

MARITIME MINING RECORD AND COAL AND METAL TRADES JOURNAL

Dr. R. Bell
Geol. survey dept.

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

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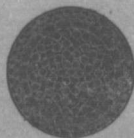
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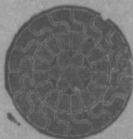
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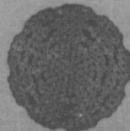
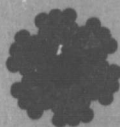
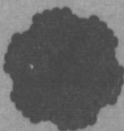
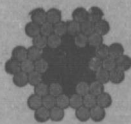
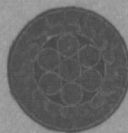
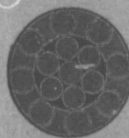
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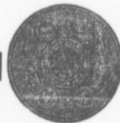
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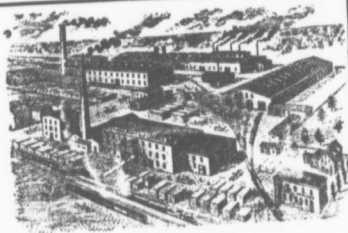
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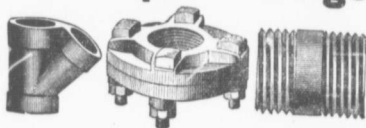
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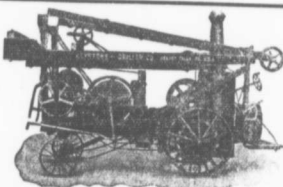
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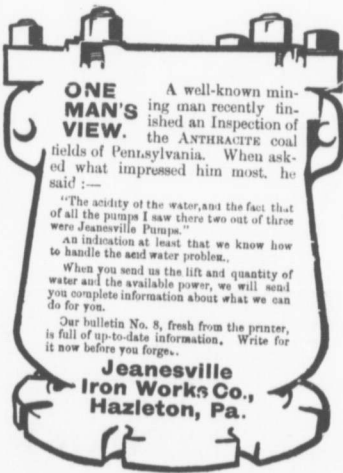
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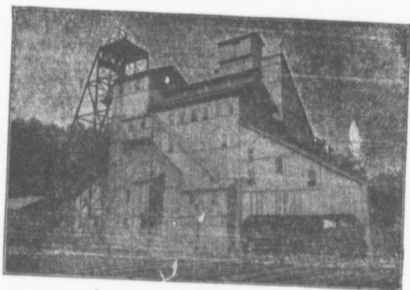
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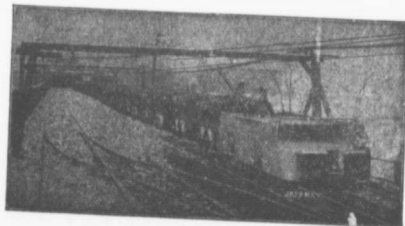
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MARITIME MINING RECORD

Vol. 10, No. 22. Stellarton, N. S., May 27th. 1908. New Series

COMPILED QUESTIONS AND ANSWERS

Have opinions as to coal formation changed of recent years? Give some particulars.

Formerly it was supposed that coal was formed out of dead leaves and trees, the refuse of the vegetation of the land, which had been carried down by rivers into the sea and deposited at their mouths, in the same way that sand and mud, as we have seen, are swept down and deposited. If this were so, the extent of the deposits would require a river with an enormous embouchure, and we should be scarcely warranted in believing that such peaceful conditions would there prevail as to allow of the layers of coal to be laid down with so little disturbance and with such regularity over these wide areas. But the great objection to this theory is, that not only do the remains still retain their perfection of structure, but they are comparatively pure—i.e., unmixed with sedimentary depositions of clay or sand. Now, rivers would not bring down the dead vegetation alone; their usual burden of sediment would also be deposited at their mouths, and thus dead plants, sand, and clay would be mixed up together in one black shaly or sandy mass, a mixture which would be useless for purposes of combustion. The only theory which explained all the recognized phenomena of the coal measures was that the plants forming the coal actually grew where the coal was formed, and where indeed, we now find it. When the plants and trees died, their remains fell to the ground of the forest, and these soon turned to a black, pasty, vegetable mass, the layer thus formed being regularly increased year by year by the continual accumulation of fresh carbonaceous matter. By this means a bed would be formed with regularity over a wide area; the coal would be almost free from an admixture of sandy or clayey sediment, and probably the rate of formation would be no more rapid in one part of the forest than another. Thus there would be everywhere uniformity of thickness. The warm and humid atmosphere, which it is probable then existed, would not only have tended towards the production of an abnormal vegetation, but would have assisted in the decaying and disintegrating processes which went on amongst the shed leaves and trees.

When at last it was announced as a patent fact that every bed of coal possessed its underclay, and that trees had actually been discovered standing upon their own roots in the clay, there was no room at all for doubt that the correct theory had been hit upon—viz, that coal is now found just

where the trees composing it had grown in the past.

But we have more than one coal seam to account for. We have to explain the existence of several layers of coal which have been formed over one another on the same spot at successive periods, divided by other periods when shale and sandstones only have been formed.

A careful estimate of the Lancashire coal-field has been made by Professor Hull for the Geological Survey. Of the 7000 feet of carboniferous strata here found, spread out over an area of 217 square miles, there are on the average eighteen seams of coal.

This is only an instance of what is to be found elsewhere. Eighteen coal seams, what does this mean? It means that, during carboniferous times, on no less than eighteen occasions, separate and distinct forests have grown on this self-same spot, and that between each of these occasions changes have taken place which have brought it beneath the waters of the ocean, where the sandstones and shales have been formed which divide the coal-seams from each other. We are met here by a wonderful demonstration of the instability of the surface of the earth, and we have to do our best to show how the changes of level have been brought about, which have allowed of this game of geological see-saw to take place between sea and land. Changes of level! Many a hard geological nut has only been overcome by the application of the principle of changes of level in the surface of the earth, and in this we shall find a sure explanation of the phenomena of the coal measures.

Great changes of the level of the land are undoubtedly taking place even now on the earth's surface, and in assuming that similar changes took place in carboniferous times, we shall not be assuming the former existence of an agent with which we are now unfamiliar. And when we consider the thicknesses of sandstone and shale which intervene beneath the coal seams, we can realize to a certain extent the vast lapses of years which must have taken place between the existence of each forest; so that although now an individual passing up a coal mine shaft may rapidly pass through the remains of one forest after another, the rise of the strata above each forest bed then was tremendously slow, and the period between the growth of each forest must represent the passing away of countless ages. Perhaps it would not be too much to say that the strata between some of the coal seams would represent a period not less than that between the formation

of the few tertiary coals with which we are acquainted, and a time which is still to us in the far away future.

The actual seams of coal themselves will not yield much information, from which it will be possible to judge of the contour of the land masses at this ancient period. Of one thing we are sure, namely, that at the time each seam was formed, the spot where it accumulated was dry land. If, therefore, the seams which appear one above the other coincide fairly well as to their superficial extent, we can conclude that each time the land was raised above the sea and the forest again grew, the contour of the land was very similar. This conclusion will be very useful to go upon, since whatever decision may be come to as an explanation of one successive land-period and sea period on the same spot, will be applicable to the eighteen or more periods necessary for the completion of some of the coal fields,

THE EIGHT HOUR DAY.

The following are gleanings from the Report of the Departmental Committee appointed to inquire into the probable effect of an eight hour day on trade in Britain:

The length of the day at present worked in Great Britain is nine hours, three minutes.

The process of winding the men both ways occupies on an average an hour.

The term 'hours from bank to bank' is interpreted in three different ways.

To reduce the time occupied underground productively or unproductively by all persons working in coal mines from 9 hours 3 minutes to 8 hrs., would be to make a reduction of 11.60 per cent., or to contract the aggregate man hours passed underground in the United Kingdom on a day of full production from 6,197,359 to 5,478,328. It is important to keep constantly in mind the distinction between the hewers, who at present spend an average of 8 hours 36 minutes below ground, and other persons employed underground, whose work is as necessary as that of the hewers to the production of coal, and whose day from bank to bank averages 9 hours 28 minutes. To reduce the day of the hewers to eight hours would curtail by 7 per cent. while the day of the other class would be curtailed by nearly 15½ per cent.

In East Scotland the hours of work are rather less than elsewhere in the United Kingdom: In Wales both hewers and day men remain down 10½ hours.

For the whole of the United Kingdom the travelling time for hewers, that is the time occupied in going to and from their places is 60 minutes; the time taken for meals is 39 minutes, therefore the time of the hewers at work is 6 hours 57 min.

Absenteeism from work, though prevalent in Britain does not seem to be as 'popular' as in Nova Scotia. Monday, as with us, is the off day. Where in a colliery 1275 were employed the absentees on Monday were 315, on Tuesday all out but 15, Wednesday all but 39, Thursday all but 27, on Friday all but 11, whereas on Saturday 151 took holiday. After pay days we take longer to recover in N. S. Absenteeism in Britain is greatest in Lancashire, where in 1905 one man in about seven is always absent. It is least in Durham

where only one man in say 25 is an absentee, and here we may have a reason why the Durham miners are the most progressive, most charitable, most intelligent, and 'biest' of the 'English' miners. The Scots are almost as steady workers as the Durham men, not quite. Cardiff and Swansea take second place and Scotland third.

The average working time underground is 49 hours, 53 minutes per week. Stoppages and absenteeism reduces the week to 43 hours, 13 minutes.

The present actual average time underground amounts to 43 hours 13 minutes per week, which spread over six days gives an average of 7¼ hours per day each day of the week all the year round except on general, public and local holidays. It must be borne in mind that the figures stated are not hours of work, but hours bank to bank, which include time spent underground in travelling to and from place of work and in meals.

Most of the witnesses for the owners and operators said the inevitable effect upon the output of coal must be to reduce it in exact arithmetical proportion to the number of hours. They maintained that when a customary stop day or short day is established now it will continue to be observed, that the men who now work irregularly will continue to absent themselves on Mondays and on other days and that this systematically and designedly. Mr. Ratcliff Ellis, the witness selected by the Mining Association of Great Britain, assumes an immediate loss to the product of the United Kingdom of 21,471,000 tons if the reduction in the hours of hewers alone is taken into account, or of 31,900,000 tons, that is 13 1-2 per cent. if the reduction in the hours of persons engaged in conveying mineral be taken as the basis of the reckoning; and further, as the latter class are as necessary to production as the former that the latter figure is more likely to be the true figure.

The commissioners were not prepared to accept Mr. Ellis' conclusions for the following reasons:—

(a) The total stop days probably do not afford any part of such a reserve of available time. We consider that, in cases where a Saturday or alternate Saturday or other customary day has been established as a total 'stop' day, the chance of reverting to a week day is extremely small, and it may be disregarded.

(b) The short days now worked may be considered to afford a certain reserve of available time, but not one of great importance. We have found that as a rule, the short days, other than Saturdays, have not in many cases been reduced much below the eight hour limit, and there is therefore little scope for their extension under an eight hour law, and in the case of the Saturdays in which the present hours are below eight, we think it would be extremely difficult to institute any change in the direction of lengthening the hours. The miners' total or partial stop on Saturdays is an institution to which all classes, and especially the younger men and boys are firmly attached. At the same time we think there is some small reserve of unemployed time which might become available for work under this head for example, the short Mondays of 7 1-2 hours now worked in the steam coal collieries of Glamorgan, as shewn by Mr. E. M. Hann, might conceivably be extended to eight hours.

(c) The loss of time by total stoppage of collieries due to bad trade, accidents, strikes and lockouts, &c., which the tables of the Board of Trade show, according to our calculations, to have amounted, during the last time 10 years, to 7.14 per cent. of the total time, does in our opinion afford an available reserve of employable time. We have no means of determining what proportion of this 7.14 per cent. of loss of time is due to the different causes enumerated above, but we think it may be assumed that the greater part of it is due to stoppages of collieries for wagons due to want of orders. Should demand press upon production during the earlier period of an eight hours system, this cause of loss of time and production would tend to disappear. We say 'tend to disappear,' not entirely disappear, for it has been represented to us as impossible to maintain the output of those districts which supply a seasonal demand as its maximum during their slack season. We think this objection, however, is one of small importance, for we find that the influence of the season on the demand for special kinds of coal tends to disappear in times of scarcity, and that all producible coal of every character is brought into use. Thus the average number of days worked in the Nottingham district, which in normal years is considerably reduced during the months of June and July, was more than maintained during those months in the yrs. 1899 and 1900, years of great demand and short supply. Should the institution of a limited day therefore, lead to a scarcity of coal, we think that that part of the 7.14 per cent. of unemployed time which is due to want of wagons and orders, probably much the greater part, would be available and utilised for production.

(d) The 6.6 per cent. of available time lost by the voluntary absenteeism of individual men, on the days when the pits are open to them to work, we look upon as a reserve which will, to a certain extent, be available for productive use under an eight hour day, but it is impossible to say to what extent. As we have before explained, this percentage is not the measure of the total sum of absenteeism from work from all causes, which most witnesses who have given evidence on this subject have told us amounts to at least double the percentage; nor even does it represent the total of voluntary absenteeism, but it measures the fluctuations between the actual attendance on the best days, and on the average days; therefore a priori, it would not seem to be unreasonable to anticipate that a limitation of the hours during which it would be possible for the men to earn wages would lead to a better employment of those hours. If this assumption be correct it might be expected that some confirmation of it would be found in Table XII. of the Home Office Tables for the United Kingdom, and that where the customary hours are least it would be found that the practice of absenteeism is least. Roughly speaking we found this to be the case, and that in East and West Lancashire and North Wales, where the hours of work are longest, the practice of absenteeism is most prevalent, and in Scotland and Durham where the hours, at any rate of hewers, who form the class which furnishes the greater part of the absentees, are shortest, the average attendance at work is best. But we found that

this rule does not work with uniformity, for in Yorkshire, for example, where the hours are below the average, the percentage of absenteeism is nevertheless high, and after investigating the local evidence upon this point, we came to the conclusion that the relative degree of the practice of absenteeism from work is not conditioned only by the relative length of the working day, but that in districts in which other forms of employment than coal mining are open to other male and female members of the family, the miner permits himself to indulge in more days of repose than in districts where all the employment is at the pits, and the family dependent solely upon the earnings of the miner.

But, after making due allowance for these local encouragements of the practice of abstention from work, we find the statistics we have collected of absenteeism, give some grounds for believing that upon the whole shorter hours of the working day do at present conduce to greater regularity of attendance at the pits in the districts in which the shorter hours are worked.

Although many of the witnesses, who were opposed to an eight hour day, were not disposed to admit that any improvement in the regularity of the attendance of the miners for work in the pits would follow a reduction of hours, some of the most experienced managers of collieries were of the contrary opinion, and agree with the inferences drawn from the statistics of absenteeism we have collected, in believing that an improvement in this respect may be looked for. For example, Mr. Chas. Pilkington, of East Lancashire, where the rate of absenteeism is high, was of this opinion; Mr. E. M. Hann, Manager of the Powell Duffryn Collieries of South Wales, stated his belief that if he (the miner) has such short hours in which to earn a living, he has got to be there every day, and it will influence his working pretty considerably."

It appears to us the more probable that a shorter day would result in more regular habits of work, from the fact we have ascertained, that the practice of absenteeism prevails chiefly among the hewers, a class who are invariably paid by the piece. We were told by Mr. Morgan W. Davies of Swansea, that if they impose what, if I may call it so, is a 'stint.' That is, a man is not allowed to do more than a certain amount of work, and very often it happens in some collieries that the men finish their work for the week by Wednesday evening or Thursday morning, and then they have Thursday, Friday, and Saturday idle.

This we found to be an extreme example of a custom or habit not unknown in other districts, and it appears to us to be probable that the men of the hewer class especially will, in some districts to a considerable extent, endeavour to maintain their production with a shortened day by more regular work.

We, therefore, after examining the extent and the causes of the loss of time at present within the eight hour limit, and considering the question whether such time, at present lost to production, provides a reserve which may become available and effective under an eight hour law, have come to the following conclusions:—

- (a) That the time lost by customary total stop days affords no such resource.
- (b) That the time lost by customary short days of less than eight hours affords a certain slight reserve, but not one of great importance.
- (c) That of the 7.24 per cent. of total time, lost by stoppage of collieries, a large portion will become available for production, and would be effectively employed during any time of scarcity which might follow the enactment of an eight hour law.
- (d) That the 6.12 per cent., which is only a portion of the total time now lost by voluntary absenteeism, would be reduced in many districts, especially in the class of hewers, and that this does afford a certain reserve of available time, but reserve of an uncertain extent which would become effective for production under a legally limited day."

Before the Commission, appointed by the Government to enquire into feasibility of enacting an eight hour day for the colliery workers of Nova Scotia, begins to hold its sittings, which will likely be in about eight weeks from this time, it might be well that the question be taken up by the several lodges of the P. W. A. and discussed in all its bearings. While at first blush it may seem to the colliery workers that there is only one side to the question, a little enquiry and investigation may lead to the view that an eight hour day brought on suddenly might not be unattended with counterbalancing disadvantages. An eight hour day for British miners may be beneficial for the workers, and do no great injury to the operators. In Nova Scotia a statutory eight hour day may be of no benefit to the workers while certainly injurious to the trade. Nova Scotia, it must not be forgotten, is peculiarly situated. Let it be supposed for a moment that an eight hour day could by statute be enacted for Cumberland and Pictou Co., but could not be enacted for Cape Breton, would the Cumberland and Pictou miners looking to their best interests insist on such a law. It is unlikely. The several counties in Nova Scotia, those producing coal, are competitors. In the interests of fair play all should receive equal treatment. The United States in a far greater degree is competitor with N. S. in sending coal into the upper province markets. The miners of the U. S. may ask for a statutory eight hour day, but it cannot be granted them until there is a change in the constitution of the United States, a thing not likely soon to happen. Would it then be fair to ask for an eight hour day for the colliery workers here, while the colliery operators across the line would be receiving the benefit of an unrestricted day. Are Nova Scotia miners aware that in spite of the duty the United States sent into Canada for the twelve months ending March, nearly three times as much coal as was sold in Nova Scotia in 1907. Are they aware that the United States sent in during the year ended 31st. March, '08 about thirty million tons of coal, soft and hard, or six times the total coal sold from Nova Scotia mines last year. And will our miners give the U. S. operators a still greater advantage, further opportunities for sending in cheap coal by demanding an eight hour day, while no such day can be forced on the U. S. operators. For every ton of coal Canada sends to the United States the latter country sends to the Dominion eight tons. The workingmen of Nova Scotia should be careful not to play into the hands of this province's

keenest competitors.

An argument in favor of an eight hour day, universally, almost, advanced is that miners under an eight hour day would 'hoe' into it and cut as much coal as now done in nine hours. That is doubtful. Many experienced miners do not adopt such an argument. Mr. P. Coll, of Sydney Mines, for instance has said that the miners who work the longer hours make more wages than those who work the shorter. Some say the Italians at some collieries work nine or ten hours and make more than the natives who work eight hours. This goes to show that a miner cannot do as much in six or seven hours as he can in eight or nine.

There are numerous cases at the present time where miners do not find it necessary to work eight hours. To all such a statutory eight hour day would be a decided disadvantage. In mines having travelling roads as means of exit many miners when they have plenty of coal blown or cut down make a very short shift of it leaving the loaders to fill away the coal. Under a statutory eight hour day it is possible these miners would have to remain in the pit even if they had no work to do. Further the miners, especially in the hand pick mines, must remember that the eight hour day would apply to loaders. If it takes a loader nine and a half hours to fill say ten boxes, he could not fill more than eight in seven and a half hours, thereby as he might still claim a ten hour days wage, entailing a loss to the miner of from 40 to 60 cents per day.

The miners of Nova Scotia do not look kindly upon the increased introduction of coal mining machinery, they are opposed to night shifts, and are annoyed at the importation of miners from abroad. Have they considered the bearing an eight hour day would have on these subjects. The operators are looking for increased not diminished outputs. If the desired amount of coal could not be obtained in eight hours the collieries would have to go double shifted, in some cases. In other cases more men would be imported, while in others mechanical cutters would be sought for and introduced. There are a few questions that might well be discussed preparatory to any urgent demand for a statutory eight hour day.

The British Amalgamated Engineers Society has a membership of 110,000. The society has a balance to its credit of not a million but over four million dollars. The income for 1907 was over two million dollars. The expenditure was about a million and three quarters divided about as follows:—Superannuation cost over \$800,000; Sick benefits \$275,000; Out of work benefits \$70,000, and Strike and Federation benefits only \$40,000. The members of the P. W. A. pay to the Union and to the Provident Society say 50 cents a month. If a big fund is their object they should pay \$1.75 per month as do the members of the Amalgamated Engineers.

The Herald did not play the big bassoon over the election in the Montrone burghs. It is to be assumed that the fight there did not result in any accession of votes to the tariff reformer. Some 350 fewer votes were polled at the late election, for tariff reform than in 1906. How is that, seeing the depression in trade should have alienated many voters from the liberals.

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According to statements appearing in several newspapers, some of the P. W. A. lodges, which have had their charters revoked, are not at all pleased at such proceeding, and intend to test its validity. Until they are advised by their own counsel that the Gd. Sec'y had power to revoke their charters they mean to continue on as lodges of the P. W. A. Truly this is a strange procedure on the part of the members of lodges who by an illegal vote taken in an illegal manner declared that they wished no longer to retain connection with the P. W. A. I do not say that a lodge of the P. W. A. had not the privilege and right to discuss the question, "Is the P. W. A. fulfilling its objects, or its mission," or even the other "Is the U. M. W. likely to do more good to the workmen of N. S. than the P. W. A.?" These questions, I am inclined to think, might have been 'legally' debated, but as soon as any member made a motion to the effect that the lodge should become part and parcel of the U. M. W. the master workman, on the instant, should have declared the motion incompetent and the mover out of order. Indeed, it is my opinion, that the mover should then and there have been charged with a breach of obligation. If the members of any lodge were tired of the P. W. A. and desired a change then each and all of them could have resigned and thereafter gone in any way to their liking. The carrying of a resolution, in any lodge, to go over to the U. M. W. in a body, was conspiracy against the Prov. Workmen's Association and subjected the conspirators to the punishment due to such. Some of the newspapers speak of the motions passed in some of the lodges as motions to 'affiliate' with the U. M. W. But the intent of the motions was not 'association,' nor have the U. M. W. ever made a proposition to that effect, and even if it had the offer should have been submitted first to Gd. Council and not to the individual lodge. The desire of the U. M. W. is not that the P. W. A. affiliate with them, but that the latter society surrenders its name, and its independence and that the lodges and their members take the name of the U. M. W., and allow the affairs of the N. S. miners to be supervised by men thousands miles distant, whose knowledge of conditions

in N. S. is limited indeed. To call that affiliation is to mislead.

Let me come to the question, "Has the Grand Sec'y power to revoke a charter without first having authority from the Gd. Council?" My immediate answer is, he has, and it would not, perhaps, at times, be in the interests of the Associations that he had not. In the matter of arrears, or other assessments, the Grand Council reserves to itself the power to say whether a lodge shall or shall not be dealt with, but in matters pertaining to breaches of the constitution the Gd. Sec'y has, and, as I said, has rightly, big powers. Sub-section 3 of Article 13 says, "Any lodge three months in arrears for per capita tax, or other legal assessments, without cause deemed sufficient by council or acting in anyway contrary to the constitution, may after due notice from the Gd. Sec'y be suspended or have its charter revoked." I am not aware that any lodge has had its charter revoked for non payment of dues, though a charter may have been revoked for refusal to pay assessments, but a charter has been revoked by the Gd. Sec'y on his own initiative, without even appeal being taken from it. The members of a certain lodge, as members and not as individuals, broke the peace, to put it mildly, and as the lodge seemingly approved of this horse play, the Grand Secretary immediately and without calling council revoked or suspended the charter. The executive of every society must necessarily have large powers otherwise the affairs of the society could not be economically administered. Had the executive no power to act except when specifically enjoined by Gd. Council, there would be uproar and continual confusion. But why should the lodges which have shown themselves seditious object to have their charters revoked. They declared a preference for the U. M. W. and the revoking of the charters merely serves to make the way easier for them. They have expressed a desire for the U. M. W.; very good, and the P. W. A. through its Gd. Sec'y and Gd. Master, expresses a desire to be quit of them. Are they displeased because the executive took them at their word, are they amazed at being hoisted by their own petard. The P. W. A. has been going through an ordeal the past few months. It will no doubt come out purified, and strengthened.

Is coal mining a healthy, or an unhealthy occupation? If one had believed my good friend 'Sydney Miner,' who greatly flourished in the pages of the Halifax Herald some two years ago, but has since lead an almost hermit life, the work of the miner is the most unhealthy and debasing on earth. Not knowing at the time he wrote that I had ever seen a coal mine, he asked me with fine scorn if I had ever stood on a bank head as the men emerged, grimy and smoked, from the mines. Had I looked into their vacant listless eyes from which all hope had fled; had I seen through the grime and the dust the hectic flush on the face; had I heard the harrowing cough; had I sounded the hollow chest and noticed the sunken cheeks, had I taken notice of the emaciated body, and seen him totter from weakness as he feebly stepped from the cage. The reading at first made me sad, but then when I remembered

I had stood on many a bank head and never saw such pictures. I smiled and concluded that the Sydney Mines apostle of socialism was drawing wholly on his imagination. I believe that I administered a temporary reproof, promising to return at a later time and give him the flogging he deserved. I knew at the time the fearful picture appeared that the painter being a recent arrival, knew very little about conditions in Nova Scotia, or about the mortality at our mines. I knew he had in his mind some squaier he may have seen in some unprogressive Scottish hamlet, but I fancied, nay, was sure, that he grossly misrepresented conditions. The report of the committee on the eight hour day gives some interesting facts in reference to mortality among miners, and the conclusion is arrived at that mining instead of being an unhealthy is a rather healthy occupation. Here are some facts brought out in evidence:—

Dr Totham quoting from officials papers said: Taking the mortality from all causes among the population as 1000, 885 represents the mortality among this people—the colliery workers. Of this total mortality 123, or nearly one seventh part was due to accident, leaving a balance of 762 due to other causes, or nearly 19 per cent less than the corresponding figure for males which was 941. Bronchitis was the only disease which showed any marked excess, the figures being 79 for coal miners and 57 for all males. On the other hand the mines mortality from phthisis was less than half that of all males—89 against 186—from diseases of the nervous system their mortality was 18 lower; from urinary diseases 17 lower; from cancer 15 lower; from heart disease 10 lower and from diseases of the liver 10 lower than among all males.

Dr. John Crome in his evidence spoke highly of the physique of the collier as compared with those engaged in other industries. This applies to the boys as well as the men. They are stronger than other boys and have better recuperative powers. The parents being strong produce a strong progeny and the boys are better fed. I have assisted in preparing the vital statistics in my district and these show that if were not for the high infant mortality the death rate in a mining community would compare favorably with that of agriculture. One factor in infant mortality is early marriages, the great factor is the lack of knowledge among the mothers and their preconceived opinions on the feeding of babies. If you get rid of the infant mortality, which is the deaths under twelve months you get the general death rate for Earsdow—a mining locality—of 10.49, and of Ruthbury—a health resort—of 11.94. Barring the infant mortality and comparing the miner with the agricultural laborer, who is the healthiest of all laborers, the advantage lies with the miner. I take it Earsdow is a thoroughly typical mining district. I have made comparisons among the volunteers and find that between the ages of 18 and 30 years those declined by the company show a percentage—of rejections—in the mining community of 11.37 as compared with 20.34 for the non-mining or general community, showing still in favor of the mining community. My conclusions are "All these facts go to prove that the boys and youths of the mining population are healthier and sturdier than those of oth-

er classes, and that therefore they do not suffer in health by the length or condition of their labor, a fact which is further emphasized by the amount of animal spirit shown and vigorous horse play frequently indulged in by them when returning from work. In answer to the question, "Do you consider that mining is the most healthy of all manual occupations," the witness replied, "I could not speak for occupations that I know nothing of, but my experience is, that comparing the miner, (and I am speaking now of the miners of Northumberland, whom I know) with agricultural laborers and shipyard employees, he is healthier." After this we should hear no more of hollow eyes and hectic cheeks.

I noticed in the esteemed Eastern Chronicle, a mild criticism of the composition of the committee appointed to enquire into the possible effects of an eight hour day at the collieries. Exception is taken to one of the commissioners on the ground that he is not sound in the faith politically. Probably the government desired to have on the commission an employee who had tested the workings of an eight hour day and was favorable to it. The Sydney Record is my authority for the statement that Mr. Robb fills that part of the bill, and perhaps he is the only employer, engaged in industrial pursuits whose learnings are that way. I cannot say I love the complexion of the commission, for two reasons. The first is that the commissioners are too few. Instead of three there might properly have been five. The second objection is that the commission, as it stands, appears to me to be lopsided, or rather all one sided. The chairman of the commission, if we are to judge him by his public speeches, is a semi-socialist, if not a full fledged one, and, of course, as such believes that the manual laborer should put in as few hours work in a day as he possibly can; the second named commissioner, so says the Sydney Record, is already an eight hour day man, and the third named is a politician, and he has no choice of sides unless he has made up his mind to retire from active politics. The ideal commission would have been one composed of a chairman without preconceived views, an employer likely to favor and one likely to be doubtful of an eight hour day,—and two others, one from among the industrial and one from the domestic consumers. I would exclude a colliery operator and a colliery worker as incompetent, being prejudiced. However the commission has been appointed and all interested must assist in bringing out every detail that may tend to throw light on the subject, and thereby help to bring about a satisfactory solution.

Though he never openly joined the League, the Editor of the Dartmouth Patriot must have been a disciple, afar off, of the W. C. Milner, of three years ago, that is of the Milner who had not through efflux of time, and salutary discipline, become mellowed and milder. I am not sure that friend Milner will be overly well pleased that the mantle he threw down has been picked up by the Dartmouthian. The former knew a little about coal, the latter referring to it talks as the Scots would say 'havers.' In its issue of 23rd inst., the Dartmouth Patriot says:—

"Coal is a prime necessity in the homes of thous-

ands of the people of this province."

Admitted.

"The home builders are now paying two prices for this article. They are compelled to pay a price away beyond what is fair and just."

They are not paying two prices, and they are not paying more than what is just, unless they are paying it to the middlemen and not the operators, and yet the article leads one to think it is the operators who are the extortionists.

"Every home builder knows he is paying far more than he paid a few years ago."

True, he is paying about thirty per cent more, but he is also paying higher for rents, higher for eggs, and very much higher for butter and provisions generally, and he is also, be it carefully noted, receiving higher wages than five years ago.

"This is quite enough in itself, but dear fuel means the serious handicap to all industrial progress."

"This may appear reasonable, but it is not borne out by history. The fact is that Britain, Germany and other countries showed marked progress when fuel was dear, not cheap. There never were years in Britain, Germany, United States, France, etc, like 1906 and 1907, and never was coal dearer—within the last twenty years—than during that period.

"Nova Scotia should be a great manufacturing province and this it can never be with coal at the price it now is."

This might seem to settle the future of Nova Scotia as regards industries, for it is safe to say that coal will not, in our day, be much cheaper than what it now is. Yet, there is hope for Nova Scotia even if coal maintains its present price. The biggest and the greatest manufacturing city in the Dominion is Montreal. The rising cities of the west not excepted, Montreal is the most flourishing city in Canada, and one of the most flourishing on the American continent, and mark you, all this, in the face of alleged high priced coal. The Steel Works at Sydney, Sydney Mines and Trenton; the Sugar Refineries in Halifax county; the Cotton Mills, the Foundries in the several counties; the Nova Scotia Railways, such as the D. A. R., etc., all receive coal cheaper than do similar establishments in Montreal.

"A solution of the power problem is of the utmost importance to all, and government ownership will settle it for all time. . . . To the individual consumer it means a large decrease in the price he will have to pay for one of the chief necessities of his home."

Well, just let the government try it, and then it may be found out that there are more ways of losing money than running railways.

"This is no new fad or experiment. It has been accomplished already in other countries. Germany has had government owned and operated coal mines for many years. At present the German government owns over sixty-five thousand men at work in the government mines alone. These government mines settle the prices charged for coal in Germany. The great coal company, called the Rheinisch Westphalian Coal Syndicate, which controls an output of 78,000,000 tons yearly, is effectually controlled by the government through the government mines. The great German Syndicate is immensely more powerful than the Dominion Coal Company, but still it has to do obedience to the German government. Why then do the people of N.

Scotia have to fear our Syndicate? It is simply a matter for the people of this province to settle of their own motion."

"Evidently the writer in the Patriot has not seriously considered his subject, not even a little bit, else he would not think that Nova Scotians were paying an exorbitant price for coal. With the exception, perhaps, of certain parts of the United States, coal is cheaper here than in any other white man's country. In 1907 coal advanced in Britain a dollar a ton, while there was no increase in price here. In France as I pointed out in a former issue, coal when taken in 12 sacks at a time costs not less than \$5.70 per ton; in Italy the price is three times as high as in Nova Scotia; the Swiss pay ten dollars, the Russians five dollars and the Norwegians six fifty for the coal they buy. But let me take Germany with its wonderful government mines, and the Westphalian Syndicate, as it is called. The price quoted for this German coal at export points was \$3.75 per ton, higher by good many cents than N. S. coal. This price ruled last year. This Westphalian Syndicate bought a large quantity of British coal last year in order not to lose some of its outside customers. For this coal they paid f. o. b., \$3.84. The Syndicate is an exporter, and it was stated before the British Royal Commission that it exported coal in order to keep up the price in Germany. Britain has no government mines, and yet the people and manufacturers buy coal as cheaply as it is bought in Germany. Mr. R. Ellis before the Royal Commission said, "The price of coal in Germany varies. Sometimes the price is so large in Germany that it tempts supplies to go from this country." The fact is that the imports of British coal—into Germany are yearly many million tons; Hamburg alone, taking nearly three millions, while vast quantities find their way in by Rotterdam. Last year, with British coal selling at \$3.84 at the shipping port Germany took a bigger share of British coal than ever. If Germany imports twenty five million tons of high priced coal, and her production is about six times that quantity, how is it possible that the German people, with government owned mines, can buy coal at a less price than in Britain or Nova Scotia. The fact is the "Syndicate" not only takes a fair price, but the highest price it can get fair or otherwise, and the Syndicate makes the German people pay a high price for coal in order that German coal may be exported to some desirable future markets. The German Exchequer is at the present time in need of all the money it can lay hands on, and the mines are being run, not so that the people may procure low priced coal, but so that some benefit may accrue to the government. Coal is not cheaper in Germany than in Nova Scotia, and yet it ought to be, for the German colliery worker earns from thirty five to fifty cents less a day than does the worker in a Nova Scotia colliery.

The Sydney Record tells us that a former conservative candidate for the 'Local' has been criticising the Pension bill. I wish the Record had given us some particulars. Are the provisions too generous, or are they not generous enough. I presume the latter is the ground of complaint. Let me see: the member of this government thrift scheme receives \$2.50 per week when he reaches the age of 65. The amount is twice that which the British scheme proposes, and moreover

it is to be paid five years sooner. We hear the German scheme of pensioning praised. The N. S. scheme then should be doubly praised for it is far away and beyond superior to the German. The socialist organ in Berlin praises the British scheme on the ground that five shillings a week is a pension considerably higher than that paid in Germany.

All the special correspondents present in Dundee toward the close of the contest, thought Winston Churchill would be defeated. Liberal and Unionist alike were convinced of this. They are now convinced that they must be classed with the minor prophets. Some who knew Scotland, however, believed in Mr. Churchills triumph; there were some who believed that Scotland would know a great man when they saw him, and so it turned out. Indeed the four last contests occurring in Scotland have given new life to the government and have had a correspondingly depressing effect on the tariff reformers.

The 'dailies' have assured us that the Licensing and the Education bills have been passed by the British Commons in the hope that they will be maimed or killed by the Lords. What rot. Why, every man in the Commons knew that in voting for the bill he was drawing upon himself the ire of the 'trade' in his constituency. And if Mr. Asquith wished the Lords to amend the Licensing bill why would he give the trade pause, in their threats of getting the Lords to kill the bill, by hinting that if they mutilated or throw out the bill the license fee at the hands of his successor would be increased next year, and the year after, and the year after that again. There are thirty two labourites in the British parliament, thirty were present and voted for the bill—two were absent. Speaking for the labourites Mr. Crooks said they would vote for the bill even should their so doing cost every one of them their seats. That's one at any rate for the labourites.

As a former pastor of "Sharon" would have said, a "preventing providence" is responsible for Ramblers absence from the May Musical Festival. And it is well. Any performance lasting over two and a half hours is apt, nay, is sure, to make me forget that long ago I lived in a christian community. I would not refer to the event had I not read in an esteemed contemporary that to Mr. Earl belongs the credit of the conception and carrying out of the affair. Possibly, but was there not a power behind the throne? Were I asked "who should get the credit for the success of the main object of the Festival," without a falter I would say the Misses Wallis. And this is said without even a sub-conscious bias, as none of the three is on Ramblers visiting list.

A leading Ontario paper advises as follows:—"Every citizen is bound by the very fact of his citizenship to take an active an intelligent part in the politics of his country." True, if we only could. There is not much to hinder all being active politicians, that in most cases is merely a matter of will; but will some reliable paper, grit or tory, it matters not, tell a fellow how he is to take an intelligent part. Where is he to get the information on which to base an intelligent opinion. If he turns to the Mail and Empire, it is not

there, and if to the Globe and Chronicle, lo! neither is it—I fear, there. Editors might get useful information if they took the trouble to look for it—in Hansard, but how is the ordinary voter who never sees Hansard to get along. If he takes a tory synopsis of the doings in parliament, he is sure to be out, and if he takes the grit editors version, he may not, well, he may or he may not be in it. I'll say no more on that point. And then as to the doings in special committees. Where is to get the evidence uncoloured. That's a problem for those who wish to take an intelligent interest in practical politics.

For its own sake the Halifax Herald should leave British politics severely alone, or try and overcome its glaring prejudices. Tory, as the Montreal Star is, and protectionist, it does not claim that the Dundee election affords joy to the tariff reformers. The Herald on the other hand says that had it not been for opportune reduction of the sugar duties, a unionist and tariff reformer would have been elected. The Herald knows better or is culpably ignorant. Had Churchill not been elected the seat would have gone to the labour party, composed mostly of free traders. Of the 15,000 electors in Dundee, 11,000 probably are free traders and the remainder tariff reformers incidentally, that is, because they happen to be tories.

TIMBERING IN MINES.

All mine props should be set so as to secure the largest area of roof possible and in such a manner that the pressure will be equal on all sides. In working places, the posts should not exceed the prescribed distance apart, and may be even nearer if desired. Props should be set as soon as a good roof is often turned into a bad one by inefficient timbering, and it often requires more labor to put it in shape again than would have been required in keeping the place properly timbered.

A NOVEL IN A PARAGRAPH.

A number of years ago some miners in Wales, in exploring an old pit that had long been closed, found the body of a young man dressed in a fashion long out of date. The peculiar action of the air of the mine was such as preserved the body so perfectly that it appeared asleep rather than dead. The miners were puzzled at the circumstance. No one in the district had been missed within their remembrance, and at last it was resolved to bring in the oldest inhabitant—an old lady long past her 80th year, who had lived single in the village the whole of her life. On being taken into the presence of the body a very strange scene occurred. The old lady fell on the corpse and kissed it, and addressed it by every term of endearment spoken in a bygone generation. He was her only love, and she had waited for him during her long life. She knew he had not forsaken her. The old lady and young man had been betrothed sixty years before. The lover had disappeared mysteriously, and she had kept her faith during the long interval. The miners removed the old lady to her house, and that night her faithful spirit rejoined that of her long-lost lover.

AROUND THE COLLIERIES.

The usual large number of persons are preparing to take the coming mining examinations in Sydney.

John Murphy, night underground manager at Dom. No. 3, has resigned to take a position at Mabou Mines.

On a day recently 425 tons were hoisted from the Allan Shafts; the improvement in output is gratifying.

J. W. Devison, late manager of Dom. No. 1, left on the 11th. to take a position with a mining concern in West Virginia.

In the face of handicaps, such as longer haul, transferring of boxes on deep, etc., Dominion No. 3 is leaving previous years behind in outputs.

The Bye elections in Scotland did not go just as the Herald would like, therefore it was mum, didn't even mention that elections had taken place.

The Hub Colliery, No. 7, has started operations again. An electric haulage gear has been installed and big things may be expected from the mine in the near future.

Instructor McMahon, of the Draeger Life saving station of the D. C. Co. is instructing classes of men from the different mines in the use of the breathing apparatus.

The collieries in Pictou were idle Victoria day. The managers' would have preferred them to have worked, but there is no profit in working with a half force.

The usual spring house cleaning is going on about the Dominion Coal Co's Collieries. The removal of garbage, the whitewashed fences and buildings add much to the appearance of mining towns.

The Dominion Iron & Steel Co. have recently ordered from the Robb Engineering Company one 20 inch and 28 inch x 36 inch tandem compound Corliss engine for endless haulage at their mine in Wabana, Nfld.

The Western Fuel Company of Nanaimo, B. C., have recently ordered from the Robb Engineering Co. a 650 horse power 24 inch. x 42 inch. Robb-Armstrong Corliss engine for driving one of their mine ventilating fans.

Coal miners wages are coming down in Scotland. The coal owners asked for a reduction of 12 1-2 per cent. or say 6d. per day on the 1888 scale. They have been awarded 6 1-4 per cent. or 3d. per day. This decision affects some 100,000 mine workers.

Of the thirty-two labor members in the British parliament, thirty voted in favor of the licensing bill, the other two being absent. This may not be pleasing to certain Sydney Mines socialists, but it is heartening to every real friend of the workmen.

Some of the collieries of the Dominion Coal Co. have been doing remarkably well of late. On a day recently Dom. No. 2 hoisted over 5,000 tons of coal, which possibly forms the worlds record for hoisting out of one shaft. Dom. No. 6, a comparatively new mine, did well to hoist in a day over 1,000 tons.

Since the article on the revolting P. W. A. lodges was written the men favorable to the U. M. W. had recourse to law to prevent the Gd. Council taking action at a meeting announced to be held in Halifax lately, in reference to the revoking of the charters. The meeting was put off till Saturday to allow of delegates from the expelled lodges to explain their action.

The 'Unique' the charter boat of the Acadia Coal Co. is doing excellent work. She is expected to leave on Saturday which will make the fourth cargo for her this month. The last round trip was made in eight days. Leaving Montreal on the 17th. she arrived at the landing on the morning of the 25th. at 6.30 a. m. and went out loaded with some 3,200 tons at 4 p. m. She would reach Montreal Sunday.

Notice of a reduction in wages from 5 per cent. on the lower paid men to three times that on the higher paid was posted at the collieries of the Acadia Coal Co. last week. If the Conciliation Board matures it will have two matters to deal with, the mens demand for an increase and the company's demand for a reduction. Better call off the Board and cry quits, and save expense, trouble and annoyance.

Delegates from P. W. A. Lodges are in Halifax attending meeting of Grand Council. A few would be leaders are going about the C. B. Collieries endeavouring to split up the P. W. A., but it looks as if they will be disappointed. Until the P. W. A. entirely disappears any lodges of the U. M. W. will be of as much use as the fifth wheel to a coach, and the P. W. A. is not going out in a hurry.

The Aberdeen Apostle asks:—"In plain, blunt words, what are we banded together for; is it not to fight the capitalists?", and Fergus in the Post answers: "No my apostolic friend, we might kill them. Men who think do not answer that way. In plain, blunt words, capitalists are as necessary to us as we are to the capitalists. We are partners, engaged in a common industry, for mutual profit. Partners until our coal is sold, our interests are identical until we have robbed the consumer, and if we can divide the spoils equitably we need never fight.

"In ye olden times fights were frequent and the stronger man or organization took justice and more, and the little fellow took what he got, but now legislation can appoint a judge to settle between us (conciliation) and all that is needed is that the judge be honest and our case well presented and justice will prevail."

THE REWARDS OF LABOUR UNDER SOCIALISM

For the student of Socialism there is no more attractive occupation than that of tracing, in the earlier and later international literature, the changing views of the great thinkers on the question of equality under the Socialist State. As Shakespeare endowed some of his favourite characters with an idealism which he was far from sharing, so a large class of Socialist leaders legislate, perhaps unknowingly, for a perfected human race, freed from all the weaknesses and trammels of mortality. Among the earlier philosophers, it should be noted, the doctrine of an equality of rewards was not universal. The followers of Saint-Simon and Fourier were prepared for a hierarchical organization of society. But it has been a theory of many later writers that equal payments to every worker would be the only fair system under a Socialist State. A doctor, for example, is to give his nights and days to the relief of suffering without material or moral recognition beyond that which the sewer-man receives for his short hours of toil.

The idea of Socialists of Mr. Blatchford's school is that in the ideal community every man will have all that a man needs, and that it would be most unreasonable for the more highly gifted citizens to sulk and refuse to benefit their fellows because nothing can be given them beyond the essentials of a happy and healthy life, with esteem and love to boot.

Mr. Sidney Ball is much more closely in touch with his comrades when he writes: "Modern Socialism . . . does not base industrial organization on 'the right to work' so much as on the right of the worker, not to 'payment according to needs' so much as on 'payment according to services'; it recognizes the remuneration of ability, provided that the ability does not merely represent a monopoly of privileged and non competitive advantage."

Mr. H. G. Well, it need hardly be said, does not contemplate any system of equal salaries for all. "Socialism," he says, "would leave men free to compete for fame, for service, for salaries, for position and authority, for leisure, for love and honour." He encourages the elementary school teacher with the prospect of higher payments, and he adds: "You will have no anxiety about sickness or old age; the State, the universal Friendly Society, will hold you secure against that; but if you like to provide extra luxury and dignity for your declining years . . . the State will be quite ready for you to pay it an insurance premium in order that you may receive in due course an extra annuity to serve the end you contemplate."

Mr. Ramsay Macdonald says: "Socialism proposes to establish no state of equality. It only proposes to adapt each organ to its natural function—to give to each man a chance of doing congenial work in the complex social life."

Mr. F. W. Jowett, M. P., says that in the Socialist city "salaries must be liberal enough to attract the best men to the public service." He proposes larger consultation fees for specialists, to be paid jointly by associated corporations, and he wishes doctors to be placed above the reach of personal competition."

PIT CAGE ACCIDENTS.

The Home Office a few days ago issued the report of Professor R. A. S. Redmayne on the fatal shaft accidents which occurred at Fogg's Colliery, Darcy Lever, near Bolton, on October 4th; at Barrow Colliery, Worsborough near Barnsley, on November 15th.; and at Raw-

don Colliery, Moira, Leicestershire, on November 18th, last. At Fogg's colliery the ascending cage, while drawing men to the surface collided with the descending cage, with the result that the ascending cage fell to the bottom of the shaft, causing the death of all the ten occupants. Professor Redmayne finds that the accident was due to a broken rod of the ascending cage forcing it into the path of the descending cage. He states that the conductors were not defective, and expresses the opinion that it would be preferable to substitute chains for rigid rods for suspending cages and to have such chains annealed every six months. As regards the Barrow colliery accident, where seven men were thrown to the bottom of the shaft and killed through the oscillation of the ascending cage and its collision with two girders, Professor Redmayne says the accident was due to the carelessness of the hanger-on in signalling the cage away when the drop-sheet was down on the lower deck of the cage. To render the recurrence of a similar accident impossible, he recommends certain alterations in the manner of fixing drop sheets to the floors of cages, together with the provision of gates on the open ends of cages. In the third case where, through the racing of the winding engine, the cage at Rawdon colliery, containing sixteen men, was over-run and dashed into the sump of the pit, injuring all the occupants, one fatally, the report states that the accident was due to the engineman—probably in a moment of mental aberration—over-running his engine, and so causing the overwinding, and that the unbalanced nature of the loads was possibly a contributory cause. Professor Redmayne suggests an increase of the brake power and the limiting of the number of persons raised, or lowered, at one time to eight, unless the engine is fitted with some efficient speed controlling device.

NOTHING WASTED.

There are sermons in stones, also in slag-heaps. Those unbeautiful dark mountains—amorphous masses that lie round the smelting furnaces of the black country—telling of the fierce industries of that strenuous region, are, as we study them, suggestive of much. One could pity them almost. They are the rejected in the great competition. The mass they belonged to, after ages measureless of peace and unity, no part claiming superiority over other part, has been hauled up for scrutiny, put to fiery test, with the result we see. While one part is proclaimed of value and set to noble uses, this is flung out contemptuously to exhibit its no-value to every passer by. Singular, that people should talk of equality. There is no equality in this world. The slag story is everywhere. It is told by every industry, every form of human activity. There is no manufacture without its waste products. Nature's processes are on the same lines. There is no wheat without its chaff; no fruit without its husk, rind or skin. We cannot work without promotions and degradations of our material. The sculptor elects and predestinates some part of his marble to honour and some to dishonour. Out of the same block come the high features of the marble Caesar and the chips that litter the floor.

This would be very hard on the chips if that were all. But we are ceasing to gird at Nature's arrogance and wastefulness now that we are learning the secret of it—that it is only in appearance. In her eternal process nothing has really come to nought. Even slagdom has its hour. After touching bottom it comes up again. You can use it in manufactures, in cement, glass making

and what not. Its atoms are prepared to show you they are of the most respectable quality, and fit to ally themselves, as they will in time, with the best families. Before you call anything 'low' be sure you know all about it. 'What is a weed', asks Emerson, and replies that 'it is a plant whose virtues have not yet been discovered.' Natures waste in fact is just her way of taking a rest. There are innumerable dark suns in the universe, mighty worlds worn out, gone cold and dead. They are so much cosmic slag, We wonder what their uses are. Be sure they have their uses, even now; and their hour will come again,

TAMPING DYNAMITE CHARGES.

Tamping in holes loaded with dynamite is a source of danger, the Engineer and Mining Journal recalls, if the hole is completely or nearly completely filled with tamping from the vein. Careful search will often fail to locate such a hole that has missed. Any good effect from tamping, other than to keep sparks from igniting the dynamite or to keep the fuse in the hole when hit by flying rock, is questionable. A few inches of tamping is as good as a foot for protecting the dynamite and retarding the fuse. The use of more tamping consumes more time, and increases the danger arising from missed holes by tending to conceal them in case they are tamped full to the collar. The use of a foot or 16 inches of tamping is almost as bad; for, if the hole is cut off by another blast, it is possible that the stump of the hole left will be completely filled with tamping, and therefore hard to locate. Besides, if only a few inches of tamping is used and the hole misses, the primer can be inserted on top of the tamping and the hole blasted without any picking out of tamping. When one considers that often holes are cut off and the charge of dynamite cut in two without its being detonated or ignited, it becomes questionable whether the hole will detonate properly if many inches of rock tamping intervenes between the charges.

BORING FOR COAL

Q.—How would you search for coal?

A.—The search for coal in an unworked district is the application of geology to practical uses. In such a search all available means are taken to obtain information, such as the examination of quarries, beds of rivers, and railway cuttings; even the ploughing of fields has often led to the discovery of the presence of coal when no other indications were forthcoming, by the dark appearance of the soil when turned up.

Such an examination carefully carried out in any district will reveal whether the strata belong to the coal-bearing formation or not. The discovery of a few fossils, such as *sigillaria* or *stigmaria*, will at once identify the coal bearing rocks; or an outcrop of coal may be discovered at the surface, but this is not often the case, particularly if the coal bearing strata have been deeply overlaid by newer formations.

When an outcrop cannot be discovered, and it is known that coal is likely to exist in the area of exploration, further search must be made by means of 'day' mines, trial pits, or by boring. If the beds of strata are highly inclined, a few trial pits may be sunk for a short depth, and levels driven out from the bottom of them to search for the seam; this method of procedure is often followed in searching for metalliferous veins and is termed 'costeaning'

If an outcrop of coal can be found, then a 'day' mine or drift may be driven into the seam for some distance so as to prove its value and get some information as to the nature of the roof and pavement, and the regular thickness of the seam, as outcrops are often thin and of poor quality, and may be no criterion of the qualities of the seam over the whole area. If it is not possible to drive a day mine from the outcrop, owing to its position or to other difficulties, a small trial pit may be sunk, some distance from the outcrop to the seam, which is then explored by a few levels driven in the coal. If the foregoing methods do not give satisfactory results, or cannot be carried out easily owing to the depth at which the seam or seams lie from the surface, recourse must be had to boring. This method of proving coal fields is generally the most satisfactory, as correct information can then be obtained as to the thickness of the seam, depth from the surface, etc.

Boring, then, is the method employed to gain information regarding the existence of beds of minerals such as ironstone, coal, and other minerals, lying below the surface of the earth, and to obtain information respecting their position, thickness and quality.

Q.—Why is boring resorted to?

The uses of boreholes are various, but in a field of coal it is usual to put down a series of boreholes with the object of obtaining the following information.

- (a) A correct section of the strata passed through.
- (b) The exact depth of the seam or seams from the surface.
- (c) The thickness, quality and number of seams.
- (d) The nature of the roof and floor of the seam.
- (e) The inclination of the strata, and the number and size of faults or dislocations in the field.

In establishing the existence of dykes or faults underground, boreholes sometimes save time and money which might otherwise be wasted in exploring by means of drifts, particularly when the 'vees' of the fault is nearly vertical or ill-defined, and it is difficult to determine whether it is an up-throw or a down-throw fault.

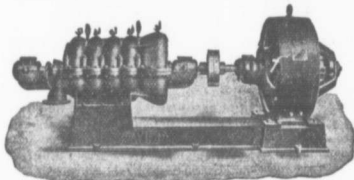
By the aid of a borehole the gradient of a road that would intersect the dislocated seam can also be determined.

SHOT FIRING IN MINES.

When an explosive becomes fast in a newly drilled hole, it should be carefully removed and the hole stemmed up; another hole should be drilled in the same direction, but not nearer than 12 inches to the stemmed hole. If the direction of a shot is marked on the roof or other convenient place, the direction of the hole will be known, and if a miss-fire occurs, the drilling of the relieving hole into the charge of the missed shot can be avoided. In cases where shots miss-fire, accidents may be avoided if the place is fenced off for an hour and a danger signal put up. When the fence is removed, the detonator wire of the missed shot should be tied to a prop so that it may be recovered after firing the relieving hole.

The Crows Nest Pass Coal Co., Ltd., have two 3500 ft., Walker Brothers Air Compressors running, one at Coal Creek and the other at Michel, B. C.

Westinghouse Motors for Mines



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Railway signals which are not only visible but audible are being tested on the Great Western's Witney and Fairford line. The driver does not need to look out for semaphores, for in front of his eyes in the engine cab is a tablet on which the messages 'Danger' or 'All clear' appear, having been electrically sent by the signalmen. Communication is set up by means of a shoe underneath the engine coming in contact with a third rail laid for a short distance between the other two. When there is 'Danger', the engine's whistle is automatically blown, and when the line is clear an electric bell is automatically rung for fifteen seconds, while passing the signal post. Neither fog nor heavy snow could be responsible for an accident with this system, and in case of the electric circuit breaking, the only disturbance would be that the whistle would shriek steadily.

Prince Edward Island Railway.

TENDERS.

Sealed tenders addressed to the undersigned and marked on the outside "Tender for Power House and Chimney" will be received up to and including THURSDAY, JUNE 4th, 1908, for the construction and erection of a Brick Power House and Chimney at Charlottetown, P. E. I.

Plans and Specifications may be seen at the Superintendent's Office Charlottetown, P. E. I., and at the Chief Engineer's Office, Moncton, N. B., where forms of tender may be obtained.

All the conditions of the specification must be complied with.

D. POTTINGER,

Railway Office,
May 14th. '08.

General Manager,
Moncton, N. B.

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Have Excellent
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Synopsis of Canadian North-West. Homestead Regulations.

ANY even numbered section of Dominion Lands in Manitoba or the North-West Provinces, excepting 8 and 20, 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-agent, he made at an Agency on certain conditions. 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.

An application for entry or cancellation made personally at any Sub-agent's office may be wired to the Agent by the Sub-agent, at the expense of such application is to have priority and the land will be held until the necessary papers to complete the transaction are received by mail.

In case of "persecution" or fraud the applicant will forfeit all priority claims or if entry has been granted it will be summarily cancelled.

An application for cancellation must be made in person. The applicant must be eligible for homestead entry, and only one application for cancellation will be received from an individual until that application has been disposed of.

When an entry is cancelled subsequent to institution of cancellation proceedings, the applicant for cancellation will be entitled to prior right of entry.

Applicant for cancellation must state in what particulars the homestead is in default.

A homesteader whose entry is not the subject of cancellation proceedings may, subject to the approval of the Department, relinquish it in favor of father, mother, son, daughter, brother or sister, if eligible, but to no one else, on filing declaration of abandonment.

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 slightly (50) 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 a road allowance crossed in the measurement.

(5) A homesteader intending to perform a resident duty in accordance with the above while living with parents or on farming land owned by himself 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.

Before making application for patent the settler must give six months' notice in writing to the Commissioner of Dominion Lands at Ottawa, of his intention to do so.

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 200 acres can be acquired by one individual or company. Royalty at the rate of ten cents per ton of 2500 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 \$50 to \$100 per annum for a company according to capital.

A free-miner, having discovered mineral in place, may locate a claim 100 x 100 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 payments of a royalty of 2-1/2 per cent on the sale.

Placer mining claims generally are 100 feet square; entry fee \$10 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 lessee 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.

Miners Wanted To Chew BULL DOG TOBACCO,

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for Water after using

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—W. B. Reynolds, Halifax Representative—

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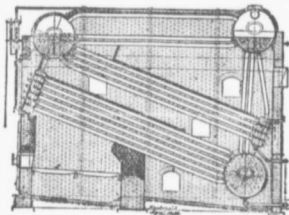
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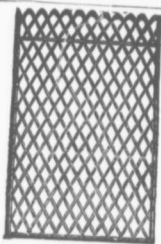
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The Nova Scotia Steel & Coal Co., Ltd., who use our Ropes largely, write that one of our Haulage Ropes at Wabana Mines has been in service for over 5 years, drawing over 1,750,000 tons in that time and is still good for further considerable service.

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WIRE "DOMINION" ROPE
 For Everybody.

—PATRONIZE HOME INDUSTRY—

The DOMINION WIRE ROPE CO., Ltd., Montreal

INVERNESS IMPERIAL COAL

INVERNESS RAILWAY and COAL COY.
 Inverness, Cape Breton.

Miners and Shippers of INNERNESS (BROAD COVE)

Screened, Run-of-Mine Slack.
 —First Class both for Domestic and Steam Purposes.—

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

Apply to Inverness Railway and Coal Company, Inverness,
 Cape Breton; Wm. Petrie, Agent, Port Hastings, C. B.

INVERNESS RY. & COAL CO'Y

Time Table No. 24, Taking effect at 1 a. m.
 FEB. 2ND, 1908

EASTBOUND		STATIONS.	WESTBOUND	
Read Down	No. 34		No. 31	No. 53
a. m.	p. m.		a. m.	p. m.
L 11 40	L 2 30	P. TUPPER JUNCTION	A 10 15	A 7 35
B 11 46	S 2 24	PORT HASTINGS	S 10 18	S 7 27
A 11 2	A 4 05	PORT HASTINGS	L 10 25	L 7 10
	L 4 15	TROY	A 10 12	
	P 4 23	CRENSHAW	P 10 05	
	P 4 24	JUDIQUE	S 9 54	
	P 4 45	CRENSHAW	P 9 37	
	P 5 18	CATHLAMET	S 9 17	
	A 5 20	CATHLAMET'S POND	P 9 2	
	L 5 28	PORT HOOD	L 8 47	
	S 5 35	GLENGOE	A 8 42	
	S 6 06	MABOU	S 8 25	
	S 6 28	GLENGOE	S 7 44	
	S 6 48	BLACK RIVER	P 7 36	
	S 7 07	STRATHLOUNE	S 7 17	
	A 7 15	INVERNESS	L 7 00	
	p. m.		a. m.	

Trains make close connections at Pt. Tupper Jet
 with I. C. R. passenger trains, excepting the Mar-
 time Express.

MABOU & GULF COAL COMPANY, L'T'D.

Miners of the

MABOU DIAMOND COAL.

Burns and Works like Bituminous;

Looks and Lasts Like Anthracite;

IT HAS NO EQUAL.

Mines, Piers
 and General Offices

MABOU, CAPE BRETON.

North Atlantic Collieries, LIMITED.

Mines and Loading Piers, Port Morien, C. B.

Miners and Shippers of **Cow Bay Basin Coals.**

EXCELLENT FUEL FOR

**Domestic, Steamship
and Railway Use.**

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."

Loading Piers at Port Morien C. B.

Quick Dispatch.

Head Office, Halifax, N. S.

Mines Office, Port Morien, C. B.

Babcock & Wilcox, Limited.

PATENT WATER TUBE BOILERS.

Over 6,500,000 H. P. in use, Fired with all kinds of Fuel

Steam Superheaters, Feed Water Heaters, Mechanical Stokers, Coal Conveyors, Steel Chimneys, Structural Steel Work, Electric Cranes, Piping.

Our Text Book "Steam" Free to users.

Head Office for Canada, New York Life Building, Montreal.

Branch Office, Traders Bank Building, Toronto.

A. & W. MacKINLAY

LIMITED.

Rule and Print Special Blank Forms for Mining and other Industrial Corporations. BLANK BOOKS ruled to pattern and made in any Style of BINDING.

Loose leaf supplies of all kinds made to order.

135 to 137 GRANVILLE STREET.

HALIFAX, N. S.

JERSEY - LILY - FLOUR.



*Best all round flour on the market.
Uniform in quality. Every barrel*

*can be depended upon. This flour can
only be had in Cape Breton at the stores
of the Dominion Coal Company.*

**Air Compressors, Rock Drills,
Imperial Pneumatic Tools,
Air Appliances, Coal Cutters,
"EVERYTHING IN AIR MACHINERY."**

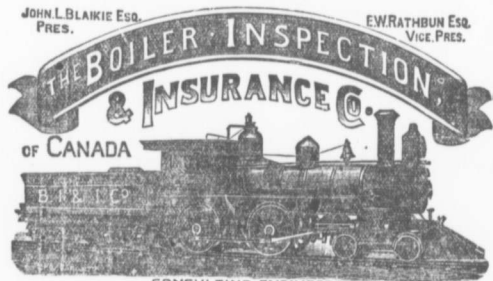
BUILT BY

CANADIAN RAND CO., LIMITED.

MONTREAL. HALIFAX. TORONTO. WINNIPEG. ROSSLAND. VANCOUVER

JOHN L. BLAIKIE ESQ.
PRES.

EW. RATHBUN ESQ.
VICE-PRES.



G. C. ROBB CHIEF ENGINEER

HEAD OFFICE TORONTO

**WHEN WERE YOUR
BOILERS**

....LAST INSPECTED I....

WRITE TO

G. W. JONES, Agent,

Halifax, N. S.

-OR TO-

A. BONNYAN, Inspector

Amherst N. S.

RUBBER HOSE for Air Drills. Pneumatic
Tools, Steam, Suction, etc.

"REDSTONE SHEET PACKING,

For highest pressures with Steam, Hot or Cold Water and Air.
The most durable and satisfactory Packing on the Market.

RUBBER BELTING For Transmitting Conveying and Elevating.

Unequalled for Durability and Power Transmitting Qualities.

MANUFACTURED BY-

The Gutta Percha & Rubber Mfg. Co. of Toronto, Ltd.

Branches at Montreal, Winnipeg and Vancouver

Head offices, 47 Yonge Street, Toronto

Acadia Coal Company, Limited.

STELLARTON, NOVA SCOTIA.

Miners and Shippers of the

CELEBRATED

ACADIA COAL.

Unexcelled for Steam, Domestic and General Purposes.

DELIVERED BY RAIL OR WATER.

SHIPPING PORT: PICTOU LANDING.

Quotations Furnished Promptly on Application.

MARITIME COAL, RAILWAY & POWER CO., Ltd.

Miners and Shippers of

CHIGNECTO High Grade

—AND—

Steam

JOGGINS

—AND—

Domestic

COAL.

Unexcelled for General Use.

Shipment by Intercolonial Railway and Bay of Fundy

Collieries, CHIGNECTO and JOGGINS Power Plant, CHIGNECTO, N. S.

DAVID MITCHELL, General Manager, MACCAN, N. S.

The BROWN MACHINE CO.,

New Glasgow, Nova Scotia.

Coal and Gold Mining Machinery a specialty

Endless Haulage Engines, Revolving Tipples, Picking Tables and Complete Screening Plants for the Cleaning and Picking of Coal. Rope Wheels, Pumps, Valves, Shafting, Belting Etc.

Complete equipments furnished for Coal or Gold mines.

Screening plants are now in operation at Sydney, Springhill, Broad Cove, Port Hood and Westville, Mines.

Estimates cheerfully given

CORRESPONDENCE SOLICITED

DRUMMOND

COAL

High Grade Fuel
for Steam, Domestic and General
Purposes.

COKE

From Coal Washed by Latest Process,
Growing more popular daily—and considered
to give as good results for Foundry purposes
as the United States Article.

FIRE CLAY

of Fine
Quality

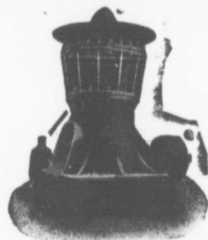
FIRE BRICK

Better than
Scotch seconds for
Ladle lining etc.

SHIPMENTS BY RAIL OR WATER.

INTERCOLONIAL COAL MINING CO., LTD.,
Westville Nova Scotia.

HADFIELD'S STEEL Foundry Co., Limited. SHEFFIELD



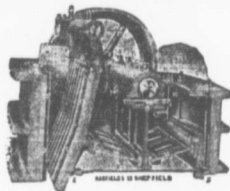
PERFECT GYRATORY
STONE CRUSHER.



CAST STEEL
BRONZE BUSHED.
SELF OILING

WHEELS & AXLES

WE MANUFACTURE
CRUSHING ROLLS,
ELEVATORS,
and Gold Mining Requisites



HADFIELD'S PATENT
JAW CRUSHER

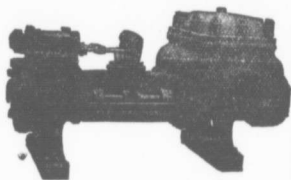
(Solid Steel Construction.)

The Parts which are subject to Excessive Wear are made of
Hadfield's Patent 'Era' Manganese Steel.

Sole Representatives of the Hadfield Steel Foundry Company Limited Sheffield, for Canada,

PEACOCK BROTHERS, Canada Life Building, MONTREAL.

**...Fairbanks, Morse PUMPS...
Hand-Steam Power.
GASOLINE ENGINE
& Pump combinations
to meet all your**



--Requirements about MINE, MILL, and FURNACE.--

EMERSON STEAM PUMPS, (Pulsometer Type)

—will handle Muddy, Sandy and Gritty water without injury to themselves.—

—THE—

Canadian Fairbanks Co., Ltd.

MONTREAL. TORONTO. ST. JOHN. WINNIPEG. CALGARY. VANCOUVER.

CHAINS. CHAINS.

(All Sizes in Stock.)

"EDGES" BEST SPECIAL CRANE CHAINS.

Cannot be Excelled for HIGH CLASS QUALITY and WORKMANSHIP

They are made of the very best brands of English Bar Iron and by Selected Workmen.

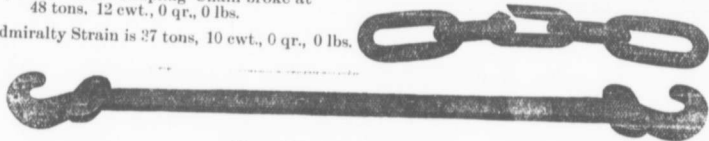
**Makers of every description of Chains
for Mining and all Engineering Purposes,**

Coupling Chains and Solid Forged Draw Bars

For Mine Cars, A SPECIALTY.

This 14" 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,
SHIFNAL, England.**

Draw Bar for Coal Car.

Tel. address "Edge" Shifnal.

"Codes" A. B. C. and Bedford McNeills

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

BEST COAL FOR
DOMESTIC CONSUMPTION.

IN Lots To Suit Purchasers.

BEST GAS COAL

Mines

SPRINGHILL

Mined in the Province.

N. S.

Head Office

MONTREAL

Dominion Coal Company, Ltd.

Miners of
 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.—

ANALYSES.

ANALYSES OF GAS AND STEAM COAL MADE BY J. & H. S. PATTINSON, CHEMISTS,
 —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	100 00

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
 —6000 tons loaded in 24 hours.—

Special attention given to quick loading of sailing vessels. Small vessels loaded with
 ✨ quickest despatch. ✨

:: BUNKER COAL ::

The Dominion Coal Co. has provided unsurpassed facilities for Bunkering Ocean going Steamers with Dispatch. Special attention given to Prompt loading. Steamers of any Size are bunkered without detention.

By Improved screening appliances lump coal for Domestic trade is supplied of superior quality.

Prices. Terms, etc. may be obtained at the Offices or the Company.

ALEXANDER DICK Genl. Sales Agent, Glace Bay, N. S., Can.

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 DOMINION COAL COMPANY, LIMITED,
 DOMINION COAL COMPANY, LIMITED,

112 St. James St., Montreal, Que.
 171 Lower Water St., Halifax, N. S.
 Quebec, Que'

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 Hull Blyth & Co., 4 Fenchurch Avenue, London, E. C.

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