded to the great richness of Canadian iron ore; he pointed out how the state of the iron trade is the financial barometer of a country's prosperity, and how, if that trade is prosperous, other lines of business take their cue from it. Whilst our grain markets are threatened with curtailment by Indian and Australian wheat, our ores are looking up. England derives from and for a long time has been dependent on Spain for most of her Bessemer ore, and from that quarter comes also the greater part of the iron ore imported into the United States. But the iron producing districts of Spain are threatened with an early exhaustion, the production being already much reduced. Mr. Ledyard claimed that "a very few years must see the end of them," and no part of the world "will offer greater inducements for the manufacture of steel than our own Canada. In that case it would not be at all surprising to see some of the large English iron manufacturers transporting their works to Canada." At present the duty of 75 cents per ton prevents many of our iron deposits from being worked. An American expert after viewing the Belmont mine, the ore of which is of exceptional purity, stated that if he was working it, he would take out 450 tons a day. The duty on this would be \$300, and how would such a per diem tax work on any industry? The removal of this duty alone by Commercial Union would benefit both Canadians and Americans alike. Apart, however, from the export trade, there are large quantities of lower grade ore which it would not pay to export, but which could be profitably smelted on the spot if we had a market large enough to induce capitalists to put up the necessary works. The Canadian market is too small for this, but if the whole North American market was open to us there are many points where furnaces would

be erected, and the manufacture of iron and steel would benefit the whole community. Although the C. P. R. traverses hundreds of miles close to deposits of Bessemer ore suitable for making steel, the very rails used on that railway were bought in England, probably made of Spanish ore, and did not contribute one dollar's worth of benefit to any Canadian, although similar ore from which they are made is almost alongside the track. Four-fifths of their value might have been distributed to pay for the labour of our own mines and mechanics had furnaces existed here. Instead of this, said Mr. Ledyard, our money has gone to pay Spanish mines and English labourers who care nothing for us and who could not probably point out Canada on the map.

Nature never intended Customs barriers to keep apart two portions of the same continent which she intended to be commercially one. These remarks apply not only to iron but to pyrites, the demand for which for sulphuric acid manufacture is now assuming very large proportions in the United States, but on which the duty of 75 cents per ton prohibits any trade, the pyrites being only worth \$4.50 per ton in New York. Copper ore would be shipped largely to the States if there was no duty, the tariff barring the way, and consequently the new copper districts in Algoma and Nipissing remain undeveloped. The same remarks apply to several other minerals. The opponents of Commercial Union tell us we have the Canadian markets, but 300,000 tons of pig iron is about the annual consumption of Canada, whilst the North Chicago Rolling Mills alone use 1,700 tons a day, or as much as would supply the whole of Canada! Mr. Ledyard wound up his remarks by saying "let us have free trade with our own continent, our natural market."

Mining Report, 1887, for British Columbia.

The Annual Report of the Minister of Mines for 1887, being "An account of Mining operations for Gold, Coal, &c.," in the Province of British Columbia, has been laid on our table, and the digest of it, after careful perusal, will prove of great interest to our mining friends generally.

The total estimated yield of gold last year in the Pacific Province is valued at \$693,709, being a decrease since 1886 of \$209,942. Several reasons are given in the reports from the various districts for this falling off, the principal of which appears to have been the unusually dry season which compelled most of the hydraulic claims to shut down very early in the year, the limited number of men employed on productive works, and the giving out of the old placer mines. An impetus to gold mining during the coming season is anticipated, owing to the reports which have been received from all quarters of the discovery of ledges carrying the precious metal in different degrees of richness, and the increasing confidence bestowed on

quartz veins in various locations. Quartz mining is proverbially slow in its first stage, and particularly so when the ore is of low grade, as such can only be handled profitably by wealthy companies. The large amount of prospecting carried on last summer has brought to notice many creeks containing gold in paying quantities, but veins are not so easily found owing to the heavy growth of timber generally covering them. One of the chief centres of quartz mining is Illecilowaet. One year ago this place was comparatively unknown, but a village last summer grew up around the C. P. R. station. The metal obtained here is silver, and the shipments by the Selkirk Company between 25th July and 7th November consisted of some 250 tons of selected ores, representing a gross value of \$21,000, and a net value at the smelter of \$15,000, nearly \$63 per ton as the average net yield at the latter. The range of the percentage of lead was from 17 to 52, and of the silver assay from 36 to 149 ounces per ton. There exists also at the date of this report ore down at the mines and on the dump valued at \$15,000. A crushing and sampling mill is at work to which is attached a complete assay office. In the Lillooet district the yield of gold has been good, but the work is principally carried on by Chinese from whom it is very difficult to obtain returns. In the Yale district a new and enormously rich mining section is reported, and of Granite City and the surrounding country it is remarked in the Report, "the country is almost untraced and has vast mineral resources both in quartz and gravel, that only await time to discover,—pluck and energy to develop." We note one deficiency in the Report which we hope to see supplied in future issues, viz: tables showing the yield and value of silver in the Province, as this is an interest second only to gold mining, and one that is attracting considerable notice.

In the Similkameen Division of the Okanagan District, reference is made to the production of platinum, which last year reached 2,000 ounces, commanding from \$2.60 to \$3.00 per ounce, according to quality. It is stated as a remarkable fact that many thousand ounces of this rare metal have been thrown away by the miners as worthless, in consequence of the prevailing ignorance as to its value. Last year samples were sent to various places, but from insufficient data and few samples 50 cents per ounce was all the value set upon it. One reply stated it was worth \$2.50 per ounce in Germany if confined in large parcels, but \$3.50 per ounce is at present readily paid for it in Portland, Oregon.

The output of coal in British Columbia appears to be annually increasing, 413,360 tons having been mined last year against 326,636 the year before. As the Pacific coast of the Dominion bids fair to become the coaling station of the North Pacific Ocean, where navigation is rapidly assuming very large dimensions, the demand must soon become un-

limited, and the various cities of the Pacific coast of the United States will also draw their chief supply for domestic consumption from our mines. The principal exports of this fuel are now made to San Francisco, Wilmington and San Diego, in California; to Portland, Oregon; Alaska; the Hawaiian Islands; China and Japan. But the large cities now rapidly growing up, such as Seattle, Tacoma and other places, are now demanding a supply. The Nanaimo and Wellington Collieries are the main sources of supply, but the Kootenay district in the Rocky Mountains gives prospects of very extensive yields if the rich seams which there crop out abundantly are worked.

Among the minerals of this Province which apparently are very little taken into account as yet, are galena and copper. The want of a smelter probably has much to do with this. The present annual consumption of lead in Canada is of the value of \$250,000, and the import duty \$12 per ton. A large demand for lead exists in China, and a profitable trade with that country might be established from the Pacific coast if smelting were carried on in the Province.

It may be inferred from the general tenor of the reports from various mining districts, that placer digging can no longer be relied on for any remunerative returns, as they have been exhausted of their wealth in past years. But in new districts the gravel benches will afford a wide and remunerative field to those who first work them. For lasting returns quartz and ledge mining will be the main objects for the capitalist to venture upon, and the large extent of rich metalliferous country in British Columbia which has not yet been even prospected offer inducements for mining enterprise equal, or at least only second to the rich mining district of the American territories through which the same range of mountains extends, as afford to British Columbia its hidden wealth.

Nova Scotias' Prosperity.

Just as we go to press we are in receipt of the Annual Report issued by the Department of Public Works and Mines for the year 1887. This valuable work is, as usual, replete with interesting matter, but owing to lack of space we are unable to give it any extended notice until our next issue. A very noticeable feature however, is the very gratifying increase of \$21,600.28 in annual revenue over 1886. We commend the following figures to the careful study of the legislators of Ontario and Quebec.

1886.	
Prospecting Licenses.....	\$ 8896 72
Rents	3794 00
Gold Royalty.....	8550 16
Licenses to Search.....	2030 05
Coal Royalty	101,656 53
Licenses to Work.....	500 00
Costs and Fees.....	.....
Renewal of Coal Leases.....	479 50
	\$126,856 91

1887.	
Prospecting Licenses.....	10567 56
Rents.....	4283 00
Gold Royalty	9420 77
Licenses to Search.....	2560 00
Coal Royalty	119,670 16
Licenses to Work.....	1025 00
Costs and Fees.....	885 70
Renewal of Coal Leases.....	60 00
	\$148,457 19

LETTERS TO THE EDITOR.

We invite Correspondence upon matters consistent with the character of the Review.

Be as brief as possible. The writers name in all cases required as a proof of good faith.

One dozen copies of the issue containing his communication will be mailed free to any correspondent on request.

We do not hold ourselves in any way responsible for the opinions expressed in this section of the Review.

Mining in the Mountains.

CALGARY, N.W.T., March 2nd, 1888.

The Editor

THE CANADIAN MINING REVIEW :

SIR,—The mining industry of British Columbia is attracting considerable interest out here now, and I have thought that perhaps a short description of the mines on Mount Stephen and around Field, of which I have a thorough knowledge, might prove interesting to your many readers.

These mines are situated 130 miles from Calgary, in the Kootenay District, and I may say, right on the line of the Canadian Pacific Railway. At Mount Stephen there is seen a lode on which there are four locations, viz: "Monarch," "Cornucopia," "Sunrise" and "Carleton" mines. The two first mentioned belong to Coffman Bros. & Co., and the last two to Mr. W. A. Allan, of Ottawa, and myself, each extending 1,500 feet in length by 600 feet in width. The first claim located was called the Monarch from which the lead takes its name, or it might be called the Mother lode. On this mine considerable work has been done. A tunnel has been run in on the vein about thirty feet, showing a vein from the foot wall to the hanging wall of about seven feet of solid ore. The ore is galena lead and silver, averaging by careful assay about twelve ounces silver, and over sixty-five per cent. lead. The foot wall is Black limestone, or, as geologists would say, Cambro Silurian limestone. The hanging wall is quartzite, showing a true vein of ore between two different formations. Lying west of the "Monarch" is the "Cornucopia," showing a body of ore in a vein about two feet wide, of the same character. The vein has been followed in about thirty feet, and it increases in width according as it is developed. Next and adjoining in the east is the "Sunrise" Mine, on which a shaft has been sunk about twenty feet, showing the same vein and the same character of ore. At the top the vein is small, but at the bottom it shows a well developed lead about two feet wide, increasing in width as depth is attained. Adjoining the "Monarch" on the west is the "Carleton" Mine, on which considerable difficulty was encountered in cutting a trail from the Monarch ground. This mine shows a large body of ore about eight feet wide, solid, on which assays have been made showing sixteen ounces of silver and over seventy per cent. lead. From the east end of the "Sunrise" Mine to the west end of the "Carleton" Mine, over one

mile, the vein shows ore in bodies along the whole distance, and I have no hesitation in saying that the Monarch vein or lode for distance is one of the best veins, so far as developed, in the Dominion of Canada or on the Pacific coast. Many districts can show richer ore, but none such large bodies at the surface. I speak from experience, as a practical mining man of over twenty-eight years, spent in mining camps on the Pacific coast, and any miner who examines the vein will agree with me. As all those mines are situated about 1,000 feet up from the railroad there will be difficulty in building tramways to bring the ore down, as there is an inexhaustible supply of timber along the Kicking Horse river in front of these mines. All that is necessary, however, is capital and enterprise and the output will be astonishing. East of Mount Stephen lies Cathedral Mountain, on which there are two claims, the Carrie Mine and the Cathedral, both showing large bodies of ore, but containing some iron along with the lead and silver. These mines lie up high on the mountain. A good trail has been built for a mile or so, and the owners will complete it next spring. The formation is the same as Mount Stephen, and the vein lies parallel with the Monarch vein but higher up from the railroad. There is plenty of timber on the mountain side for all practical purposes. The Carrie Mine is owned by Calgary gentlemen.

North and across the Kicking Horse river lies Mount Field, on which are some good locations and mines; first among them being the Alpha, showing a body of ore about six feet wide to which a good trail has been built. The ore is of the same character as on Mount Stephen, except that it carries zinc in place of iron. In other locations the Comstock and Virginia show good indications of mineral and are on the same vein as the Alpha.

These mines comprise that portion of the Kootenay district which I have imperfectly tried to describe, but not to exaggerate. There are also other mines, and many will yet be discovered, as mining is but in its infancy in British Columbia.

I am happy to say people are waking up to the fact that this portion of Canada is rich in all kinds of mineral which, if taken hold of and properly developed by capitalists, will prove a source of great wealth. Now, if these mines were in the United States, they would have long since been taken hold of, but Canadians are only now waking up to the idea that they own in British Columbia mineral deposits as rich and great as the world has ever seen.

JOHN PATTIE.

The Development of our Mineral Resources.

The Editor

THE CANADIAN MINING REVIEW :

SIR,—In my last letter to you on the above subject I dwelt more particularly upon the effect of the land laws, upon the development of our mineral resources, and perhaps a few further suggestions regarding the attainment of this most desirable end may not be amiss so I herewith give them for what they are worth.

Ever since my first acquaintance with the mining districts of the Dominion I have advocated the establishment of nuclei of small local museums at the various mining centres with a view to educating the people of the district to know the appearance of the useful minerals.

I have been much struck by the fact that in districts of very large extent the search for useful mineral deposits is left in the hands of

comparatively few, and when we remember how very close searching is required, and how very unfavourable are the conditions in most of our mining districts the wonder is not how little is found, but how much has been done by those few. Every one who has had anything to do with bush work knows well, that even in the rocky areas where the soil is either absent or only forms a slight patchy covering—the difficulties of seeing anything owing to the thick bush and to the rock being so universally covered up with moss, and with the debris of dead vegetation. When we realise this and how the search for mineral deposits and the determination of their nature and extent when found under such conditions requires so much greater expenditure of time, energy and money than in more open districts where in traversing the country one can see around for a reasonable distance, then we see that what we want is a much greater number of prospectors. More favourable regulations for the acquirement of claims would, as previously pointed out, encourage the influx from other parts of the continent of already trained men, but besides this I think a great deal might be done by taking steps to direct the attention of others, whose business already takes them into our mineral regions, to the search for veins, &c., the finding of which would be not only profitable to themselves but also to the country at large.

These wild sections of the country are continually being traversed by a small army of trappers, voyageurs, pine prospectors, lumbermen, etc., and all these men together with farmers, whose holdings are near rocky mineral areas, could doubtless be led to be continually on the look out for minerals and spend more or less of their time prospecting, which they, being right on the ground, could do at odd times and with little cost.

As a step towards bringing about this wider interest in the subject, I would then suggest that the town councils of such centres as Port Arthur, Sault Ste. Marie, etc., should apply through the proper channels to the Dominion Government for collections of typical rocks and minerals such as are now supplied by the Geological Survey to various colleges and other such public institutions throughout the Dominion. Having obtained this they should house it in a suitable room or rooms where it would be easily and continually accessible during reasonable hours and place it in the charge of some resident, such as I am sure could always be found to volunteer, who would arrange it to the best advantage, keep it in order, etc. Then if the residents of the town would take every opportunity to bring it to the notice of all such as would be likely to put the knowledge thus attained to use, I feel sure that much good would result.

Further, it would be a good thing to start a library of reference in connection with the collections so that not only would an eye knowledge of rocks and minerals be thus obtained, but the means of acquiring a wider and deeper knowledge of these subjects would be placed within the reach of all. A very good way to make a commencement would be to get, at the same time as the mineral collection was obtained, a set of the publications, both (maps and books) of the Geological Survey.

Thus we should have the nucleus of a local museum formed at little or no cost to the community, for the collections, etc., are supplied cost free for such public purposes, and there are doubtless always to be found everywhere some public spirited persons who would be willing

both to provide room, to house and also take charge of them.

Around this nucleus could be gathered collections illustrating other subjects and there might also very usefully be commenced in connection with it collections illustrating the local resources which would be very useful in interesting visiting capitalists and others whilst doubtless the library would be added to from time to time by donations of suitable books from various sources. In fact it would form a centre towards which with efficient management would gravitate many things which would be thus rendered useful to the whole public instead of remaining simply locked up in the possession of private individuals or lost for want of some recognized place to put them.

When I first made this suggestion, in 1884, after visiting the Lake Superior mining region, I also proposed that such collections should be sent to some of the chief Hudson Bay posts where they would come under the notice of the passing voyageurs and trappers which would perhaps lead to very useful discoveries in our great northern wildernesses which, owing to the disadvantages of climate and to the existence of so large a proportion of rocky lands, will probably remain wildernesses unless mineral discoveries cause the opening up of the country.

I am glad to see, from a letter just received from a gentleman to whom I made the same suggestion as above, that at one place steps are being taken to carry out this idea, and if similar results are attained in other places through the wider publicity given the suggestion through the mediumship of your excellent paper, I shall feel that I have not talked nor written in vain.

I remain, Sir,
yours, &c.,
ELFRIC DREW INGALL.

(Mining Geologist of Geological Survey of Canada. Associate Royal School of Mines of England.)

Strong Protest Against Chinese Labor in Pacific Collieries.

A well attended meeting of colliers was held recently in Victoria to consider the proposed amendment to the Coal Mines Act of the Province. Mayor Grant presided.

Mr. Williams, on coming forward, said he was a miner of twenty-five years' experience, and he had come to Victoria to give his views, more particularly on the Chinese question. His experience was that one Chinese were a dangerous element in a mine, and instanced two or three cases where accidents occurred through Chinese being unacquainted with the dangerous nature of gas. A Chinaman in a mine has a roving commission—can come or go where he likes—while a white man, according to the Mining Act, can only go where his working is. His opinion of the recent explosion was different to what was published in the newspapers, but, of course, he was only a poor miner and his opinion did not count for much. His experience, however, with all classes of men in mines, was that a Chinaman was the most stubborn and pig-headed individual in existence in coal mines. The miners had drawn up some amendments to the Coal Mines Act in their own interests which they hoped to have passed in the Legislature, and as the resolutions were framed to save life and property, anyone raising a hand against their law was an accessory to manslaughter should accidents occur in the future. He then referred to the workings of mines, and the danger of employing Chinese therein, and concluded by asking all

present to attach their names to a petition about to be presented to the Legislature.

Mr. Hanna, an elder of the delegation, and a miner of 24 years experience, spoke in the same strain, referring particularly to the necessity of doing away with the employment of Chinese in the coal mines.

Mr. West spoke briefly in support of the amendments, and hoped the petition would receive many signatures. It was not a question of politics, but a movement in the interest of human life, and could not be looked upon as class legislation. He was very sorry not to see more business men and politicians present, but if the question was properly understood the hall would have been crowded.

Mr. Campbell, a miner, said he was not a speaker of any merit, but he had had thirty years' experience as a miner, sixteen years in British Columbia and the rest in Scotland and the United States. The speaker then gave his opinion of the effect of employing Chinamen in the mines had. He said he had known of Chinamen lighting fires in the mines to warm themselves. This, he said, was very dangerous, for in the event of gas being in the mine, an explosion would occur without a moment's notice. His experience with Chinamen in the mines showed that they are very careless, and the men have come to the conclusion that the Chinamen have been the cause of the explosions in the mines. The miners hoped that the people of Victoria would sign the petition to dispense with Chinese labor entirely. Mr. Dunsmuir had stated that money was no object to him, and that he would do what he could to satisfy the white miners. The speaker said he had put a good deal of faith in Mr. Dunsmuir's remarks, but that gentleman was now trying to do away with the most vital clause in the amendments to the Mining Regulations Act.

Mr. McClymont said that, as was stated by previous speakers, this was not a political meeting, but simply to show the people of Victoria what the miners desire. He considered that any one who would not take this matter up and assist the miners would have murder upon his head. He did not believe in mining matters. All know that the Government is controlled by one man, and the lives of those miners are in his hands. It rests with the people whether Mr. Dunsmuir is to have this control or not. If a man goes into the Legislature with an all-powerful influence and works for his own personal advantage, he has betrayed the trust of the people who put him there.

Another miner addressed the meeting briefly, after which the chairman invited the audience to come up and sign the petition. Eighty-three of those present responded to the call and signed their names.

The Unsafe Davy Safety Lamp.--

According to Mr. A. H. Stokes, one of Her Britannic Majesty's Government inspectors of mines, the Davy lamp is no longer to be considered in the light of a safety apparatus, and from that point of view is henceforth to be regarded as useless. The Royal Commission appointed to report upon the "Mines Regulation Act," declared that the lamp is "unsafe in a current with a velocity of six feet per second," and, as Mr. Stokes says that the combined rate of the miner's walk and the necessary ventilation will constitute at least that amount of speed in the air, it must necessarily be banished from the mines. He adds that in his own experience many explosions and deaths have resulted from its use.

Mineral Output, 1887.

W. Hamilton Merritt, F.G.S., A.R.S.M.

Last year, in view of the absence of official statistics, I contributed a short paper to this section (a) on the mineral output of 1886. The statistics I collected were copied from *The Week* into *The Canadian Gazette* of London, Eng., which devoted a column to the subject, ending with the following:

Canada can point with pride to the fact that collections of her ores have taken the highest awards for quality and variety at many international exhibitions, while the encomiums passed by no less a British authority than Mr. Le Neve Foster upon the Canadian minerals at the Colonial Exhibition were evidence of the great value of the exhibits there displayed. Surely then it becomes of national importance that every facility should be provided for obtaining detailed and specific official information regarding the deposits, that they may be speedily developed. The Canadian Institute is not as yet a body whose voice will command the prompt attention of either the Dominion or Provincial Governments, but the cause it is forwarding is of such vital moment to the Dominion that we hope the authorities will take the matter in hand, and speedily pass into law such measures as will render possible the collection of reliable and concise information and statistics relating to the mines, minerals and metallurgical interests of the whole Dominion.

Since the above was written we have been glad to welcome last month an advance guard to the expected, and hoped for, assistance from legislation in the shape of the statistical report on minerals for 1886, compiled by Mr. Eugene Coste of the Geological Survey. This doubtless is the result of a large and influential deputation of mining men and members of the House of Commons who gladly came together at my request to wait upon the Minister of the Interior at Ottawa in March, 1886. (See THE CANADIAN MINING REVIEW, March, 1886). And I think we shall be correct in giving our section credit for a recent Order-in-Council which has established a special section of the geological survey in accordance with our memorial presented to the Government last session, and following the lines laid down in the memorandum presented by the above mentioned deputation.

We must give the present minister credit for commencing the much needed reform, the desirability of which was laid before his predecessors without success.

The Departments of the Nova Scotia and British Columbia Governments, devoted to the mineral development of these provinces, are increasing their knowledge and efficiency as testified by their reports. Excellent work in acquiring information in connection with Ontario minerals is still being carried on by Mr. Blue of the Ontario Bureau of Industries.

We must welcome another important factor in the dissemination of information relating to our minerals and mines in the greatly improved condition in which THE CANADIAN MINING REVIEW of Ottawa has recently appeared. This journal has given our efforts, tending to the development of our mines and minerals, every assistance and has always supported the contention that extra legislation is advisable.

Among the public movements that concern our mineral developments the energy of the *Toronto World* deserves especial notice. This newspaper came to the inevitable conclusion that the Government of Ontario had been decidedly remiss in relation to the mineral development of the province, and has been doing excellent work in proving its point.

In view of the evident interest taken by our section last year in the statistical information contained in my paper of last year previously alluded to, I have again in a general way compiled from obtainable sources, a certain amount

of information in connection with the mineral output of the past year, 1887.

	Nova Scotia.	New Brunswick.	Quebec.	Ontario.	Manitoba.	N. W. T.	British Columbia.	Total.
Coal.....tons.....	1,521,000	700	.....	.....	.....	61,000	413,370	1,988,000 tons.
Gold.....\$.....	\$500,000	.....	.....	5,450	.....	.....	\$703,760	1,193,760 dollars.
Gypsum.....tons.....	124,000	21,525	.....	18,007	.....	.....	4,410	181,975 tons.
Iron Ore.....tons.....	50,000	1,000	.....	.....	.....	.....	.....	71,347 "
Marl and Gypsum Ore.....tons.....	63	2	.....	.....	.....	.....	.....	1,587 "
Copper.....".....	.....	.....	1,337	3,874	.....	.....	.....	5,267 "
Silver.....".....	.....	.....	.....	\$217,055	.....	.....	.....	214,067 dollars.
Salt.....tons.....	.....	.....	.....	65,801	.....	.....	.....	65,800 tons.
Petroleum (crude).....bbls.....	.....	.....	.....	708,233	.....	.....	.....	708,233 bbls.
Phosphate.....tons.....	.....	.....	.....	733	.....	.....	.....	733 tons.
Asbestos.....tons.....	.....	.....	.....	1,000	.....	.....	.....	1,000 tons.
Mica.....lbs.....	.....	.....	.....	.....	.....	.....	.....	4,700 lbs.
Antimony Ore.....tons.....	.....	.....	.....	.....	.....	.....	.....	30,000 lbs.
Pyrites.....tons.....	.....	.....	.....	.....	.....	.....	.....	174 tons.
Plumbago.....cwt.....	.....	.....	.....	.....	.....	.....	.....	37,000
Barytes.....tons.....	.....	.....	.....	.....	.....	.....	.....	1,180 cwt.
Sand and gravel, building stone, marble, erindstones, lime, granite, serpentine, slate, firestones, bricks, tiles and miscellaneous clay products, say.....	.....	.....	.....	.....	.....	.....	.....	.....
Export of produce of the mine for 1887 (from Dominion Trade and Navigation Returns).....	.....	.....	.....	.....	.....	.....	.....	.....
To United Kingdom.....	.....	.....	.....	.....	.....	.....	.....	.....
United States.....	.....	.....	.....	.....	.....	.....	.....	.....
Other countries.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	.....	.....	.....	.....	.....	.....	.....	\$2,850,000.

The total export of the product of the mines for 1887, as given by the Trade and Navigation returns, was a little short of that record in 1886. In the aggregate the production of mineral does not seem to have increased materially—notwithstanding that the output of coal, iron, salt and petroleum was larger—but while the quantity mined in one or two products may have fallen off temporarily, the result of the past year's work shows that the mining at large has been persistently continued in every department, and that prospecting and preliminary development has made enormous headway, particularly in the Rocky Mountains, and Selkirks, in the Nicolet Valley region, and in the Georgian Bay and Lake Superior districts.

This fact, in conjunction with the awakening public interest, will without doubt very soon show remarkable results, and we may hope will place our mining industries on the permanent footing which they should undoubtedly occupy.

The Effect of Good Management on the Profits of Coal Mining.—The following extract from an article by Mr. André in a recent number of the *Colliery Guardian* is very suggestive and instructive: "The reforms introduced into the management of the Anzin collieries in the north of France in 1884, which occasioned the great strike and raised the ex-collier and tavern-keeper Basly to the position of a member of the French Parliament, are beginning to show themselves in larger dividends for the shareholders and better wages for the men. The efficiency of the miner, that is, the average annual production per man, has been raised in three year-

from 206 to 286 tons, and increase of 38.8 per cent. This important reduction in the cost of production has so improved the financial position of the company that they are able to prosecute vigorously the exploratory works that had been commenced in more prosperous days, and thereby gradually to increase the output. There are now eighteen pits being worked, the average annual output from each of which is 129,800 tons." Among our own colliers it would be easy to show the difference which good or bad management makes in the cost of production, and the data to make such comparison is generally to be found in the annual reports of the companies, though it can be brought out into relief only by careful analysis and comparison of statements.

Economic Minerals of Algoma and their Locality. (a¹)

SILVER—Native and Argentite—Silver Islet, Jarvis Island, Rabbit, Beaver, Badger & Silver Mountain, and Whitefish & Atik Lake districts, and combined with copper, nickel and cobalt on Michipicoten Isle, St. Ignace, Nipigon Bay, Princess and Thunder Bays, Sudbury, on line of C.P.R., also

GOLD—Native in vein in Heron Bay on line of C.P.R., Prince's location, Huronian and Highland mines, Shebandawan, Lake Superior, and in several well defined veins near Rat Portage on Lake of the Woods.

GALENA—In string veins in Black Bay (Townships of McTavish, Dorion and McGregor), Princess and Thunder Bays, Lake Superior, and New Silver District, south-west of Port Arthur.

ARGENTIFEROUS GALENA—"Victoria" and Cascade mines near the Sault Ste. Marie and on Echo Lake, Thunder Bay, and in the new silver district south-west of Port Arthur.

LEAD—At Silver Lake, Thunder Bay, vein of quartz and barytes holding galena. "Enterprise," Black Bay, Pointe Aux mines, Pigeon and Kaministiquia Rivers, Lake Superior.

COPPER—Sudbury on line of C.P.R., Lake Superior, Spar Island, Prince's location (4 feet vein), viterous sulphuret with silver. St. Ignace and Michipicoten Islands; combined native copper and silver. Michipicoten Island; bay and river combined copper, gold and silver. Mica Bay, Otter Head, Pic River, Montreal River, Battle Island, Nipigon District, Pointe Aux mines, Black River and Black Bay.

IRON—Specular Iron Ore—The Wallace mine on Lake Huron, Desert Lake mines, Bruce mines, and at Killarney, Nipigon and Michipicoten districts and north shore of Lake Superior, magnetic iron ore. North shore of Lake Superior and westward at Genesint Lake and Hunters' Island, both magnetic and hematite.

NICKEL—Wallace mine, Lake Huron "3 A" mine, Prince's location and Michipicoten mines, Lake Superior.

BARYTES—Permanent white—Lake Superior in a multitude of veins along the north shore, between Pigeon River and Montreal River.

JASPER—Northwest of Thunder Bay, Batchawanning Bay and north of Lake Huron.

SERPENTINE—Nipigon River.

SANDSTONE—Red and Brown for building, on Nipigon Bay (Isles Verte and Le Grange.)

AGATES—St. Ignace and Michipicoten Island, Lake Superior.

AMETHYSTS—Thunder Bay, coast and islands, Lake Superior.

CHLORASTROVITES or Cats Eyes—Isle Royale, Lake Superior.

BISMUTH—Thunder Bay (north of "3 A") and at Echo Lake, near Sault Ste. Marie.

ANTIMONY—North Shore, Lake Superior, Garden River and Echo Lake.

GAS, NATURAL—Thunder Bay, Lake Superior.

MARBLE—Lake Nipigon, Sunshine Creek, C. P. Ry. west of Port Arthur, and at Garden River and Echo Lake.

CHERT, RIBBOND (for cameos)—Thunder Bay.

COBALT (for glass staining and porcelain painting, etc.)—Thunder Bay, Lake Superior.

REFRITRE, PITCHSTONE and BASALT, (for making black glass)—North Shore of Lake Superior, between Nipigon and Michipicoten. Limestone (pure), Mack Bay, Echo Lake and north-westward from Thunder Bay, L.S.

WHITE QUARTZ SANDSTONE (for making glass)—North shores of Superior and Huron.

ALUM—On Slate River, Thunder Bay, Lake Superior.

STEAHITE OR SOAPSTONE—Near Thunder Bay.

FLAGGING SLATE—Sawyer's Bay, Thunder Cape.

MOLYBDENUM (for dyeing purposes and calico printing.)—Terrace Bay and in certain rock cuts on C. P. R. road, north shore of Lake Superior.

ARSENIO—In various places on north shore of Lake Superior.

ROOFING SLATES—75 miles west of Port Arthur on C. P. Ry., on the Montreal River.

MANGANISE—North shore of Lake Superior at different places.

GYPSEUM—North of Michipicoten and on the Moose rivers.

MICA (marketable)—On the Lake of the Woods east of Rat Portage, and within 20 miles of Port Arthur, Lake Superior.

LIGNITE—On the Rainy River, near Fort Francis, and on the Albany, north of Lake Nipigon.

TELLURIUM (a rare combination of gold and silver) found in the Huronian mine near Port Arthur.

ZINC—In immense deposit near Ross Port on the line of the C. P. R. east of Port Arthur.

FIRE CLAY AND KAOLIN—Near Thunder Bay and Peninsula Harbor.

ASBESTOS—North of Poplar Lodge, Lake Nipigon, and near the mouth of Nipigon river.

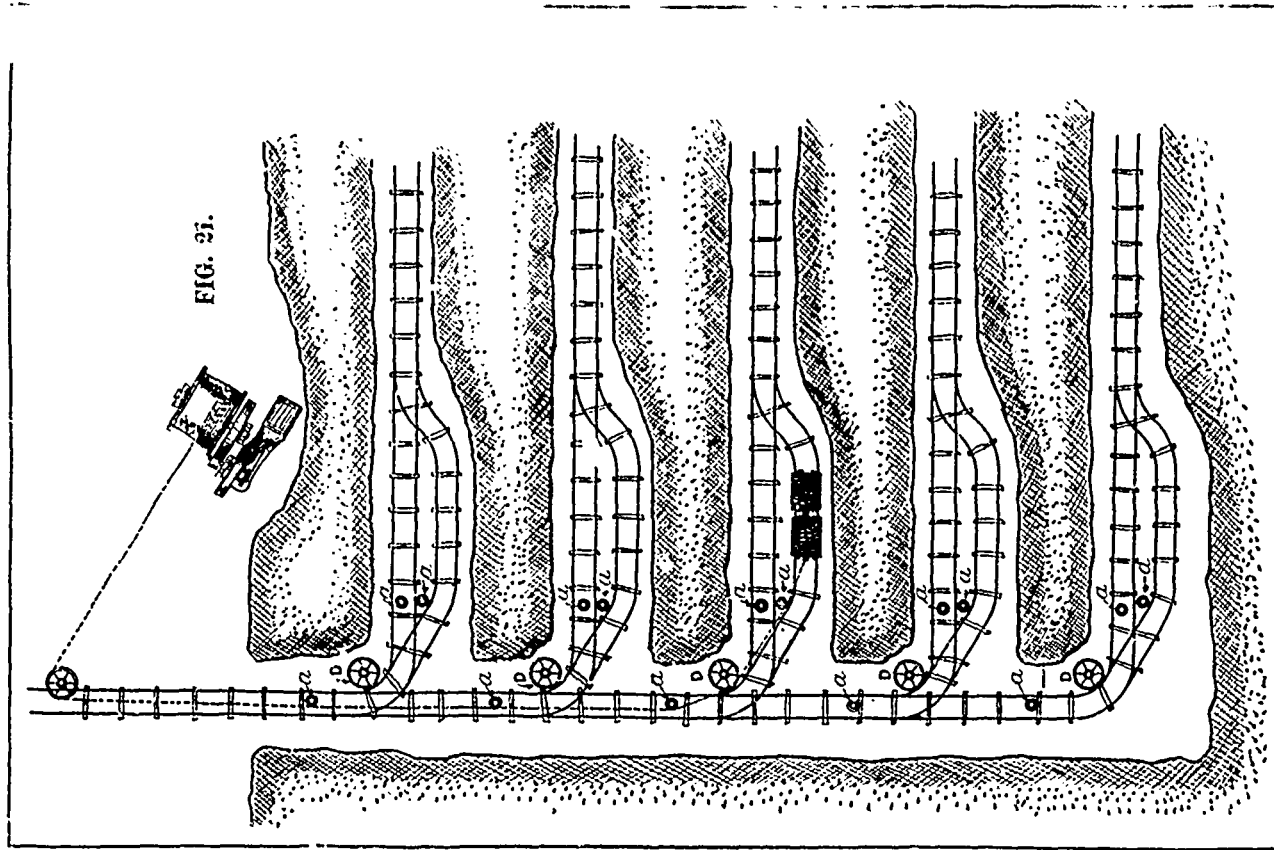
Colliery Cage Props.—According to A. Demeure, at No. 5 pit of the Bascoup Collieries, the cages are double-decked, carrying two tubs on each deck. At the bottom of the pit they are received on a platform balanced so as to support the weight of the cage and empty tubs, but to sink when a loaded tub is run on, the movement being controlled by a powerful brake, so that the change of position is conducted independently of any handling of the engine. Meanwhile, the cage at bank has to be (1) raised, (2) lowered on to the props with the top deck level with the bank, (3) raised until the lower deck is slightly above the props, (4) lowered on to them, (5) raised to allow them to be withdrawn, (6) lowered away. In English practice, this would usually be conducted in the reverse order, the cage being (1) completely raised, (2), bottom deck lowered on to props (5) raised clear, (6) lowered away. In each case the engine has to be reversed five times. It was found that the cage at bottom was always loaded and waiting before the cage at top was ready, and it was to accelerate the latter that the Stauss system was adopted. In this system the catches are somewhat in the form of short bolts, resting on a steel bar or frame, the upper surface of which has an inclination of about 9°.

These bolts are hinged so as to give way to the upward passage of the cage, and are connected to the hand lever by a sort of toggle-joint which locks them into position, so that the weight of the cage applied on their upper surface cannot possibly force or slide them back, while, owing to the inclined surface on which they rest, they can be easily withdrawn by the lever without the necessity of first lifting the cage. The cage is (1) completely raised, (2) lowered until the bottom deck rests on the props, (3) the props are withdrawn and the cage lowered until the upper deck comes on to the props, (4) the props are finally withdrawn and the cage lowered away, the engine being reversed once. Mr. Stauss claims five distinct advantages for his apparatus:—(1) Economy of time. Experiments show that in the case above given this amounts to 13 per cent., with a corresponding increase in the amount of coal that can be drawn in a given time. (2) Economy of steam, as each reversal of the engines means an additional stroke of the pistons. (3) Less wear and tear of the rope. (4) Less wear and tear of the valve gear and moving parts of the engine. (5) The possibility of employing smaller engines, an advantage open to considerable question. In the case of existing plant, the size of engine cannot, of course, be reduced, and in putting down new plant the engine should always be powerful enough, in case of need, to raise the loaded cage unassisted by the partial counterbalance of the empty one. In cases where there is no balanced platform, the Stauss system is not so applicable (except in the case of single decked cages, where the gain is not so apparent), as it is only advantageous where the cage is changed by successive descents; and while the cage at bank is thus descending, the one at the bottom would, if worked simultaneously by the engine, by ascending stage by stage. Moreover, the rope must be kept taut, so as to avoid an undue shock when the cage is dropped by withdrawing the catches; and this manifestly cannot be done with both cages at once. As a necessary precaution, when the pit is standing, the hand-lever must be locked or chained, so that the catches cannot be willfully or accidentally withdrawn; and should the engine-man have occasion to leave his engine, he must always put the brake hard on.

Accidental Mining Success.—A rather strange and remarkable story is told in Idaho in connection with one of the principal gold mines of that territory. It is stated, says *Mining Industry*, that two daring and unscrupulous fellows, one having a rather creditable acquaintance in London, conceived the idea of floating a mining venture in England. The basis of operations was a 10-foot assessment hole, sunk on a worthless quartz vein. Artistically executed maps and plates of an ideal vein with workings were gotten up, together with views of a mill belching forth steam and smoke, and surrounded by innumerable quartz teams and the conventional piles of cordwood. The sanguine promoter of the enterprise then started for Europe and unfolded his great mining scheme, while his partner worked the wares from this side. The swindling pair were successful in catching a few fools, and securing a little money. Every week the "superintendent" telegraphed the results of the clean-up from the plates and mortars of the imaginary mill, and promptly returned the money received from stock sales by this promoter as the amount realized from the disposition of gold bars. Dividends were declared, the stock was advanced in price, and the Englishmen felt greatly

elated over their venture. It proved a picnic for the American partner in the scheme, but the promoter of the enterprise in England became frightened at the magnitude of the swindle and dreaded a final exposure and the consequent results. He wrote to his confederate in Idaho to look about and buy a mine for the company with a portion of their profits, which were now very large. A mine answering the description was not, however, so readily found, and especially as the man in Idaho was rather indifferent. Finally the climax began to approach when a few of the directors of the company announced their intention of visiting America and inspecting their wonderful bonanza. This brought the situation home to the "superintendent," who, at the urgent demand of his associate in England to protect himself, lost no time in scanning over the country for a suitable property. Finally one was found that very nearly answered the description of the visionary mine, and it was purchased, and in a few months it was made to conform in all essentials to the description forwarded, even including good ore faces, as new strikes were made that surprised everyone. When the promoter arrived with his party of Englishmen he was the most surprised and delighted man in the company, and the exchange of congratulations between the two partners was an event that neither will forget. The mine not only held out well, but continued improving, and paid dividends regularly, and is to-day one of the best gold properties in the Territory of Idaho. The Englishmen, it is stated, never learned of the deception practised on them, and would to-day invest a million pounds sterling upon the recommendation of the promoter; but the latter is making money enough out of the strangely acquired mine, and would not go through the experience of selling an imaginary mine again unless, perhaps, he should get broke once more.

Electric Coal Cutting Machine.—The application of an electric motor to impart motion to coal cutting machinery is proposed by Messrs. Bower, Blackburn & Mori, of Woodlesford, Yorkshire. The frame work or bed-plate of the machine is supported on wheels. Within the frame work is mounted or applied the electric motor, which may be of any suitable construction, and to this motor the electric motive force is imparted through suitable cables from a dynamo machine of any suitable tension. A rotary motion is transmitted to the shaft carrying the cutter bar through gearing. The lower part of the frame work, to which the upper part of the frame work is attached, forms a circular turntable, and is fitted so as to be capable of a rotary movement on the bed-plate, this rotary movement being effected by means of a worm, mounted on a shaft supported in the bearings, attached to suitable brackets, mounted on the bed-plate, and worm-wheel segment attached to the upper part of the frame work. By this means the cutter bar can be moved along by the attendant as the coal is being cut, and the proper feed given thereto. Although by preference the motor is carried on or attached to the coal cutting machine, the inventors would have it understood that such motor may be placed at any convenient distance therefrom, and motion transmitted from such motor to the machine by belt, chain, rope or other gearing, or by storage transmission or static induction. Suitable means may be employed for regulating the speed of the motor, and thus varying or adjusting the speed of the coal cutting machine.



Wire Rope Haulage and its Application to Mining.

By Frank C. Roberts, C.E., Philadelphia, Pa.

Continued from February Issue.

Having described the most important mechanical devices common to engine and gravity-planes, I will now consider the distinct features of each.

II. *a.* **ENGINE-PLANES.**—Planes of this class, especially when underground, are often denominated *slopes*, and are naturally divided into single and double slopes. In the former hoisting and lowering are distinct and separate operations, performed upon a single track (Fig. 7). Double slopes, on the other hand, provide for hoisting and lowering at the same time, and consequently necessitate three or four lines of rails (Figs. 8, 9 and 10).

On single engine-planes it is usual to employ a non-reversing engine, and, as in the case of the

single hoist, the slope may be operated by employing the power of the engine but one-half the time. In such instances the empty cars are allowed to descend by gravity, the drum running freely on the shaft for the time and being controlled by a strap-break or friction-clutch. It is sometimes convenient to locate the engine at the foot of the plane, the hoisting-rope being supported along the side of the slope by rollers (Figs. 15 and 16) and led to the head of the plane, where it passes around a wheel of large diameter and, returning down the track, is attached to the car.

The single-slope system is peculiarly applicable where there are a number of side-entries located at different levels below the surface. In this case the train of descending cars may be stopped at the entry into which it is desired to switch some of the trucks, the train in the meantime being prevented from premature starting by a lock consisting of a timber pivoted and thrown over the rails. When the disconnection has been made, the signal is given and

the train descends to a lower level, where the operation may be repeated. In hoisting to the surface, the cars in the various side-entries are run to the main entry and, in a manner similar to that above described, switched to the main slope and connected to the rope.

An improved modification of the single plane is illustrated in Fig. 21. Here, for the accommodation of the empty or loaded cars, each side-entry has its individual parting or siding placed near the main entry, and in this way the plane is practically divided into as many separate planes as there are entries. Loaded cars are taken from each entry in succession, and the empties returned in the same order, the position of the end of the rope being indicated to the engineer by marks upon the rope, or better, by an indicator attached to the drum. Proper switches, etc., are located at the desired points, and the rope is guided into the entry by drums D, placed in the angles as shown. These drums have a face of two and a diameter of five feet. Guide rollers, *a*, are placed at suitable points.

Double Engine-Planes.—In double engine-planes, engines similar to those employed in double hoists are used, requiring, of course, reversing-gear and an efficient brake. The operation of these planes differs from the preceding only in the detailed arrangement of switches, sidings, etc. These devices may be readily understood by an examination of the various track-systems and other expedients already described.

II. *b.* **GRAVITY PLANES.**—The valley of the Monongahela is celebrated for its gravity-inclines. Here the mine-adits are located at a considerable elevation above the railroads, the incline from the pit-mouth to the railroad being of such a degree that loaded mine-cars, descending by gravity, raise a corresponding number of empty cars. To this application of natural force the name "gravity-plane" has been given. Perhaps to the ordinary observer the profile of the gravity-incline is a matter of small moment, and yet this factor is important in securing a satisfactory operation. The plane should be slightly concave. Theoretically the curve is a

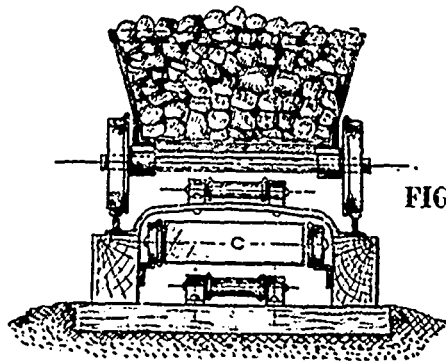


FIG. 22.

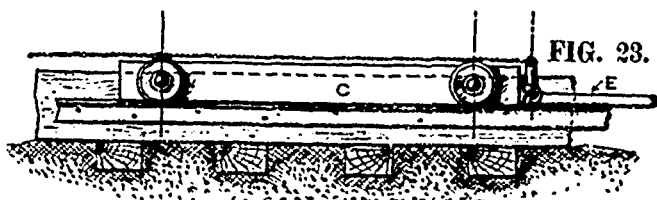
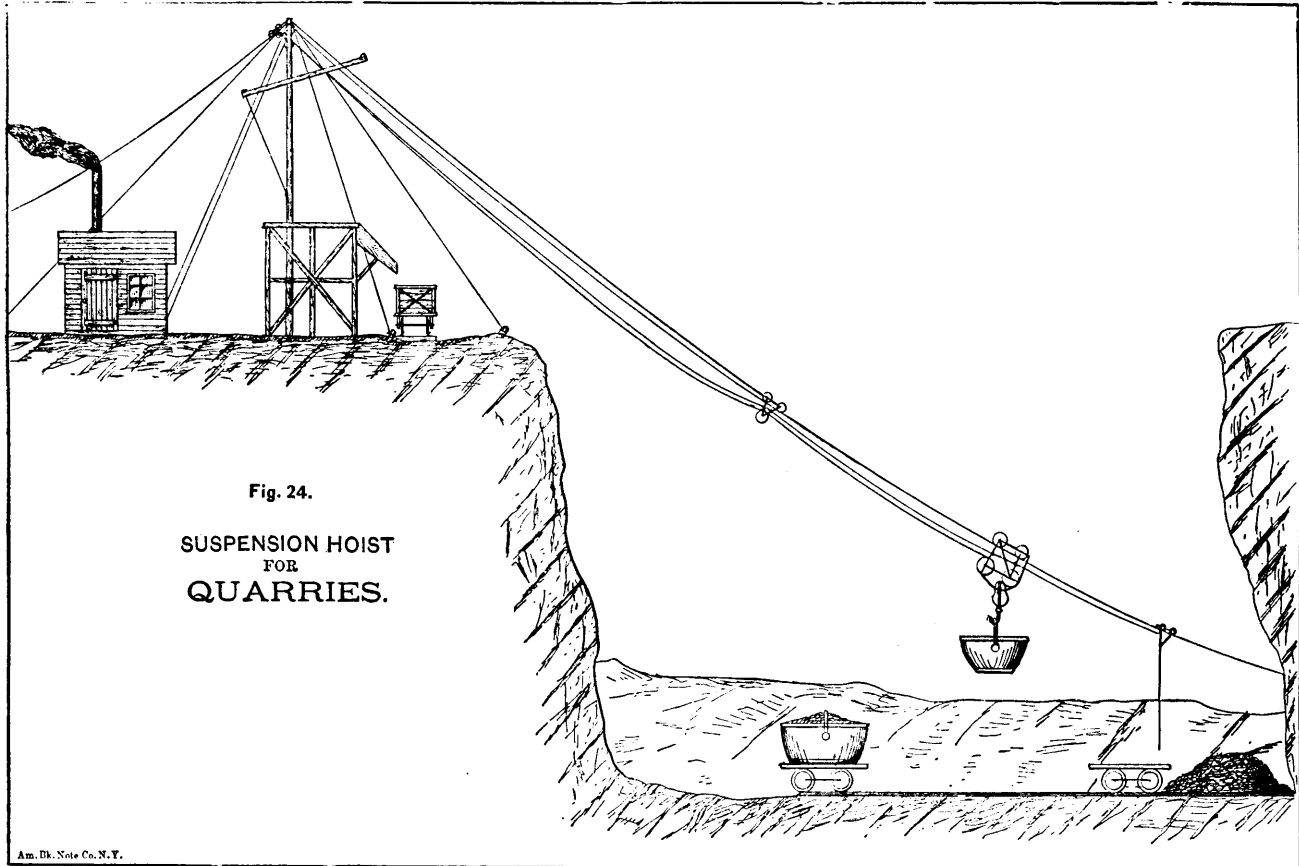


FIG. 23.

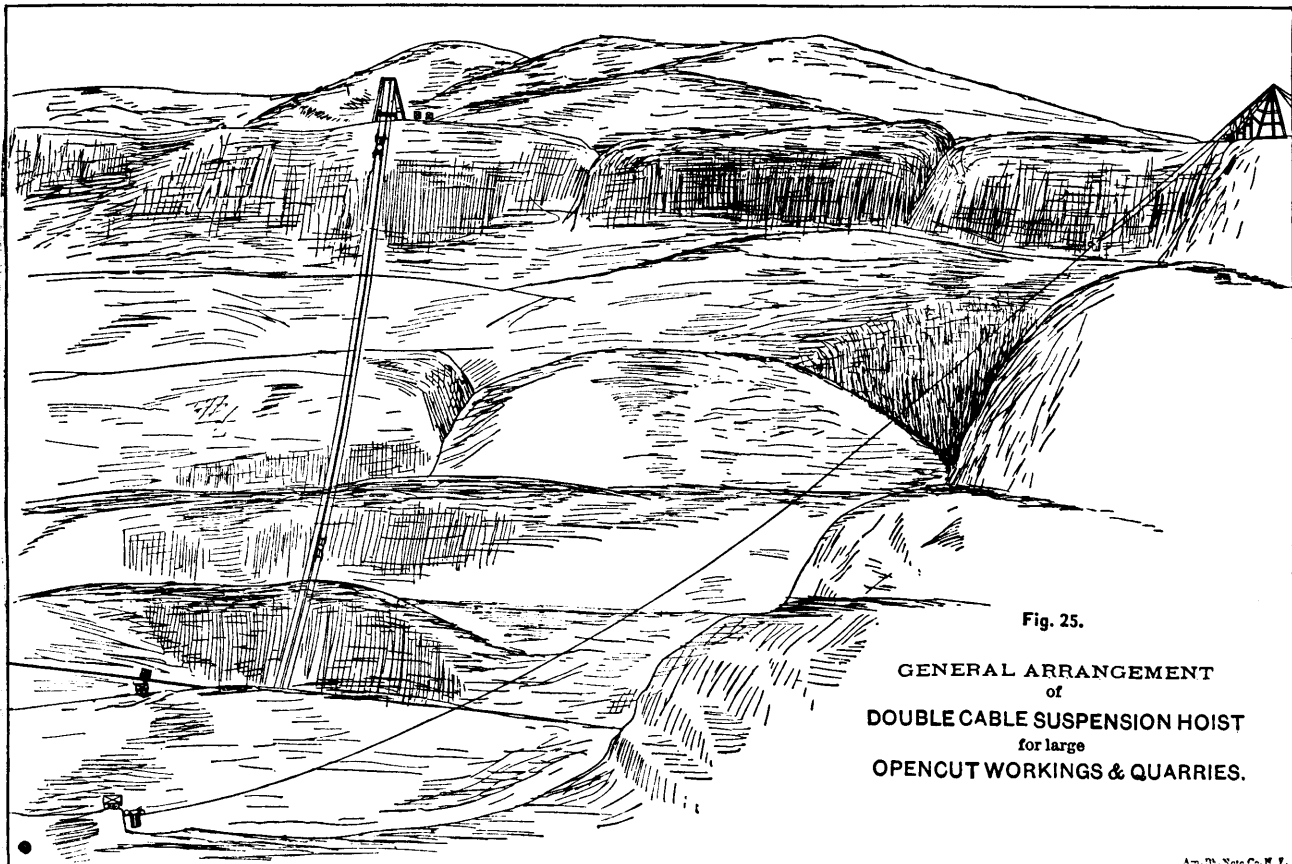


cycloid, the peculiar property of this curve being that a body falling along its lines will reach the lowest point of the plane sooner than by any other course, straight or curved. It can also be demonstrated that when the cycloid is employed, the weight of the two ropes is equalized at every point, so that the resistance from this cause is constant. On a straight incline a variable breaking force is required; but on a cycloidal incline the brake may be applied with equal force during the whole time of descent, and a uniform rate of motion insured.

It would, of course, be a difficult matter to build the profile of a plane so as to conform to cycloidal lines; but, for the reasons mentioned, it is advisable to approach as nearly thereto as possible.

The various track systems common to both engine and gravity-planes have been described above; but while the three and four-rail systems are similar in principles of operation, the single-track system (Fig. 7) as applied to gravity planes is modified to such a degree as to require special consideration. This modi-

fication consists in employing two tracts of different gauge, the narrower being placed within and below the wider (Figs. 22 and 23). The wider track is for the pit-cars, while the narrower serves as a roadway for what is termed the balance car, C. The latter is so proportioned in weight that it is sufficient to raise an empty car, and light enough to be elevated by the descending loaded car. To the balance car is attached a safety catch E, as shown in Fig. 23. When the rope breaks, or through any means becomes slackened, the lever E drops, and com-



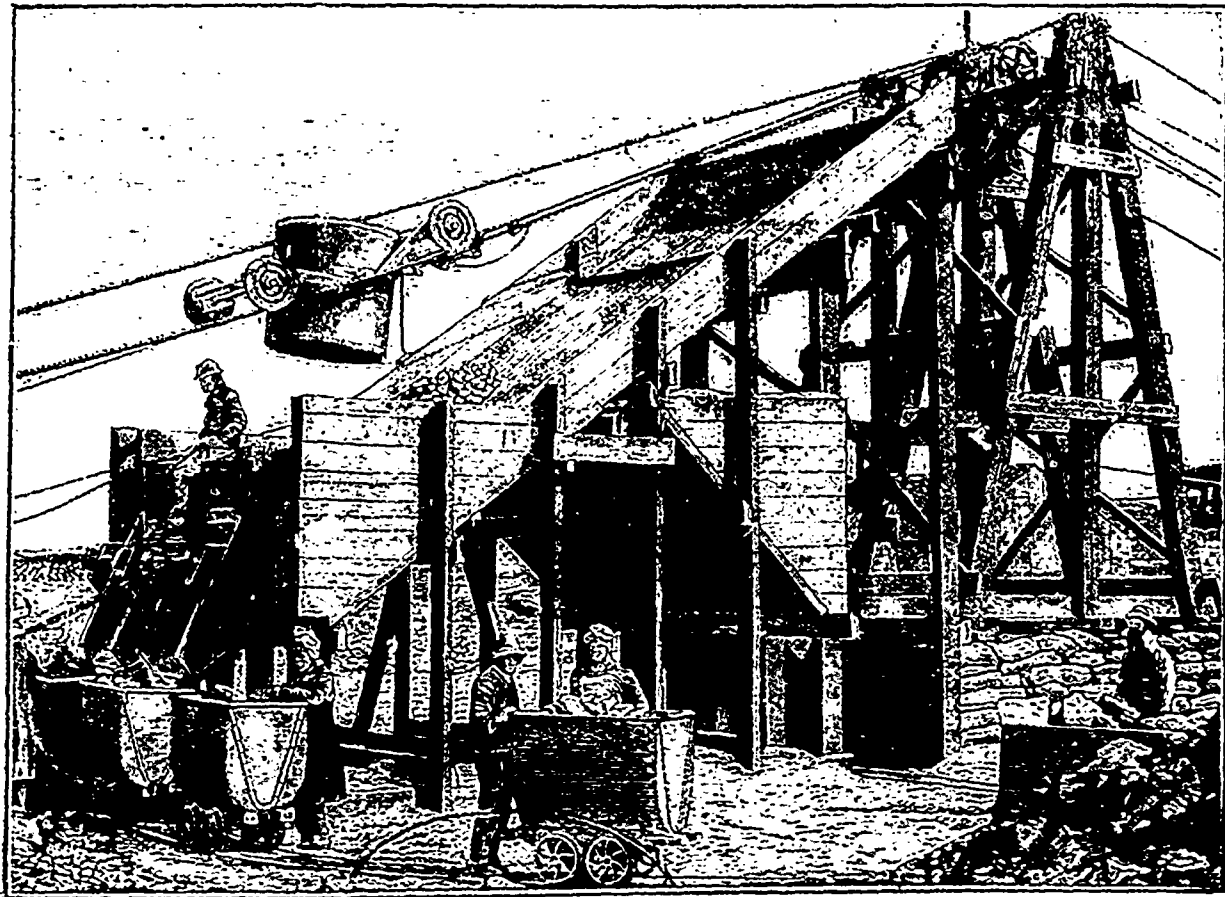


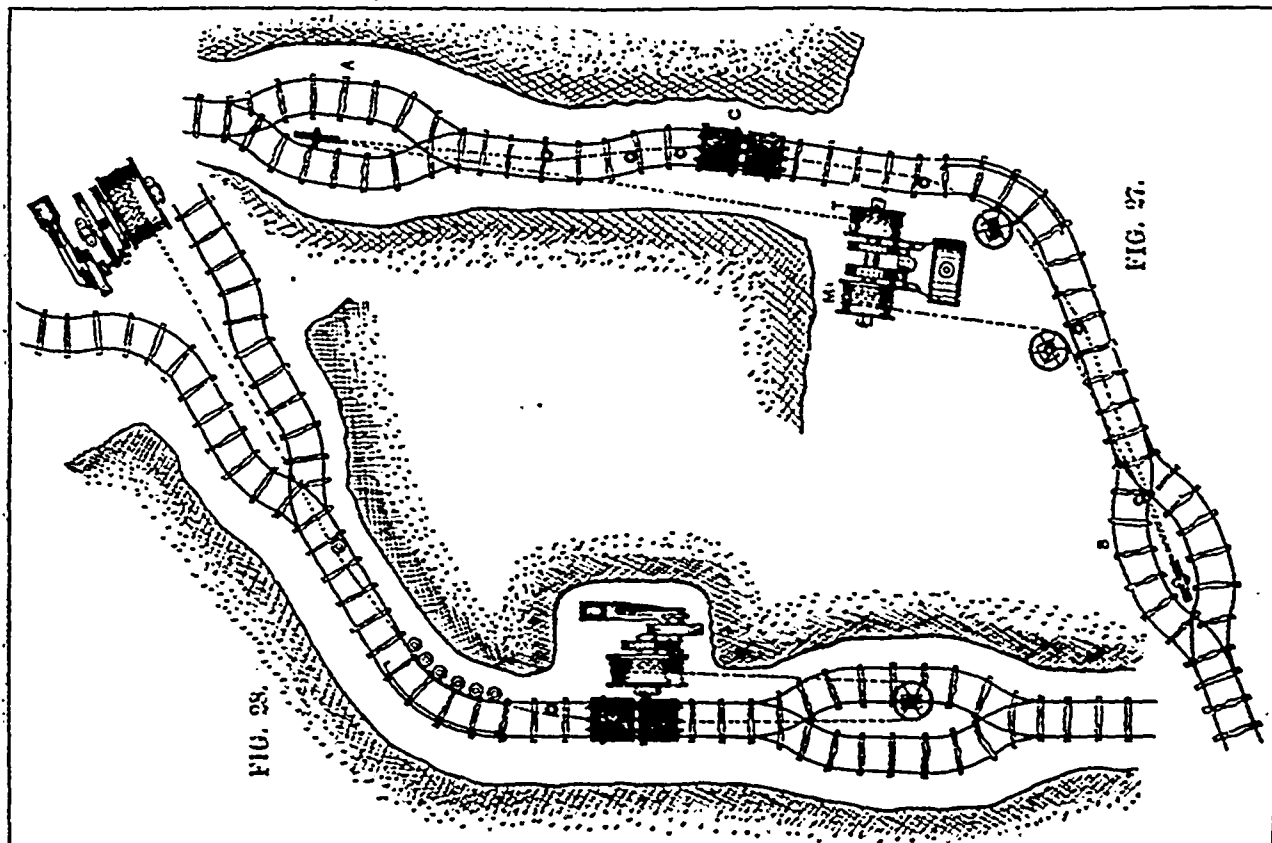
FIG. 26.—Arrangement of Terminal for Double Cable Suspension Hoist.

ing in contact with the ties of the road-bed, prevents rapid and dangerous descent.

Gravity-planes are operated by either one or two wire ropes. Where a single rope is employed, it receives three or four turns around the head drum, in order to prevent slipping, and the ends are attached to the empty and loaded cars respectively. (In the single-track system one end is, of course, attached to the counter-

balance car). This arrangement is very crude and not to be recommended under any circumstances. There is an unavoidable sideward movement in the rope, which not only causes great inconvenience but is also the source of rapid wear to the rope. Where the employment of a single rope is necessary, it will be found more advantageous to employ a standard wire-rope grip-sheave. The latter consists in

an iron sheave, having its rope-seat composed of a number of hinged segments. These are arranged in such a manner that the pressure of the rope causes the upper part of the segments to close and grip the rope. The preferable method, however, is to employ two ropes. These may be operated in various ways. In the first instance, we may employ one drum, the rope winding and unwinding from opposite ends,



or again, we may have two smaller drums keyed to one shaft, each having its own rope. Both these expedients require that the two ropes shall pass off at opposite sides of the drum *i. e.* one at the top and the other at the bottom. Where economy of space is requisite at the heading, this becomes a very inconvenient arrangement. In order to avoid this difficulty two drums mounted on separate shafts and connected by gear wheels are used. In this manner it becomes possible to lead both ropes from the under or top side of the drums as may be desired. The most complete device is to employ two fusee-drums, placed end to end on one shaft with the brake-seat between them. These may be located at some distance back from the head of the incline. Two head-sheaves are here employed, over which the rope passes and continues down the incline.

In all gravity-planes it is necessary to employ a brake-apparatus attached to the rope drum in order to check (*b*) the speed of the descending cars. Any approved brake may be used for this purpose, care being taken to apply a device that may be operated speedily and with

little exertion. The speed of the drums must be entirely under control.

The same precautions should be taken in proportioning a wire rope, to be used on inclined planes, as have been specified under hoists. Wire rope of six strands of seven wires each, laid about a hempen centre is the most serviceable on inclined planes. The wire in this grade of rope is coarser than in the 19-wired rope and is consequently better able to withstand the rough usage and surface-wear encountered in this application.

Fig. 39 illustrates the most approved design of swivel-chain-connection between the wire-rope and cars on inclined planes.

The stress in the rope when applied to inclined planes is dependent on the inclination to the horizontal. The following table will be of assistance in determining the stress; but it must be borne in mind that, while the table is based upon an allowance of 40 pounds per ton for rolling friction, there will be an additional stress, due to the weight of the rope, proportional to the length of the plane.

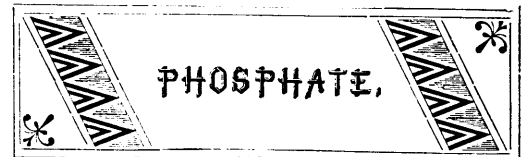
Stress in Hoisting Ropes on Inclined Planes of Various Degrees.

Rise per 100 ft horizontal.	Angle of Inclination	Stress in pounds per ton of 2,000 lbs.	Rise per 100 ft horizontal.	Angle of Inclination.	Stress in pounds per ton of 2,000 lbs.
Ft.	°		Ft.	°	
5	2 52	140	105	46 24	1484
10	5 43	240	110	47 44	1516
15	8 32	336	115	49 00	1535
20	11 10	432	120	50 12	1572
25	14 03	527	125	51 21	1597
30	16 42	613	130	52 26	1620
35	19 18	700	135	53 29	1642
40	21 49	782	140	54 28	1663
45	24 14	860	145	55 25	1682
50	26 34	933	150	56 19	1699
55	28 49	1003	155	57 11	1715
60	30 58	1067	160	58 00	1730
65	33 02	1128	165	58 47	1744
70	35 00	1185	170	59 33	1758
75	36 53	1238	175	60 16	1771
80	38 40	1287	180	60 57	1782
85	40 22	1332	185	61 37	1794
90	42 00	1375	190	62 15	1804
95	43 32	1415	195	62 52	1813
100	45 00	1450	200	63 27	1822

I append also a table (Trenton Iron Co.), giving the various data necessary to select a wire rope to meet specified requirements.

Trade No.	Description			Iron.			Steel.		
	Diameter in inches	Circumference in inches.	Estimated weight per foot in pounds.	Breaking stress in tons of 2,000 pounds.	Proper working load in tons of 2,000 pounds.	Circumference of hemp rope of equal strength	Breaking stress in tons of 2,000 pounds	Proper working load	Circumference of hemp rope of equal strength.
11	1 1/4	4 3/4	3 37	36	9	10 3/4	88 38	22	16 1/2
12	1 1/2	4 3/4	2 77	30	7 1/2	10	67 2	16 8	15 1/2
13	1 3/4	4 3/4	2 28	25	6 1/4	9 1/2	60 67	15 2	15
14	1 1/2	3 1/2	1 82	20	5	8	39 84	10	11
15	1	3 3/4	1 50	16	4	7	31 82	8	9 1/2
16	1 1/4	3 3/4	1 12	12 3	3	6 1/4	24 7	6 2	8 3/4
17	1 1/2	3 3/4	0 88	8 8	2 1/4	5 1/4	18 48	4 6	7 3/4
18	1 3/4	3 3/4	0 70	7 6	2	5	16 32	4	7 1/4
19	1 1/2	3 3/4	0 57	5 8	1 1/2	4 3/4	12 44	3 1	6
20	1 1/4	3 3/4	0 41	4 1	1	4	9 33	2 3	5 1/4
21	1 1/2	3 3/4	0 31	2 83	3/4	3 1/2	6 89	1 7	4 1/2
22	1 3/4	3 3/4	0 23	2 13	3/4	3	5 23	1 3	3 3/4
23	1 1/2	3 3/4	0 19	1 65	3/4	2 3/4	3 93	1	3 3/4
24	1	3 3/4	0 16	1 38	3/4	2 1/2	3 25	81	3
25	1 1/4	3 3/4	0 125	1 03	3/4	2	2 96	75	2 3/4

(To be continued.)



Du Lievre.

Nothing could be more encouraging than the present outlook of the phosphate industry in this district. All the mines are being vigorously developed, giving employment to a large force of miners and laborers, and ore is being brought to the surface in great abundance. The mines have never been so productive as now, and when navigation is open many thousand tons of rich ore will be ready for shipment. There can be little doubt that the output during the coming season will be far in excess of any former year.

Frequent reference has been made in these columns to the constant improvements which have been made at the various mines, but at none of them are these more striking than at High Rock—one of the most productive properties in the district. The buildings, which include among others, commodious boarding and store-houses, stables, blacksmith's and machinist's quarters, and a very commodious and substantially built manager's dwelling and office, will shortly be augmented by the erection of twelve new tenements for the accommodation of the largely increased force to be put on during the coming summer. In the large tunnel (No. 11 pit) a staff of 100 men and four drills are taking out about 15 tons of ore per diem. The other pits on the top of the hill continue to turn out satisfactorily. In the cobbing houses another 52 men and boys are employed in connection with the recently introduced ingenious system of cleaning up the fine phosphate. This system, which was fully described in our December issue, continues to give every satisfaction: double the quantity of ore being separated from foreign matter in less than half the time taken by the old process, and as much as forty tons has been cobbled in one day by these large circular screens. About 2,500 tons of first class ore are now awaiting transportation. Mr. W. W. Pickford proposes to bring out from England a large number of miners during the summer, and an endeavour will be made to increase the force to at least 300 men. A little village of 35 families has sprung up in connection with these extensive mines.

Mr. Patrick Smith, the genial mine superintendent at High Rock, has been suffering from an old accident to his foot, and has temporarily resigned his position for a few weeks in order to seek medical treatment in Montreal.

James McCabe is preparing to take out a large quantity of phosphate from his mine on River du Sour, as he expects that the L. R. locks will be finished this year, thus allowing steamers to run to High Falls and leave him but one day's hauling from the mine, which is but a mile or two from Messrs. Ross Bros.' Ox Bow Farm.

Mr. Stewart is putting up a house on his lot near High Falls. He will open out a number of shows this spring. This gentleman owns quite a number of mining lots above the Chute.

Mr. S. P. Franchot reports that very satisfactory progress is being made at both the Emerald and the Central Lake Mines.

It may interest our readers to know that the exact quantity of ore shipped from Buckingham station last year amounted to 12,900 tons, as follows:—

	Tons.
High Rock.....	5,000
Dominion.....	2,600
Ottawa Phosphate Co.....	2,400
Union Mining Co.....	1,700
W. A. Allan.....	600
Lomer, Rohr & Co.....	600
Total.....	12,000

Preparations for a very active season are being made at the mines of the Canadian Phosphate Company. Arrangements are nearly completed for the construction of a tramway to the river's bank, and increased accommodation is being provided for the largely increased force which will shortly be put on by the new company. Captain Smith informs us that three new boilers and other machinery is to be put in, and everything done conducive to a large output during the coming season. A little over 120 men were employed last month.

The directors of the new company are:—Ed. Packard, jr. (Messrs E. Packard & Co., chemical and superphosphate manufacturers, Ipswich and London, and managing director of the Ulster Manure Company, Londonderry), chairman; W. H. Williams, President of the Vendor Company, New York; Thos. Oakeley, 2 Lombard street, London, E.C.; W. E. Couper (Messrs. Couper, McCarnie & Co.), 1 Fenchurch Avenue, London, E.C.; C. C. Hoyer Miller, Montreal and London. As has been already stated in these columns the agents of the corporation are Messrs. Miller & Co., Custom House Square, Montreal.

Mr. F. Stacey Shirley writes regarding his new process:—"Regarding the soluble product referred to, and about which I wrote you some time ago, the experiments are proving to be highly valuable, but a little too powerful to be used in great quantities, its extra strength will, therefore, be a feature for economy. I am getting some points together as testimony to the value of the plain raw phosphate, but only want such as is authenticated. If not in time for this issue, will send you full particulars for next after."

Some of the leading men interested in the Du Lievre Milling and Manufacturing Company are:—E. F. Childs, Congress street, Boston; F. S. Arnold, Providence, R.I.; W. H. Lunn, New York; and F. Stacey Shirley, New Bedford, Mass.

Nothing of importance has taken place at the North Star Mines during the month. The mineral already shipped from this mine is of an exceptionally high grade, and in this particular there is no falling off in that which is now being raised. Like the others, arrangements have been made for a very large output during the summer.

Messrs. Poupore & Co. are pushing rapidly forward with the construction of the new lock and dam at Little Rapids—a work of immense importance to the miners on the river. A very substantial and commodious house has been erected for the lockmaster, and between 50 and 60 men are now employed on rock work, and on the retaining wall. Mr. F. M. Hamel is the engineer in charge.

Matters are very quiet at Little Rapids, and will continue so for a few weeks yet. As soon as the season opens the force will be increased and work conducted vigorously again. During the autumn much new ground was prospected and many promising deposits discovered. There is a large amount of reserve ore in sight on this valuable property.

We understand that Mr. A. F. Macintyre, of Ottawa, will do some work this summer on his lots immediately adjoining the Emerald Mine. On all of these lots a good deal of prospecting has been done. The soil has been stripped off in patches and also trenched in various directions, so as to expose the solid rock over an area of about three acres on the side of a south sloping hill about 200 feet high. The country rock is here the same as at the principal phosphate mines in the district. There is also a nearly white rock, pitted with small holes on the surface, which is regarded as a good indication in this region. In all the strippings and trenches green phosphate has been found. On the other lot, within a few yards of the Emerald property, among others, an opening eight feet long has been made into the rock, exposing a vein of solid green phosphate. A shaft has also been sunk to a depth of 25 feet, cutting through an inclined vein of green ore, with an average of about a foot as seen in the shaft. Several other openings also show very rich indications. An eminent geological expert writes thus about it:—"The phosphate deposits of the Emerald Mine, adjoining this part of the above lot, all run directly into it, and, judging by the forms of the excavations which have been made, in working downward their tendency is to increase in size—the direction of this property."

The manager of the Phosphate of Lime Company is going to build twelve new dwellings at the mines, and has already made arrangements for the delivery of the lumber requisite.

We have to express our thanks to Mr. W. W. Pickford, jr., Captain J. E. Smith, and Mr. Neil Cochrane for their extreme courtesy and kindness to our representative during a recent visit to these mines. Their generous hospitality will not soon be forgotten.

The attention of our readers is directed to the advertisement of Messrs. Dick, Ridout & Co. of Toronto. Miners in need of bags for their phosphates, cannot do better than give these celebrated manufacturers a trial.

Templeton District.

Visitors from the Blackburn Mine state that a very large quantity of very fine ore is on the dumps awaiting shipment.

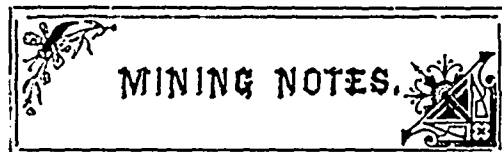
The new machinery put in on the Templeton and Blanche River Company's property (the old Perkin's) is giving every satisfaction, and will largely increase their output.

Perth District.

Captain R. C. Adams, managing director of the Anglo-Canadian Company, who has been in England during the past few months, sailed from London on the 3rd inst. The snow has retarded operations at the Otty Lake mines, but Dr. Penrose states that everything is in good shape for extensive operations as soon as the season opens.

Kingston District.

Superintendent Harris and a large force are making very satisfactory progress with their Blessington mines. Increased accommodation is being provided for the largely increased force to be shortly added.



We shall be greatly obliged to mine owners and superintendents for such authentic reports of their operations as may concern shareholders and the public.

Nova Scotia.

The annual general meeting of shareholders of the Intercolonial Coal Co. (limited) was held at Montreal on the 7th instant.

The extreme scarcity of railway rolling stock continues and much dissatisfaction exists at the various collieries on this account. The output of coal in consequence is very much reduced.

The Drummond Mine is working daily, and when cars are not to be had the coal is banked. As soon as the summer shipments begin the large pile at present existing will very rapidly disappear. The company contemplate the reopening of their No. 4 slope, from which they will extract pillars. A hauling engine has been put down in their Scott pit, and the sinking of the slopes, in order to prove the quality of the coal, is being proceeded with.

The slopes of some of the provincial collieries are assuming great length. The main slope of the Drummond Colliery is over 3,300 feet long, that of the Acadia over 3,100 feet, and of the 'Vale' 2,600 feet. The 'Syndicate' slope at Spring Hill is down 2,000 feet. It is proposed to add 1,000 feet, which will make it 3,000 feet in length.

The Black Diamond Mine, formerly owned by the Nova Scotia Coal Company, has been reopened by a party of New Glasgow capitalists, who will put forward every endeavour to operate the mine successfully. This mine has been closed for a number of years. It is hoped the new company will meet with the success they deserve.

At the Albion Mines, the Acadia Coal Company (limited) are making preparations for the reopening of at least one of the slopes which have been closed since the explosion of 15th January. An effort will also be made to sink a slope to the deep of the famous Cage pit seam, and at the same time avoid contact with the old workings. It is also understood that the draining of the Foord pit is to be continued. With these works once more in operation, trade will boom at the Albion mines.

At the Vale Colliery a plentiful supply of cars appears to be all that is requisite to make things lively as the "McBean" and "Six Feet" seams are both being worked vigorously. There has been a large influx of Belgian miners, and from latest reports, more will soon follow.

At little Harbor, where prospecting has been carried on for some time past, a three feet seam of coal has been discovered. The parties conducting the work are confident that the seam will increase in thickness towards the deep, and they are in hopes that it is underlain by a larger deposit.

Nothing further has been heard of the reported discovery of coal at Antigonish, and little importance is now attached to the rumour.

The estate of the Steel Company of Canada, Londonderry, N.S., has been transferred to the Londonderry Iron Company of that place, by whom the business heretofore carried on by the Steel Company will be continued.

Official returns of gold crushed for February are:—

District.	Mill.	Tons Crushed.	Ounces Gold.
Whiteburn	The McGuire	34	142½
Waverly	Wallace (old Berkner)	5	2½
East Rawdon	J. Nichols	14½	70
"	Rawdon United	280	78½
Dars' Hill	Dufferin	870	447
Stormont	Tributers	61½	88
Sherbrooke	Goldenville	11	13½
"	Pactolus	50	8½
"	Miners	200	35
Lake Catcha	Oxford	131½	379½
The following are additional returns for January:			
Dars' Hill	Dufferin	754	376
Brookfield	Brookfield	90	81

A miner named Alex. Fraser, working in the east mines of the Londonderry Iron Co., was crushed to death by a heavy fall of earth on the 6th instant. This appears to be a case for the mine inspector to investigate.

"We learn from a gentleman living at Sydney, C.B." writes the *Critic*, "that a valuable seam of superior coal, five feet in thickness, has just been discovered near Fortune's Brook, south of the property formerly belonging to the Toronto Coal Company, and a little to the west of the seams that have been worked. It is close to a shipping place on the Bras d'Or.

New Brunswick.

Negotiations for the sale of the Stockton Manganese Mine are nearing a successful completion. The price to be paid for the property is \$55,000.

Prospecting for coal is being carried on near Shaw's Mill, Dunscombe, on the line of the I. C. R.

Mr. F. J. Alley's Manganese property at Glebe, Dutch Valley, will be vigorously worked in the spring.

One of the principal sources of manganese ore at present, is to be found on the properties of the Queen Manganese Mining Company at Markhamville, where very extensive "pockets" of ore have been opened. The following figures have been officially reported to us: Quantity ore mined in 1887, 813 tons of 2,240 lbs.; sold for blast furnace use and shipped to England, 505 tons; to United States, 53 tons; ore prepared for consumers' uses in chemical and manufacturing industries in the United States and Canada, 243 tons; average number hands employed in mines, 20; average number hands in works, 30.

Mr. D. Andrews, superintendent of the Moose Brook Manganese Mine writes: "I have sunk the shaft 30 feet deep, also drifted 12 feet east and west, and the changes are for the better. If it continues good going west, I shall have to sink the shaft 10 feet deeper in order to give us a chance to have the greater part of next month's work in backstopping, that means to be below our work, so that all the ore and rock will be much easier handled, and at less expense. I will continue taking out ore this month, then I shall sink and drift; that will probably take the best part of three weeks, and in so doing we will be prospecting new ground. Everything points that by sinking we shall strike new deposits. The ore that you saw on the dump looked

splendid after the rain, in fact much better than I expected to see there."

Mining licenses have been recently sold in the northern portion of New Brunswick on Crown Lands, and it is said valuable deposits of galena, manganese and iron exist thereon.

The Stockton manganese mine is about being placed in Baltimore, says the *Halifax Critic*, and no doubt vigorous measures will be taken to develop and ship the ore in large quantities. The price to be paid for the property is \$55,000.

Quebec.

The Graphite City mill is at a standstill.

Under the able superintendence of Mr. Neil Cochrane very satisfactory headway is being made at the British and Canadian Mica Company's mines. Mining both in the tunnels and on the outside of the hill is very systematically conducted, and a large quantity of very superior mica is being taken out and made merchantable. Since our last an enormous crystal weighing fully 280 pounds has been taken out. The demand for the product continues good, and Mr. Von Rehm, the manager, reports a brisk business at the Buckingham office.

At Black Lake the Anglo-Scotch Asbestos Company is building a factory and putting in machinery to crush their asbestos rock instead of cobbing it. There are a number of dwelling houses going up. The company have employed 15 men all winter, the average output being 1½ to 1½ tons per day.

Many improvements are being made at the Capleton Copper Mines, of which particulars will be given in these columns in a future issue.

The Hon. J. G. Ross, Quebec, Hon. J. A. Chapleau, Hon. Geo. Irvine and many other prominent men are largely interested in the asbestos industry.

Ontario.

We understand that negotiations are in progress for the sale of the Frontenac mica mine. This property is located on lots 4 and 5 in the 11th ranges, Township of Miller, and is favorably spoken of. A report on the property states: "The position of the mine is a gully between two mountains, the deposit forming a ridge in the gully. This ridge is 185 feet long, from 10 to 25 feet wide, and 20 feet in height. The rock is pure white quartz, the mica crystals showing the whole length of the ridge on top, and in various places on the sides. Surface crystals were removed from every part of the ridge, in sizes varying from 4 x 6 to 7 x 10 inches. An opening was made eight feet in width and six feet in depth. The crystals taken from this opening measured from 4 x 6 to 15 x 24 inches."

Very few men are now at work at the Bristol mines and the company do not intend to add to their present stock pile, which is now in the vicinity of 20,000 tons, until the railroad is extended to the mine, a distance of from two and a half to three miles. This extension the company are pushing and expect to have made early in the season.

Owing to the deep snow and severely cold weather, work was suspended at the Stobie mine—the property of the Canada Copper Company—on 1st December, but operations will be resumed again in the spring.

At the Copper Cliff mine and vicinity about eighty men have been employed in sinking the shaft, which has now reached a depth of something over two hundred feet, driving levels, using a diamond drill, etc., underground, and cutting timber and wood outside. Little stopping has been done, and consequently no large quantity of ore has been raised to the surface, but the mine is being opened up ready for this work.

The twenty-two tons of ore taken from the Richardson Hill, Eldorado, by Mr. Mark Powell and others yielded a 20½ ounce gold brick.

Satisfactory progress is being made at Mr. D. G. MacMartin's mica mine. From latest accounts the drift looks well, and shows large quantities of mica.

The Imperial Land and Mining Syndicate has been organized by parties who have been making explorations on the north shore of Lake Superior, a few miles east of Sault Ste. Marie, in an unsurveyed Indian reservation, and from a point near Port Arthur, east to Sault Ste. Marie. They have gained perfect titles to 1,100 acres of land which are said to contain rich mineral. A force of men are now at work carrying on development work. In their exploratory work they have located several iron mining properties and found deposits of copper ore.

At the Robertsville mine, on the Kingston & Pembroke Railway, very little has been done lately. Good work has, however, been done with the Diamond Drill, and prospecting has revealed several very promising beds of ore, one over 16 feet thick, of a very superior quality—on the property. Captain Kitto is taking out timber and making ample preparation for vigorous operations during the coming year.

There are thirty-six known iron deposits in North Hastings, from all of which ore can be obtained in large quantities, and any one of which will prove paying mines, if properly worked.

There are also numerous deposits of lead, antimony, plumbago or graphite, pyrites, etc., suited to chemical works, besides many other kindred minerals. All that is wanted in this section is capital to open up these mines.

Specimens of mineral taken from the property of Mr. Thomas Storey, at Escott, have been assayed at Ottawa, and found to contain traces of gold and silver.

In a local sheet published from the office of the *Advertiser*, Petrolia, the following figures regarding the oil industry are given:—Number of wells pumping oil, 3,860; approximate number of wells drilled in 1887, 400; number of hands employed in oil pumping, 3,000; employed in refineries, 500; average cost of well, \$400. The total amount of capital invested is estimated to be little short of \$3,000,000. During the last six months of 1887 the output of crude oil was about 500,000 barrels, the largest quantity ever shipped from Petrolia in the same length of time.

On lot 20 in the first concession of Snow's, seven miles east of Kinmount, are found promising deposits of magnetic iron ore, yielding over 60 per cent of metallic iron with very little

impurity. A considerable quantity of ore has been mined on this lot by different parties. The lot is owned by Messrs. Thomas Shortiss and Henry O'Brien, of Toronto. Mr. Wm. Myles, who bought a portion of this property, built a branch railway $6\frac{1}{2}$ miles long in 1879, from the Victoria railway up to lot 20, and this is likely to form the first link in the Irondale, Bancroft and Ottawa railway, a company having been chartered to build a railway through this district. Messrs. Parry and Mills, of Chicago, have built a charcoal furnace on lot 19 in the first concession of Snowdon. They have also constructed, in connection with it, a good dam and saw-mill on the Burnt river, but after expending about \$40,000 operations have been suspended for want of funds.

Port Arthur District.

BEAVER MINE.—The last shipment of ore concentrates from this mine—including \$9,000 in bullion—makes over \$330,000 exported as reported by customs officers to date, a very handsome showing considering that there are many thousands of tons of rich ore in the dump and in sight yet, as well as many barrels of concentrates at the mill, which is now undergoing some further improvements. The working force has been reduced of late; among other reasons given is that Mr. Peters has given an option for one half interest for \$1,500,000. The officers report that the mine never looked better, and that the force was reduced owing to the stoping ground not being sufficiently developed to keep the mill going steadily with a full force.

The Porcupine Mine still has a small force at work pending the sale, it is understood, to a strong New York company. This is a promising mine and having such good neighbors as the Beaver and Badger is bound to attract capitalists who will doubtless readily invest if the owners do not stand them off by exorbitant figures.

The Badger Mine is still creating a sensation by its rich ore. Everyone is anxious for Mr. Eschweiler to erect the mill for which preparation is being made. He claims to have at last settled on a treatment which will give better results than have ever yet resulted with the ore peculiar to this district.

MINING LOCATION R, 135.—The miners who have been at work at this property, which lies about three miles north of Silver Mountain, report that at a depth of forty-four feet native silver was struck. For a considerable distance previous, low grade ore containing sulphide of silver was encountered. One of the mine owners has gone out to make an examination, meanwhile a company is being formed to work this claim steadily. The value of this property is greatly enhanced by having a magnificent water power along side of the mine.

Some Chicago capitalists, represented in Port Arthur by Mr. P. M. French, are preparing to work some silver claims near that town when the snow goes down enough to permit teams to haul the supplies.

The **BIG BEAR** claim, a short distance north-east of the Rabbit Mountain mine, will also shortly go to work.

SILVER MOUNTAIN MINE, and its neighbour, the **Crown Point Mine**, keep on making steady progress. As no assayer lives on the premises,

it is impossible to ascertain the average value of the ore which is very fluctuating in richness. It is uncertain whether the work for a mill will be placed on the ground before the Government road is fully completed.

NATURAL GAS apparently exists both at Port Arthur and at the Kaministiquia River in spite of geological expectations to the contrary. Should it be found in volume it will be of great service in securing the smelting works so long required at Thunder Bay.

We are officially advised, says the *Engineering and Mining Journal*, that Messrs. Morrison & Macfarlane, brokers in mineral lands, Duluth, Minn., have recently bought from original owners 1,200 acres, known as the Cariboo vein, situated in Black Bay, east of Port Arthur. The property has been indifferently developed. There is indication of a rich silver lead deposit running through the location.

Manitoba and North-West Territories.

Mr. James Reilly writes to the *Calgary Tribune* suggesting that the Dominion Government contribute to the development of the mining industry, either by founding smelting works at central points, under control of Department of Interior, or by liberal cash subsidies and other facilities.

Gold miners, working on the Saskatchewan this season, made from \$3 to \$5 a day. The cold stopped them Nov. 12th.

The Cochrane coal seam, worked by Major Vaughan, is improving much. It is 75 feet from surface and is now about level.

Haney & Henderson have a good prospect near Edmonton, the vein being 12 inches and carries silver and gold, with some platinum and iron.

The Galt Co. has advanced the price of their coal from 25 to 50 cents a ton, which means a daily increase in their cash receipts of over one hundred dollars.

The coal vein, south side Saskatchewan, near Battleford, is being worked. It is three feet thick, light, hard and in large lumps. It is four feet above river level.

A meeting of the shareholders of the Medicine Hat Railway and Coal Company (Limited) will be held in Toronto on 31st inst.

Small quantities of coal have been taken out from the Souvis district. The *Moosomin Courier* writes:—"We have given it a trial and it burns equal to the Galt, but not quite so free; there is no difficulty in keeping up a good fire with it, and it throws a good heat. The coal used was taken from a ravine bank and about 100 feet in. A branch railway to these mines would enable vendors to supply this excellent domestic fuel throughout Manitoba and the Territories for about \$3.50 per ton. Settlers would do well to consult their own interests and pay a visit to these coal fields."

A North-West member says that great activity now prevails at the new anthracite coal mine near Banff. A trial slope is being sunk and has reached 330 feet deep. The seam is seven feet six inches, and the quality of the coal is the very best anthracite. The mine is being worked night and day, and six tons an hour are

being taken out of the trial slope. As soon as the new machinery is in place the daily output will be large, probably four hundred tons. Although the weather in the month of February was unfavorable, yet considerable shipping was done. About 97 carloads left the mines, 31 of which went to Winnipeg and 63 to San Francisco and the Pacific coast. The outlook for trade to California is of the most promising character. The extent of the market can hardly be realized, and will tax the energies of the company during the coming season.

Many of the Victoria settlers use coal taken from the banks of the Saskatchewan; it is said to be equally as good as that found at Edmonton.

British Columbia.

Work has been resumed in the west slope of No. 5 Pit, Wellington Collieries. This will render it possible to increase the daily output to about five hundred tons, or just half the output of coal prior to the explosion.

The East Wellington Colliery (Chandler's) is now operated entirely by Chinese labor.

The *Nanaimo Free Press* says that the bore being put down by Mr. T. D. Jones on what is known as the West Estate of the V. C. Co. has struck an excellent seam of coal. This property is contiguous to the Wellington & East Wellington coal properties. Mr. Jones had in use his diamond drill, which brought up an inch and a quarter core.

It is understood that the owners of the Cayoose Creek quartz claim have effected a sale of their property on a very satisfactory basis.

A bill was passed on the 29th ult. giving foreign mining companies power to incorporate under the laws of the county or State in which the members of the company reside and work mines in British Columbia, by registering there. These concessions are for the purpose of attracting foreign capital for developing resources in the precious minerals.

The Privy Council has granted British Columbia leave to appeal from the judgment of the Supreme Court of Canada in respect to the title to minerals in the railway belt of the province. Mr. Jeune, Q.C., in making the application informed their Lordships that the question was of the greatest importance. Attorney-General Webster, on behalf of the Dominion, admitted that he could not very strongly oppose the application, and the appeal will be heard at an early date.

"We understand," says the *Colonist*, "that it is the intention of Messrs. R. Dunsmuir & Sons to open up the Perseverance and Union coal mines in Comox, a stretch of land eight or ten miles in length. This will be worked from six or eight different points with shafts and slopes. Wharves will be built on Baynes Sound and a standard gauge railway constructed past the "Perseverance" to the "Union," a distance of about thirteen miles. The work will be commenced immediately and pushed so that coal will be shipped by next fall. As soon as the surveys are completed, which will take about fourteen days, railway work will be commenced and 600 or 700 men put on for construction purposes. Mr. Dunsmuir assured a reporter of this paper that he intends to open up the field so that the production will amount

to 2,000 tons per day at least. The opening up of these mines is of the greatest importance to every portion of Vancouver Island, and to the Pacific board, and the undertaking will involve the expenditure of a large amount of money."

What Natural Gas Has Done.—A review of the revolution which has taken place in Western Pennsylvania since the introduction of natural gas three years ago shows that the steel furnace capacity in twelve iron and steel mills has been increased 1,164 tons per day, or at the rate of 319,200 tons per year. In several mills the furnace capacity has been increased 200 per cent., and in one nearly 100 per cent. In 1881 the capacity of local mills making wrought iron pipe was 174,000 tons per annum, now it is 360,000 tons per annum, the greatest in the world. The production of one establishment in 1887 exceeded the total output of 1884. The product of the iron and steel wire mills from 85,000 tons per annum has increased to 108,000 tons. In the blast furnaces an increase of 245,000 tons has been obtained, while the coke field product is being enlarged 22 per cent. In the manufacture of railroad locomotives there has been an increase of 25 per cent. In the window glass trade an increase of 5,976,000 feet per annum has taken place. In the manufacture of plate glass the increase has been fully 100 per cent. The growth of the natural gas interest is among the most remarkable things of the age. There are engaged in the enterprise twenty-six companies, with a nominal investment of \$23,505,000, of which \$18,360,000 is invested in Pittsburg companies. Experts estimate the total displacement of coal by gas in Allegheny County alone at 20,000 tons daily, which is equivalent to 500,000,000 cubic feet of gas every twenty-four hours.

Emphatic Guarantees.

Which are Justified by an Extraordinary Public Experience.

TO THE PUBLIC:

Having branch houses and laboratories in seven different quarters and therefore having a world-wide experience, we, H. H. Warner & Co. justify ourselves in making the following statements:

OUR THEORY PROVED.

I.—For the past decade we have held that 39 per cent. of diseases originate in the kidneys which introduce uric acid into every organ, attacking and destroying first the organs which are weakest. We have also held that if the kidneys are kept in perfect health most of the ordinary ailments will be prevented, or, if contracted, cured. Other practitioners have held that extreme kidney disease was incurable. We have proof to the contrary, however, in hundreds of thousands of cases in every section of the globe. Warner's Safe Cure is the greatest specific known. Its reputation is established everywhere, and its influence surpasses all other medicines.

HOW DISEASE CREEPS ON.

II.—The kidneys being the sewers of the human system, it is impossible to keep the entire system in good working order unless these organs are doing their full duty. Most people do not believe their kidneys are out of order because they never give them any pain. It is a peculiarity of kidney disease that it may long exist without the knowledge of the patient or of the practitioner. It may be suspected if there is any gradual departure from ordinary health, which departure increases as age comes on, the kidney poison in the blood gradually undermining and destroying every organ.

SCIENTIFIC SPECIFICS.

III.—We do not cure every known disease from one bottle. This is an impossibility. Warner's Safe Remedies include seven scientific specifics, each one of which has a specific purpose which the others cannot fully perform.

RECOGNIZED STANDARDS.

IV.—Warner's Safe Remedies have been recognized by the doctors and the people all over the globe, even in countries most conservative and most opposed to the manufacture of proprietary medicines, as standards of the highest excellence and worthy of the patronage of all people.

STRONG GUARANTEES.

V.—We make the following unqualified guarantees:

Guarantee 1.—That Warner's Safe Remedies are pure and harmless.

Guarantee 2.—That the testimonials used by us are genuine, and so far as we know, absolutely true. We will forfeit \$5,000 for proof to the contrary.

Guarantee 3.—Warner's Safe Remedies have permanently cured many millions of people whom the doctors have pronounced incurable. People who were cured ten years ago report the cure permanent and completely satisfactory. Warner's Safe Remedies will sustain every claim, if used sufficiently and as directed.

VI.—Ask your friends and neighbors what they think of Warner's Safe Cure. We do not ask you to believe us alone.

YOUR FRIENDS AND NEIGHBORS.

MRS. JAMES BURNS of 18 Division St., Toronto, writes that her daughter was given up to die, by the best medical men in the city, from Bright's Disease of the Kidneys, but that Warner's Safe Cure not only saved her life but restored her to health.

L. A. BAKER, of Toronto, Supt. Fire Patrol Co. of Canada, suffered from lame back for three years. Physicians treated him for Bright's Disease, but he obtained no relief. Four bot-

tles of Warner's Safe Cure made a well man of him.

W. J. HAMILTON, of Amherst, Nova Scotia, was cured of hemorrhage of the kidneys after doctors failed to cure him and the last dying rites of the church had been given him.

MRS. HAYWARD, of 321 Church St., Toronto, was cured of Chronic Dyspepsia with six bottles of Warner's Safe Cure.

JOHN GIVES, of Galt, is a living monument to the power of Warner's Safe Cure over Enlargement of the Liver.

We could give thousands of similar testimonials. Warner's Safe Cure does exactly as represented.

VII.—We were forced into the manufacture of Warner's Safe Remedies in obedience to a vow made by Mr. H. H. Warner that he would, if the remedy now known as Warner's Safe Cure restored him to health, spread its merits before the entire world. In ten years the demand has grown so that laboratories have been established in seven quarters of the Globe. Not only is Warner's Safe Cure a scientific specific—it cures when all the doctors fail, thousands of the best of physicians prescribe it regularly, its power over disease is permanent and its reputation is of the most exalted character.

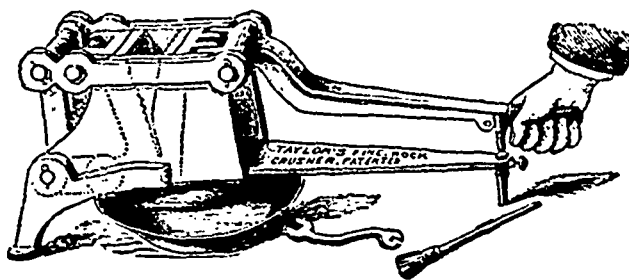
(a) Paper read before the Canadian Institute, Toronto.
(b) Revised and corrected from "Clavos" in the Emigrant.
(c) From this term is derived the expression "checker house," applied to the shed covering the head-drum, in which the operation of "checking" is done.



AS the plans for the erection of the proposed Post Office at Prescott, Ont., are to be amended, intending tenderers are hereby notified that new tenders will be called for at a future date.

By order,
A. GOBEIL,
Secretary.

Department of Public Works,
Ottawa, 24th Feb., 1888.



Taylor's Laboratory Rock Crusher.

The Assayers and Chemists' Friend.

PRICE COMPLETE, \$25.00

Manufactured and sold by

New York Metallurgical Works.

104 and 106 Washington St., New York.

E. N. RIOTTE, Manager.

PEERLESS OILS

FOR MINERS' USE ARE UNEQUALLED.

"PEERLESS CYLINDER OILS!"

"610 CYLINDER OILS!"

"PEERLESS ENGINE OILS!"

WE! "ELDORADO ENGINE OILS!"

LEAD! "PEERLESS MACHINERY OIL!"

OTHERS! "PEERLESS SHAFT & BOX GREASE!"

FOLLOW US! "COTTON WASTE, ALL KINDS!"

TRY A SAMPLE! "SAFETY OIL TANKS!"

WILL SEND FREE! "MINERS LAMP OILS!"

TO ANY ADDRESS! "DRILL OILS!"

Teephone or Write

THE SAMUEL ROGERS OIL CO'Y,

RUSSELL BLOCK, OTTAWA,

N.B.—"Sole Manufacturers of the above brands."

FOR SALE.
Asbestos Mines.
 On Lots 27, 28 and 29, in Range A, of Coltraine,
 Megantic County, P. Q.
300 ACRES,
 One Mile from Quebec Central Railway.
 Free from Reserves or Royalties.
James Reed,
 Reeddale, Megantic, P. Q.

CHEMICAL LABORATORY
 OF THE UNIVERSITY COLLEGE OF OTTAWA,
 Under the direction of **PROF. C. F. MARXAN, M.A.,** Dominion Examiner of Public Analysts,
 and **A. L. TOURCHOT,** Demonstrator of Applied Chemistry.
THE MOST COMPLETE OUTFIT IN THE DOMINION FOR ALL KINDS OF ANALYSES.
A SPECIAL DEPARTMENT
 Has been just completed for the Analysis of Phosphate, and will be found to answer most satisfactorily the wants of the Phosphate industry.

Rock Drills, Air Compressors,
 General Mining Machinery,
 Wire Rope and Contractors' Supplies.
 FOR CATALOGUES, ESTIMATES, &C., ADDRESS:
INGERSOLL ROCK DRILL COMPANY,
 (LIMITED.)
 44 Foundling Street, Montreal.



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 **75 CENTS** 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, or collected under the provisions of the Adulteration Act, or 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 inspectors 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, as well as a copy of a Bulletin which it is proposed to issue in April, 1886, concerning the fertilizers

E. MIALL,
 Commissioner.
 15th Dec., 1887.



SEALED TENDERS addressed to the undersigned and endorsed "Tender for Hot Water Heating Apparatus, Experimental Farm, Ottawa," will be received at this office until Monday, 19th March, for the several works required in the erection of Hot Water Heating Apparatus for five residences at the Central Experimental Farm, Ottawa.

Specifications can be seen at the Department of Public Works, Ottawa, on and after Friday, 9th March, and tenders will not be considered unless made on the 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 declines 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 March, 1888.



EXTENSION OF TIME.

THE time for receiving tenders for Iron Staircases for New Departmental Buildings,

OTTAWA.

is hereby extended to **THURSDAY, 5th April.**

By order,
A. GOBEIL,
 Secretary.

Department of Public Works,
 Ottawa, 12th March, 1888.



SEALED TENDERS marked "For Mounted Police Clothing Supplies," and addressed to the Honourable the President of the Privy Council Ottawa, will be received up to noon on Monday, 16th April, 1888.

Printed forms of tender, containing full information as to the articles and quantities required, may be had on application to the undersigned. No tender will be received unless made on such printed forms. Patterns of articles may be seen at the office of the undersigned.

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

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

FRED. WHITE,
 Comptroller, N. W. M. Police.
 Ottawa, March 12th, 1888.

SUBSCRIBE NOW FOR
THE
Canadian Mining Review
1888.



INDIAN LANDS

LANDS IN THE UNDERMENTIONED localities are offered for sale to actual settlers through the following Indian Agents: On the Great Manitoulin Island, Lake Huron, Ontario; Mr. J. C. Phipps, of Manitowaning, is the Agent for the sale of lands, in the following Townships on this Island: Assinick, Bidwell, Howland, Shequandah, Billings, Campbell, Carnarvon, Allan, Takumnah and Sandfield, and in the Townships of Shequandah, Manitowaning and Shaftsbury (commonly called Little Current). Mr. H. W. Ross of Cockburn Island, is the Agent for the sale of lands on that Island, and in the Townships of Gordon, Mills, Sturpee and Barrie Island, and in the Township of Gore Bay as well as for those in the Townships of Kolinson and Dawson, on Manitoulin Island. Leading roads have been constructed throughout the Great Manitoulin Island.

On the Saugeen Peninsula, Ontario, the lands in the Townships Amabel, Albemarle, Keppel, Eastnor, Lindsay and St. Edmunds; as well as several Townships in the Peninsula, are offered for sale through Mr. William Simpson, Indian Lands Agent at Warton, County of Bruce, Ontario.

On the Garden River Reserve, Ontario, Mr. William Van Abbott, of Sault Ste. Marie, is the Agent for the sale of lands within this tract, and which are situated in the Townships of Macdonald, Laird and Meredith; also for lands within the tract commonly known as the Batchewana Bay Indian Reserve, and comprised in the Townships of Averes, Fenwick, Kars, Pennefather, Dennis, Herneck, Fisher, Lilley, Vankoutzberg, Tupper and Archibald. There is a leading road through these lands which affords ready communication with other parts of the country to intending settlers.

The condition of sale in respect to the lands within the Townships above described can be ascertained on application to the respective Agents.

(Signed) **L. VANKOUGHNET**
 Deputy Supt. General of Indian Affairs.

Department of Indian Affairs,
 Ottawa, February, 1887.



NOTICE.

SALE OF COAL LANDS.

PUBLIC NOTICE is hereby given that Section 29, Township 24, Range 10, west of the 5th principal meridian, which is situated in the anthracite coal district, will be offered for sale at public auction at the Dominion Lands Office, Calgary, on Thursday, the 22nd day of March next, at the upset price of \$20 per acre.

The above land will be put up in two blocks, one being that portion to the north and east of the Bow River, and the other that to the south and west of it.

The terms of sale shall be one-fifth in cash at the time of sale and the balance in four equal annual instalments, with interest at the rate of 6 per cent. per annum.

The sale of this land will be subject to the regulations respecting Coal Lands. Payments must be in cash; scrip or warrants will not be accepted.

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

Dept. of the Interior,
 Ottawa, Feb. 25th, 1888.

NOTICE.—No unauthorized insertion of this advertisement will be paid for.

**VALUABLE
PLUMBAGO
AND OTHER
Mineral Lands
FOR SALE,**

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.

For information apply to

WM. H. DICKSON,
160 Waller St., Ottawa

H. E. DICKSON,
Russell House, Ottawa.

OR TO THE OFFICE OF

THE CANADIAN MINING REVIEW,
OTTAWA.

**FOR SALE.
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 1½ 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 2½ 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 to be remunerative.

TOWNSHIP OF ORFORD.

5th. Caruncle 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, ¼ 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 mining 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 45 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

WM. FARWELL,
SHERBROOKE, P.Q.,
CANADA.

RUSSELL & CO.
PROVINCIAL AND DOMINION
LAND SURVEYORS,
CIVIL AND MINING ENGINEERS,
PORT ARTHUR, ONTARIO.

Mining Properties Surveyed, Reported on and Dealt in.

Latest and Most Complete Plans of Thunder Bay Mining District Always on Hand.

A. I. RUSSELL, A. H. MACDOUGL, W. W. RUSSELL.
P. L. S., D. L. S. P. L. S., D. L. S. M.E.A., M.C.A.N., S.O.C.G.P.

The Canadian Anthracite Coal Co.
LIMITED.
Miners & Shippers of Coal.

McLEOD STEWART, Pres., J. G. THORP, Vice-Pres.
OTTAWA, CANADA. EAU CLAIRE, WIS.
A. PUGH, General Manager, W. B. SCARTH, Secretary,
ST. PAUL, MINN. WINNIPEG, MAN.
O. H. INGRAM, Treasurer,
EAU CLAIRE, WIS.

Mines at Anthracite,
N. W. T., CANADA. v-1-1y

T. D. LEDYARD,
DEALER IN MINERAL LANDS
4 ONTARIO CHAMBERS, TORONTO.

Will buy undeveloped iron ore and other mineral properties.
WANTED. — Deposits of Magnetic Iron Ore, Red Hematite, Brown Hematite, Galena, Iron and Copper Pyrites, Mica, Soapstone, Marble, Gypsum, Baryta. Samples can be sent by sample Post for 1 cent for 4 oz. or up to 24 oz. in weight.
Information regarding mines cheerfully given. Correspondence solicited. Crown Land Business attended to.

WOLFF & COTTON,
Provincial Land Surveyors,
ONTARIO AND QUEBEC.
OFFICE:—52 ELGIN STREET, OTTAWA.
(Opposite Russell House.)

WM. HAMILTON MERRITT, F.G.S.
Associate Royal School of Mines, &c.,
Mining Engineer and Metallurgist,
Will report on Mines and Mineral Properties.
ADDRESS:
15 TORONTO ST., TORONTO, ONT.

JAMES HOPE & CO.,
BOOKSELLERS,
Stationers, Bookbinders and Printers,
OTTAWA.

J. HERBERT & SON,
401 and 403-Wellington Street-599
O T T A W A .

Plain and Ornamental Slating, Felt and Gravel Roofing, &c.

ESTIMATES GIVEN.

Orders Executed with Care under Personal Superintendence.



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 proscribed 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 ten-hill creek or hill diggings, and the rights and duties of miners are fully set forth.

The Regulations apply also to

BED-ROCK FLOUMES, 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.

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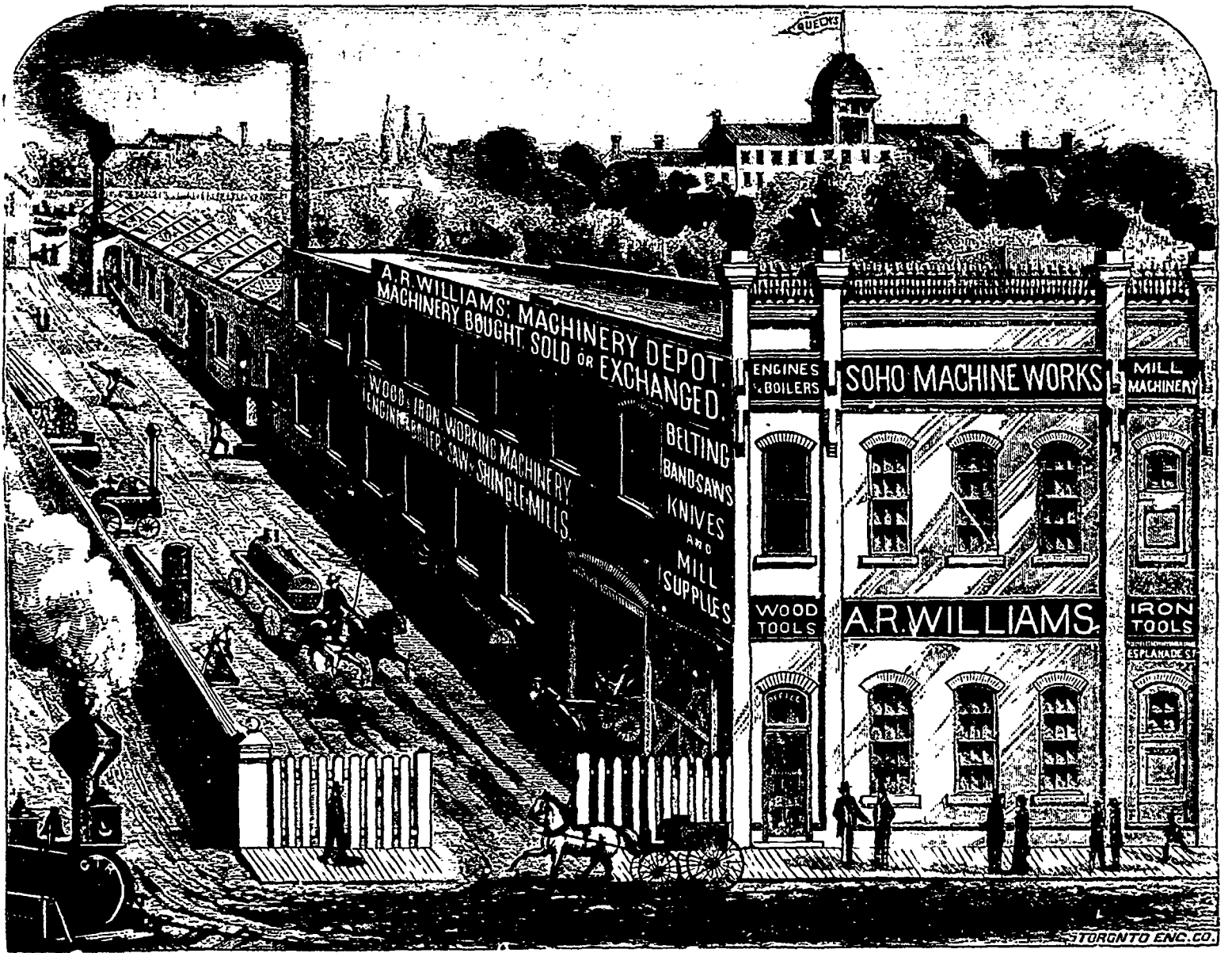
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