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New Series Vol. 7 No 3.

August 10th., 1904

STELLARTON, N. S.

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LIMITED.

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PIG IRON.

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21 Mixed for Pictou Landing	7.40
62 Mixed for Pictou	7.45
45 Mixed for Mulgrave	8.15
19 Express for Sydney	10.55
26 Mixed for Pictou	11.00
46 Mixed for Truro	11.00
39 Express for Halifax and Montreal	16.00
142 Mixed for Pictou	16.05
45 Express for Sydney	16.50
161 Mixed for Pictou Landing	18.50
65 Mixed for Hopewell	18.10
77 Mixed for New Glasgow	18.45
86 Express for Halifax	18.45
65 Mixed for Trenton	18.40
17 Express for New Glasgow	21.15
66 Express for Pictou	21.15

—TRAINS ARRIVE AT STELLARTON

78 Mixed from Trenton	5.55
65 Express from Pictou	19.30
18 Express from New Glasgow	7.35
21 Mixed from Hopewell	7.35
45 Mixed from Truro	8.00
46 Mixed from Mulgrave	11.40
27 Mixed from Pictou	11.40
19 Express from Halifax and St. John	16.45
39 Express from Sydney	16.25
26 Express from Montreal and Halifax	16.40
142 Mixed from Pictou Landing	16.10
77 Mixed from Hopewell	18.45
86 Express from Sydney	19.35
65 Express from Trenton	19.35
17 Express from St. John	21.10

A. D. trains are run by Atlantic Standard time. Twenty four  
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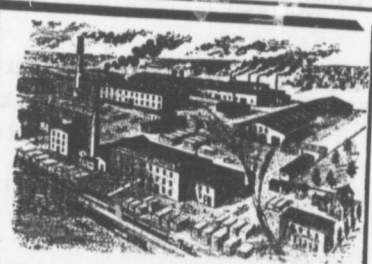
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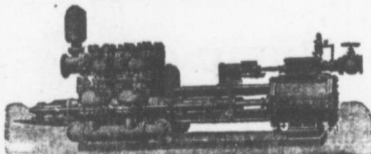
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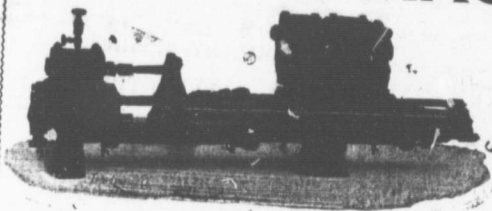
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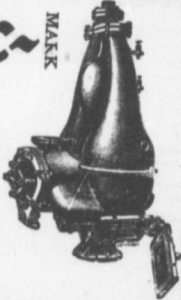
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### HALIFAX, N. S.



The...  
**MARITIME MINING RECORD**

**Vol. 7, No. 3. Stellarton, N. S., August 10th 1904 New Series**

**MODES OF WORKING.**

*By R. Simpson, Springhill.*

Stoop and room, or pillar and stall, or bord and pillar. This mode of working, with its numerous modifications, may be said to be the only other method of working a seam unsuitable for longwall. Seams from 3 ft thick, and upwards, may be worked by bord and pillar, and some even thinner seams have been worked by bord and pillar. The system is best suited for thick or moderately thin seams, with no available stone or refuse to fill up the space left after taking away the coal, or in a seam tenent valuable property on the surface, where pillars could be left to secure the surface, or where the roof and pavement are so hard that it is costly to take the roof down, or to lift up the pavement to build the waste with. Bord and pillar working is divided into two distinct operations:—(1) Driving places in the solid coal, and dividing the area of coal to be worked into large rectangular blocks or pillars by means of narrow places called bords or stalls or rooms. (2) Extracting the pillars and allowing the roof to fill up the space left by the extraction of the coal.

The first important point to be considered is the size of the pillar to be left at the bottom of the shaft to protect the surface buildings and the shaft itself from damage. The size of pillar must be adjusted to suit the nature of the coal, the roof and floor, as well as the inclination of the seam and the extent and nature of the surface buildings. In highly inclined seams the pillar should be left larger on the rise side of the shaft, as the weight always tends downhill.

The size of shaft pillars is given differently by different authorities. A good sized pillar is one 40 yds. square for a depth of 50 fms. and size should increase by 5 yds. for every 10 fms. increase in depth of shaft. Another plan which is much adopted in Scotland, is to draw a line enclosing all the surface buildings, such as engine-houses, fans, screens, etc., that is to protect, and make the shaft pillar of such a size that solid coal will be left in all round this line for a distance equal to one third of the depth to the seams, or they may be

calculated from the formula  $R = \sqrt{\frac{3d \times t^2}{0.8}}$  where R.

= radius of pillar in yds. d, = depth from surface in yards. t = thickness of seam in feet. Or by this formula

$S = \sqrt{\frac{D}{50}} + 22$  S = size of pillar in yds. D = depth to the seam in yards.

Andre gives the following sizes as suitable for shaft

pillars:— Up to 150 yds. deep, pillar 35 yds. square.  
 " 175 " " " 40 " "  
 " 200 " " " 45 " "

The size of pillar increasing 5 yds. for every 25 yds increase in depth. The rule that I generally use, is to allow half of depth, that is to say for a depth of 100 fms. the shaft pillar would be 100 yds. square, which gives quite a good pillar for the shaft. In the old method of working bord and pillar, the whole royalty to be worked was first cut into pillars right out to the boundary line, before any of the pillars were extracted; this entailed a large amount of loss, due to the length of time the pillars stood before being taken out, for where the roof was bad or the coal tender, the pillars would be much crushed, and all the roadways round about the pillar would have fallen in, causing extra expense for relding roads into the pillars etc. To overcome this difficulty, workings are now often laid out in sections or panels, and as soon as one section is turned into pillars, these are at once extracted without being allowed to stand any length of time. This method is found both cheaper and to result in the production of better coal.

One of the main things to be taken into consideration in setting away the places is to set them away according to the cleats of the coal, that is to always be crossing the cleats, or what is called half way across the cleat or at an angle of 45° to the line of the cleat. Pillars should, as a general rule, be worked lengthwise to the rise of the seam, unless the latter becomes very steep, when it is then found more economical to make the long side of the pillar at right angles to the inclination, and so have a larger amount of coal to work from the level course. The size of pillars in the ordinary working varies according to the thickness of the seam and other circumstances, such as inclination of the seam, tenderness of the coal, and nature of roof and pavement; the following is the rule that I use:—

Allowing 6 square yards of pillar per fathom depth for a 4 ft. seam  
 " 8 " " " " " " " " " 5 ft. seam  
 " 10 " " " " " " " " " 6 ft. seam

Taking all things into consideration, pillars as large as possible should be left in during the first working.

If both roof and pavement are hard and small pillars are left, then the coal will be crushed, and in this case a larger percentage of dross will be got. When this takes place it is called thrust or crush. If roof and pavement are both soft and only small pillars are left, then creep will occur; (creep is usually confined to the slow rising of the pavement, which sometimes, owing to the pressure of the walls or pillars on either side, becomes more and more convex and sometimes even block up the road or render it impassable,) and a large amount of coal may be entirely lost. Robbing the pillars

in an irregular manner may also bring on creep, and large areas of valuable coal have been lost in this way. Pillars which may be sufficient to prevent creep in the first working may be quite incapable of doing so when the work of extracting the pillars has been commenced. Again if the roof is bad, and small pillars only have been left, then, when a crush comes on, the roof will spill or ride over the pillars, necessitating a large amount of redding when the pillars are being taken out, and much of the coal will be made into small, which will reduce its value greatly.

The width of the bords will depend almost entirely on the nature of the roof, but if the latter is good, the bords should be driven as wide as possible, consistent with the safety of the men, as wide bords give a much larger percentage of round coal, than narrow bords.

The following proportions are sometimes adopted for pillars.

At	50 fathoms deep	50 per cent of the seam is left in.
"	50 to 100 "	" " " " " " " " " " " "
"	100 " "	" " " " " " " " " " " "
"	150 " "	" " " " " " " " " " " "
"	250 " "	" " " " " " " " " " " "

After everything has been determined as to size of pillars and direction, and the width of bords, the places are then driven at right angles to each other for to form the pillars, which is called the first working, then the next operation of taking out the pillars which is the most dangerous and most important part of the work, and the greatest amount of care should be exercised in carrying it out.

The following rules ought to be carefully attended to to be successful in this part of the work:—

(1) No naked lights ought to be used in withdrawing timber, whether gas has been found or not, and the timber should be withdrawn when few men only are in the mine.

(2) The lifts should be made as short as possible and not too wide.

(3) They should proceed regularly and as speedily as possible.

(4) Two lifts should not meet each other; one should be finished and the timber withdrawn before the other comes forward.

(5) The timber ought to be withdrawn as soon as practicable after a lift is completed.

(6) If plenty of timber be used, (about one prop per square foot) less will be broken and wasted, and a plentiful supply of timber should be kept as near as possible to the working faces.

(7) Too many pillars should not be removed at once, and they should be worked in a systematic style, that is to say that they should turn an angle with each other of about 75°, so that the pillar next the stump, would protect the stump. In the extracting of the pillar, should they be large and square they are often split into two, by driving a road through the centre, and extracting the remainder by taking lifts right and left; in this way the length of lift is shortened which in the removal of pillars is a considerable advantage. The pillars themselves are extracted by taking slices off them, varying from two 18 ft. in width, in this way they are reduced in size till a small pillar about 8 ft. square is left, this small pillar being then extracted as rapidly as possible.

In some districts instead of the pillars being taken out in lifts, the whole pillar is extracted in one operation, the waste which is left being packed with rubbish,

as in ordinary longwall working. It is not always convenient or even safe to attempt this method.

Advantages of bord and pillars are as follows:—

(1) Pillars of coal can be left to support valuable buildings etc, on the surface.

(2) Water and dykes and other dislocations are easier dealt with, as you only have the width of the place to cross it.

(3) The roads are not so difficult to keep open as in longwall.

(4) It is suitable for thick seams with little rubbish available for packs in longwall.

(5) Outburst of gas can be easier dealt with, than in longwall workings.

Disadvantages of bord and pillar:—

(1) Large quantity or percentage of small coal, owing to the narrow work.

(2) Great cost of timber and brattice etc, and the ventilation difficult, owing to the amount of friction in going round rightangle bends etc.

(3) More rails are required, and greater lengths of roadways, to be kept in repair, and greater cost for haulage.

(4) Great liability to creep and thrust if pillars are too small.

(5) The coal is not so easy to get as in longwall workings, as you can be assisted by the weight in longwall, but it does not help you much in bord, in pillar, in the solid works, therefore it generally costs more to get the coal.

(6) More men can be employed in a given area in longwall, and therefore a larger output can be got than in bord and pillar.

Example of working laid out in the panel system:—  
At Hamilton Palace Colliery, Scotland. The whole field being first divided into large blocks or panels, 300 ft. square, by pairs of headings or levels driven close to each other, and throughers driven for ventilation. The levels and headings were driven by Stanley coal heading machines, two machines working a level each with only a rib of coal one ft. thick left between them.

These machines cut a diameter of five ft. each, and when the rib was taken out between it formed a good road eleven feet wide, which was quite sufficient to admit of a double road being laid for haulage purposes. This rib of coal obviated the use of brattices, (small bolt-holes being bored through at short intervals for ventilation), and it also served to preserve the roof, as the large blocks are formed, men are immediately set to work to form smaller pillars 30 yards by 20 yards, and as soon as these are driven a third set of men proceed to extract them. The great advantage of this method of working, as compared with that of forming pillars over large areas, is that they only stand for a short time after being formed, better coal is got, while a large number of men can be employed, and hence a larger output, is obtained in a shorter time. The seam of coal in this case was seven ft. thick, and the inclination on the steepest part, would be one in six. The men in the solid places produce 3 tons per man and fill it into the boxes. The men at the pillars fill from 4 to 6 tons per man into the boxes. It has a good roof and pavement.

## -:- 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.  
Advertising rates, which are moderate, may be had on application.  
Subscription \$1.00 a year. Single Copies 5 cents.

R. DRUMMOND, PUBLISHER.

STELLARTON, N. S.

August 10 1904.



## Rubs by Rambler.

It is a wonder there were so few newspaper discommodities having for their title 'Lessons from the strike.' A reason for that may be that the whole business was so horribly tangled that it is hard to find a beginning or an ending. Without doubt, viewed in certain aspects, it was a most peculiar strike, and most puzzling to the ordinary onlooker. The Company said the stoppage of work was the very thing it wanted, and the public said the men in striking were playing into the hands of the company. Where the puzzle begins is here. If, as was publicly stated, on behalf of the company, the strike was just what was wanted, how comes it that they so soon became so anxious to work the plant. They—the company—we were told, wanted the strike, and yet they wanted men to go to work, almost as soon as they had stopped. I cannot explain this procedure on the part of the Company. I rather think they wanted to shut down some parts of the plant for a while, and yet were adverse to the fact becoming known. At the beginning of the strike it was freely stated that the company would like to shut down, for three months or so, part of the producing plant, but that they were desirous to proceed with construction work. Of course the ordinary man knew that the Company would have to continue the mining of ore, and the storing up of dolomite else there could be no work on the plant the coming winter. There are those who hold the strike could have been avoided. They say had the company offered to increase the low paid men the public would have been with them, and thereby caused the P. W. A. to compromise. Others say had the P. W. A., while declining to accept the company's proposal of arbitration, offered to accept arbitration with a wider scope, that the public would have been with them and have caused the company to have complied. There are others who hold that as storms are necessary to clear the air so this strike was bound to come so that the management and the men might have it demonstrated to them that neither could have it all their own way. If the company had the idea that they could easily force to compliance the men, or the men the idea that they could coerce the company, then, both have likely been convinced of their error. The strike has been costly. I wonder if either side claims it has been worth the money. If it has only tended to embitter feelings it has been a dead loss; if it has taught the sides to respect more each other it may not have been wholly valueless.

It was given out as one of the conditions to the settlement of the late Sydney Steel strike, that the company while recognizing the P. W. A., would do so only through a committee of its own workmen. I must own up that I do not quite understand what that means, unless it be that the company does not want the Gd. Sec'y of the P. W. A. or any Grand Council officer to appear with the committee. If this view be correct, I cannot see where the company is any the gainer, or the Association any the loser. I am not in a position, confidently, to speak of the policy of the P. W. A. in recent years, but previous to 1898 it was no part of the policy of the Gd. Council to unnecessarily intrude itself by any of its officers, on any manager of any coal company. The then policy was to do nothing on behalf of the lodges which they were capable of doing through their own committees. The first strike in which the Association was engaged after its formation was that at the Drummond. The committee of the lodge may have desired the Gd. Sec'y to accompany them, but he, knowing that the then manager did not look upon him with friendly eyes, refused, on the ground that his presence would hinder rather than help negotiations. The strike ended in favor of the men without a word having passed directly between the Sec'y and the manager. Had the Gd. Sec'y been in direct communication and the manager been unbiassed it might have terminated a day or two earlier. That is all. Again, when the workmen of the three Acadia Co's collieries, and those of the Halifax Co'y struck in the eighties, and were successful, never a word passed between the managers and the Grand Sec'y. Though he lived for some sixteen years in the same locality as the manager of the Acadia Colliery, the Gd. Sec'y never once had a conference with him on colliery matters, for the reason that being looked on as an agitator he did not wish to have a red flag in a bull's face influence. The managers may have thought that in not extending an 'invitation' they were excluding him from the high privilege of hearing them desecant and discourse, but such trifles never worried him, so long as the main point was gained. The owners and managers, who not only consented, but were satisfied that the Gd. Sec'y should appear with the committee,—and among them was Mr. Whitney, Mr. Cowans, Senator McKeen, Mr. Donkin, etc.—would be the first to admit that the Sec'y's presence tended to facilitate a settlement. The heads of some corporations, through inexperience, may still believe that the Sec'y of the P. W. A. must be an agitator and the forerunner of strikes. That is a very mistaken idea. But for the Sec'y strikes might have been more frequent. The Sec'y before now has been blamed for doing the very thing he opposed with all his might. Even Mr. Graham Fraser fell into a grievous error in this connection. At the time of the Vale strike, and after it, he blamed the Gd. Sec'y for having prevented the Steel Co. from getting a supply from the Drummond, while the fact is that the Sec'y pleaded that coal be given, but he was outvoted, the majority being led by one who afterwards became a trusted official of Graham Fraser's Company. Of course, the Sec'y had to lay under the accusation, as a statement of facts might have affected others. I can well understand how an official of a big steel co'y might become impatient and indignant in being forced to discuss matters with a committee composed of miners, railway men, retail clerks and so forth, but where-in he should be annoyed at the presence of the Gd.

Secy: I fail absolutely to see. The Steel Work's men, while P. W. A. men, must abide by the constitution of the P. W. A., and it is embodied in the constitution that when grievances arise the Gd. Secy must be informed, and in many cases the Gd. Secy must be consulted. Unless things have changed, it is of decided advantage, as tending to a speedier and more satisfactory settlement, that the Gd. Secy be present when important negotiations are going on. Things are generally left to his arbitration anyway, so his exclusion is only prolonging the agony. Instead of snubbing it might be the better policy for the companies to hold in with the head of the clan. My own impression is that it would not have been a loss had the condition referred to—a western idea it strikes me—been omitted. What actually is the good of it? One can let an opponent know he doesn't care much for him, without spitting on his face.

One of the C. B. papers while saying that the result of the Sydney strike was a bad defeat for the P. W. A., expresses the hope that it may ultimately prove beneficial. Nothing like having a cheerful heart. It is said also by a C. B. paper that it would have been better had the strike been settled on a more substantial basis, and hints that things are still unsettled. It may be that good will result, even though from a workman's standpoint, the settlement was bad. The P. W. A. has had an almost uninterrupted record of success; this is its first defeat, where the cause was upheld by Gd. Council, and it may be that it was growing proud. In its case it may turn out, as in some rare cases, that "sweet are the uses of adversity"—though I must confess for my part, I would rather dispense with the experience. The pity is that the Society has come out of the affair with its reputation slightly tarnished, for in some quarters, the alleged intimidation of non union men, and the shouting at the works, is put to the credit of the P. W. A., even though the leaders of the society disclaim all responsibility. Some other papers are very nasty and hint that the strike was fomented by paid agitators, but such papers show utter ignorance of the rules of the P. W. A. The present Secy of the P. W. A. would be very foolish to agitate for the bringing about of that which will only bring him worry, and annoyance. If he was paid in proportion to the number of strikes he inaugurated there might be some reason for the assertions of the papers that speak about agitators, but as his pay goes on strike or no strike, he can have no possible object in trying to influence the men to suspend work. I have been careful in refraining from expressing an opinion as to the wisdom or unwisdom of the strike; nor have I ever said in these columns that it was untimely, for the reason that interference with opinions when a strife is on will do more harm than good, and for the reason that I knew the strike was the will of a majority of the men, and not of the Gd. Secy. Of course some may have been agitators and exerted influence, but no one or two men "ordered" the strike. The RECORD hopes that the men will take their licking like men, and that both men and management will let bye gones be bye gones. If an honest man cannot live in Sydney at \$1.31 to \$1.35 per day, then surely calm diplomacy will find out some way

whereby his wages may be increased or his wages assume greater purchasing power. Its all over now so let us bury our little hatchets.

Let me say it again, though in a different form, that the Halifax and the Sydney dailies do nothing by halves. With them it is a case of the whole hog or none. Take for instance that pretty little story of the acquiring, according to one account of 400 miles, and to another of 100 miles, of submarine coal areas, outside of the Dominion Coal Cos areas by the Nova Scotia Steel and Coal Co. The story was a shock to those who had imagined that every available foot of land containing coal had previously been gobbled up, and it was a surprise to those who supposed that an odd area only here and there might be picked up. I did not refer to it last issue, as I did not want to spoil any effect the story might have in lifting Scotia up out of its despondent condition. As the story by this time has done any duty expected of it, there can be no harm in now saying, that while there was some truth in the yarn, there was an awful amount of exaggeration. First of all there was no necessity to slap Dominion Coal, while trying to succeed Scotia coal. It was said for instance that Dom. No. 2 could not go more than a mile seaward till it was bumped up against the new acquisition of the Steel Coy. That surely is incorrect or the Mines Office plans are astray. From Table Head to the nearest point of the new areas the distance is two miles. Then from about where Ochiltree McDonald leaves off till the Point Acone areas end there were nothing like 100 miles of areas unless the lessees went five miles or so out to sea. I fancy the Nova Scotia Steel Coy has acquired thirty miles of new areas, and that is a pretty good haul. Some of these the Dom. Coal Co. had, but gave up perhaps foolishly in the light of present happenings. Certainly the Nova Scotia Steel and Coal Co. deserve credit for tact and foresight for being up to snuff. The areas are certainly a new and not a valueless asset. When it comes to the time when so much will have to be 'written off' for the abandonment of Ferrona, the pen that deletes a hundred or two hundred thousand for the one, will be able to 'write in' an equivalent amount for the other—the areas. From the Nova Scotia Steel and Coal Cos standpoint I should say the acquisition of the areas was good business, and it must be admitted to be a "good stroke of policy. There are those who believe that sooner or later the three big companies operating in C. B. will be fused into one. When that time comes each one of the thirty miles will be made to represent a value of, say, from \$5,000 to \$10,000. So you see, when the Scotia people took up these thirty odd miles, they did a fair morning's work.

If a friend of the labor party in C. B. were to ask me had I any opinion to express, I would say "Not for publication at present," but might add, I will give a wee bit of advice. In giving reasons why a labor party is necessary take high ground, or else give no reasons at all and boldly declare, 'We are forming a labor party because we have good right and privilege to do as we please.' There can be no doubt, I suppose, that the labor

party's formation at this time is due to the way things went at Sydney during the late strike. But it cannot be due to a revolt against the greed of capitalists. "In the case of the Sydney corporation it cannot be said that greed or selfishness led them to refuse the demands of the strikers. Call their refusal by any name you choose, but do not say they refused because they were greedy, grasping or selfish. A greedy person is one taking more than is necessary. In that sense the Steel Co'y cannot be called greedy, for they, as yet, have got nothing to laugh over. Some may say look at the bounties and so forth. Well, look at them. None of the bounties have, as yet, went into the pockets of the shareholders. They may have gone into the bad mis-management of the past. The directors of the company, and they may be called the capitalists, have not as yet made money out of the concern, except in the way of stock jobbing. The preferred stockholders have had no dividend for the past two years, and holders of common stocks, in thousands of cases, lost instead of made money. How then can the words selfish or greedy corporation apply to the Sydney corporation. Call the directors foolish, weak, extravagant, but do not say it is grab all. And I would further say do not assert that the tendency in Canadian law making at present is to favor big capitalists, and corporations, and to deal harshly with the workingman. The assertion can not be maintained. A law may be necessary to keep out foreign labor, Italian, Polish, and so forth, but what benefit has a law that shuts out a neighbor, who may be styled an alien, ever accomplished. If a strict labor law, shutting out Americans was enforced in Canada and a similar law affecting Canadians enforced in the U. States, who would be most hurt? Why, without doubt, Nova Scotian, Canadian, workmen, for there are fifty Canadian workmen in the U. S. for every American there is in Canada.

The Chamberlaninites and the Canadian Manufacturers have one article of faith in common, and have both for their motto "adequate protection." The former will impose a higher duty on stuffs imported from foreign countries than from, say, Canada, but still the duty on Canadian imports will be high enough to protect the Britisher from his keen Canadian competitor. The British manufacturer is assured of adequate protection. And that is the very idea of the Canadian Manufacturer. He would impose a high duty on foreign imports and a lesser duty on imports from Britain, but still a duty high enough to give the Canadian Manufacturer all of the Canadian market he desires. No one will deny that this is a very beautiful arrangement, even if an odd one, here and there, questions it being a beneficial one. To the uninitiated it looks a case of 'as you were' but what of that if the manufacturers on both sides hug it.

At present comparatively little gold is being produced in N. S. The Brookfield Mining Co. is the only Company that seems to be increasing its production. This Company made a magnificent showing during the past month or two.

## ELEMENTARY GEOLOGY.

*Conclusion of Mr. J. W. Marshall's 2nd Lecture.*

Some seams have been formed by what is known as the 'drift agency' i. e. the vegetable matter was carried down by streams and rivers and deposited in estuaries where immense quantities were thus collected. These deposits were afterward silted up and coal seams were formed. This theory is known as the Drift theory, but only a small percentage of the earth's coal seams are believed to have been formed in this way.

Sir Archibald Geikie called the "insitu" seams. Allocthonous seams, and the "drift" seams, Antochthonous seams.

I cannot deal further with this subject at present owing to want of time, in fact two or three lectures would not be sufficient to thoroughly go over the ground.

I will pass on to the next common interruptions met with in the working of coal seams:—

(1) DYKE—A dyke is a fissure in the earth's crust filled in with rock of igneous origin. The matter now forming the dyke was once in a molten state and it was forced up into the fissure by internal forces. On cooling it formed a hard rock standing like a wall through the rocks on either side of it. It is generally vertical or nearly so, and the edges of the beds through which it passes are generally contorted. The beds on either side of a dyke are often metamorphic for a considerable distance due to the heat of the molten matter when it was first thrown up. I have seen natural coke, soot, and ashes which have been taken from coal seams in the vicinity of igneous dykes. Dykes are generally composed of basalt or whin and are often called "trap rocks."

(2) A whin sill is simply an overflow or lateral flow of a whin dyke. They are not so common as whin dykes, but where they do occur the same metamorphism is found in the associated rocks.

FAULTS.—A fault is a fissure or fracture in the earth's crust accompanied by more or less vertical displacement of the strata, and sometimes with more or less horizontal displacement. Their origin is due to earth movements as explained in the first lecture. Faults are very numerous met with in the working of coal seams and are often a source of much trouble and expense. It is not uncommon thing for the miner to come suddenly upon a stone facing and find that the coal has been completely cut out. The continuation of the seam has then to be searched for and will be found on a different level, either above or below the point where the fault was met with.

Faults are met with in various forms:—

The diagram shows an ordinary or normal fault. There is only one displacement of the strata. This class of fault is the most common and can be proved by what is known as the Schmidt Law. They are therefore called Schmidt Law faults. For instance:—the law states that the seam will be found on the side of the lesser angle. Therefore if the fault is approached from the side A the hade of the fault forms an obtuse angle with the pavement and an acute angle with the roof, and we know the fault is a "riser" or upthrow. The hade of a fault is the "facing" or line of fracture. If the fault was approached from the side B the hade

Continued on page 17

## AROUND THE COLLIERIES.

Dom. No. 1 No. 3 No 5, are still double shifted. Though Dom. No. 2 is on single shift, there are many idle days for want of shipping.

Mr. T Bown is manager at the new collieries No. 6, and is likely to remain in that position.

Many men were paid off at Dom. No. 2 last month on account of the single shift and the idle time.

A fan arrived lately at Dom. No. 3, but was ordered away again as it was thought there would be no need of it.

The safety lamps are still in use at Dom. No. 1 and there is no saying when a change to open lights may be made—if ever.

The RECORD regrets that Manager McEachron of Dom. No. 2 is not yet a well man. Through some error a wrong medicine was taken which did not tend to recovery.

The output of Dom. No 1 is now up to about the 2000 tons daily mark, but as there has been much idle time for want of shipping, the months output will not show anything like this average.

The water was all out of Dom. No. 1 last week. The deeps are not working yet as there is a good deal of cleaning up and timbering to be done. The shift men have been at work in the levels in order to obtain a good output.

Though Dom. No. 3 is still double shifted the output will soon be restricted as no development work is proceeding. Unless present plans in reference to this mine are changed, its life cannot be of long duration.

The screens on the 'Harbor' side Dom. No. 2 have been lowered about forty feet. This was a needed change in order to save the coal from breakage. A picking belt is put in. This will give the colliery a chance to send clean coal.

The screens on the Phalen side of Dom. No. 2 are also to be lowered in the near future. After that there will be, as on the Harbor side, plenty of room for overwinding as there is a long distance from the tipples to the pulleys.

Sir. H. Montague Allan, President of the Aca-dia Coal Co. in company with Mr. Campbell, one of the directors, paid a short visit to Stellarton ten days ago. They made a round of the collieries, and had a look at the new shafts. The big Jeanesville pump was one of the attractions at the Albion.

Though the Reserve (Dom No. 5) is still double shifted there have been no record outputs of late for the reason that there is no great call for them and because a stimulus is lacking due to the fact that No. 2 is single shifted. Mr McVey, the genial supt. of No. 5 doesn't see any glory in beating his own record when there is not a single competitor. A race is a good thing at times; on such occasions McVey is in his element.

Dom. No. 4—Caledonia—as a single shifted mine is doing excellent work. The mine starts at 6 A. M. so that empties can be taken to the working places by the time the miners get to them. For this among other reasons a remarkably steady output is maintained. The dry season is being taken advantage of to repair water shaft, boilers etc.

On Saturday a week ago fifty or more Italians were lined up in front of Dom. No. 1 officedemanding that Mr. Mckenzie should pay them off. Two Italians it seems had been arrested for non-payment of taxes and made to pay \$5 each, and the crowd were fearful a similar thing might happen them. Eventually the matter was settled on the Italians agreeing to pay \$2 60 each. An Italian cannot abide the poll tax.

The Provincial Exhibition will open on 7th and continue till 14th Sept. Good as was last years, the forthcoming exhibition is expected to surpass all previous ones. The women this year will have a department of their own with a daily programme and short talks on useful subjects. The Department of Agriculture will send specialists to lecture on farming topics. A big mineral display is expected.

The Jeffrey Manufacturing Co., of Columbus Ohio, makers of all kinds of machinery for the thorough equipment of coal mines, whether mine locomotives, or mining machines, have given instructions that their advertising space in the RECORD be doubled. This is indicative of two things: that the business of the company in N. S. is extending and that the RECORD is a proper medium for telling what they are prepared to supply.

Dom. No. 1 will in a very short time be a better mine than ever. To bring it to its present condition was not an easy task, but was attended both with difficulty and danger, as when the water was lowered large bodies of gas were encountered. It may truly be said that a large amount of difficult and dangerous work has been successfully carried out, and the best of it is that very little has been said about it. This may be accounted for by the fact that a majority of the officials are Scotsmen who do little talk and big work.

Mr. James Ross, the Pres. of the Dominion Coal Coy., made no apparent changes on his last visit to the collieries, but no one knows how soon he may be back again, with an interesting programme. He is away fishing now to recuperate a bit, having found it rather strenuous work to run a number of coal mines. Before leaving he left the heads of the several departments some sums in arithmetic, with which they are now busy wrestling, and expect to be ready for him when he arrives, which may be at any moment. Mr. Ross' heaviest work is to select from the most promising and pleasing of an uncountable number of ideas. There is a little mild excitement as to whose ideas will prevail.

## AROUND THE COLLIERIES.

The heap at International is diminishing rapidly, more than half being loaded away, by steam shovel.

No 1 Furnace of the Dominion Steel Co. is expected to be in operation the first week of August or the second at latest.

The International mine, though old, is yet vigorous. On a day last week over 1200 tons were raised, which is an excellent showing.

The driving of the deeps in the Hub mine is to be proceeded with immediately. There are three machines in the mine, and a large number of hand pick miners.

The big heap at the Dominion Coal Co's banking station is going off so rapidly that it will be all filled away by September. From 1800 to 2000 tons are removed daily.

The output of the Dominion Coal Co. fell off largely last month due to a lack of shipping facilities in part, but more largely to the fact that very little coal was used at the Sydney steel works.

There was a report current in Inverness last week that the Intercolonial Coal Co. and the Inverness Ry. and Coal Coy, would enter into an amalgamation. As far as the Record can learn there is nothing in it.

The latest catalogue to hand of the Jeffrey Mfg Co. Columbus, Ohio, refers to water elevating machinery. This company has a score of different catalogues of machinery, any one or all of which may be had for the asking.

The Glace Bay Gazette announces that it will take a ballot as to the most popular man for labor candidate. Is that allowable. Is it not contempt of court to discuss, not to speak of or decide, a matter that is sub-judice.

The West slope at No 6 Colliery Big Glace Bay is not as yet being driven in the coal as Mr Sutherland has not quite completed his contract for removing the clay. It will not take long to finish. There are about fifty men employed at these new works on days pay.

The water is at last all out of the deeps in the Hub Mine, Dom. No. 7. It was very difficult to pump the last of the water as it was almost all copperas, which had a most destructive effect on the pumps. Indeed, no pump could last long enough to remove it all.

Messrs Peacock Bros, Montreal, have been advised by the Hadfield people Sheffield that the firm has received an order for ten large Gyratory Crushers having a combined capacity of 750 to 1000 tons per hour. These are all for one plant of the Premier Diamond Mining Co, Transvaal.

The N. S. Herald is of opinion that the Sydney strike being settled, no more will be heard of the proposed labor party in C. B. The Herald is not very logical when it says that lots of party labor candidates can be had, and hints to apply to the parties, and then says that labor candidates are no good anyway.

Messrs F. H. Hopkins & Co. have purchased the business carried on, till Mr. Coopers death, under the name of the Jas. Cooper Mfg. Coy. The new firm has acquired the business and the agencies of the old. The individual members of the firm are F. H. Hopkins, J. I. Roseveer and R. A. O McNally.

From an advertisement of Mr. J. W. Cumming in another column it will be gathered what he is prepared to supply in mining tools, but it is not there told that during the past two or three months he has been very busy supplying copper tamping bars and needles to a large number of the collieries. For one coy he lately completed an order of about 700 shot firing tools. Mr. Cumming is ready to furnish estimates.

The past week or two experiments have been conducted at some of the Dom. Coal Co's collieries in shearing and blasting coal, according to views conveyed to Mr. Jas. Ross, pres. by the English engineers who visited Cape Breton lately. The result so far has been the production of a better quality of coal but some think that this may be as much due to the men taking much interest in the work, as to any virtue in the new plan.

The east slope Dom. No. 6 Big Glace Bay is being driven on contract, by Angus R. McDonald formerly underground manager at Dom. No. 2. Though his tender was the lowest the contract price should leave a good margin of profit. The men who are with him are capable fellows, and it is expected that some record slope driving exhibitions will take place.

The courts have decided that the South Wales Miners' Federation must pay into court \$287,810 damages awarded the colliery proprietors for causing the men to break their contracts with their employers by declaring stop days or repeated holidays. For thus delaying work the mine owners brought suit against the Federation in December, 1901. The money awarded is to remain in court pending an appeal of the case to the House of Lords.

Free Lance—The first kiln of fire brick has been turned out at the Drummond Colliery and quality apparently is satisfactory. A practical test of the product will shortly be made and we hope the outcome will realize anticipations. If it does it will be a good thing for Westville. Mr. Dunn, the Supt., says he is well pleased with the product, and is confident it will be all right. As he is a man of wide experience in that line of work his opinion is decidedly encouraging.

The new train arrangement on the Parrsboro division of the Cumb. Ry. & Coal Co. is most convenient for those wishing to spend a few hours at the sea shore, near that bustling little town. Any one anxious to go to the 'saut' water can go in the early train and return in the evening Springhill. A number take advantage of it.

## AROUND THE COLLIERIES.

Picnics are epidemic in Cape Breton at the present time.

In the table of succession of rocks p. 16 July 27th., we omitted from Mr. Marshalls paper the lowest division. This was an oversight on our part.

The Labor party in C B. has been formally launched, so says the Glace Bay Gazette. A meeting was held at Dom. No. 1 last week which was large and enthusiastic. The chief speaker was Mr. McMullen of the Co-operative store.

The piles for the tramway bridge across the East River have all been driven, and the superstructure will be rushed. Work generally is proceeding at a rapid rate, but it is not expected the cars will run on schedule time, which is put down as 1st. September.

A despatch in Monday's Halifax Herald says that Mr. S Lott has resigned the position of Superintendent of Dom. No. 3 and that Mr. M.A. McInnis has been appointed in his stead. The RECORD is pleased to hear of Mr. McInnis' promotion. He has been undergoing a splendid apprenticeship in recent years, having been secretary to Inspectors of Mines, and to Mr. Christie-anson assistant Inspector, McInnis is a cheery chap and will be able to make things hum around No. 3

Work, comparatively speaking, at Springhill is very steady.

A new shunting engine has been added to the rolling stock of the Cumberland Ry. & Coal Co, Springhill.

The Cumb. Ry. & Coal Co are still building workmens cottages at Springhill, and still there is a great demand for houses.

Manager Hargreaves of the Cumb. Ry. & Coal Co. is afflicted with a painful abscess on the back which confines him to the house.

The new fan (Capell) at the Aberdeen slope Springhill is giving the best of satisfaction. It can be at very short notice changed from an exhaust to a blow down by an entirely new method. This is one of its satisfactory points.

Sinking has again started in No. 3 slope Springhill. Coal is being hoisted by day from the 3800 lift thus clearing the road to the other lift which is already sunk 300 ft. The slope will be sunk till an additional 400 ft is reached, making a 700 feet lift of it. There will then be four different landings.

There has been a slight shortage of cars for a week or two past at Springhill and as a consequence the slopes lost half a day each. The workmen of Springhill are fortunate in the fact that the dullest time of the season, as regards work, is the finest for loading, and not a few loaf anyway whether compelled or not.

On account of a fall in the hoisting slope the Drummond Colliery was idle last Saturday, and the Acadia knocked off at half time. This accounts for the number of Westville people present at the cricket match at Stellarton.

Next issue will appear Mr. J. W. Marshalls answers to the questions on ventilation propounded at the late examination for colliery officials. Those interested in such matters when they read the answers will agree with us, we are certain, in declaring that no better answers could be given.

Flaring headlines often lead people astray. The statement that large seams were being bored for in Cumb. Co. made some people conclude that they had been bored through. The Ottawa mining Review for instance says "Recent explorations with a diamond drill are reported to have discovered large seams of coal beneath the thirty mile stretch of land lying between the Joggins Mine and Springhill." Skip the headlines.

The Acadia Coal Co is sinking a trial pit at Bear Brook not far from the old Middle River Road. The story goes—but there may not be one word of truth in it—that a party went to an official at Westville and offered to show a seam at the point named for a certain consideration. A bargain was made. Some thirty years ago an opening was made not far from present operations, but nothing came of it, as the coal was not the very best, and the angle was very high.

### A HOLIDAY For all the PEOPLE Nova Scotia's EXHIBITION Halifax, Sep't. 7th. to 14th.

**\$25,000** in Prizes and Attractions **\$25,000**

New Features in the various departments. Liberal premiums for the many departments of Provincial Industry. Special attention to Educational features. \$4,500 in purses for Six Days' Racing Horse show Events a Leading Attraction. Unrivalled Grand Stand Performances at Night. Lowest Fares on all lines of Travel.

Entries Close August 15th and 29th. For Entry Forms and all information, write to—

**J. E. WOOD, - Manager and Secretary - HALIFAX**

**Intercolonial Railway.**

**TENDER FOR STATION**

Sealed tenders, addressed to the undersigned, and marked on the outside "Tender for Station, Sydney," will be received up to and including

**FRIDAY, AUGUST 19th, 1904.**

for the construction and completion of a Brick and Stone Station at Sydney, C. B.

Plans and specification may be seen at the office of the Station Master, Sydney, C. B., 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,**  
General Manager.

Railway Office,  
Moncton, N. B.  
25th July, 1904.



Continued from page 13.  
would form an obtuse angle with the roof and an acute angle with the pavement, therefore the fault is a dipper or downthrow.

Another rule:—If the fault is approached from the side A the hade leans away from the observer at the roof and towards him at the pavement therefore he follows the direction of the hade which is upwards. Similarly he would follow the direction of the hade if he approached the fault from the side B, which would be downwards. A fault is termed a riser or upthrow when approached from the lower side and a dipper or downthrow when approached from the higher side.

The next sketch shows what is known as a step fault. This is simply a number, or series of small faults forming a series of steps. Nearly all large faults have branches running out from them in various directions and a step fault is simply a section across the branches of a large fault.

The next fault shown is a normal fault with a vertical hade. In this case we cannot use the Schmidt Law to prove it. We have only two guides, which may, or may not be present. One is that a thin leader of coal which has been drawn into the fissure may indicate the direction of throw. The other is that the strata generally rises towards a dipper fault, and dips towards a riser. This at best is unreliable and it is often necessary to drive straight through the fault and try to identify the strata beyond. This would indicate whether we were above or below the seam.

The next is what is known as a Trough fault. It is simply where the beds have been thrown down between two normal faults forming a sort of trough.

Last but not least we have what is known as a reversed or overlap fault. It is very fortunate that this kind of fault is seldom met with because they usually cause serious trouble when first met with. Of course when a fault has been proved once we have some idea what to expect when we meet the same fault again. A reversed or overlap fault, as the name implies is a fault where the strata has overlapped itself and a borehole from the surface passing through such a fault would pierce the same seam twice. By endeavoring to find the seam by the ordinary laws we would be going away from it instead of towards it, but of course we would only decide to reverse the laws after a fruitless search, and that is why a reversed fault is a serious thing to meet with. A vain search in one direction would lead to the inference that the fault was an overlap and the best thing to do would be to bore for the coal in the contrary direction.

**BALKS:**—A balk is a sudden depression in the roof of a coal seam, often cutting out almost the entire seam. They are supposed to have been formed by some ancient stream washing out the material which now forms the coal and then the bed of the stream has been filled in with other matter, generally the same material which forms the roof of the seam.

**ROLLS:**—A roll is a sudden cutting out of the seam by an undulation in the pavement. In some cases the seam is nearly cut out altogether, the pavement almost reaching to the roof. Rolls are supposed to be the undulations which existed on the old land surface on which the coal was deposited.

**SWELLIES:**—We often meet with cases where the seam thickens for a considerable distance and then it thins down to its original thickness. These thicken-

ings are called swellies and are supposed to have been formed by depressions which existed on the old land surface.

**WASHOUTS:**—A washout is similar to a balk but on a larger scale. Not only the coal seam is cut out but also the beds above and below. They have been caused by some ancient river washing out the beds and other material being afterwards deposited. There are two distinct classes of washouts:—contemporaneous and recent.

A contemporaneous washout is one which occurred during the Carboniferous period and the material which filled in the washout is found in the form of solid stone, generally sandstone.

A recent washout is one which occurred at a later period than the Carboniferous. These are filled in with rock of much newer age than the coal seam, generally sand, gravel, and other loose matter. A typical recent washout is that known as the Teem Valley washout which divides the city of Durham (England) into two parts. The section shows that it cuts through several seams and that it is filled in as follows:—3 twigs of trees, sand etc; 2 yellow clay; 1 yellow shale.

Framwellgate Moor Colliery was sunk through this washout and considerable trouble was experienced owing to the loose nature of the material sunk through. The pile system was first tried but it failed, and the shafts were got down by the sand cylinder system.

The next diagram shows a peculiar thickening of the coal at a washout. The bed of shale forming the roof of the seam is replaced by coal so that the seam is about twice its ordinary thickness. This is an actual example which occurs in the Northumberland and Durham Coalfield, and it is believed to have been caused by the river which formed the washout being in flood at a time of heavy rainfall. The flood or torrent would cut out more material than usual and the bed of the river would become so much congested with material that some would be thrown out on either bank. This accounts for the thickening of the seam.

**NIP-OUTS:**—A nip out is where the roof and floor gradually approach each other and finally the coal is entirely lost. The Northumberland and Durham Coalfield terminates in this way at a place called South Wingate.

Work is not so brisk at some of the Mines in Cumb. Co. as desirable. The Chignecto colliery is making a little better than half time.

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RAILROAD TRAINS HEAD DOWN NO 22	TIMETABLE AT PORT HASTINGS (Local Trains) Trains run daily except Sunday		Miles	STATIONS.	WAVE NOOKS TRAIN HEAD UP		
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11 31	8 00	1 3	1	P. Heccksbury	11 08	A 3 27	
11 31	8 10	1 3	1	P Hastings	11 08	A 3 29	
11 31	8 15	1 3	1	Troy	11 08	A 3 31	1 9, 30
11 31	8 27	1 3	7	Craigville	11 08	A 3 33	
11 31	8 40	1 3	9	Crainish	11 08	A 3 35	
11 31	8 53	1 3	11	Crainish	11 08	A 3 37	
11 31	9 07	1 3	6	Justique	11 08	A 3 39	
11 31	9 20	1 3	5	Catherine's Pond	11 08	A 3 41	
11 31	9 36	1 3	2	Port Hood	11 08	A 3 43	
11 31	9 48	1 3	4	Glencoe	11 08	A 3 45	
11 31	9 59	1 3	1	Mahou	11 08	A 3 47	
11 31	10 11	1 3	3	Glendyer	11 08	A 3 49	
11 31	10 23	1 3	9	Black River	11 08	A 3 51	
11 31	10 35	1 3	9	Strathrose	11 08	A 3 53	
11 31	10 47	1 3	9	Inverness	11 08	A 3 55	

Trains make close connections at Pt. Tupper Junction with all I. C. B. passenger trains excepting the Man. Express which leaves Point Tupper at 7.25 p. m. The following signs on time table indicate "W", Wa'er. "F" Flag, "L" Leave "A" Arrive. Canadian Express Company operates over this Railway.

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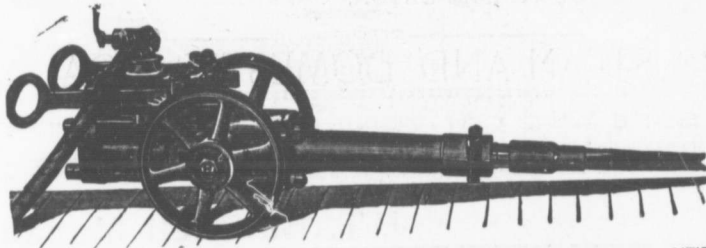
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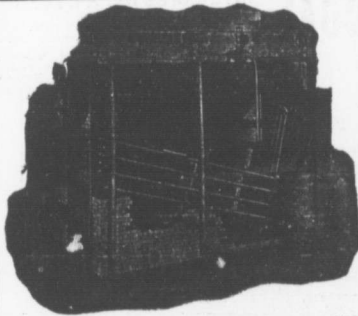
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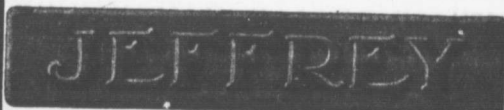
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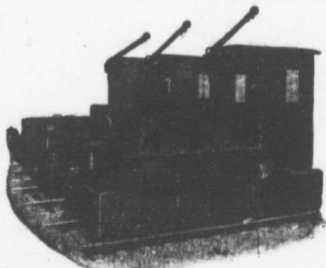


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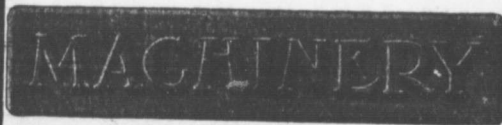
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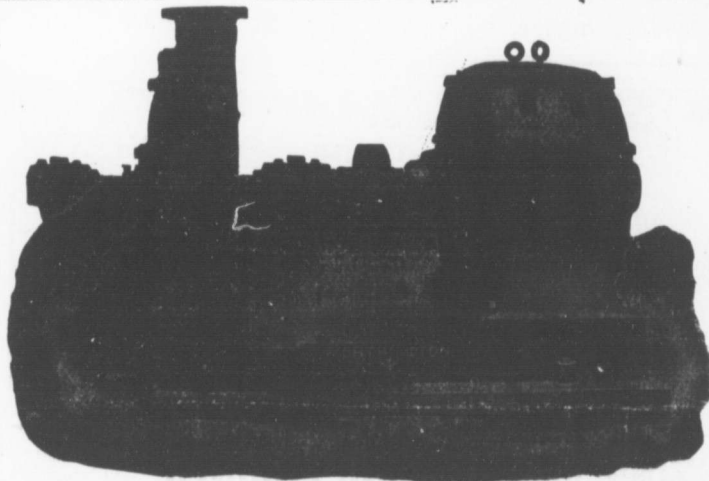
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	STEAM COAL.		GAS COAL.
CARBON.....	80 18 per. cent.		77 51 per. cent.
HYDROGEN.....	5 11 " "		5 22 " "
OXYGEN.....	7 34 " "		6 72 " "
NITROGEN.....	1 16 " "		1 27 " "
SULPHUR.....	0 56 " "		3 07 " "
ASH.....	2 30 " "		4 10 " "
WATER.....	3 35 " "		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  
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Special attention given to quick loading of sailing vessels. Small vessels loaded with  
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	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

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GENERAL STEAM PURPOSES.

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