

MARITIME
WINNING RECORD
Dr. R. Bell
Geol. survey dept.
AND
COAL AND METAL TRADES JOURNAL

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

New Series Vol. 10 No. 11 December 11th, 1907 STELLARTON, N. S.

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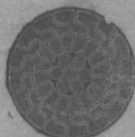
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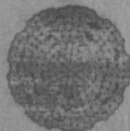
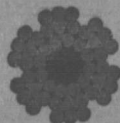
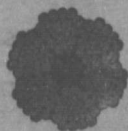
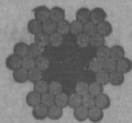
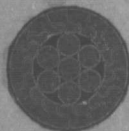
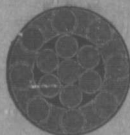
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78 Mixed from Trenton.....	6.35
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31 Mixed from Hopewell.....	7.35
51 Mixed from Truro.....	8.00
55 Mixed from New Glasgow.....	10.25
17 Mixed from Pictou.....	10.50
56 Mixed from Mulgrave.....	12.25
19 Express from Halifax and St. John.....	12.50
150 Mixed from Pictou.....	12.55
85 Express from Halifax and St. John.....	12.55
20 Exp. from Sydney.....	12.55
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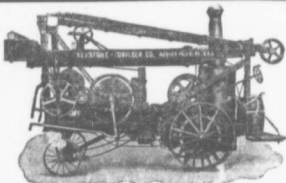
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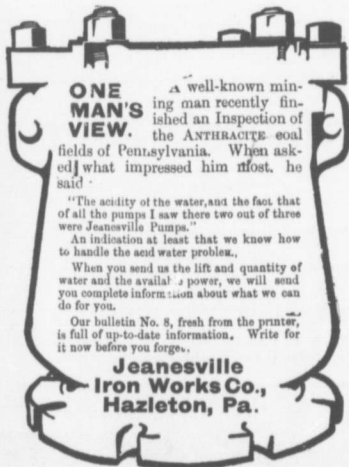
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MAN'S
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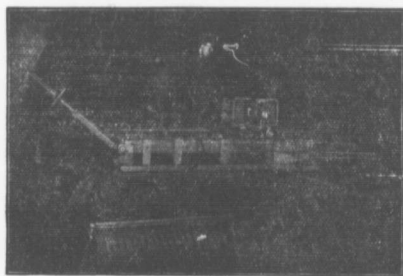
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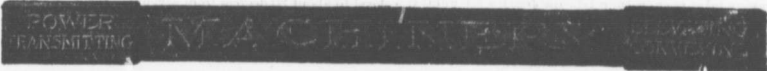
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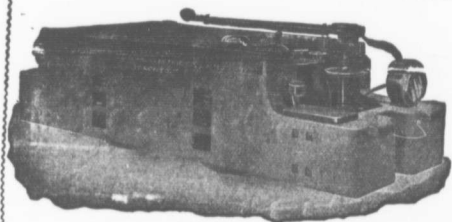
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Important Notice.

The Maritime Coal Ry. & Power Coy., having taken over on June 1st., the Joggins Mine and Ry. and are starting at once on opening a new slope and doing large repairs. They want **ONE HUNDRED MINERS AND LABORERS AND TWENTY CARPENTERS.** Apply at Joggins or Chignecto.

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No....

MARITIME MINING RECORD

Vol. 10, No. 11. Stellarton, N. S., Dec. 11th. 1907. New Series

MARITIME MINING RECORD.

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

The RECORD is devoted to the Mining—particularly Coal Mining—Industries of the Maritime Provinces.

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R. DRUMMOND, PUBLISHER.

STELLARTON, N. S.

DEC. 11

SELECTED QUESTIONS AND ANSWERS. SCIENCE AND ART OF MINING.

VENTILATION.

Q.—A semi-circular air-way is 10 feet high and 10 feet wide. Velocity of air is 5 feet per second. Explain (a) how you would measure the air current; (b) how often the current must be measured to comply with the Coal Mines Acts.

A.—The sectional area of this air-way will have to be obtained by the addition of the product of the semi-circular portion to the product of the rectangular portion, because in this case we must conceive of the section being made up with two figures—(1) the top or semi-circular; and (2) the bottom or rectangular, separated from each other by means of a conceivable line crossing the air-way at the points of the diameter where the arch springs from the side walls. The arch in this case would spring from side walls 5 feet in height, therefore the sectional area of the roadway will be as follows:—The semi-circular portion will equal the diameter x by the radius x . $.7854 \text{ equal } 10 \times 5$. $.7854 \text{ equal } 39.27$ square feet, and the rectangular portion is equal to the height of the side wall x by the width of the roadway between them (or the diameter), thus $5 \times 10 \text{ equal } 50$, and the sectional area therefore equals $39.27 \times 50 \text{ equals } 89.27$ square feet. Again, if the area be multiplied by the velocity the result will be the quantity passing along the air-way in cubic feet. Thus a sectional area of 89.27 square feet with a velocity of 5 feet per second, the quantity of air passing equals $89.27 \times 5 \text{ equals } 446.35$ cubic feet per second, or $446.35 \times 60 \text{ equals } 26,781$ cubic feet

per minute of air passing.

(a) To measure or determine the air currents through the air-way two processes are necessary: (1) the determination or measurement of the velocity of the current by means of an instrument called the anemometer for the space or period of, say, one minute; then when the velocity is accurately determined, we (2) multiply the sectional area of the air-way by the velocity obtained, which gives us the amount of air traversing the air-way in cubic feet per minute; or, as the case may be, according to the time period used. Measurements should be taken in each main intake and main return air-way, and at the intake and return of each split from a main airway, and compared as a check upon the measurements, and also adjust the quantity where necessary to do so.

(b) In answer to this part of the question, the 1st General Rule, or, rather, the latter portion of the 1st General Rule, states—That in the case of mines required by this Act to be under the control of a certificated manager, the quantity of air in the respective splits or currents shall at least once in every month be measured and entered in a book to be kept for that purpose at the mine. Therefore we see that if the air be measured once in each month and afterwards entered up in the book kept for such purpose at the mine, the Coal Mines Acts have been complied with in this respect; but it is advisable, especially in a dry and dusty, and more so in a very fiery mine, to have the air current measured more frequently than this. In fact, at a number of collieries in this country at the present time the air current is measured and recorded weekly, and this, in the writer's opinion, is quite long enough between each measurement. My opinion is that a compulsory measurement ought to be made each week, instead of each month as at present, in order to comply with the Acts

PUMPS AND PUMPING.

Q.—What is the extreme vertical height that a pump will draw water? Explain reason why.

A.—It is well-known to most mining students that the action of a pump that has to draw water to a higher level than its own level

(the level of water) depends upon the atmospheric pressure.

Now, taking the average atmospheric pressure to be 14.7 lb. per square inch, this would balance an amount of water equal to a pressure of 14.7 lb. per square inch; that is, if the atmospheric pressure was taken away from the water to be balanced, by forming a vacuum, say, in a column of pipes.

The vertical height a pump will draw water in theory is between 33 and 34 feet. This may be obtained as follows:—

A column of water one foot high has a pressure on the bottom of 0.434 lb. per square inch; therefore, to balance an atmospheric pressure of 14.7 lb. per square inch, we should require a column of water equal to 14.7 divided by 0.434 equals nearly 34 feet.

In practice this 34 feet is never obtained, because the water rising up the pipes on the forming of the vacuum meets with resistances, chiefly from the rubbing surface of the pipes, and through a possibility of a proper vacuum not being formed.

A good example of a pump "drawing water," as it is termed in the question, may be seen in the common plunger pump. On the upstroke of the plunger a vacuum is formed in the working barrel; the water from the pump then rises up the suction pipes and passes through a valve or crack into the working barrel, and fills the vacuum that has been formed. This is caused by the atmospheric pressure acting on one part of the surface of the water whilst this atmospheric pressure has been removed from another part of the surface of the water (the water in the suction pipes.) Thus the atmospheric pressure having been removed from the water in the pipes, the pressure on the outside water forces the inside water up the pipes until there is sufficient water in them to balance the atmospheric pressure, or until the water in the pipes meets with greater resistance than the atmospheric pressure can overcome. Probably one-quarter (1-4) of the atmospheric pressure will be required to overcome friction in the pipes and other resistances, therefore, the 34 feet in theory is never attained; but the greatest height which a pump will draw water in practice is about 24 feet, or from 21 to 24 feet.

PRACTICAL WORKING.

Q.—What are the advantages of packing the goaves in long wall work?

A.—When coal seams are not thick and give a good supply of building and packing material, then the system of working is usually long wall. In some cases the seams may not give sufficient debris to build the goaf tight as the working proceeds, and then what debris is obtained in the working of the seam is built alongside of the drawing roads to support the roof. The breadth of roadside building is us-

ually determined by the nature of the roof, the character of the seam. Still, no hard and fast rule is held when mining, as the whole of the stone must be stowed somewhere to allow the work of coal-getting to get on, and then the building is generally a little broader at this point.

The advantages of building the goaves tight in long wall workings are many.

1.—The stone from the brushing of the roads is stowed or packed tight in the goaves in place of sending it to the bank, and in less time than filling it in tubs and sending the debris to the bank.

2.—Another important point to be noticed is the debris from the pit is emptied on the pit bank, and often large hills are made with the stone, which most landlords have a strong objection to. The colliery companies have therefore to lease more ground and pay the rent for this ground, as well as the assessments.

3.—Packing the goaves with stone saves wear and tear of machinery in hauling and winding the stone, and also allows more time for coal handling.

4.—The stone building supports the roof and saves expense in timber, as the building secures a larger area of the roof, and there is less risk of accidents.

5.—Long wall working allows the roof to settle down gradually and rest on the buildings, and when mining under large towns, water, etc. the packing of the goaves does not allow the surface to break, and as it settles down the subsidence (if any) is hardly noticed, and where surface damages have to be paid this is a great saving.

6.—The ventilation of the workings is much simpler when the goaf is packed tight, as the air passes along the long wall face, and carries away any noxious gases that may be given off, there being no large vacancy in the workings for gas to accumulate in, and which might be thrown out at any moment by a fall of roof or alteration of the barometer.

The above are the chief advantages of packing and building long wall working, but there are a few minor advantages to be claimed, making this method a success, and in some places stone and other debris are brought from the surface to stow and pack the goaf. In some continental collieries water flushing is adopted. By this means sand and other soft material are washed into the goaves with water, making sure that all vacant spaces are filled up solid, and this prevents the breaking of the roof and subsidence of the surface.

LARGE COAL MINE OUTPUTS.*

By F. C. Keighley.

The first thing necessary to do is to determine how large a coal mine should be and yet not exceed the profitable limit so far as relates

to the volume of output to be gotten under the local conditions. During the past few years I have known of several very large operations that were projected with the idea of advancing beyond former practices, and also achieving a reduced cost of production. I know that these mines have produced a large tonnage; I further know that some of them have been very profitable, but I do not know of any case where the cost has been reduced proportionately to the increase of output as compared with a well-designed, well-developed, and well-balanced mine of what might be termed a reasonably large output, for instance, ranging from 1,500 to 2,500 tons per day. I know of a very large mine at this time that is, perhaps, the finest mine of its kind that has ever been developed; I think possibly it holds the record output. It is a well-managed operation, and very successful, yet the management informs me that they are dissatisfied with results. They have reached the output that was expected, but the cost has not decreased as they expected, and not in the same ratio as the increase of output over other mines of ordinarily large outputs; and I may as well confess that this mine is, to a great extent, responsible for the presentation of this paper to you; one of the parties connected with the operation requested me to prepare a paper on this subject, and one of his reasons for so doing was to see if any light could be thrown on the subject.

Going back to the points already stated, some years ago I wrote a series of articles on coke making, and I made the statement that there was a law of proportion to be observed in laying out coal mines just as there is in anything else, and if this law of proportion is not observed, the results expected cannot be obtained. In a paper of this general character it would be impossible to give exact figures and all I am going to attempt is to make comparisons. In a case of very deep shaft sinking, say, 1,000 feet, it is evident that the output of the mine should be larger than the output of a 500-foot shaft by reason of the greater fixed charge resulting from the extra cost of development, heavier machinery, etc. Again, there should be a term of years decided upon, for instance, 25 years. As there was a certain investment for machinery and improvements, the depreciation of such machinery and improvements would have to be provided for. It is plain to be seen that with a term of 25 years, 4 per cent. per annum on the cost of the improvements set aside would provide for that depreciation; this is a matter that should be taken into consideration. It must not be forgotten that the thickness of the coal is a very important factor in determining the output. In a thick seam there would be no refuse to handle through the shafts; in a thin seam there might be as much refuse or more to handle than

the tonnage of coal itself. In cases of a very large volume of water to be pumped, the output would have to be considered as the cost for pumping water remains stationary. No more reference is needed to those lines.

For the purpose of illustration we will say that we have before us two propositions or prospective developments. The shafts, the thickness of the seams, and the general conditions being the same in both cases. The first proposition is for an output of 2,000 tons per day run-of-mine coal; the second proposition is for an output of 4,000 tons per day; and right here I might say that I have been informed that several mines at this time are producing over 4,000 tons of coal per day. It is stated they are doing this successfully, but I have never heard that the cost of production in these very large mines was less than or even as low as at a well-balanced, well-designed mine of 2,000 tons capacity per day. Having these two propositions before us, and endeavoring to ascertain which is the more favorable to economical production, we should anticipate the conditions that would likely follow in each particular case. It is evident that if an output of 4,000 tons per day is desired, the coal-field tributary to that operation would necessarily be twice as great as for the 2,000-ton operation. Every ton of coal in a coal-field is located at a certain distance from the foot of the shaft, and nothing can change that fact, therefore, the average haul in the 4,000-ton operation would be fully twice as great as in the 2,000-ton operation, and consequently there would be a proportionate increase in the cost for hauling. This increased cost for hauling would have to be borne by the operation. It is hardly necessary to say that the railroad companies will haul freight from shafts 5, 10, 15 and 20 miles apart for the same rate per ton as they will from shafts side by side where coal mines are located within certain freight radii. This increased cost for hauling alone would be a very large item. By reason of the 4,000-ton operation covering so much more ground the cost of maintenance of roads, air-ways, travelling ways, etc., would be proportionately increased. The 4,000-ton operation would further have to bear an increased cost for supervision, and this would be more in proportion than for the 2,000-ton operation. The distance travelled by the foremen, mining engineers, various employes underground, and particularly the coal miners, would be doubly as great, and though this at the first glance might not appear to cut much of a figure, yet it probably has more to do with the success of a mining operation and the regulation of costs than any other factor; this I know from my own experience. I have opened mines and have managed one of them continuously for 15 or 16 years; there was a time in the beginning when the

cost was excessive; you all know the reason why this should be; there was another time some 4 or 5 years after the operation began that the costs were low, the work of management easy, and the whole operation ran like a clock. This continued for a few years, and then there was a gradual increase in the costs, apparently no one knew just why, but one thing was certain, a certain record had been made, and it was a source of wonder, and, I might say, of much vexation to me as to why costs could not be held to the record made. The people who make a specialty of figures could not see any reason why costs should increase. It is true that I did know something about it, but on some points I was in the dark, but I have light on the subject now; I know now why all this did come about, and I begin to wonder that the increase in cost of production was not still greater. About the first thing I noticed after, say, 10 years had passed by, was that men did not seem to want to stay at the place very long; the men that came around seeking for work did not seem to have the same anxiety as formerly for work at the mine I am now referring to; after being told they could get work, the first question was, which section, and very often the man would say he would come back but we would never see him again. Once in a while a man would jump at the place offered, and there was a reason for it, his work was comparatively close to the shaft bottom. Men who have worked for me 25 or 30 years, having followed me from other works, and who have worked for 14 or 15 years at the mine in question, would seem to be dissatisfied, and finally pick up and leave. I would question some of these men to try to find out just what was the matter, and about the only thing I could get out of them was that they could not make as much money as they had in the past, notwithstanding the fact the wage rate was greater. I noticed a great many of our men did not have the energy one would expect from them, consequently I studied over this matter a great deal, and the result of this was that I discovered it was unreasonable to expect a man to do as much work in the fourteenth or fifteenth year of the plant's existence as he did in the fifth year, and the reason for this was that year after year the workings got farther and farther away from the shaft bottom until, in some cases, the miner had to carry his dinner bucket and tools 2 1/4 miles in the morning to his working place after walking perhaps a mile from his home to the shaft; then in the evening he had the same distance to traverse. It is a very easy thing to see that if a man walks 5 or 6 miles a day he could not do as much work as when he only walks a half-mile. Again, we found that our live stock account kept increasing on the debit side; horses would not last as long, more of

them were injured or killed, and feed bills were higher. Of course, you can see that the same things applied to the live stock that applied to the men; they really did not do as much effective work, but it took them so much longer to get to and from their work, and in this particular case the increased force or expenditure of force required from our men and live stock was largely accentuated by reason of an increase of grades. The first four or five years the grades were practically the ideal grades for haulage; after that period the grades increased year after year until they got as high in many places as 10 per cent. It is true that men did not have to haul coal up this 10 per cent. grade, but they had to walk up it, and if a man has to lift his body 10 feet in every hundred he has to accomplish it by the expenditure of a certain amount of force that he will not have when he goes to digging coal. You can readily see that in case of a very large operation the conditions I have just called your attention to are very serious ones, and as mining men I don't think it is necessary for me to bring up all that is incidental to this line of argument. All mining men will at once recognize the increased cost and difficulty in ventilating the greater mine over the lesser one. In the matter of timber the cost is very much increased; the haulage ways, travelling ways, and air-ways have to be supported for so much greater length, and the atmospheric conditions produced through the air-currents being laden with the various gases absorbed in their passage from the inlet to the working faces are very much more destructive to timber, and we know that in some places perfectly solid timber will be completely destroyed by the gas-laden atmosphere in six months' time, and a short distance from the shaft bottom no piece of timber will last more than five or six years if located in a return air-current. You must not lose sight of the fact that the greater the length of the air passages and the greater the area of the working faces to travel the greater the increase in the cost for the operation of ventilating machinery, maintenance, etc. What I have said relative to distance, ventilation, and timber, will, to a great extent, apply to the question of drainage, particularly in a field affected by local swamps, and while you might not expect a greater proportion of local swamps in a large field than in a small field, yet by reason of such swamps being located at long distance from the shaft bottom, which would be the case in a large field, the expense for piping water from and carrying the power to those points would be double, treble, or even more. There are other arguments that could be brought to bear, but I have said enough. It is not necessary for mining men to be prompted as to every little incident or condition attendant upon mining operations,

Continued on page 20.

THE SPLIT AIR CONTROVERSY.

Mr. Baird makes reply as follows:—"Practical" asserts "the question says nothing about power being the same in each split". Does the question say the pressure has to be the same in each split. As he will persist in trying to convince people by the twisting of figures to suit himself, I certainly proved there was a difference in the pressure in each split, and I again take my pen once more to show how easy it is to figure out the question by simply following the well known formula $\frac{KSV^3}{a}$

= P, P x Q = power. Now the first question on the ventilation paper for Managers last examination is admitted to be a practical question, and I will write it so each and every person can read for themselves. "The downcast of a colliery is 6 x 7 and 3000 ft. long, the up-cast 6 x 6 and 2000 ft. in length and with one undivided air course in the mine 5 x 6 and 15000 ft. long, the quantity of air circulating is 21000 cub. ft. per minute. What is the pressure and power" $K = .00000001$ What quantity of air will circulate if the air course in the mine be divided into two equal splits. Power remaining the same.

Now I ask Mr. Practical to work this question out fully and see how it looks alongside of the question with the three splits. I would also invite each and every candidate who has passed and likewise those who have not been able to get certificates to work out this question, as it is the most simple split question that can be put to candidates for examination. I wish to say to Mr. Practical that I have not taken any offence nor have I any ill feeling. I issued this challenge with good intentions, to correct an error that has been allowed to go on for some time, and I cannot allow any such thing as a draw. It must be a fight to a finish.

A short time ago I read an article by a perfervid socialist in which it was stated that while there were a fearful number of poor and unemployed in London there were very few indeed in fact none in Berlin. Nor in that city were slums to be found. The paternalism of German government had, in short, provided for all the needs of the people and none went hungry and none were in want. Of course not being familiar with the whole of modern German history I had to accept the article as having a substratum of truth, while I took the precaution to doubt, for after all there are many poor in Germany where paternalism has its centre. Herr Bebel speaking the other day in the Reichstag said that there were at present between 20000 and 40000 unemployed in Berlin. Considering that Berlin is a village in comparison with London it must appear to some that Berlin after all is not the Eldorado they had looked for. Bebel held up a loaf and exclaimed: "This is a big loaf; three years ago it weighed 4½ lbs; to-day it weighs 3 lbs. and it is 50 per cent. dearer". Poor Germany—poorer than Nova Scotia for if we pay as some say, a fabulous price for coal we still get a big loaf at about the old price.

The explosion which occurred in one of the Consolidated Coal Co's. mines at Monaghan, W. Va. last Friday was by far the most disastrous that has occurred in this country. Indeed if the latest report of the number killed is correct it is as appalling as any that has occurred in any coal mining country in the world. At the time of writing the number killed is at the lowest placed at 400 and the highest 540. About fifty bodies have been recovered and these are so fearfully mangled that no hope is entertained of rescuing any one now in the pit. A large number of those killed were foreigners, from 50 to 55 per cent. It is not known how the explosion occurred. Expert miners from Pa. to the number of 200 have volunteered to explore the mine.

The idea that wire rope is a modern invention is erroneous. The excavation of Pompeii brought to light a piece of bronze wire rope about 15 feet long and one inch in circumference. It is made up of three strands, each strand of 15 wires twisted together. In construction it does not differ materially from the wire rope of to-day. Pompeii was buried 1,829 years ago. How long wire rope had then been known it is not possible to tell, but judging from the construction of the sample discovered it must have been known for some time. Ropes in tramways are said to have been in use as early as 1644. Rope driving was common a century and a half ago.

For some time past the miners of Ayrshire have been complaining of a system locally known as the "block," under which no miners are employed at any colliery while a strike or lock-out is in progress in any part of the county. This system of "boy-cott" has now found its way to Lanarkshire, and men are not being employed at any of the collieries of the Associated Coalmasters, and in fact men who have been employed during the past fortnight have been dismissed. The rumour of the "block" being enforced has given rise to very strong feeling, and a severe struggle is likely to take place if owners continue to keep men idle.

A new type of locomotive is coming into use in America. It is called, says the "Daily Telegraph," the Mallet duplex. The chief difference from the ordinary types is that one set of driving wheels is carried in a steam truck under the front of the engine. The Baltimore Ohio line was the first to use these locomotives. The Great Northern Railway (United States) now have them in regular service.

Intercolonial Railway.

—TENDER—

Sealed tenders addressed to the undersigned and marked on the outside "Tender for Engine House, Newcastle," will be received up to and including Saturday, December 14th, 1907, for the construction of the engine house at the engine house at Newcastle, N. B.

Plans and specifications may be seen at the Chief Engineer's Office, Moncton, N. B., and at the office of the Station Master at Newcastle, N. B. at which plans forms of tender may be obtained.

All the conditions of the specification must be complied with.

Railway Officer, D. POTTINGER, General Manager.

Moncton, N. B. Nov. 26th, 1907.

AROUND THE COLLIERIES.

The output from the mines last month beat all previous records for November. It is expected this month will also make a record.

The Dom. Coal Co. are looking sharp after their development work in order to have plenty working places next season.

A correspondent directs attention to something omitted in reference to the broken time at Springhill last month, by a paper lately Star-ted in that locality. We have no space to spare.

The Cumb. Ry. & Coal Co. is piling up the culm in great quantities in close proximity to the fire doors. The approach of winter may account for this, again it may not. This is unusual therefore it is causing much comment.

Sinking in No. 3 slope, Springhill, is being proceeded with in a very satisfactory manner. If there is no interruption a week or so will see the levels broken off for a 1900 ft. lift, the largest winning yet, for any one lift.

The election of checkweighman resulted in the re-election of E. B. Paul, M. P. P. and Jos. Moss. The feverish canvassing of the latter was in strong contrast to the smiling indifference of the former. Both were elected by very large majorities.

Dom. No. 3 with a haul of over two miles has walked away with the record for life and service of haulage ropes. A rope put on in December '05 was taken off Nov. 9th, '07 after running 409 single shifts and hauling 325,000 tons of coal. It was over 22,000 feet long and more than doubled the average life of ropes at that mine when hauls were much shorter than at present. The best previous rope hauled 213,000 tons, about half the distance.

The Cumberland Ry. and Coal Co. through their solicitors have notified the Department of Labor that the company will take no part whatever in the proceedings before the Conciliation Board applied for by the men after returning to work, after a thirteen weeks strike. The company says the first Board decided the matter finally and that a new Board is useless. This is the stand which it was expected the company would take, indeed it had no alternative if it meant to abide by its former declarations. Somebody is making a fearful mess of this business. First the Department of Labor said no new Board could be appointed. Afterwards under a stimulant administered by the member for Cumberland County it went back on its first declaration. The Department of Labor should it appoint a new Board will be in no position to enforce any ruling. The better plan of the men, in view of the possible industrial depression, is to cease hostilities indefinitely.

The Dominion Coal Co. and their employees are discussing a new three years contract. The company have issued a schedule and given the men to the seventeenth to make answer. An increase in wages is offered surface labourers and also loaders and other days pay men underground. A large number of the men are opposed to a contract, but possibly in view of the increase offered to the lower paid class of workmen they may withdraw their objections and thus display a brotherly spirit.

At Port Morien the output is not quite up to the mark that the Gen'l Manager had set though it hovers around what the Record thought probable. The mine in November was worked with hand picks wholly as there was not steam to run the compressor fast enough for the machines. The new Babcock is under steam and the old one is under repairs. When this one is repaired there should be steam for all present purposes. For the output there is a goodly staff and a sufficient number of officials.

Things have been going along very smoothly at Springhill since the strike. There has been no friction, consequently no noise. The men are doing well as usual, and all hope to spend the season of good will in a christian like fashion. It is not the men holding responsible positions, or the men working honestly for their bread and butter, who make the trouble here, but the loafers hanging on to the garments of the workmen for political and other purposes. These are the men who have made all, or most of the trouble in Springhill.

"The scope of mining education should be broad; it should be philo-sophic; it should be human. For breadth there are few professions that can surpass it. Some persons educated in geology alone, think they are mining engineers; others delude themselves with the same fond hope because they are familiar, without training or experience, or both, with the mechanical, or the chemical aspects of mining. Some still more deluded think they are mining engineers because they can handle the instruments well enough to survey underground, or manipulate a furnace and run a 50 cent assay.

A landlord and tenant case brought a well known socialistic author into court and developed the fact that he paid \$145 a month rent for his apartment. So that while he was espousing the cause of the down-trod he evidently saw to it that he had a more than moderately comfortable abode for himself. What a degree of insincerity there has been in all the agitation leading up to the present disturbance! The "Age of Graft" has been succeeded by the "Age of Fakes" and from high to low everyone has been trying to fool the public. And the people reading what was laid before them wanted a chance. They've got it.

AROUND THE COLLIERIES.

The new slope at the Joggins is now down over 700 feet. Good progress is being made.

The coal hoisted from the Allan Shafts is now being run over the new bank head.

In the Mabou mine, away under the ocean, a spring of excellent drinking water has been tapped.

The connection between Nos. 1 and 2 Allan shafts will be completed it is now thought by the 1st. of February.

The new branch railway to connect the new slope at Joggins with the main line is completed and shipments of coal are now made daily.

The output of the North Atlantic Collieries is 150 tons a day it is claimed. The shipments do not show quite as much of course.

The pipe line connecting Morien colliery with Sand Lake is completed but, unless within a day or two, the pumps have not yet started.

A Springhill correspondent says it did not take thousands of dollars to put "that level in order"—the level referred to by Deputy Nicholson presumably.

The Glace Bay Gazette hints that the mine at Port Morien was not a success in the past because it was managed from abroad. Is that so. Don't speak until the new managing director has shown what he can do.

The output for the Springhill collieries for November was about double that of the same month last year and yet it was much short of the average. However as things are now in good shape bigger outputs will follow.

The main slope of No. 3 mine, Springhill, has almost reached the 4800 ft. level. The half way levels have been broken off and development work in other directions is being rapidly pushed. With this lift opened up No. 3 has a large field to draw from.

A surface workman at the Drummond was killed on Friday afternoon last by a full box of a rake that was being hoisted falling upon him. The accident was due to overwinding. The engineman thought that the rake was coming from a lower lift than actually was the case and thought it had 300 feet or more to run before the engine would require to be stopped. The rake coming at full speed crashed through the bank head and a box fell on top of the poor fellow underneath who was working near the fire doors. The verdict of the jury was death due to an error of judgement on the part of the engineman. The pit worked the day after the accident though about 300 men were off.

A Springhill writer institutes a comparison between certain of the Deputy Inspectors. He better put the brakes on or the Record may have a word to say.

The Springhill people claim that if there is congestion at the railway centres it is due to the bad time made by the engines when not using Springhill coal. Now that the I. C. R. is getting a share of the Springhill output the trains both freight and passenger will make better time and keep things moving.

The Cumb. Ry. & Coal Co has of late been weighing the coal as it came from the pit. There has as yet been no alteration in the mode of payment. When the change comes the company will endeavour to arrive at an equitable basis. The company of course will adhere strictly to the terms on which work was resumed.

There are great carryings on at the old Jubilee mine in Cumb. County. The leader of the Free Trade League is having a high old time. He has entered into possession of the plant and has commenced pumping out. The mine operators will hear something fall soon, but we wager it won't be a fall in the price of coal even though the foremost apostle of cheap coal is at the helm of the Jubilee.

The output from the Allan Shafts is a little over 300 tons per day. There are sufficient places in the mine to run the output up to about 500 tons but miners are lacking. There is room for a number of miners but they are still scarce though a certain kind of loaders are offering freely. A large number of Englishmen have come into the county within the past ten days, but as they never saw the inside of a mine before, it will take some time before they will be of much service.

The Gd. Master and the Gd. Sec'y. of the P. W. A. have replied to Mr. J. K. L. Ross' animadversion on the miners. Mr. Ross had said in an interview that the curtailed output was due to picnics and loss of time after picnics etc. The officers of the P. W. A. say the lessened output was due to scarcity of places. Mr. Duggan has been given a cue and we are mistaken if somebody doesn't catch it. The Record on its own responsibility would like to ask the Gd. Master and the Gd. Sec'y. to explain how the output of the Nova Scotia Steel & Coal Co. from the 25th. to the 30th. Nov inclusive was 14,000 odd tons, while from the 2nd. to the 7th. inclusive, the days after pay day, the output was only 11,000, there being plenty of places and no breaks. In the Record's opinion this is a matter, this idle time after pay days, which the Grand Master and the Grand Secretary should face squarely and boldly. Why should there be 25 per cent. decrease the three days following pay day.

A MANLESS BANKHEAD.

A couple of years, or so, ago the Record had an article entitled 'A smokeless colliery'. The article had reference to a projected pit of the Nova Scotia Steel and Coal Co. Through some mis-carrage of plans the colliery was not when finished void of smoke, though much less was emitted than from any other colliery on the Island. After that we had an article headed a 'Horseless' colliery. This also had reference to a colliery of the Nova Scotia Steel and Coal Co. Haulage took the place entirely of horses, and thereby a great advance was made on the old system. Progress is the watchword of to-day and it is now our pleasant duty to record a further step in advance. The cost of cutting the coal in a mine may be comparatively so little that people wonder where the big cost of landing it on the surface comes in. Coal costing say fifty cents a ton to mine may cost a dollar and twenty to thirty in cars on the surface. The increased big cost is due chiefly to the many men employed as shiftmen, or as deputies, in the mine and to the number of men on the bank head and surface generally. At most of our collieries there are too many men required to handle the coal on the bank head. Any device therefore that will tend to lessen the number of men required will decrease costs. In Perthshire, Scotland, the writer saw a bankhead with only a man and two girls on top. That was a model colliery. But we can now do better than that in Nova Scotia. At the new slope at the Joggins there is not a single man or boy on top. The boxes on landing on the bankhead are manipulated from the engine room. The following is a short account of the way of working: This bankhead is operated entirely by the hoisting engine man. The coal is taken from the faces in self dumping cars with a capacity of one ton. The hoisting engine man hoists the car which dumps itself on a plate, this plate is controlled by a lever operated by the man at the hoisting engine. With this lever he can place the coal over the screens, in the locomotive coal storage pocket, or if the material hoisted is stone or waste, the same lever places the stone in the stone cars. The hoisting engine man is guided altogether by the bell at the pit bottom, and on receiving the signal places his lever in the proper position for what ever material is being sent while the trip is on the way up. With this apparatus one man can hoist, tip, screen and place in cars 700 tons per day. With the addition of a picking belt, this would make an ideal apparatus for a small mine with a capacity of about 600 tons per day, and the first cost of installing this apparatus is much less than the ordinary form of bankhead.

Coal Shipments November 1907.

CUMBERLAND RY. & COAL CO.			
Shipments	Nov	1907	28 741
"	"	1906	14 123
Increase	"	1907	14 618
Shipments	11 mos	1907	242 325
"	11 "	1906	558 826
Decrease	11 "	1907	116 501

DOMINION COAL COMPANY, LTD.

—Output and Shipments for November 1907.—

		—Output—	—Shipments—
Dominion No. 1		47 388	
Dominion No. 2		66 076	
Dominion No. 3		32 166	
Dominion No. 4		51 286	
Dominion No. 5		55 130	294 890
Dominion No. 6		21 232	
Dominion No. 7		248	
Dominion No. 8		19 692	
Dominion No. 9		35 195	
Dominion No. 10		7 777	
		336 190	294 890
Shipments	Nov	1906	234 167
Increase	Nov	1907	60 732
Shipments	11 months	'07	3 005 656
"	"	'06	2 997 770
Increase	"	'07	7 886

INTERCOLONIAL COAL CO.

Shipments	Nov	1907	29 276
"	"	1906	29 726
Increase	"	1907	8 550
Shipments	11 mos	1907	251 823
"	"	1906	259 190
Decrease	"	1907	8 367

INVERNESS RAILWAY & COAL CO.

Shipments	Nov	1907	22 257
"	"	1906	19 142
Increase	"	1907	3 115
Shipments	11 mos	1907	221 104
"	"	1906	186 664
Increase	"	1907	34 440

NOVA SCOTIA STEEL & COAL CO.

Shipments	Nov	1907	56 951
"	"	1906	69 229
Decrease	"	1907	12 278
Shipments	11 mos	1907	585 701
"	"	1906	612 655
Decrease	"	1907	30 954

ACADIA COAL CO.

Shipments	Nov	1907	32 327
"	"	1906	28 976
Increase	"	1907	3 351
Shipments	11 mos	1907	294 557
"	"	1906	248 366
Increase	"	1907	46 191

and I shall not carry that part of the argument any further.

Looking at the other side of the question. What might possibly be gained by an unusually large, and I must say, often badly-proportioned, operation? Such an operation may make a record for a large output, that record may be published world wide, but in the end the owners or operators would reap nothing from it, and possibly, if the operation were followed closely the operators would likely be very much criticised, for I know that it is impossible to do things at a remote distance from the shaft bottom as they can be done within a reasonable distance, they cannot have the necessary supervision and the materials often cannot be gotten as promptly to the working faces as required. Safety certainly cannot be one of the achievements expected from the greater operation. I think it is beyond question that a large mine is more dangerous than the compact, well-proportioned, moderate-output mine; no further argument is necessary on that score. As to reduction of cost you can see now I think that it is a delusion when entertained in connection with an unwieldy mine. There is one thing in favor of a large output, or, to be more exact, in favor of the 4,000 ton operation, and this is, there would be a decrease in certain fixed charges. Some people think there is a decrease in the cost for management and supervision; this is a fallacy for the reason that if the 4,000 ton coal-field were divided into two operations of 2,000-ton output each, the management and the supervision would be more effective and economical, and that on general principles. When it comes to the ups and downs of the coal trade generally, the snug, tight, compact operation will hold the record every time, and I think this cannot be successfully controverted.

WASTE IN MINING.

The United States Geological Survey has taken up the study of waste in coal mining, not for the purpose of securing preventive or other legislation, but simply for the purpose of publishing information that will help the operator and the miner to secure a larger percentage of the coal in the ground, and also a smaller proportion of slack or screenings, when the market requires screened coal and the fines are practically valueless.

An item which the field men are told to study carefully is the relation between the width of rooms. One of the principal reasons for the loss of coal in mining operations is driving too wide rooms and leaving too narrow pillars; with the result that the pillars are crushed and lost before it is possible to withdraw them. Our experience so far has been

that while the initial cost per ton may be a little greater, the percentage of total recovery is much greater when wide pillars are left to support the roof and are then robbed out, allowing the roof to fall in behind. We are gathering figures covering the percentage of loss which is entailed by these different systems.

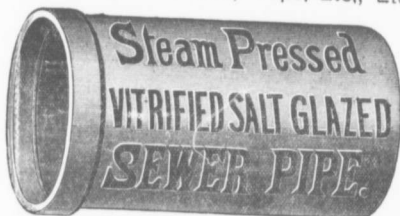
When pillars are robbed the men are instructed to ascertain what percentage of the coal is left, after robbing, and if not robbed, what is the total amount of loss represented by the coal left as pillars. The men are also instructed to ascertain whether the roof breaks through to the surface, and the thickness of the rocks affected by the roof-fall. Where any benches are left unworked in the mine, as in the case previously referred to, the field men are instructed to secure careful measurements lost beyond recovery.

Another cause of waste is the actual method of mining. If the coal is undercut by hand or by pick, or if the undercutting is done in the fire clay, there are different percentages of coal wasted. This is particularly the case where the slack coal is not a merchantable product. It is claimed in some districts that a large amount of waste is caused by shooting the coal from the solid, the miners using large quantities of powder, or other explosive, and making large amounts of small coal sometimes endangering the property and lives of the men, but, from the miners' standpoint, securing a much larger amount of coal to the unit of labour expended upon it. This is a subject of much controversy between operators and miners, and if the efforts of the survey can bring about a better state of affairs, they will not have been made in vain.

There is still another cause of waste in coal mining which pertains to some fields and not to others. This arises from the payment of the miners on the mine-run or screened-coal basis. In Pennsylvania and West Virginia, Virginia and Eastern Kentucky, and in some parts of Tennessee and Alabama, where the slack coal produced in mining is used for making coke, there is no question but that the miners should be paid by the run-of-mine, but where the market requires screened coal, and the slack is either wasted or sold at prices far below the cost of mining, the payment for mining on the basis of mine-run coal would undoubtedly tend toward waste. Miners are human, and if they are paid as much for slack as for the prepared size coal, the temptation to use an excess of powder and thus blow down a larger supply of coal and at the same time make an excessive amount of slack, is very apt to be indulged in.

The proximity of other coal beds, particularly above the one being worked, may be adversely affected by the mining operations, and is another factor carefully noted. There are

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50 Miners and Helpers.

Apply to **JOHN A. ROY**, Mine Manager

some beds in Pennsylvania which, in the earlier days of mining in that State, were considered rather thin for a profitable working, and have been irrevocably lost because of the settling of the strata due to the workings below them. Some day in the not so very remote future, the useless sacrifice of these beds will be greatly deplored.

Included in this investigation is also a study of the methods of preparing the coal for shipment, the ascertaining of whether or not all sizes are marketable at all seasons of the year, and if not, the proportion of the different sizes sold and wasted. We have also taken up the study of mechanical means of preparing and cleansing the coal by breakers, slate pickers, washers, etc., by collecting all possible data regarding the improvement in the quality of the marketable product which has been effected by washing, and thus abating waste. Large amounts of coal which were formerly wasted because of their impure character, are now being made marketable by washing.

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Have Excellent

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WILL NOT COOKLE

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Best for

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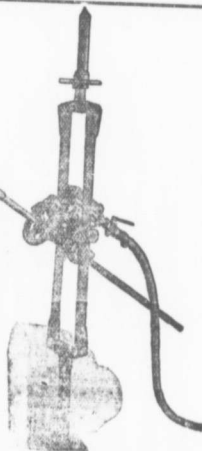
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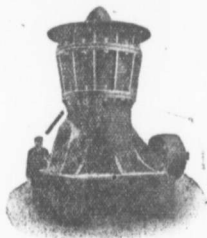
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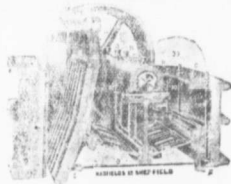


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(Solid Steel Construction.)

The Parts that are subject to Excessive Wear are made of
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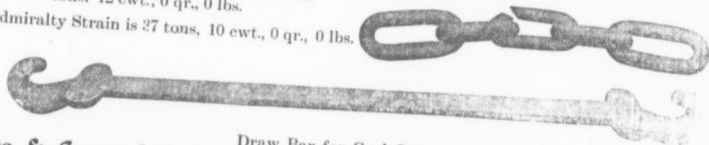
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They are made of the very best brands of English Bar Iron and by Selected Workmen.

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Coupling Chains and Solid Forged Draw Bars
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This 1 1/2" Draw Bar Coupling Chain broke at
48 tons, 12 cwt., 0 qr., 0 lbs.

The Admiralty Strain is 27 tons, 10 cwt., 0 qr., 0 lbs.



Edge & Sons, Limited,
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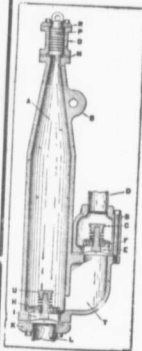
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Synopsis of Canadian North-West.

Homestead Regulations.

ANY even numbered section of Dominion Lands in Manitoba, Saskatchewan and Alberta, excepting 8 and 26, not reserved, may be homesteaded by any person the sole head of a family, or male over 18 years of age, to the extent of one quarter section, of 160 acres, more or less.

Application for entry must be made in person by the applicant at a Dominion Lands Agency or Sub-agency for the district in which the land is situated. Entry by proxy may, however, be made at an Agency on certain conditions by the father, mother, son, daughter, brother or sister of an intending homesteader.

The homesteader is required to perform the homestead duties under one of the following plans:—

(1) At least six months residence upon and cultivation of the land in each year during the term of three years.

(2) A homesteader may, if he so desires, perform the required residence duties by living on farming land owned solely by him, not less than eighty (80) acres in extent, in the vicinity of his homestead. Joint ownership in land will not meet this requirement.

(3) If the father (or mother, if the father is deceased) of a homesteader has permanent residence on farming land owned solely by him, not less than eighty (80) acres in extent, in the vicinity of the homestead or upon a homestead entered for by him in the vicinity, such homesteader may perform his own resident duties by living with the father (or mother).

(4) The term "vicinity" in the two preceding paragraphs is defined as meaning not more than nine miles in a direct line, exclusive of the width of road allowances crossed in the measurement.

(5) A homesteader intending to perform his resident duties in accordance with the above while living with parents or on farming land owned by him, self must notify the Agent for the district of such intention.

Six months' notice in writing must be given to the Commissioner of Dominion Lands at Ottawa, of intention to apply for Patent.

W. W. CORY,

SYNOPSIS OF CANADIAN NORTH-WEST MINING REGULATIONS.

COAL. Coal lands may be purchased at \$10 per acre for soft coal and \$20 for anthracite. Not more than 320 acres can be acquired by one individual or company. Royalty at the rate of ten cents per ton of 2000 pounds shall be collected on the gross output.

QUARTZ. A free miner's certificate is granted upon payment in advance of \$5 per annum for an individual, and from \$20 to \$100 per annum for a company according to capital.

A free-miner, having discovered mineral in place, may locate a claim 1500 x 1500 feet.

The fee for recording a claim is \$5.

At least \$100 must be expended on the claim each year or paid to the mining recorder in lieu thereof. When \$500 has been expended or paid, the locator may, upon having a survey made, and upon complying with other requirements, purchase the land at \$1 per acre.

The patent provides for the payment of a royalty of 2 1/2 per cent on the sales.

Placer mining claims generally are 100 feet square; entry fee \$5 renewable yearly.

A free miner may obtain two leases to dredge for gold of five miles each for a term of twenty years, renewable at the discretion of the Minister of the Interior.

The leasee shall have a dredge in operation within one season from the date of the lease for each five miles. Rental \$10 per annum for each mile of river leased. Royalty at the rate of 2 1/2 per cent collected on the output after it exceeds \$10,000.

W. W. CORY,

Deputy of the Minister of the Interior.

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BULL DOG TOBACCO,

Because it is the only Tobacco which does not excite **Thirst** for Water after using

TRY IT!

The St. Lawrence Tobacco Co., Ltd.

—Montreal.—

—W. B. Reynolds, Halifax Representative—

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The Westellar Terra Cotta Company

having taken over the business of the Stellarton Brick and Tile Co'y, and having installed more powerful and modern machinery, WILL BE PLEASED TO HAVE ENQUIRIES AS TO PRICE AND QUALITY.

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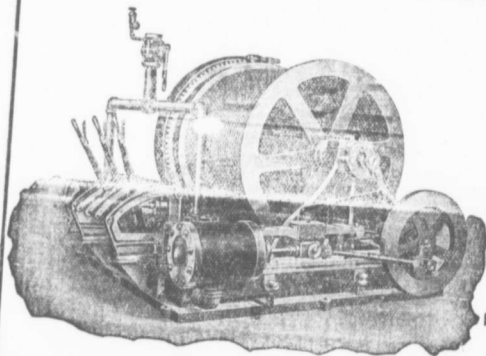
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Vessels from P. E. I. and Western Ports, via St. Peter's Canal, will save time by loading at New Campbellton. Smooth Inland Navigation. Quick Despatch.

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BUNKER COAL Shipping facilities of the most modern type at Port Hastings, C. B. for prompt loading of all classes and sizes of Steamers and sailing vessels.

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EASTBOUND		STATIONS.	WESTBOUND	
Read Down	No. 54		Read Up	No. 51
No. 52	No. 54		No. 51	No. 52
a. m.	p. m.		a. m.	p. m.
L 10 55	L 8 50	P. TUPPER JUNCTION	A 10 50	A 8 25
R 11 05	R 8 55	PORT HAWKESBURY	S 10 45	S 8 27
A 11 20	A 4 05		L 10 55	L 8 30
	L 4 15	PORT HASTINGS	A 10 57	
	P 4 35	TROY	P 10 17	
	S 4 38	CREMONA	S 10 22	
	P 4 50	JUDIQUE	P 9 56	
	S 5 05	CHALMOER	S 9 52	
	P 5 18	CATHERINES POND	P 9 19	
	A 5 32		L 9 55	
	L 5 38	PORT BOOD	A 9 50	
	S 5 52	GLENCOE	S 8 43	
	S 6 10	MABOU	S 8 35	
	S 6 28	GLENDAVE	P 7 50	
	S 6 46	BLACK RIVER	S 8 05	
	S 7 02	STRATHLOOSE	L 7 50	
	A 7 15	INVERNESS	L 7 55	
	P m.		S 7 55	

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EXCELLENT FUEL FOR
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Recent analysis of the coals in several of the seams in this Basin—which will be persistently developed—show them to be remarkably low in ash and sulphur.
All modern appliances for Screening and picking, so that this coal can be shipped more than "reasonably free from stone and shale."

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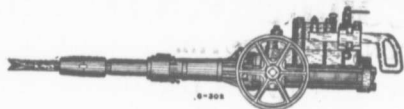
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The first COAL CUTTER to be put on the Market.
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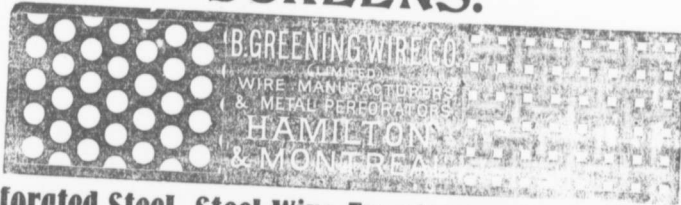
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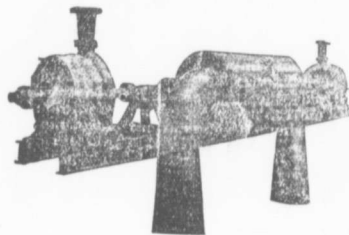
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FRESH MINED SPRINGHILL COAL

ANALYSIS

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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
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Delivered By Rail or Water

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GENERAL STEAM PURPOSES.

The year Round

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Bituminous Coals, the celebrated "Reserve" coal for household use, "International" Gas coal, and the best Steam coal from its collieries on the Phalen seam.

—Yearly output 3,500,000 tons.—

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—NEWCASTLE, ENGLAND.—

	STEAM COAL.	GAS COAL
CARBON.....	80 18 per. cent.	77 51 per. cent
HYDROGEN	5 11 " "	5 22 " "
OXYGEN	7 34 " "	6 72 " "
NITROGEN.....	1 16 " "	1 27 " "
SULPHUR	0 56 " "	3 07 " "
ASH.....	2 30 " "	4 10 " "
WATER.....	3 35 " "	2 11 " "

100 00

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Caloric Power of Steam Coal:—Pounds of Water evaporated from 212 per cent Fah, by one pound of the coal as determined in Thompson's Calorimeter,—14.8 lbs.

Shipping facilities at Sydney, and Louisburg, G. B., of most modern type. Steamers carrying
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By Improved screening appliances lump coal for Domestic trade is supplied of superior quality.

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