# MARITIME MINING RECORD

COAL AND METAL TRADES JOURNAL

*Cumberland.* ✳ *Pictou.* ✳ *Cape Breton.* ✳ *Inverness*

New Series Vol. 12 No. 1 July 14th. 1909 STELLARTON, N. S

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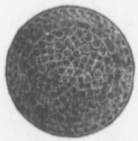

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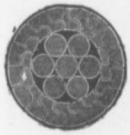
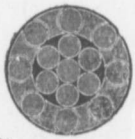
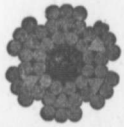




Locked Coil Aerial Cable or Colliery Guide.



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**CHRISTOPHER CHISHOLM**

Commissioner of Public Works and Mines Halifax N. S.

The....
# MARITIME MINING RECORD

Vol. 12, No. 1. Stellarton, N. S., JULY 14 1909. New Series

## NOVA SCOTIA EXAMINATIONS, 1909.

### MANAGERS PAPERS.

### —GEOLOGY.—

Time—One hour.

1.—What is the difference between arenaceous shale and fire clay?

2.—How should you proceed to prove a fault? Describe a fault that you know.

3.—To what geological age does the coal-bearing system belong?

4.—Explain the terms bed, vein, strike, dip, slate, shale, stratum, igneous, metamorphic, tertiary and sedimentary.

5.—How is geology useful in coal mining?

6.—What is a coal seam? Compare its mode of occurrence with gold, silver, copper, lead and iron.

### —SURVEYING.—

Time—Two and a half hours.

1—Would you use a compass in making a survey where accuracy is required? Give your reasons.

2—State your ideas as to having figures showing datum levels on your working plans.

3—Describe the various modes of surveying mines and of connecting the surface and underground workings, with respect to plans.

4—Plot the following to scale 100 feet to one inch, and close the survey by latitudes and departures. Calculate the closing course and distance.

| | | | Sine | Cos. |
|---|---|---|---|---|
| A—B | N. 87°00' E. | 520.0 ft. | .99863 | .05324 |
| B—C | N. 51°30' E. | 260.0 ft. | .78261 | .62251 |
| C—D | N. 69°15' W. | 140.0 ft. | .93514 | .35429 |
| E—F | N. 9°30' E. | 270.0 ft. | .16505 | .98629 |
| F—G | N. 45°00' W. | 410.0 ft. | .70711 | .70711 |
| G—H | Sine. | | | |

5—What precaution would you take in making a survey to connect two shafts, tunnel to be in same vertical place as shafts?

6—Describe how you would establish a true meridian.

### —VENTILATION.—

Time—Three Hours.

1—An airway 600 yards, size 6 x 6 ft., passes 3,000 cubic ft. per minute, what quantity will pass through another airway, 700 yards long, size 5 x 5 ft, ventilating pressure remaining the same?

2.—What should be the theoretical diameter of port of entry of a fan, to pass 200,000 cubic ft. of air per minute?

3.—With 2 H P, we have 10,000 cubic feet air per minute in an airway 10 x 10 ft. and 3,000 feet long. How many (horse power) will be required to circulate the same amount of air in an airway 5 x 5 ft. and having the same length?

4—If 46,000 cubic feet of air is delivered at the foot of a downcast shaft, and there divided into two airways of equal section, but of such unequal length that the resistances are to each other as 4 : 1, what is the quantity passing in each airway.

5—How and why does a fan or furnace cause a current of air to flow through the workings of a mine?

6—How would you proceed to increase by half, the air current without altering the size of the airway? How much will the water gauge be increased to produce the above current?

7—In the year 1888, the equivalent orifice of our mine was equal to 350 square feet for a quantity of 125,000 cubic ft. of air per minute. Now, in 1908, the equivalent orifice for the same quantity, in the same mine, is equal to 216 sq. ft. only, how do you account for this difference, and while you are busy, please give the ventilating pressure for 1888 and 1908?

8. How would you examine a safety lamp, to see that it is in perfect order? Describe all the parts which are likely to be out of order in a lamp you are acquainted with.

9—If it require a pressure of half an inch of water guage to blow a certain quantity of air through an airway 1,500 feet long, and having a height of 6 feet and a breadth of 9 feet what should be the area of an opening made by a regulator-shutter, to pass ½ of the quantity that moves through the unobstructed airway?

### —MODES OF WORK.—

1—State fully your experience in mines and mining giving in detail in what occupations such experience has been gained; also in what capacities you have been employed in different countries or districts.

(Note—It is important that candidates answer the above question as fully as possible).

2—Draw up a list of questions with respect to safety and condition of mine, which, in your opinion, Underground Manager, Overmen and Examiners should report to you daily, as Manager.

3—In a mine where two seams of coal are being worked, seams are 200 feet apart vertically, pitching thirty (30) degrees from horizontal. Show by sketch

the relation which should be maintained between finished work in the two seams.

4—What precautions would you adopt for reducing as far as possible, accidents from—

(a) Fall of roof at the face?

(b) From fire damp?

(c) Use of explosives?

5—Describe how you would proceed to seal off a gob fire in a section coutaining ten bords—fire discovered in No. 7 bord to the rise—show by sketch. What precautions would you take to prevent accidents during operations where fire damp is being given off in the section affected?

6—Describe in a general way, arrangements both on surface and underground, for a shaft 600 ft., with daily output 1,000 tons, 10 hours hoisting—show by sketch. Safety lamps are to be used exclusively. Give details as to working force, duties, etc., for mine worked on economical basis.

7—What precautions and care should be taken of steel drawing ropes, when in use, to prevent accidents and specify for the different grades of steel, giving your reasons?

8—What construction of screen would you adopt to prevent breakage in tender coal?

(Note—Candidate may take for illustration any seam with which he may be familiar).

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—MECHANICS.—

Time—Two Hours.

1—Sketch and describe the action of a double acting pump.

2—What head of water will be required to feed direct into a boiler with a steam pressure of 60 lbs. per square inch?

3—What advantages are gained by using a double instead of a single acting hoisting engine?

4—How would you take care of a boiler, re firing, foaming, blowing off water and filling up?

5—What are the uses of fly wheels, and what precautions must be taken in their construction?

6—What weight would a pair of 22 inch cylinder horizontal engines, 4½ ft. stroke, with an 8 ft. drum, on the first motion, raise from a pit 260 yards deep with a round wire rope, the uniform boiler pressure, 60 lbs. per square inch, the engine to work expansively and the steam cut off at three-quarter stroke?

7—What is a steam engine and the principle of its action, condensing and non-condensing?

8—What do you understand by H. P. in calculating the power of a steam engine?

9—State the various methods of raising water from mines. Describe the safest and most approved kinds of pumping engines.

10—How should you inspect or instruct others to inspect shafts, cages, ropes, etc, used by workmen ascending and descending shaft?

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AMBULANCE.—Manager, U. Manager, and Overman.

Time—Half Hour.

1—What course would you pursue to relieve pain in removing to surface a man with fracture of bone between knee and thigh?

2—What means would you employ to resuscitate a man who has been overcome by gas in a mine?

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—SCHOLARSHIP.—

Time—Two and a half hours.

1—What is the number of feet, board measure, in a tapered piece of plank, 20 ft. long. 24 inches wide at one end and 16 inches wide at the other, the board being 2 inches thick?

2—Find the amount and compound interest of $1,000,00 for 4 years at 3%.

3—Find the cube root of .5 to 4 places of decimals.

4—A body falls approximately 16 ft. in the second and in each succeeding second 32 ft. more than in the preceding one. How far will it fall in 20 seconds and what distance will it fall in the last second?

5—If three men can do 5/12 of a piece of work in 5 days, of 12 hours each, how many men will it take to do 4/9 of the work in 6 days, of 8 hours each?

6—Draw a trapezoid having its parallel sides 5 miles and 8 miles respectively, and its altitude 4 miles. What is the combined length of the four sides?

7—What is the cost of tiling a cellar floor 24 ft. 6 inches by 20 ft. 8 inches, size of tile 5 inches by 8 in., tiles worth 30 cents a dozen?

8—Two seams of coal, dripping 1 in 14, are bored through a distance of 50 ft. What must the least distance be of a level to connect seams? Show by sketch that you understand the question.

9—A railway cut 600 feet long, an average depth of 4 ft. 6 inches, bottom of cut 12 ft. wide, sides sloped to an angle of 45 degrees. What is the number of cubic yards of material moved?

10—An equilateral triangle is 10 ft. long on each side and has an area of 43.30. how long should be the side of an equilateral triangle to contain three times the area?

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A new briquetting machine called 'Devillers' is working successfully in Brooklyn, N. Y. The machine has turned out 15,000 tons so far this year, all of the product finding ready market. The cost of production is said to be 2,25 to 2.50 per ton. It is mentioned in the Coal Trade Journal that Mr. Deviller is under contract to build a plant in Nova Scotia capable of producing 200 tons per day. This is certainly a big plant, and unless it be at Springhill, we cannot imagine where such a plant can be a success financially, that is, if the manufacture of the briquettes is to cost $2,50 per ton, and a short ton presumably at that.

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The Mining Society, and individuals interested in mining were busy preparing a warm reception for Minister Templeman, when the disappointing intelligence was communicated to them that the visit had been declared off for the present. It is hinted that the large programme prepared to be laid before the minister, as outlined in the Record of a late date gave the minister chills, or at least caused him to take cold feet and defer the visit to N. S. to a more convenient season. If he comes in the fall it will be all the better. There will be over so many more problems to present to him for solution.

# MARITIME MINING RECORD.

The MARITIME MINING RECORD is published the second and fourth Wednesday in each month.

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R. DRUMMOND, PUBLISHER.

STELLARTON, N. S. July 14


## MODEL MINES.

We have a few "model mines' in Nova Scotia. Take for instance Dom. No. 2 There are others but the naming one will suffice. While they may not have turned out all that their designers expected, still they are not traps. They are well managed, both below and above, and on a fairly economical scale. While we agree with some of the things in the following extract from the 'Mine Workers Journal', we think the article loses its force from the severity of the terms employed :—

"You can talk "model mine" until all the miners are dead as a result of explosions, says the 'Mine Workers' Journal.' A model mine, as Mine Inspector Harrison truthfully says, has come to be regarded as the only one in which those explosions occur. The old, weather-scared, storm-beaten, mine that has been sending out its product for probably half a century or more is no longer looked upon with suspicion and apprehension and has no good reason to get jealous of the modern model mine. Because a splendid tipple is built, a modern hoisting apparatus installed, a splendid battery of boilers are all gathered together, and the buildings covering these are well painted, the machinery kept clean and the engine room made to look better than the average miner's home; this does not constitute a model mine, although people have come to think it does. You can have all these, and every minute they are in the mine. Yea, their lives are threatened when they approach the landing for the purpose of descending into it. A dwelling house may be well painted on the outside and look well to the passer by, and yet, internally it may be a house of death and pestilence that threatens the life of the whole community. These so-called model mines have come to be looked upon in this light by all practical coal miners, who have come to regard them as shams, and the stories put in circulation at such times, as being an attempt made by designing persons to mitigate the blame that is due the operators of such places to lessen the claims that may be made for damages by the widows and orphans of those who have lost their lives through the carelessness, or perhaps incompetency of the underground management of this so-called "model mine."

A model is usually the product of the brain of some genius. It is perfect in all its parts and when put in operation every part has a certain duty to perform. If any one of these parts by reason of neglect or incompetency become deranged, or fail to do the work assigned, the model does not perform the work of the designer. It ceases to be a model until put in working order. A model mine, to be worthy of the name, must perform all the duties desired of it by its designer and this it cannot do if the airways are neglected If the gas or gases are allowed to accumulate, if other dangerous conditions are not attended to, it then becomes a model in name only, and is more dangerous than the ordinary kind."

## THE COST OF LIVING.

A certain class of would-be-looked-upon-as reformers, but who very well may be styled unthinking agitators, in season and out of season, assert that it is impossible for the workingmen to live anything like decently, in any manner adequate to his physical well being, owing to the greatly increased cost of living. About two years ago the Ladies Home Journal set a commission to work to find out exactly what foundation the commonly repeated allegation had in fact. After a thorough investigation the conclusion arrived at was that the cost of necessaries had not increased. This conclusion was supported and maintained by what appeared indisputable evidence. We were a little surprised at the conclusion for we had been of the opinion that there had been an increase in the cost though not to the extent many declared. An article which lately appeared in a paper published in a mining district incited to an investigation on our own account. We have before us as we write two store pass books. The one refers back to 1877—1878—eight years before the Pictou strike, which was successful in establishing a minimum wage, for day laborers, of a dollar a day instead of from eighty to ninety cents which had been the wage till then. The other is dated thirty years later, when the minimum days laborer's wage is a dollar and forty. From each passbook I have selected about a couple of dozen of the most prominent necessaries from the grocery and provision classes. Prices fluctuate a little so we have taken the average for three years, in the respective periods around 1878 and 1898

| PRICES 1878 | | PRICES 1898 | |
|---|---|---|---|
| 2 Gallons Molases | $1 10 | Same Quantity | $1 04 |
| 20 lbs Sugar | 2 60 | " " | 1 10 |
| 1 Barrel Flour | 9 25 | " " | 7 25 |
| 2 lbs Tea | 1 60 | " " | 70 |
| 5 lbs Rice | 21 | " " | 15 |
| 10 lbs Oatmeal | 40 | " " | 45 |
| 2 Gallons Kerosene | 80 | " " | 44 |
| 4 lbs Cheese | 68 | " " | 64 |
| 5 pkgs Spices | 50 | " " | 40 |
| 8 lbs Soap | 82 | " " | 45 |
| 2 Doz Eggs | 28 | " " | 40 |
| Biscuits and cakes | 54 | " " | 40 |
| 4 lb. Currants | 40 | " " | 40 |
| 1 lb. Starch | 10 | " " | 10 |
| 8 lbs Codfish | 56 | " " | 56 |
| 10 lbs Pork | 1 40 | " " | 1 50 |
| 4 lbs Lard | 68 | " " | 60 |
| 5 lbs Raisins | 90 | " " | 84 |
| 9 lbs Butter | 1 92 | " " | 2 00 |
| 2 doz. Herring | 60 | " " | 60 |
| 1 Bushel Potatoes | 45 | " " | 50 |
| | $25 25 | | $20 52 |

In the 1877-8 pass book there is one marking of fresh beef at 9c. a pound. Similar beef would cost to day 16c, a difference of 7c. Twenty lbs. at 7c is equal to 1.40. The difference in 31 quarts of milk is 62c. These two items 2 02 added to 20.52 make 22.54. Tobacco is scarcely a necessary, but let it go as one, and add 40c, as the difference between black jack then and black jack now, and, we have the sum total increased to 22.94, still leaving a balance of $2,31 in '08 favor. This can be put against any increased cost for coal. These figures prove conclusively that, on the whole, there has been no increase in the necessaries of life. Coming to the item of rent, and still confining ourselves to the colliery districts, we make the assertion—the accommodations of course taken into consideration—that there has been no material advance in some cases and in others none at all. The houses in the 'Rows' in Stellarton and Westville which rented twenty to twenty five years ago for from two to three dollars, have not been raised any. The new houses with better and larger accommodations rent for from five to six dollars per month, and they are worth it, in comparison with others. Living to day does cost more than it did a quarter of a century ago. The prices of necessaries have not increased, but we live much more luxuriously, indeed in a style which our forbears might call princely. Twenty odd years a matron or a maiden might feel vain over a hat costing a couple of dollars. Now either would purse up her lips at a head piece costing twice that sum. In many respects we have grown extravagant in our tastes, and no simple fare allures us. The common complaint of dwellers in country and in towns is that taxes have largely increased, so they have, perhaps, but then there is something in the way of improvement to set against the increase. The cost of living has increased, let us admit it, but then here too there is something to set against the increase, namely, the better living and the handsomer dressing. The actual necessaries of life, as we have demonstrated, have not increased, while wages have increased from twenty five to fifty per cent. If it is declared a workman cannot live to day on the wages he earns, then we are forced to the conclusion that he spends a too large sum on pleasure and on luxuries, some of these not conducive to his moral, mental, or physical well being.

## SPONTANEOUS COMBUSTION.

It was stated the other day that a cargo of coal enroute to Montreal had taken fire in the steamers hold. The statement may be taken with a grain of salt, as it was made by a 'rival.' It has been the general belief in Nova Scotia that the more sulphur and especially the more pyrites in coal the more liability to ignite at inconvenient times. If we are to believe the Scientide American, there is no good ground for the long held common belief. Neither sulphur nor pyrites play much of a part in spontaneous combustion. A more important part. Here is what the paper referred to says :—

"Spontaneous combustion is always to be feared in large masses of coal. It has been proved that the temperature of English coal freshly stored rises in two or three days to from 70 to 85 degrees F. and thereafter continues between 85 and 100 degrees F. Water may accelerate this rise of temperature by bringing oxygen in solution. Special care should be taken not to deposit dry coal upon any large quantity of damp coal. Wet coal should be spread in layers eight inches thick and allowed to dry 24 hours before being covered with a new layer. Sulphur compounds do not play an important part in spontaneous ignition. Pyrites resist atmospheric influences well, with the exception of the variety called marcassite, which tends to decompose in the presence of water. The practice of ventilating piles of coal by means of little shafts and canals, although recommended by insurance companies, is rather injurious than otherwise, as it facilitates the absorption of oxygen. If ventilation is attempted it should be mechanical and very energetic in order to produce a refrigeration which will counterbalance the oxidizing effect of the air."

## Rubs by Rambler.

I am wholly in favor of the daylight bill. I have not seen or heard a good argument urged against it. We all are proud of the climate of Nova Scotia. We compare it with Britain and rejoice we have more sunshine and less rain. We exult over the beauty of the landscape in the fall, and glow with fervor as we speak of our bracing winters. But there is a fly in the ointment. The summer nights are shorter by an hour and a half than they are in Britain, due to the fact that we have no twi-light. As soon as the sun is set the day is done. I would say then that if a daylight bill for Britain can be commended, much more can it be recommended for Nova Scotia. What we have long sighed for—more day light—it will give us. Though there is no daylight bill on the statutes, running the day to fit in with the light is no new thing in Nova Scotia, at least in the colliery distaicts. Twenty years ago in the matter of time every different colliery had a time of its own. There was whistle time as well as village or town time. And no one was inconvenienced while many were benefited. In the summer months our young men would derive benefit from the proposed change of time. There would be from sixty to eighty more minutes day-light for cricket, or golf, or tennis, or baseball. It will give the workman house-holder time to cultivate his garden etc. A writer in a local paper opposes the bill on behalf of the farmers. He says it would be too early, if the clock was changed to milk the cows and pack the apples. Everything, he declares would be wet with dew. And also that the milk trains in the morning would start at an unholy hour, Theres something in the dew business I admit ; dew does not fall every morning ; this summer there has been too little of it. But then we must legislate for the great majority and these do not work on the farms. Farmers

have plenty of fresh air and all the outdoor recreation they want. A daylight saving bill is for those who are barred from fresh air and recreation by the shortness of our summer nights.

A correspondent of the North Sydney Herald says that though the vote in election for the officers of the U. M. W. district local has not been made public he has it on good authority that James McLachlan of Sydney Mines, the Irish-Scotsman, beat Mr. Wm. Watkins, familiarly called the 'wee Welshman' by 900 votes. What authority, I would here ask, had the North Sydney Herald, for spelling the treasurer's name with a c instead of a 'ug'. James is not the man to be ashamed of his nationality. That by the way. The victory of McLaughlan is significant, or let me tay surprising, seeing that previous to the election the C. B. papers published what evidently were inspired articles, giving Mr. Watkins an excellent character and extolling his fitness as scribe and custodian. The Island is too strong evidently for the Mainland. The Island members must have gone largely for the man who resided in C B. If Mr. Watkins was really desirous of being elected to the position, his disappointment need not be great He can console himself with the thought that as the tree fedeth and the flower withereth so the fashion of the district local U. M. W's. will in a few weeks have passed wholly away, and there will be no treasures for James to gather in.

Had'nt Dan McDougall of the local U. M. W's. colossal cheek, and gall amounting to more than impudence to ask the coal operators of Nova Scotia to meet him and his subs in conference. Who is this McDougall? Who are the U. M. W's.? They have not been recognized in Nova Scotia as yet, and why should their alleged officers be. The U. M. W's. have done so much bluffing that their public statements and their invitations are ridiculed. The Montreal Witness is also of opinion that Dan McDougall is sort of cheeky. It says:

"One of the most inconsistent as well as one of the most impudent resolutions ever passrd by a labor union would seem to be that emanating from the body known as the American United Mine Workers' Association on Friday calling upon the Dominion and Nova Scotia governments to prevent any foreign labor to be brought into the country to take the place of miners who might go on strike. It is hard to believe—yet it is a fact—that such a resolution could be passed by a meeting at which at least five United States citizens were present, as members of the executive of the United Mine Workers, and that in support of a strike which is to be financed by the United States union That union has also had the impudence, it is said, to send to England, to menace miners against coming to Nova Scotia in case of a strike. This strike, threatened to-morrow, is one for which no reprobation can be too severe."

A Mr. Phelps, a New York lawyer, regarded as a leader of the agitation in India and a preacher of sedition, was ordered out of the Waldorf Hotel, London. How different the treatment awarded Bonsfield, Lewis and Patterson in C. B. They came to preach sedition and unsettle the minds of workmen toward the P. W. A., and yet Mayors and others did them homage. They have better methods in Britain. They are able to recognize wolves in sheeps clothing and govern themselves accordingly.

Messrs McLennan, Patterson, Bonsfield etc. etc. having failed to organize a ledge of the U. M. W. at Westville a new Richmond was sent into the field. He announced a meeting extensively for June the 26th. At the appointed hour the new man, a renegade Scot, it is understood, faced an audience of forty persons, four of whom were not workers at any colliery, and ten were boys who have not yet arrived at the age of discretion. The remainder, the 26, were drawn from the Acadia and the Drummond collieries. They were the men, each one of them it is said, with a grievance if not against the companies against the leaders of the P. W. A. It is said this new scottish Richmond said that the Pictou miners were scabs, and yet these twenty-six sat tamely there and heard the foul remark. It is said that fabulous promises were held out if the men only joined the U. M. W. The boys instead of a dollar five would get a dollar seventy-five and so on. The Westville man that believes such clap trap is far worse than a scab; he is a 'natural'. If Pictou is to be handicapped by excessive charges there can be only one result. She will be out of it as a competitor for trade.

## THE OTTAWA WATERWAY.

Extracts from address by Senator Poirier of Shediac, N. B., before the Canadian Club of Fort William, March 30th. 1908:

"We from the Maritime Provinces have enormous quantities of bituminous coal to export. None of that coal goes farther west than Montreal, where navigation closes upon us. From Ottawa to Fort William both inclusive, all the coal that is consumed, and it amounts to about 5,000,000 tons annually, is bought in the United States, and imported into Ontario. Why is that, when for steam, gas and coke our Canadian coal is just as good and economical as the American soft coal? Simply because of the difference of cost of transportation.

"Give us the advantage of cheap rates and we will, profitably to both you and us and the country supply half at least of the 5,000,000 tons you require. Give us good navigation for boats of equal size from Sydney and Pictou to Fort William and you will find that Sydney and Pictou coal can be landed at your door for 85 cents per ton, and possibly a little cheaper. This 85 cents per ton will constitute the whole cost from Sydney to the farthest Canadian landing place. On the coal shipped from Cleveland, to the water rate of 35 to 45 cents per ton must be added the rail rate from Pennsylvania, 78 cents more per ton, making it $1.18 for the entire haul, or 33 cents per ton more than the Nova Scotia coal. To this $1.18 for freight, must be added the duty of 53 cents per short ton. This will give a clear advantage of 86 cents per ton to the Canadian article landed at your door. Therefore out of the 5,000,000 tons which Ontario to-day imports from the United States we can supply all the soft coal that is, at least 3,000,000 tons.

"The money paid for the coal and for the hauling of it will all remain in Canada, when the Georgian Bay waterway is in operation.

"These $3,000,000 or $4,000,000 we pay to-day for purchasing three million tons of coal in Pensylvania and $3,000,000 or $4,000,000 for conveying it to the Canadian works is clearly money lost to Canada—money exported abroad. Let us save every cent of it, and it will be so much added to our national wealth. This money saved will go to the credit of the canal, and will alone pay, though indirectly, its annual charges."

## SOME ANCIENT TRADE HISTORY.

The first mention of coal in the annals of man kind occurs in the Bible, Proverbs xxvi. 21, and is as follows: "As coals are to burning coals and wood to fire: so is a contentious man to kindle strife." This was written about 1016 B. C., at the time King Solomon came into power. Part of his dominion way Syria, and ancient coal mines are worked in that country to day.

There are several other references to coal in the Bible, all of a later date. Tools and cinders have been found near the Roman wall in England, indicating that the Britons were familiar with the use of coal prior to the Roman invasion in 54 B.C.

The first actual record of a coal transaction is the receipt for twelve cartloads of coal written by the abbot of Peterborough, A. D. 852.

Years before the Christian era coal was in common use in China, says Carrington Phelps in the 'Metropolitan Magazine.' Anthracite coal is powdered, mixed with wet clay and rolled into balls. These are dried in the sun, and the poor use this fuel in little hand furnaces precisely as they did centuries ago.

Marco Polo speaks of seeing, in 1275, "a kind of black stone in Cathay that is used to burn better than wood." Marco Polo's countrymen refused to believe the traveler's tale.

The earliest historic mention of coal in the United States is by the French Jesuit missionary father, Hennepin, in his journal in 1679.

## RAILWAYS AS COAL CONSUMERS.

Among consumers railroads in their rapid expansion have played a leading part. It has been calculated that for the five years ending with 1900 the average gross consumption of the railroads of the U. S. was 57,390,000 tons, and for the five years ending with 1905 it was 85,997,000 tons, an increase of 49.8 per cent. Coal used for coking between 1900 and 1905 increased from 28,673,000 tons to 44,223,818 tons. Within the five year period the increase was 66.7 per cent. In the United States the per centage of coal consumed by railroads out of total consumption is 35.3 per cent. In Great Britain it is only 7.78 per cent., and in Germany 9.82 per cent. For railroads and coking uses 49.40 yer cent. of all the coal consumed in the United States is required. An analysis of consumption demand for five year periods for the United States shows the following average results in percentages:

| | Exports | Coking | Railways. | Industrial dom'e |
|---|---|---|---|---|
| 1886-1890 | 1.02 | 14.55 | 40.17 | 38.23 |
| 1891-1895 | 1.77 | 13.45 | 39.96 | 38.94 |
| 1896-1900 | 2.35 | 14.70 | 37.19 | 39.81 |
| 1901-1905 | 2.46 | 14.49 | 34.91 | 42.12 |

## Coal Shipments June 1909

### —DOMINION COAL COMPANY. LTD, —

—Output and Shipments for June 1909—

| | —Output— | —Shipments— |
|---|---|---|
| Dominion No. 1 | 57 896 | |
| Dominion No 2 | 70 446 | |
| Dominion No. 3 | 31 320 | |
| Dominion No. 4 | 41 003 | |
| Dominion No. 5 | 53 110 | |
| Dominion No. 6 | 22 668 | 384 245 |
| Dominion No. 7 | 20 653 | |
| Dominion No. 8 | 20 471 | |
| Dominion No. 9 | 31 399 | |
| | 348 966 | |

| | | |
|---|---|---|
| Shipments | June 1908 | 384 245 |
| Decrease | " 1909 | 387 742 |
| Shipments 6 mos. | 1909 | 3 497 |
| " | 6 " 1908 | 1 209 991 |
| Decrease 6 | " 1909 | 1 570 258 |
| | | 300 267 |

### INVERNESS RAILWAY & COAL CO.

| | | |
|---|---|---|
| Shipments | June 1909 | 24 372 |
| " | " 1908 | 30 171 |
| Decrease | " 1909 | 5 799 |
| Shipments 6 mos. | 1909 | 97 487 |
| " | 6 " 1908 | 128 291 |
| Decrease 6 | " 1909 | 30 804 |

### CUMBERLAND RAILWAY AND COAL CO.

| | | |
|---|---|---|
| Shipments | June 1909 | 25 801 |
| " | " 1908 | 29 411 |
| Decrease | " 1909 | 3 610 |
| Shipments 6 mos. | 1909 | 178 316 |
| " | 6 " 1908 | 198 279 |
| Decrease 6 | " 1909 | 19 963 |

### NOVA SCOTIA STEEL & COAL CO.

| | | |
|---|---|---|
| Shipments | June 1909 | 96 000 |
| " | " 1908 | 64 100 |
| Increase | " 1909 | 31 900 |
| Shipments 6 mos. | 1909 | 274 556 |
| " | 6 " 1908 | 287 595 |
| Decrease 6 | " 1909 | 13 039 |

### ACADIA COAL CO.

| | | |
|---|---|---|
| Shipments | June 1909 | 23 806 |
| " | " 1908 | 30 750 |
| Decrease | " 1909 | 6 944 |
| Shipments 6 mos. | 1909 | 124 199 |
| " | 6 " 1908 | 162 618 |
| Decrease 6 | " 1909 | 38 449 |

### INTERCOLONIAL COAL CO.

| | | |
|---|---|---|
| Shipments | June 1909 | 17 830 |
| " | " 1908 | 21 845 |
| Decrease | " 1909 | 4 015 |
| Shipments 6 mos. | 1909 | 110 124 |
| " | 6 " 1908 | 134 523 |
| Decrease 6 | " 1909 | 24 399 |

## SELECTED QUESTIONS AND ANSWERS.

(Science and Art of Mining.)

### WINDING ROPES.

Q.—What are the circumstances governing the life of a winding rope in a fairly deep shaft? How can you ascertain from time to time the state of such a rope, and how often would you recap it?

A.—The circumstances which govern the life of a winding rope are very numerous, but if care be taken in the design of the winding plant when it is first put down many of the ills peculiar to steel ropes, which are now almost universally used, can be avoided, or at least modified. The winding drum and headgear pulleys shou'd be of equal diameter, and as large as is consistent with the power of the engines, and so reduce the bending and rubbing action on the wires as they pass over the pulleys, which, especially in plough steel ropes, is apt to set up fatigue in the wires, and thus shorten the life of the rope. The wood lagging in the winding drum should be kept in good order; no bolts should be allowed to protrude, and come in contact with the rope, and the rope should have no tendency to override when going on the drum, which is noticeable in some plants where the space between the headgear and drum is too short. Also, the engine drum should be as high in proportion to the height of the headgear pulleys as possible, and so reduce the arc of contact on the pulleys and lessen the period of bending stress on the rope. The use of a balance rope, balancing of engine, care in picking up of chairs by the winder, and steady application of the brakes, instead of rash use of the reversing lever—all have a tendency to make the strain on the rope more uniform, and thus avoid fatigue, which is much more rapid when the rope is under a constantly varying load. The condition of the shaft as regards steam, water (probably acid), and return air, has a great effect on the life of a rope.

In upcast shafts where stoppers are lifted by the cappel, the repeated shocks might cause a defective cappel to draw, and it is advisable that great care should be taken in the examination of cappels under all conditions. The parts of a winding rope which usually first give way are:

(1) Immediately above the cappel, caused by rapid vibration of the rope, when lifting the chair from sump boards or fallers.

(2) On top of headgear pulleys, where water is apt to get in, when chair is at bank bottom or mid shaft, which are the usual places where a prolonged stand is made.

(3) Entering winding drum when chair is at bottom or bank.

Re-cappelling of ropes is not necessarily done because of any defect found in the cappel itself, but to move these weak places, and thus lengthen the life of the rope by di-tributing the wear over a longer length.

In ordinary ropes all the wires except the core come to the surface of the rope, and can, if broken or worn, be detected by the daily examination, if it is not detected sooner by the banksman or winder. In many collieries the ropes are inspected twice daily, and so the chance of an accident owing to a defective rope is reduced to a minimum.

Defects in locked coil ropes are not so easy to find; deformity of the rope surface and a cracking noise when running are as a rule the only signs of weakness, as in my experience it is not often that the locked coils which form the surface of the rope give way.

In one instance of deformity of the rope we put two pairs of strong clamps on the rope, and by taking the weight off the rope with two long bolts connected with the clamps, we opened the locked coils, taking care not to open them too much, and found that several of the internal wires were broken. Thus, by taking notice of a slight deformity of the rope surface, we found it necessary to put a new rope on, and I think that if reasonable care be taken when heavy weights have to be lifted, the locked coil rope, owing to its small diameter in proportion to its breaking strain, and its smooth surface and even wear, is the best class of rope to use.

The period elapsing between the re-cappelling of winding ropes must not exceed six months.

In conclusion, I may say that a thorough cleaning and greasing at least once a week should be done if the best is wanted out of any class of rope.

(The answer says nothing about keeping records of winding ropes—when put on and when taken off; their nature and quality; by whom made, and reasons for their having been replaced by new ones. This is one of the most important features to be considered in connection with the use of winding ropes).

### METHODS OF WORKING.

Q.—What would influence you in deciding the direction of a long wall face?

A.—When deciding the direction of a long wall face it is obvious that there are many important factors to be taken into consideration. The chief points to be considered are:

1—Nature of roof and floor, and coal seam.

2—Thickness of coal seam, also dip of seam.

The long wall method may be applied, either by working from behind (called long wall retreating), or commencing at once from the shaft pillar to work away the mineral (called advancing) maintaining means of access to its fresh face by roads, artificially supported, through the waste. Beyond this great differences occur, according as to whether the faces of work need to be straight, following the lines of cleat, divided into 'stalls,' or set off in several directions at once. The working faces are for the most part so arranged as to advance against the plains of cleat, but there are certain tender coals in which it will be found that (when the pit is deep) they are upon this system much broken up by the pressure, and that a far better proportion of round coal will be obtained by working on the end, i e., in the direction of such cleat.

In some instances it will be seen that a great length of face may be opened in a single line, as much as from 100 to 400 or 600 yards; in others 40 or 50 yards from a straight face stall. In many instances, again, the face forms on the large scale a curvilinear working, which may be adopted when the coal is not so divided by cleat as to cut more freely one way than another.

Supposing now, the above methods were adopted, and the coal was holed to a sufficient depth all along the face; the pressure of the overlying mass will tend to force it down, and in some cases actually saves the collier the labour of 'falling' the coal by itself, performing that office in the course of a few hours. Other-

wise by wedging, or blasting, the coal is brought down, broken to requirements, and filled into the tubs.

In seams of moderate thickness the whole of the coal should be got out, but in the pillar and stall method small portions of coal are frequently lost, whereas in the long wall system there is (practically speaking) no waste. This is a very big advantage of long wall, over pillar and stall working.

If the output of the mine was considerable, the roads in a long wall pit would consist of main engine planes, main gates, cross gates, and ordinary gate roads. The gate roads are displaced by cross gates, the old cross gates by newer ones, and the main gates by engine planes.

This is necessarily required in order to keep down the length of the roads as much as possible, which is economical in cutting down expenses.

It is a matter of convenience for the direction of the roads in flat seams, but where the seam dips the gradient has to be considered.

The great advantages of the 'long wall' method are simplicity of plan (and consequently, of ventilation) and the entire removal of all the coal; added to which under most circumstances, are greater safety to the men, and a larger proportion of round coal is obtained, a matter which, considering the prices, is of vital importance in the selection of the mode of working.

## VENTILATION.

Q.—Other conditions remaining constant, what alterations in a current of 50,000 cubic feet per minute, travelling an airway, would result from (a) doubling the length; (b) doubling the velocity; (c) doubling the power; (d) doubling the area?

A.—(a) We know that if we double the length of an airway we must at the same time (other things remaining constant) offer a double resistance to the air current by presenting a double area of rubbing surface for the air to brush against, and at the same time double the pressure will be required. Thus, the volume of air in this case will vary inversely as the square root of their lengths, or ratio of rubbing surfaces.

$\therefore \sqrt{2} : \sqrt{1} :: 50,000 : x.$

$\therefore 1.41421 : 2 :: 50,000 : x = 35,355$ cub. ft. per min.

Now $50,000 - 35,355 = 14,645$ cubic feet per minute lost in overcoming the resistance offered by the double area of rubbing surface exposed to the air current.

(b) By doubling the velocity we shall get double the quantity, as the quantity in this case varies directly as the velocity.

$\therefore 1 : 2 :: 50,000 : x = 100,000$ cubic ft. per minute.

An increase of 50,000 cubic ft. per minute.

(c) The quantity of air circulating varies as the cube root of the power

$\therefore \sqrt[3]{1} : \sqrt[3]{2} :: 50,000 : x$

$\therefore 1 : 1.1599 :: 50,000 : x = 62,995$ cub. ft. per min.

$\therefore 62,995 - 50,000 =$ an increase of 12,995 cubic feet per minute.

(d) The quantity varies as the areas multiplied by the square root of the area

$\therefore 1 \times \sqrt{1} : 2 \times \sqrt{2} :: 50,00 : x$

$\therefore 1 \times 1 : 2 \times 1.41421 :: 50,000 : x = 141,421$ cub. ft.

$\therefore 141,421 - 50,000 = 91,421$ cubic feet per minute increase.

From the above calculations we have pointed out to us in a marked degree the value to be got by increasing the sectional area of air ways in mines, as doubling the area nearly gives us approximately three times as much air.

At the same time doubling the velocity gives us double the quantity, but this is not so easily done, while doubling the power only gives about a quarter more air. Thus, the greatest benefit is to be got by increasing the area if possible.

## PERMITTED EXPLOSIVES AND BLACK POWDER

An "Explosives Circular" issued by the United States Geological Survey reminds us that as a part of the investigation or mine explosions authorised by Congress in May, 1908, it was decided by the Secretary of the Interior that a careful examination should be made of the various explosives used in mining operations, with a view of determining the extent to which the use of such explosives might be responsible for the occurence of these disasters.

The preliminary investigation showed the necessity of subjecting to rigid tests all explosives intended for use in mines where either gas or dry inflamable dust is present in quantity or under conditions which are indicative of danger.

It may be wise to point out certain differences between the permissible explosives as a class and the black powders now so generally used in coal mining, as follows:—

(a) With equal quantities of each, the flame of the black powder is more than three times as long, and has a duration three thousand to more than four thousand times that of one of the permissible explosives, also the rate of explosion is slower.

(b) The permissible explosives are one and one-fourth to one and three-fourths times as strong and are said, if properly used, to do twice the work of black powder in brining down coal; hence only half the quantity need be used.

(c) With 1 pound of a permissible explosives or two pounds of black powder the quantity of noxious gases given off from a shot averages approximately the same, the quantity from the black powder being less than from some of the permissible explosives, and slightly greater than from others. The time elapsing after firing before the miner returns to the working face or fires another shot should not be less for permissible explosives than for black powder.

The use of permissible explosives should be considered as supplemental to, and not as substitute for, other safety precautions in mines where gas or inflamable coal dust is present under conditions indicative of danger.

As stated above, they should be used with strong detonators; and the charge used in practice should not exceed 1½ pounds, and in many cases need not exceed 1 pound.

In as much as no explosive manufactured for use in mining is flameless, and no explosive is entirely safe under the variable mining conditions, the use of the terms "flameless" and "safety" as applied to explosives is likely to be misunderstood, may endanger human life, and should be discouraged.

# AROUND THE COLLIERIES.

Drive out the intruders.

Nova Scotia must not stand for even a mild form of Molly McGuire methods.

It must be brought home to the foreigners that Nova Scotia is not Colorado.

For the present the Record is inclined to let the 'strike' take its course. There can be only one end.

Part of the East side of Caledonia is working submarine. In about two years all the workings on this side will be under the water.

Caledonia mine, single shifted gives an average of about 1600 tons per day for a force of 580 men. This is considered a good output considering that Caledonia is becoming venerable through age.

Brigades have been formed at the several collieries of the N. S. Steel & Coal Co. to practice with the Draeger machine, so as to be ready for fire and explosion. The Draeger, in C. B. is not without its critics.

Sydney No. 2 is worked with the Little Hardy Mining machines. The mining is done in a band in the middle of the seam. There is thus no fine coal made, no dirt filled in the coal and no waste.

As the Coal Trade Journal says, "We have the real people in the trade, our advertisers can depend on that' And we have got the real people who work in the mine, many of whom will some day hold important positions in the trade.

The main deep at Dom. No. 6 is 200 feet under the ocean. There is one point in the mine which is 500 ft. under. In about a years time, if all goes well and a strike does not shut down the mine indefinitely the work of further sinking the slope will be begun. The slope will make in the direction of the Roost Head.

H. J. McCann, Supt. of Dom. Coal Co's stores, is one of the champion golf players of Cape Breton. In a race in a thunder shower the other day, from Reserve to Dominion, it was proven that when it came to horsemanship he could not hold the whip with Supt. McEachern. McCann blamed his defeat on the French trainer. He used golf language in criticising that unfortunate.

We have received the "Standard" issued for the first time in Glace Bay, 19th ult. The Standard is conservative in politics, and radical in its views regarding corporations, etc. The Record, as our readers well know, is strictly independent in politics and therefore has no use for political articles grit or tory, but it will be glad to have from the 'Standard' or for that part from any paper, articles whose tendency will be to hasten moral and social reform.

The two slopes Dom. 14 and 15 are so close together that part of the plant of one, boilers, compressors etc, will be used for the other.

For the Victoria coal it is claimed that it makes no clinkers. It is a quick burner and an excellent steamer. Along with Sydney Mines coal, Victoria when worked some years ago was in good demand for bunkers.

Though No. 15 of the Dom. Coal Co's pits all but adjoins No. 14, the two slopes tap different seams of coal. The No. 15 slope is to be driven in the Lingan main seam, while 12 and 14 are driven in the Victoria seam.

No better praise could be given Mr. Maxwell and his staff at Dom. No. 1 than is given when it is said that the mine is doing better than ever. The output, according to the number of men at work is from 2100 to 2400. The number of men at work averages in the vicinity of 650. This pit is a wonderfully steady producer, and on that account is in favor with the higher officials. Mr. Maxwell has it may be a broad face, his smile is correspondingly broad. He gets on well with the men.

There have been a number of changes of managers of late. Wm. Wilson, formerly of the Hub, has gone to Maccan, and John Roy formerly of Mabou and Chignecto goes to the McKay. W. Maxwell of Dom. No. 12 and Ang. I. McDonald have gone West. Mr. Richardson of the North Atlantic Collieries Co. handed in his resignation a week or two ago. He is a young man, and desires a broader horizon than is afforded at Port Morien. It is said the Western fever has laid its hands on others, but whether it will be strong enough to carry them off time will tell.

The fuel inspector of the railway which is probably the largest consumer of coal in Canada, in conversation with the writer, the other day said that the coal now being sent to Montreal was very much superior to that sent a dozen years ago, and added, "You have some grand coals in C. B." I should just say we had, though their true value has never been fully appreciated. The remark of the Inspector bears out the often repeated assertion of the Record, that our coals are as good as the best, and those who use most know that best.

A Record representative, the other day, had the pleasure of a chat with Mr. Kirbky, the Inspector of the Dominion Coal Companies mines, in succession to Mr. Fergie. He is called the Companys 'Mining Engineer. Mr. Kirkby has a face that one takes too, his manner is not loud, his head gives not the slightest indication of swelling. An informal survey leaves the impression that this Scot is not of those who make it unpleasant for themselves and their associates, by trying to impress one with the belief that they know it all. That man is a lout who is not a learner.

## THE WORLD'S COAL.

At the 50th general meeting of the Instution of Mining Engineers, Dr. Moore, in his presidential address, dealt with the world's production of coal. He said that the history of coal dated from the begining of the last century, when the coal production of the whole world was probably less then 15 million tons, a figure which had increased to 1,080 million tons in the year 1907. In the year 1800, out of a total production of 15 million tons Great Britain was responsible for two-thirds, and the annual production of coal in the United Kingdom had incresed to 50 million tons by 1850, in which year the United States had an output of only 3½million tons. The total output of the world at that date was probably 75 million tons. Up to the year 1860 Great Britain was the only country which showed a comparatively rapid increase in coal production, but since that year other countries, notably Germany and the United States, had shown rapid rates of increase. The production in this country had steadily increased, until in 1907 it was 267 million tons. In the United States the increase in the rate of production had been very rapid during recent years, and by annual additions of 25 million tons or forty per cent. of the total production, the United States been now by far the greatest coal producer. It appeared to be certain that in future years the United States would contribute an even larger proportion of the total production The combined production of coal and lignite in Germany, which in 1907 was 65 million tons less than that of Great Britain, was increasing at a rapid rate. and was rapidly overtaking that of this country. Austria-Hungary, with a combined output of coal and lignite of over 45 million tons, now occupied fourth place on the list. The output of coal from British Colonies was steadily increasing, the total in 1907, including India, being 36 million tons. Great Britain was by far the largest exporter of coal, having exported 85 million tons in 1907, and these large coal exports were a great sateguard to the consumer against prices being unduly raised. The increasing consumption of coal raised the question as to the possible exhaustion of supplies, but this was complicated by the difficulty of estimating the reserves existing. The figure put forward by the Royal Commission assumed an assured quantity in the year 1901 of 101,000 million tons still available in this country, which would be worked out in something less than 300 years, but little doubt could be felt that some means of doing without coal would have been discovered before supplies were exhausted.

## BIG CONTRACTS FOR CANADIAN WESTINGHOUSE CO.

The letting of the contract for a large share of the equipment of the. Hydro-Electric commission's transmission line to the Canadian Westinghouse company is not only a big thing for the company, but for the city at large. It means that the company on this order alone will be kept busy with a full complement of hands for ten months. The work requires skilful operatives, who are paid big wages.

The engineers employed by the commission were those in the forefront of the development of electrical science as applied to the useful purpose of man in the present day. In forder to make its distributed power reach as large a proportion of the population of Ontario as possible, the commission decided that the highest workable transmission pressure should be used. With the sanction of the engineers a system of 110,000 volts working pressure was adopted, a figure nowhere in the world exceeded, equaled in only one or two isolated cases.

The Westinghouse company was awarded the contract to furnish all the electrical equipment for the two crucial stations of the whole system—first, the main transformer station at Niagara Falls, where all the power is started on its long journey to the various towers of the Ontario peninsular district; and second, the main switching station to be located near Dundas, where the plan of dividing and handling the power for the service to the eastern, nothern and western towns will be carried out. In addition, the Westinghouse company's contract includes furnishing the main switches in all the remaining towns on the system for handling the 110,000 volt current as it enters and leaves each station, and also includes a special system of protection to be installed in the station of every town on the line. This latter constitutes an arrangement perfected by the Westinghouse company by means of which, if a fault occurs on transmission line between stations, the portion of the line thus becoming defective and otherwise a source of danger is immediately made "dead" and at the same time the remaining portions of the transmission line are continued in efficient operation.

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The self acting rope haulage lately introduced on the East side of Caledonia is doing the work expected of it. The haulage takes the submarine coal down to the main haulage. This new haulage saves the labor of a dozen men. The pit is in excellent condition due to Mr. McDonald the energetic superintendents untiring vigilance.

As superintendent at the Reserve it may be said of Bart Connors that he is on his native heath Few, if any, of the superintendents were previous to their promotion underground managers of the mine at which they are now stationed. Bart is an exception. The output of the Reserve is not so large as in its palmy days, before the coal in its chief slope became exhausted, still it is wonderful for so old a mine.

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Sydney, July 11—A reasonable length of time will be given the employees of the Dominion Coal Co. now on strike to return to work and if they then do not do so, men will be imported in large numbers to fill their places. So Mr. James Ross President of the Company, declared in an interview accorded to the Morning Chronicle to-day, in which he set out the position of the Company regarding the strike of the United Mine Workers. He also made the important announcement that if Messrs. Bonsfield, McCullough and other American U.M.W. men live up to their offer to leave the country, he will treat with the men on strike, but under no circumstances will he recognize the Mine Workers. Men are being imported at the present time to fill the places of those who have left the country, at the solicitation of the U. M. W., he said, but he added that men will not be brought in to fill the places of any men still in the country until it is seen definitely that the local men will will not abide by their contract. Then men will be brought in to replace every man who still stays on strike —Hx. Chronicle.

## INVERNESS RY. & COAL CO'Y

Time Table No. 26, Taking effect at 1 a. m OCT 11TH., 1908.

| EASTBOUND Read Down No. 52 a. m | EASTBOUND Read Down No. 54 p m | STATIONS. | WESTBOUND Read Up No. 51 | WESTBOUND Read Up No. 53 p m |
|---|---|---|---|---|
| L 10 45 | L 3 30 | P. TUPPER JUNCTION | A 1 o 35 | A 3 35 |
| S 10 51 | S 3 55 | PORT HAWKESBURY | S 10 27 | S 3 27 |
| A 11 10 | A 4 08 | | L 10 07 | L 3 10 |
| | L 4 13 | PORT HASTINGS | A 10 02 | |
| | F 4 5 | TROY | F 9 52 | |
| | S 4 38 | CREIGNISH | S 9 30 | |
| | F 4 50 | JUDIQUE | S 9 22 | |
| | S 5 05 | CRAIGMORE | S 9 00 | |
| | F 5 | ATHERINE'S POND | P 8 48 | |
| | A 5 33 | | L 8 32 | |
| | 38 | PORT HOOD | A 8 27 | |
| | S 5 53 | GLENCOE | S 8 10 | |
| | S 6 16 | MABOU | S 7 49 | |
| | S 6 28 | GLENDYRE | S 7 38 | |
| | 6 48 | BLACK RIVER | F 7 18 | |
| | S 7 02 | STRATHLORNE | S 7 02 | |
| | A 7 15 | INVERNESS | L 6 45 | |
| | p m | | a m | |

Trains make close connections at Pt. Tupper Jct. with I. C. R. passenger trains, excepting the Maritime Express.

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Natural gas was produced in the counties of Welland, Haldimand, Norfolk, Kent, Essex and Bruce, in Ontario and at Medicine Hat, Alberta; the sales from the Ontario fields constituting over 95 per cent. of the total. The total receipts from gas sold in 1908 show an increase of about 24 per cent. over the receipts of 1907 and are now larger than at any time since the gas was first used.

Complete statistics of cement production in 1908 have been received from twenty three operating plants. The total quantity of cement made was 3,495,961 barrels as compared with a total 2,491,513 barrels made in 1907, showing an increase of 1,004,448 barrels or over 40 p.c. The total sales were 2,665,289 barrels as compared with 2,436,093 barrels in 1907, an increase of 229,196 barrels or over 7 per cent. The total daily capacity of the 23 plants was about 27,300 barrels as compared with an operating capacity of 14,300 barrels in 1907. The operating plants were distributed as follows:—One each in Nova Scotia, British Columbia and Manitoba, the latter manufacturing a natural Portland, two in Alberta, three in Quebec province and 15 in Ontario. Of the 23 operating plants, 12 use marl and clay, ten use limestone and clay, and one blast furnace slag.

# DOMINION COAL COMPANY, LIMITED.

**Miners and Shippers of the Celebrated**

## "DOMINION STEAM COAL,"

**Gas Coal and Coal for Household Use**

**from the well known seams**

**'Emery,' 'Phalen,' 'Harbour,' 'Victoria' and 'Hub.'**

**12 Collieries in Operation.** ═══ **OUTPUT: 3,500,000 tons Yearly**

Used by Railways, Tramways, Steamships, Manufacturers, Water Works, Light and Power Stations in Ontario, Quebec and the Maritime Provinces, also in Newfoundland and the New England States, Mexico, Sweden, South Africa and the West Indies.

**Shipping Piers** equipped with modern machinery, ensuring Quickest despatch

—AT—

SYDNEY, LOUISBURG, and GLACE BAY, Cape Breton Island, Nova Scotia, Canada.

***7000 ton Steamers Loaded in 7 hours.***

Special facilities for loading and prompt despatch given to sailing vessels and small craft. Box Car Loaders for shipments to inland points. Discharging Plants at Montreal, P. Q., Three Rivers, P. Q., Quebec, St. John, N. B. and Halifax, N. S., Capacity up to 1000 tons per Hour.

**BUNKER COAL.** The Dominion Coal Co. has unsurpassed facilities for Bunkering Ocean going steamers the year round. Steamers of any size promptly loaded and bunkered.

**IMPROVED SCREENING FACILITIES** at the Collieries for the production of Lump Coal of superior quality for Domestic trade and Household Use.

FOR TERMS, PRICES, ETC., APPLY TO

**Dominion Coal Co., Limited,** Glace Bay, Nova Scotia.
" " " " 112 St. James St., Montreal, P. Q.
" " " " 171 Lower Water Street, Halifax, N. S.
" " " Quebec, P. Q.

AND FROM THE FOLLOWING AGENTS:

R. P. & W. F. Starr, St. John, N. B. Harvey & Company, St. John's Nfld.
Peak Bros. & Co., Charlottetown, P. E. I. Hull, Blyth & Co., 4 Fenchurch Avu., London, E.C.

**G. H. Duggan,** 2nd.Vice-President. and Gen'l Manager.

**Alexander Dick,** General Sales Agent.

GENERAL OFFICES, GLACE BAY, NOVA SCOTIA, CANADA.

# CUMBERLAND RAILWAY AND COAL COMPANY.

OPERATING THREE THICK SEAMS NOS 1, 2 AND 3.

—Miners and Shippers of the Well Known—

# FRESH MINED SPRINGHILL COAL

. . . ANALYSIS . . .

| | NO 1 | NO 2 | NO 3 |
|---|---|---|---|
| Moisture | 2.02 % | 1.41 % | 2.71 % |
| Volatile combustible matter | 18.94 % | 27.93 % | 28.41 % |
| Fixed Carbon | 75.29 % | 67.47 % | 64.69 % |
| Ash | 3.75 % | 3.19 % | 4.19 % |
| | 100.00 | 100.00 | 100.00 |
| Sulphur | 1.15 % | 58 % | .79 % |

BEST COAL FOR LOCOMOTIVE USE.

Delivered By Rail or Water

BEST COAL FOR GENERAL STEAM PURPOSES.

The year Round

IN Lots To Suit Purchasers.

BEST COAL FOR DOMESTIC CONSUMPTION.

Head Office MONTREAL

BEST GAS COAL

Mined in the Province.

Mines SPRINGHILL N. S.