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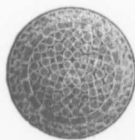
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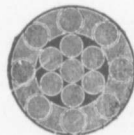
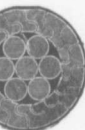
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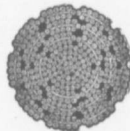
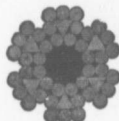
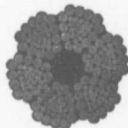
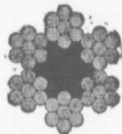
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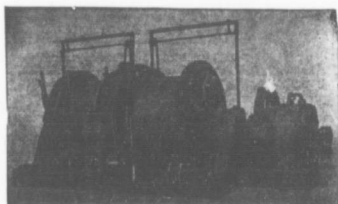
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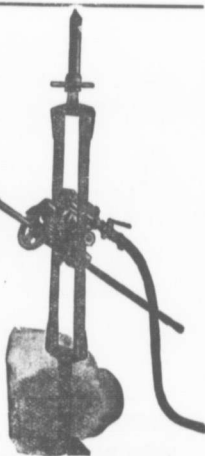
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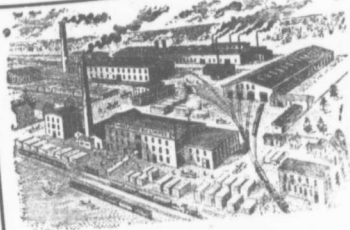
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79 Mixed for Trenton.....	6.35
18 Mixed for Hopewell.....	7.45
18 Express for Halifax and St. John.....	7.45
21 Mixed for Pictou Landing.....	7.45
62 Mixed for Pictou.....	8.20
85 Mixed for Mulgrave.....	11.15
19 Express for Sydney.....	11.15
28 Mixed for Pictou.....	13.35
56 Mixed for Trenton.....	15.15
109 Mixed for New Glasgow.....	15.15
7 Express for Halifax and Montreal.....	15.50
140 Mixed for Pictou.....	16.45
14 Mixed for Pictou Landing.....	18.15
14 Mixed for New Glasgow.....	18.40
17 Express for New Glasgow.....	21.50
66 Express for Pictou.....	21.54

—TRAINS ARRIVE AT STELLARTON—

No. 79 Mixed from Hopewell.....	6.30
18 Mixed from Trenton.....	7.04
18 Express from Pictou.....	7.35
18 Express from New Glasgow.....	7.35
21 Mixed from Hopewell.....	8.05
55 Mixed from Trenton.....	10.55
28 Mixed from New Glasgow.....	10.55
27 Mixed from Halifax and St. John.....	13.35
27 Mixed from Mulgrave.....	14.60
56 Mixed from Pictou.....	15.40
19 Express from Sydney.....	15.85
109 Mixed from Pictou.....	18.10
22 Express from Hopewell.....	18.45
22 Mixed from Pictou Landing.....	19.35
77 Mixed from Hopewell.....	21.40
65 Mixed from Pictou.....	21.45
66 Express from New Glasgow.....	21.45
17 Express from St. John and Halifax.....	21.45

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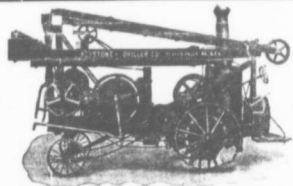
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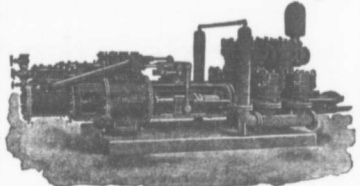
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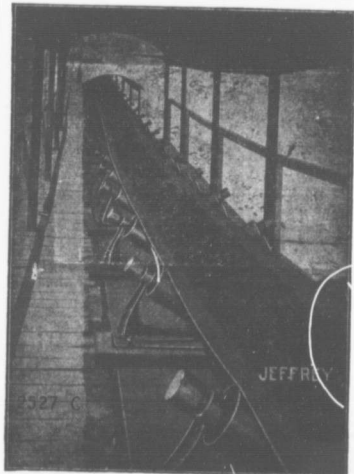
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to the...

MARITIME MINING RECORD

Vol. 11, No. 19. Stellarton, N. S., April 14th. 1909. New Series

SELECTED QUESTIONS AND ANSWERS.

(Science and Art of Mining.)

GEOLOGY.

Q.—Define the terms seam, vein, measures, hade, dip, underlie, dyke, slip, cross-course, slide, shode.

A.—A thorough knowledge of each of the above items would undoubtedly be of great service to the miner, but I am afraid, in regard to some of them, there appears to be great diversity of opinion, and one has to draw his own conclusions as to the various definitions of the terms by various authors, and quote accordingly. Several of the items could be dealt with on a somewhat extended scale, but where so many have to be dealt with, the remarks upon each must of a necessity be confined and conducted with brevity.

1. Seam.—This is sometimes termed a bed. It may be quoted as the line of separation between two strata, which is generally distinguished by its being tinted or coloured somewhat different to the strata themselves. It varies considerably in thickness, and may be only inches or extend to many feet. Even the thickness of any one particular seam may not remain uniform, but frequently varies. It may decrease, or increase, or become divided into two parts, by the intercalation or intrusion of some different stratum. The characteristic feature of a seam or bed is that of being a member of a series of stratified rocks, the roof being the surface above it, and the floor the surface below it. It is of sedimentary origin when deposited by mechanical deposition of sediment, or it may be an accumulation of organic or vegetable matter. Coal, for instance, or it may be a mixture of detritus and chemical precipitates or a residue from evaporation.

2. Vein.—Sometimes termed lode. There is a great variety of definitions of the meaning of a vein or lode, but I think the following could be generally adopted. A vein or lode is a fissure or crack in the earth's crust, formed more or less entirely since the enclosing rocks, filled with matter which may or may not be charged with mineral substance. It may occupy a cavity formed originally by a fissure, or consist of rock altered in the vicinity of a fissure. When a vein contains mineral it is said to be 'alive'; when otherwise, 'dead'. Veins may occur in stratified or unstratified rocks, and in the former they usually cut across the planes of stratification. They occur more or less systematically, being found in sets parallel or at right angles to each other or making some definite angle with the axis of elevation of the district. They are generally limited in length and breadth, but their limits are sometimes difficult to trace. They are less productive than beds

or seams, and are rarely worth working throughout. They are often extremely irregular and occasionally are found lying horizontally, but they more frequently approach the vertical. There are several theories as to their filling, and there are also several varieties or kinds of veins. They vary in thickness from thin strings and threads which are barely visible to many yards. They ramify in all directions, split up, reunite, and often intersect each other in some districts.

3. Measures.—This term is applied to a series of beds or strata, and is commonly used when describing the strata which contain coal, viz. the Coal Measures. These consist of the upper, lower, and middle coal measures, grit, and ganister beds. They are in the Carboniferous Formation, and lie on top of the Millstone Grit formation. Measures on top, red and grey sandstones; clays, thin limestones; white, grey, and yellow sandstones, clays; shales; fireclays; and numerous workable seams of coal all combine to constitute the 'measures,' until they reach a thickness of thousands of feet.

4. Hade.—This term is used to describe the inclination of a fault, or, in other words, 'It is the angle formed by the plane of a fault, and the vertical plane.' The inclination is termed the hade, and is measured from the vertical line in degrees. Except in very disturbed and contorted districts the hade is almost always on the downthrow side. It is of great value in mining.

5. Dip.—The term Dip is applied to the inclination of strata with the plane of the horizon, and is measured by the angle which a bed makes with the horizontal plane. These angles are found of various inclinations, and may be measured by a clinometer. There are also the two terms 'True Dip' and 'Apparent Dip,' and the former can only be arrived at by taking careful observation of the latter.

6. Underlie, or underly or 'Hade'.—Instead of being expressed in degrees the term underlie is based upon (and measured) by the amount a vein, etc. plunges under cover, or away from the vertical.

7. Dyke.—A wall-like mass of rock. Certain agencies have afforded us ample information that the earth's interior consists of certain molten matter, and eruptive forces acting upon this molten matter have forced it up through various fractures in the earth's crust, in its heated condition, which when cooled have solidified, and formed protrusions or intrusions of igneous rocks universally called dykes.

8. Slip.—A slight displacement of faulted bed. When the displacement of a fault is not more than a few feet the term 'slip' is generally applied by miners. When the displacement is upwards it is termed a 'heave,' and when downward a 'slide'.

9. **Cross-Course.**—A cross-course is a vein whose direction is nearly at right angles to the most important lodes of any particular district. When they contain clay they are known as 'clucans,' which are occasionally impervious to water, and form good boundaries. It is often a fissure filled with matter introduced by purely mechanical means, such as wall rock from above, or debris produced by friction of their sides one against another. Sometimes they yield ores of various characters in large quantities.

10. **Slide.**—A slide is a displacement of a lode, bed or faulted seam, occasioned by a thin vein, often of clay. This term is generally applied when the displacement is downward.

11. **Shode.**—The term shode is used in relation to prospecting, and means to search for fragments of ore in the gravel of a stream, or in a valley, so that these may enable the prospector to trace the position of the vein or lode from which they have been disintegrated. These fragments are termed 'shoades' and are often more or less water or weather worn. The prospector argues that such fragments can only be brought downhill, and therefore he goes upward, searching as he goes until such 'shoades' no longer appear. At, or near, the point of disappearance, he commences to search for the outcrop, and if this does not 'meet the eye' he begins to search for it by trenching, loaming, hushing, or costeaning. He may, as a preliminary measure to these methods, remove some of the surface gravel and wash some of the undersoil for some indications similar to the shodes. He washes by means of a cradle and pan, and may do this at many points. These and any other holes he may excavate are termed 'shode-gits'. The fragments near to the outcrop are usually less worn than those found in the valley lower down, and are generally more numerous at this point, consequently they are more frequently met with, and form a good guide as to the vicinity of the outcrop. The term 'Shodeing' means 'the examination of rocks laid bare at the surface.'

GASES IN MINES.

Q.—Enumerate the gases given off in a coal mine, from spontaneous combustion, from the coal itself, and from safety lamps, giving the chemical compositions of such gases.

A.—The gases given off by spontaneous combustion are called gob stinks, and no two gob stinks smell alike, as they are never of the same composition, the constituents forming a gob stink depending upon the temperature.

The gases given off by spontaneous combustion are H₂S or hydrogen sulphide, carbon monoxide or CO, and CO₂ or carbon dioxide, and these gases with the addition of air form gob stink.

Hydrogen sulphide or H₂S is the chief constituent in a gob stink, although carbon monoxide is present in every case in small quantities.

H₂S is a heavier gas than air, its specific gravity being 1.17 and its density 17; it is transparent and colourless, burns with a pale blue flame, but will not support combustion. It is very dangerous to life, and if mixed with air may form an explosive mixture, but the greatest danger from this gas is that it will ignite at a very low temperature, which may in turn ignite fire-damp and coal dust, and thus cause an explosion.

Safety lamps as detectors of this gas are quite use-

less, as they will burn brightly in an atmosphere which is dangerous to life, but it may easily be detected by its rotten smell; at the same time however, a live test should always be used where gob fires occur, owing to the danger of CO as well as H₂S. This gas is also given off by the decomposing of iron pyrites in water.

Carbon monoxide is also given off from spontaneous combustion. This gas is composed of 42.8 of carbon and 57.2 of oxygen. Its chemical symbol is CO, specific gravity 0.07, being about as heavy as air; it burns with a pale blue flame, but will not support combustion owing to its being chemically combined, although when present in small quantities it causes lights to burn a little brighter.

This gas is a deadly poison, as one breath may kill a man and yet not be indicated on a safety lamp. Whilst it takes three parts in 100 to give the first indications of its presence on a safety lamp, one part in 500 is very dangerous to life; thus it will be seen that it takes 15 times as much to show on a safety lamp as it does to kill a man. From this it will appear that the only safe test is a live test, usually a mouse or bird which is affected 20 times sooner than a man; if a mouse be used it should be taken from the surface, and it should be periodically changed, as it is possible to become seasoned to CO. This gas is also given off from gunpowder and nitro-glycerine shots, burning timber, and is always found in the after-damp of a coal dust explosion.

Carbon dioxide or choke damp is also given off from spontaneous combustion, and also from coal, the burning of lights, shots, breathing of men and horses; it is always present in after damp, and is carried down in the water from the surface, especially in shallow mines. Its chemical symbol is CO₂, and it is composed of carbon 27.2, and oxygen 72.8. Being a chemical composition makes it a poisonous gas, as the oxygen cannot oxidize with the carbon in the blood as it can in air which is a mechanical mixture.

This gas is very dangerous; 8 per cent causes dull lights, and also causes puffing, panting and headache to men, whilst 10 per cent is dangerous to life, and it takes 15 per cent, to put lights out. It is much heavier than air, its specific gravity being 1.524 thus making it very difficult to shift in mines. Fire-damp is the most important gas met with in coal mines, as it is found in the greatest quantities, and is the most destructive. Its chemical symbol is CH₄, and it is composed of 1 of carbon to 4 of hydrogen in its pure state; but this never happens in a mine, and no two fire-damps are of exactly the same composition. It is a very light gas, its specific gravity being 0.550 or half as heavy as air, and is always found near the roof. In its pure state it has no smell, but is often mixed with small quantities of H₂S, this making its detection easier. It is not a poisonous gas, but may cause death through suffocation or lack of O. Fire-damp is given off in three ways: By blowers, silently, and outbursts, the latter being the most dangerous as the workings may be flooded and an explosion caused. If no coal dust be present it is not dangerous up to 7 per cent, when it explodes feebly, gaining in force 9½ per cent, when it is at its highest explosive point; after this point has been reached it decreases in force until at 14 per cent, it burns quietly. Its presence may easily be detected by the flame of a safety lamp, upon which it forms a blue cap which varies in length according to the quantity present and the height of the flame. Another gas met with in deep and gassy mines is black-damp. This gas has no chemical symbol, as it is not a chemical composition, but is a mixture of choke-damp, 15 parts, and nitrogen 85,

these two gases being taken from fire-damp and air, leaving the hydrogen and a certain amount of nitrogen to come together and form a moisture. It is a very extensive gas, especially, when mixed with fire-damp. If breathed it causes the face to turn blue, the lips turn a leaden hue, and it gives the face a ghastly appearance owing to lack of oxygen.

AUTOMATIC SIGNAL RECORDER FOR MINES.

According to the South African Mining Journal Mr. Russell, an engineer working on the Langlaagte Block B Mine recently exhibited a device for automatically registering signals given in the shaft and in the engine room as well as the travel of the skip or cage. The records are obtained by means of a specially constructed clock between the face of which and the works is fixed a cylinder about 6 inches in length by 2 inches in diameter. A paper band, sectioned into time spaces, is placed over the cylinder, and a small disc recorder, with a separate needle attachment is adjusted in close proximity to one side of the cylinder. The disc and needle are both operated electrically, but separately. The disc which records the skip journeys is brought into contact with the sectional paper on the cylinder by means of a small motor driven from the winding drum, marking a line on travelling paper as long as the drum is in motion. When the drum ceases to revolve the contact is cut off automatically and the disc is raised from the paper, which continues to travel without being marked until the drum commences to revolve anew, when the process is repeated. The signal registrations are attained by means of a separate wire connected with the signal bell. Immediately a signal is given, the needle is simultaneously projected on to the travelling cylinder barrel and perforates the paper, the perforation being repeated each time the bell is rung. The time sectional paper thus records each and every signal given, and the times at which they occurred. The clock and registering apparatus is enclosed in a glass case which permits observations of the movements to be made when desired. A separate instrument is, of course, required for each engine. The machine need not necessarily be placed in the engine room, but in any place which may be deemed convenient, such as the engineer's or manager's office; it is only a matter of wire connection. With a recording machine attached to each winding engine at work, at the conclusion of every shift the whole of the work is perforated, i. e., every journey made and every signal given during the shift can be read off the register and logged. No room for dispute is left, and there is no possibility of conflict of evidence.

MINE TIMBERS.

In nine cases out of ten, when timbers are crushed, the indirect cause is decay, produced by low forms of plant life. The dwindling of the timber supply has driven consumers of wood all over the country to study decay and its prevention. Since timber, when it is once treated, retains its original strength, many of the so-called 'inferior timbers' which have hitherto been considered almost valueless because they decay rapidly, will find wide use in many localities. Such species are loblolly pine and, to a certain extent, short leaved

pine, Engelmann spruce, fire-killed lodge-pole pine, white fir, and many others. Two of the latest timber-treating plants (says Mines and Minerals) have been installed in the Coeur d'Alene lead district of Northern Idaho, where, while there is ample timber supply for some time to come, the treatment is warranted by the high labor cost of replacing timber sets. The added cost of treating timbers is from 10 to 25 per cent. of the original cost. An interesting point in the problem of wood preservation is the spread of decay in old workings, caused by infection from near-by timbers. A fresh green post, placed between two sticks that are already 'sick,' will become infected and decay much more rapidly than if it were isolated. The contagion is similar to that of the ills that man is heir to, although it usually works more slowly. In one large mine a 2 mile tunnel was completed 3 years ago and during the first 1 1/2 years the timber stood up in fine shape. Then signs of decay began to creep in here and there, and since then the disease has extended throughout the entire length of the tunnel, necessitating an annual expenditure of between £800 and £1,000 for replacing timbers rendered useless through decay. Less than one-fourth of this sum goes for timber, the remainder representing the cost of framing and installing.

TURNING COAL DIRECTLY INTOPOWER.

A contemporary, 'Fuel' says:—A Niles (Mich.) inventor by the name of Bonson is said to have succeeded in turning coal directly into power without burning. It is well known that when we burn coal to make steam most of its energy goes up in smoke, and is wasted in other ways. We waste it in a manner like that of eating the skin of the fowl and throwing away the body or drinking the foam from the glass and throwing away the liquid. With our coal supply in danger of exhaustion the story from Niles becomes interesting. The inventor is said to grind up the coal into powder and force into a hot retort with chemical-laden air, where it suddenly explodes and enters a chamber at a pressure of 500lb. to the square inch, being all consumed, and driving the engine with no smoke or other waste. The United States government has discovered that coal dust is explosive. Long ago it was found by the blowing up of several flouring mills in Minneapolis that the dust of wheat is as explosive as gunpowder. Scientists have long considered the explosion of powder, dynamite, and nitro glycerine as possible modes of running machinery. So that the explosion of powdered fuel in a chamber as a driving force for mechanism is not as incredible as it may at first seem. Even if the Michigan story be not true, the direct conversion of coal to power may be looked for in some similar way at any time.—(S. & A. of M.)

THAWING DYNAMITE.

A good dynamite thawer with a capacity of a case of dynamite at a time can be made by burying a box in a pit filled with green manure which should be rammed hard. An iron pipe is used for a ventilator as well as a handle for lifting the cover. Such an arrangement will thaw dynamite in the coldest weather. Dynamite should not be stored in it longer than necessary for thawing, as the dampness from the ground and manure would in time injure the explosive.

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SCOTTISH AND NOVA SCOTIAN OIL SHALES.

In R. E. Ellis's paper before the Mining Society some valuable information is given as to the oil shale industry in Scotland and the oil shales of the Maritime Provinces. He says the lack of knowledge possessed by Canadians in reference to the Scottish oil shale industry is to be regretted in view of the fact of our large possessions of shale. These deposits are rich and valuable and by actual test surpass those of Scotland. They are easy of access by rail or water. All that is required to establish one of the most profitable mineral industries in Canada is the proper organization of capital and energy. The manufacture of Crude Oil and Sulphate of Ammonia from shales is now one of the leading industries of Scotland. The production of Crude oil in Scotland is now more than 62,000,000 gallons from shales alone, and of Sulphate of Ammonia 50,000 tons, with more than 22,000 tons of paraffin wax. More than 2½ million tons of shale are mined annually. This enterprise, now of so large proportions started on a very small scale. Though the trade met with reverses the profits for the past few years have been very satisfactory, those of the four refining companies for the last year being 7, 15, 17½, and 50 per cent. The wages paid amounted to three and a half million dollars and the number of employees to 8,300.

The Stellarite, found at what is now Stellarton in 1859, of which about 4000 tons were mined and sent to the U. S., would be looked upon by the Scottish oil refiners as a bonanza.

Dr. Ellis says little is known of the quality and value of the great deposits of shale which occur in Antigonish County beyond that they are rich in hydro carbons. Nothing in the way of analysis seems to have been attempted. There are two groups of shales in Antigonish, one 70 feet thick the other 150 feet. Twenty feet of the former may be regarded as good oil shale, besides which there is a five foot seam of curly cannel rich in oil.

The basin should contain fifty feet of strata rich in oil, and it is desirable that examinations should be carried out and analyses made so as to obtain the actual values in Crude oil, in Sulphate of Ammonia and in paraffin wax.

Reference is made to Stellarite which is found at various points, and also to the black shales of Pictou County. These latter are supposed to contain a high per centage of hydro carbons, and are thought to be high in Crude oil. On that account it is certainly desirable that examination should

be made of these also.

Dr. Ellis's paper is timely and his suggestions good. Why should not the Government make investigation as to the value of these shales. Reliable information sent to the proper parties in Scotland might result in the establishment of one or more refineries after the Scottish pattern.

UNWROUGHT MINERALS OF NOVA SCOTIA.

The following is a question put to the Government by Mr. Drummond in the Legislative Council and part of his remarks thereon:

"I beg leave to ask the Hon. leader of the Government in this chamber the following question: Is the government taking any directly practical steps to ascertain the number, extent, location, quality or richness, of the many minerals, principally unwrought, of the Province, so as to be in a position to give something like definite information to those seeking opportunities for investment?"

At a previous time I gave expression to the opinion, that of all Nova Scotia's assets, coal was the greatest. But not at that time was it meant to be conveyed, and far less now, that coal was her only great mineral asset. Nova Scotia is possessed of other rich assets in the way of minerals, of which little more is known, of many, than their names. Some minerals, while known to exist to mining people, remain undeveloped, while many more, said, by geologists, to exist, are wholly unregarded. And yet, surely, these are great assets and furnish present opportunities which, if embraced, will surely add immensely to the material prosperity of the Province. If we are to believe those who have taken high place as geologists, there are spread before us, over the length and breadth of the land, minerals, many and varied, calling us to action. All of them are making appeal, eloquently if mutely, to be quarried out and put to the uses for which they were intended. These minerals, important assets all, appeal to the men of push and energy, of brains and daring; to the moneyed men—the favored few—and to the Local Government, sponsors for the common people, to be unearthed and developed, and with the appeal comes the challenge, if not the defiance, "Here lies your opportunity, we dare you to the doing." Are we cognizant, as we ought to be; are we thankful as we should be, for the vastness of the possibilities with which we have been favored, even though these be in hiding places in the mountains, and buried deep in the valleys? As Nova Scotians have we, as a people, risen to our privileges, and has the Government of the Province paid full regard to its great opportunity? The answer must be an unhesitating no. If it is, as I believe it to be, a fact that coal, from a mineral standpoint, is Nova Scotia's greatest asset, but small thanks are due to our own people, to our moneyed men in particular, for the demonstration of its value. Of all the coal mines in operation, prior to the advent of the Dominion Coal Co., only one had been exploited wholly by Provincial men with Provincial money. Taking Cumberland County it is found that the Springhill mines were exploited by New Brunswickers and the Joggins mines by Londoners. Pictou

County is indebted to American capital for the opening up of the Acadia colliery; to British capital for the exploiting of the famous Albion mine areas with their wonderful Ford Seam 45 feet in thickness and to Montreal men for the Drummond colliery, with its great slope high 8,000 feet long, and having at its face 2,000 of perpendicular cover. In Cape Breton County British capital gave the Province the famous Sydney Mines; British capital also started the Reserve and other collieries, and constructed a railway from the mines to Louisburg. American capitalists are to be credited wholly with the Blockhouse, Caledonia and Bridgeport collieries, and to be credited in part at least with the opening up of the colliery at Glace Bay and its harbor. The one colliery of any pretension, if I am not in error, which is not indebted to outside capital for its existence is the Gowrie at Port Morien; the area having been developed by its owners the Messrs. Archibald and McLean. Is it not a matter of surprise that this our great asset has so little to be grateful for to the foresight, energy, and capital of the people of the Province. And what has to be said of the development of our coal mines has likewise to be said, if in a slightly lesser degree, of the exploitation of our gold areas. Not to Provincial but to outside capital are we indebted in any great degree, for whatever prominence gold mining may have attained in Nova Scotia. To native prospectors probably, is due the discovery of the veins, but outsiders must be given the greatest share of the credit for the development of gold mining in this Province, and the fact that the Americans have been more successful in the management of the mines than the British, seems to convey the lesson to us that the nearer the management is to the mines the more likely are they to be successful. Incidentally, I may remark that the Dominion Coal Co. was a failure so long as it was managed from Boston, and not from Glace Bay. Gypsum is the one mineral towards the development of which our people have taken kindly. I wonder if that is due to the possibility that, heedless of the injunction, we have come to the conclusion that it is safer to walk by sight than by faith. The things which are exposed are sure, the things unseen, as are the most valuable of minerals, are uncertain.

The time has arrived when the Government of the Province should play an intelligent and an active part in the development of, at least, some of the varied minerals of the Province. Coal, possibly, and gypsum, may be allowed to look after themselves, all of the others, if they, at an early period, are to contribute to the few sources of revenue of the Province need, for their exploitation, energetic action under capable leadership, and who fitter to lead than a Government strongly entrenched in power, with adherents under strictest discipline. Is there any other service—I do not take into consideration the Succession Duties, as they do not come under the category—that yields so handsome a return to the government for the money expended, as the mines department? In the last financial report to hand of the Ontario Government, I notice that \$28,000 was expended to secure a return of \$164,000; while to secure from her mines a revenue of \$683,000 Nova Scotia expended some \$46,000 only. Ontario's

expenditure on minerals was 17 per cent. of the receipts, while Nova Scotia's expenditure was but 7 per cent. of the collections and, he it noted here that Ontario is far less dependent for revenue on her mines than is Nova Scotia. If at the present moment Ontario is deriving from her mines, a handsome return, it is because she has had regard to the truism, "He who soweth bountifully shall reap also bountifully." They tell us that in the upper strata, that is, in well informed circles it is not good form to quote a proverb, to emphasize a statement. If that be so then, on this occasion, I dare to be a law unto myself, and say to the Government, in reference to its treatment of the mining industries "There is that withholdeth and it tendeth to poverty," and to emphasize the statement by the further quotation, in view of the important part the royalties on minerals play in increasing the revenues of the Province: "Muzzle not the Ox that treadeth on the sorn", or to be more accurate if less concise "Thou shalt not muzzle the bullock WHILE he is treading out the grain". All of which being reduced to every day speech reads thus "Cherish the goose that lays the golden egg."

May I ask the question, "Has the Government risen to the greatness of its opportunity? Has it any great outstanding measure with which its name will be proudly associated in the years to come? With the Tupper Government we associate our incomparable system of common schools and Academies; with the Holmes, Thompson Government, Municipal Incorporations; with the Fielding Government, measures that gave impetus to the Coal trade and gave protection to the workers in the mine; and with the Murray Government there may be associated one measure, at least, namely that providing the Province with a Technical College; and may I add by way of contrast to these that the Hill Government is notorious for the tenacity with which it held on to office and for its sinful prodigality in reference to that once great asset of the Province, the Crown Lands. If to the credit of the Murray Government there are the first Sanitarium for Consumptives, an enlarged agricultural College, and a new Technical College, it should not be overlooked that these were made possible by the enlarged revenue from minerals. So far the outstanding measure of the Murray Government is the Technical College for which it deserves high praise. As we look at the building, nearing completion, and perceive that in a few weeks it must be fulfilling the purposes for which it was created, we imagine we hear every stone in the building crying aloud to the Government, "Having put your hand to the plough look not back." If the College, really and truly, is to attain its object, namely, the training of our pushful and ambitious young men so that they may become proficient in the sciences of farming, mining, and mechanics, it is assuredly, next, the imperative duty of the Government to see that work and opportunities for employment be attainable by the graduates, else the College will be in part a failure, in its primary object, that of producing experts so that businesses in the Province may be conducted on advanced lines. If there is no steady development in mining, and manufactures then it must follow that the men the College turns out will be forced

to leave the Province to seek employment, and, surely, it was never intended that the College should be a nursery, from which traders in other countries could draw upon. As mining is the great stimulus to manufactures of all kinds, it seems that the one great policy for the Government to propound is that of practical aid and encouragement to mining development.

It is an easy matter, I admit, to say the Government should do something; it is another and a different and a difficult matter to suggest some practical way in which the Government might stimulate the development of one or more of the many minerals said to be in the possession of the Province. And I make no doubt the Government may have found it so. Without any care of being numbered among those who rush to where Angels fear to tread, I would put the suggestive question, "Has not the time arrived for the appointment, is not the Government now in a position to appoint, a Provincial Geologist?" It is a remarkable fact that we had more interesting information given as to the minerals of the Province, previous to Confederation, than has been given since. This I say without reflection on any member of the Geological Survey whose labors, I trust, are fully appreciated. What really does the average Nova Scotian know as to the mineral resources of the Province? I might go further and ask, what really does the Government know, beyond what it has learnt from books, 40 years old, or from hearsay? How many people in the Province knew that at many points there is brine running to waste and which has been flowing for ages, from which all kinds of salt can be made. Are they aware that this Province is one of the largest consumers of salt, and that the building up of a salt industry, would mean largely increased revenues for the Province, not only from the mineral itself but from the increased royalties from coal, as it takes about four-fifths of a ton of coal to make a ton of salt. There is a market around us for over 100,000 tons of salt yearly, all of which is at present imported.

How many people know that at many points in the Province there are bituminous shales which it is thought could be utilized in the distillation of oil, and that, notwithstanding the fact that it has to compete with the oil wells of the world, the shale oil industry is extensively carried on in Scotland, yielding to the several refiners a profit ranging from five to forty-five per cent.

How many of our people know that we have, at different points in the Province, several magnificent unworked deposits of limestone. Has the Government any real conception as to the value of our iron ores deposits? Can it furnish any reliable information as to their extent, in view of the fact that a late officer of the Mines Department, with a knowledge of geology declared that they were almost limitless? I am in doubt as to whether the Government can supply the information, and if the Government does not know, how can the people know; and if the people do not know, how can the information be conveyed to investors either here or outside of the Province? I am emboldened, to make the suggestion, that a capable Provincial Geologist should be appointed, by the belief that the Premier of the Province and his colleagues are casting about in various directions

in order to secure subjects, and hit upon plans, which shall tend to progress and the betterment of conditions in the Province. Emboldened still by this belief I would suggest further that the Government erect one or two small stamp mills at suitable points so that prospectors and tributors could have their quartz crushed at reasonable rates. The ten stamp mill at Oldham, owned by private individuals, has proved a blessing in this respect. It has kept the Oldham miners in the country. The loss of revenue from royalty is but a small part of the loss occasioned by the decline in gold mining. It is said that a thousand able bodied men have left the Province for the West. This loss is a heavy item. However, not being familiar with gold mining I will leave the subject to others. Again, the Government might erect at some point a small retort so that practical demonstrations could be made of the value of the shales. Still further the Government might sink a brine well delivering the brine to a company to make into salt. At Syracuse, N. Y. there are great salt works. Salt is the one mineral owned by the State of New York. The State sank the wells, put in the piping, and delivers the brine at a cost equal to one cent for every bushel of salt, and it pays the State to do so. From three only of all the minerals in the Province is royalty derived by the Government. All the others, lead, manganese, salt, graphite, tin, copper, shale, golenite, etc., pay no toll because if we have them, they remain unworked. In view of the fact that all of these minerals, and more, probably, are undeveloped, the question is, Is it necessary for the Government to search out objects which may prove beneficial to the Province? Are not these minerals appealing with wistful and reproachful eyes for recognition? Is there not laid before the Government an opportunity, brimful of bewildering possibilities? Has not the Government spread before it that supreme opportunity which comes but once to a Government, a people, or an individual? It is asserted a country, a people, cannot be made moral by Acts of Parliament. Is that so? As well say that parental authority, wisely directed, has no beneficial or restraining influence; as well say, at once, that laws, rules, and regulations are nothing more than idle words all, and that strict discipline does not tend to obedience, at first irksome, reaching by degrees to, and ending in, a willing compliance. Be that, however, as it may, few will dispute the assertion that a courageous and earnest minded Government can hasten the dawn of a brighter material day. There are signs, on every hand, that the people are throwing off a lethargy which retarded progress in the past, and are ready for strong leadership. In view of the fact that there is a growing desire to see mines opened up and new industries established; in view of the fact that the problem of increased mineral development solved, the coming problem of increased grants to education, and likewise the prospective puzzling problem of more money for better roads will be easy of solution; may not, appropriately, with kindly intent and honest purpose, a similar question be put, to the Premier of the Province and his colleagues as was put to the brave Queen of old "who knoweth whether thou wert made rulers of the Province for such a time as this?"; A time big with daz-

ing possibilities, calling for unflinching faith, untiring zeal, and unflinching courage.

They tell us of Alexander the Great, that, previous to setting out on his world conquest, he dispensed his gifts with lavish hand. Reproached by a friend in these words: "Why, you have given all away, what have you left?" Alexander replied "my hopes." And perhaps the Government, should it enter upon a policy of generous aid to mineral development, if asked the question, "What have you for this expenditure", could reply, "our hopes and expectations"—And who will gainsay that these, so frequently overlooked, are not to a Government, as to an individual, if an invisible, a priceless asset. In conclusion, Mr. President, let me, if any there still be who think that an exaggerated importance is given to the subject of mineral development, quote to them the words of the German Emperor when visiting Westphalia in 1907:

"In the bosom of your hills are hidden treasures which, brought to light by the brave miners' busy hands, promote the activity of industry, an industry the pride of our nation, wonderful in its development, the envy of the world."

SUB-MARINE COAL MINING.

The following is the part of the report of Mr. Foster, the British Sub-marine coal mining expert, who on the occasion of his visit to Nova Scotia last August was asked to make a report to the Government on Section 54 of the Coal Mines Regulation Act with its several sub-sections:

The provisions contained in the Nova Scotia Mines Act were, I understand, drawn up about the year 1877 by Mr. H. S. Poole, then Chief Inspector of Mines. They appear to have remained unaltered (except for one variation on a matter of detail), since that time. In the report of the Department of Mines for the year 1877, Mr. Poole discussed at some length the question of sub marine mining in Nova Scotia. The information contained in this report has proved of great interest and value to me, throwing light as it does, on the nature of the evidence on which Mr. Poole founded the regulations and the opinions which were held at that date by various persons interested in undersea mining. I would point out that the 30 years which have since elapsed have provided a large amount of additional experience attended by, in some respects, a change of views.

I will now proceed to remark in detail on the various provisions contained in the Act:

54. (1) (a) Provides that no undersea workings shall be carried on at a less depth than 180 feet of solid cover, but gives power to the Lessee to drive passage ways for the purpose of winning the deposit only, under a cover of not less than 100 feet. Although it is true that, both in this country and in New South Wales, workings have been carried on successfully, under special precautions, at less depths than 180 feet, I am of opinion that having regard to the general nature of the beds overlying the seams in the various districts adjoining the seaboard in Nova Scotia, it would not be advisable to alter this regulation. It must always be a difficult, if not an impracticable task, to ascertain the exact thickness of the 'solid measures' and I think therefore that a considerable margin of safety should

be provided. In the case of passage ways to be driven under a less depth than 180 feet of solid cover, I assume that, if it should be thought necessary and judicious to reduce the 100 feet limit in any particular instance, the Commissioner could, under sub section 2, sanction such a proceeding.

54 (1) (b) Provides that "A barrier of not less than 50 yards, 25 yards on both sides of the boundary lines of every lease, shall be left unwrought between the workings of each submarine seam"

Section 208 of 'The Mines Act' 1892, in which I presume that the term "land covered with water" includes sub-marine areas, provides that a barrier of 25 yards is to be left "within and along each of the boundary lines" of any sub-marine lease. This is in effect the same as the regulation quoted above, but I think expresses the nature of the reservation more clearly and I would suggest that it might possibly be advisable to alter the clause in the Mines Regulation Act so as to make it correspond with that in the Mines Act. It may happen I think, that with deeper mining or under special circumstances, wider barriers may be required, so that it seems to be a matter for consideration whether power should not be given to the Commissioner to require such extensions, if considered necessary.

(c) Provides that, where there is less than 500 ft. of solid cover over the seam worked, the workings shall be laid out in districts of an area not greater than half a square mile, each district being enclosed by a barrier not less than 30 yards in thickness which shall not be pierced by more than four passage ways of a sectional area not greater than 9 feet wide by 6 feet high, with a modification to the effect that the Inspector may, if he thinks it necessary, permit the cross section of the passage ways to be increased to 60 square feet.

(d) restricts the length of any district when parallel to the general trend of the shore line to one mile.

(e) Requires the submission to the Inspector of any proposed system of working and his approval of the same before work is commenced, as well as his sanction to any change being made in the approved system.

(f) Provides that the opening of a new lift or level in a mine already working shall be deemed the commencement of a new winning within the meaning of the section.

I have thought it better to consider the above regulations together as they seem to comprise those which relate expressly to the methods under which the coal is to be worked or points in connection therewith.

The first two provide for the application, between the lines of 180 and 500 feet of cover, of a system which is generally known as the 'panel system'. Under this the area to be worked is divided into districts or 'panels' surrounded by barriers through which as few holdings as may be considered absolutely necessary are made. The dimensions of these places are restricted so as to enable dams to be placed in them in case of any inburst of water occurring in the panel to which they lead, with the object of shutting off the district and preventing a general flooding of the workings. This system has been practiced to a considerable extent in this country in the case of workings at moderate depths but I think that experience has shown that, while it prevents many disadvantages, it offers in reality little, if any, real security. The restrictions as to the number and dimensions of the places communi-

ating with the panels cause great inconvenience, both in the matter of haulage and ventilation, while the loss of coal due to the barriers left is considerable. On the other hand it is very seldom that the conditions of the strata surrounding the drifts are such as to render any prospect of dams, likely to be of an effective nature, being capable of being erected. Under these circumstances, and they are such as I consider apply in the same way in Nova Scotia as here, I do not think that any importance can be attached to this method of working, but that it is better to rely on the pillars left for the support of the roof being properly proportioned with a fair margin of safety and a careful restriction of the width of the working places and disposition of the same.

I am of opinion therefore that no advantage can be obtained by the retention of these provisions and that their elimination from the regulations would not lessen the security of the mines while it would on the other hand, lead to a saving of coal and give improved facilities for working. Under the regulations the system of working below the 500 feet line is unfettered, though subject to the approval of the Inspector. I think that the same condition should apply wholly, as it already does in part, to operations carried on between the 180 and 500 feet lines, or, in other words that the system of working should be entirely under the Inspector's control, as it appears evident, that, in any case, some controlling authority must eventually take the responsibility of regulating workings of this description. I am strongly of opinion that the conduct of undersea workings cannot, generally speaking, be advantageously provided for by hard and fast rules and that a careful consideration of the circumstances of each case, guided by experience gained in the gradual development of operations, is the proper system to be pursued in such cases.

As to matters of detail I would make the following suggestions:

1. In clause (e) I think that it should be provided that the approval of the Inspector in the first instance should, as in the case of any alteration, be in writing.
2. I am of opinion that provision should be made, either in the Mines Regulation Act or in the Leases, that, where any workings are carried on upon the long wall system, an exploring drift shall be driven fifty yards at least in a seaward direction in advance of such workings so as to prove the existence of any faults or dislocations, until it reaches the barrier required to be left.
3. I think that surveys and levellings of undersea workings should be made every three months and that the levels together with the depth of cover should be marked upon the working plans at specified distances along the lines of all main roads and round the faces of all workings approaching the 180 feet line of cover. Soundings should also be taken at reasonable distances and recorded on the plans.

Nova Scotia's paramount interest is coal. It is a very magical word, and the industry it has stirred into being is of growing tremendous interest.

DETERIORATION OF COAL.

The fact that many coals deteriorate, and some are liable to spontaneous combustion, when stored, has been the subject of widespread discussion. From recent observations it may be doubted whether pyrites, except when present in large amount produces spontaneous combustion, though it seems that, while pyrites does not fire when pure, it is liable to heat and take fire if mixed with organic matter, as in coal. Coal contains varying quantities of unsaturated compounds, which rapidly absorb oxygen, thereby gaining in weight but deteriorating in cooking properties and calorific value. Another series of compounds also occurs which take up oxygen, but give off carbonic acid and water in the process. The latter process, which is usually slow, produces a loss in both the weight and value of the coal. A coal on storing, therefore, may gain, lose, or remain constant in weight, according to the quantities and relative proportions of the two classes of compounds present but will almost invariably deteriorate in value. When coal is stored in a cool, dry place, the alteration is, in most cases, inconsiderable. Moisture certainly assists in the oxidation of the coal. The effect of pyrites on spontaneous combustion is undoubtedly over-estimated.

The value of ventilating stored coal is doubtful, as, although ventilation will help in cooling, it will supply the oxygen necessary to produce combustion.

The chief cause of accidents in coal mines appears to arise from falls of roof and sides and coal; others which are not quite so frequent as the above are from explosions of gases and coal dust, haulage accidents, shaft accidents, inexperienced men entering accumulations of gases, and inrushes of water.

Out of about 150 discoveries of gold and silver in the United States and Canada, tabulated by W. R. Crane, only ten are designated 'accidental.' The rest, with one or two exceptions, are attributed to the intelligent efforts of the prospector. It may be significant that most of the accidental discoveries date back more than fifty years ago. The most recent is twenty two years old.

A blue print of the mine, showing plainly the method ventilation, the gangways and manways, roads, doors, &c., if hung up in some place near the colliery where the miners could familiarise themselves with it, might be the means of saving many lives in case of accident.

It has been shown that the use of very large mine props is not as economical nor any safer than the use of smaller timbers. This is especially true where timbering is used in swelling ground. Smaller timbers and contemporaneous flushing give the best results. Hewn timber is stronger than sawed timbering. The life of mine timbering, depends to a great degree upon its seasoning and the time of year at which it is cut. Well-seasoned timber will outlast unseasoned wood except in wet places. Timber that has grown too rapidly should not be used for mine supports, as its fibres will be soft and spongy. Timber which grows on northern slopes is softer less firm, and will not last as long as that grown on slopes with a southern exposure.

AROUND THE COLLIERIES.

It is said that Mr. H. J. Coll has resigned from the board for granting certificates to colliery engineers.

The Eastern Coal Co. made a small shipment of coal from its mine at Maccan, last month. This is a hopeful sign. It is hoped that it means the beginning of steady shipments.

It is rumored that during the coming season shipments from Pictou Co. to the St. Lawrence will be of very limited volume. It is said that possibly one steamer only may be employed.

Shafts are not employed exclusively in the gold mines of the province. The mine of the Oldham Stirling, is reached by a slope having an angle of 38 degrees. The length of the slope is now about 1400 feet.

The statement was made at the Conciliation Board at Glace Bay that the management of Springhill and at Sydney Mines had recognized the U. M. W. J. R. Cowans on behalf of the former and Mr. T. J. Brown for the latter gave emphatic denial to the statement.

The collieries continue to show decreases in their shipments. With April it is hoped we will see the last of these for a time. If there is anything like a brisk demand after navigation opens the several collieries of the province are in good condition to meet it, as the slack times afforded opportunity for development work, the first necessity of big outputs.

The Conciliation Board had a grand reception at Glace Bay during its sittings. There were crowded houses each day. The papers tell us that brotherly love beamed on every countenance; good-will only stopped short of falling on each other's necks and weeping tears of joy. The Board never expected to find the officials so genial and the workmen so jolly.

Boring for coal by the Canadian Consolidated Coal Co. will shortly be commenced at Lower River Inhabitants, Richmond Co. This company has been sinking pits and boring for a long time. The drill to be employed is the big government drill No. 6, capable of going a depth of 3000 feet. It is hoped the company will be rewarded by striking a seam of coal of commercial value.

It is said that some of the Port Hood men applied to the U. M. W. organizer to establish a lodge at that place. They were in trouble and had an eye to substantial assistance. The U. M. W. it is said, eager and all as they are to catch P. W. A man did not think that in this instance the game was worth the candle, and intimated to the Port Hooders that they would see them later.

Spoken to last week while in Halifax on the subject of labor conditions the Mayor of Glace Bay said there were many of the opinion that there would be trouble. And so there may be if the U. M. W. can send two or three hundred thousand dollars into the field. And further if they can do so it will furnish proof sufficient, for some, that the money is not coming wholly out of the depleted exchequer of the U. M. W.

Coal Shipments for March will appear in next issue as the returns are incomplete.

The Eastern Chronicle gives as the substance of an unconfirmed rumor that the Nova Scotia Steel & Coal Co. will sell out its plant at Sydney Mines to the Dom. Iron & Steel Co. and erect a furnace etc. below Trenton. Where would the N. S. S. & Coal Co. get coal and why would they dispose of that part of their property, which saved the situation during the depression of the past eighteen months. And where would the Dom Iron & Steel Co. get all the money to buy its sister company's plant, a matter of a few million dollars?

It seems to be the belief in some quarters that all the mineral lands in the Province are in the hands of Monopolies. This is scarcely so. There are miles and miles of shale over which no license or lease has been applied for or granted. There are many unclaimed coal areas, there are veins of graphite and lead and copper awaiting active prospectors and parties to develop them. In Antigonish it is assumed there are miles upon miles of land underlaid with shales, and in that County only one application has been received by the Government.

Several amendments have been made to the Mines Regulation Act. The amendment of last year requiring an examiner to be accompanied by an employee not less than 18 years of age, has been altered to read that he shall be accompanied by an employee 'if required by the Deputy Inspector'. Every checkweigher after this will require to send to the Commissioner of Mines a monthly return of all the coal weighed or measured by him. The owner of the mine is required to send returns of all coal sold by retail whether to workmen or others. Before a shot can be fired the place must be examined with a locked safety lamp—by the shot firer.

Vice President Sherman of the U. M. W. ordered the colliery workers of Alberta and Fernie to quit work. The operators protested to head quarters with the result that the men were ordered to sign the agreement and go to work. Sherman is the bright fellow who visited Glace Bay along with Keir Hardie and told the miners that their faces were not up to his standard of beauty. If he has any of the finer sensibilities he must feel sore at being bidden to undo his action in 'ordering' out. That is the mischief with the U. M. W. Any one of them clothed with a little brief authority may order men, unwilling to strike, out and thereby cause annoyance and loss.

Mr. Drummond is accused of backing up mineral Monopolists and making speeches, writing articles, and reading papers on their behalf. Probably Mr. Drummond thinks he does none of these things for monopolies, though he attempts to speak and write in the interests of the Province. He knows of no monopolies therefore he cannot write on their behalf. Is it not a little curious that a newspaper classed among these most decidedly liberal in tendency—should persist in saying there is monopoly in coal, gold, shale, etc. If the present Liberal Government knows that there are such monopolies and makes no effort to smash them, then certainly it is open to censure, not to use a harsher term,

Gold mining seems to be on the point of a revival in Nova Scotia. A number of mines which have been abandoned for some time are being unwatered with a view to active operations. Among the mines expected to start work shortly are:—

The *Ecum Secum Goldfields Co.*, will commence the unwatering of their mine next month. The mine has been idle for two years:—

The *Ponhook Mining Co.*, Malaga, W. J. Prisk, manager, are reopening their mine, and will commence crushing shortly:—

The *Sydney Gold Mining Co.* are busy making arrangements for the mining and crushing of quartz at an early day:—

A *Turo Co.* has taken hold of a property at West River, Sheet Harbor. A shaft is being sunk and other development work being done:—

Some work is being done at *Harrigan Cove*:—
The *Uniac Mining & Power Co., Ltd.* have commenced mining on the *Vermillion* property, *Gold River, Lunenburg Co.* It is asserted that, should the government give pecuniary assistance to the driving of crosscuts things at *Waverly* within six months will begin to hum as in the old days.

Talking to a writer in the *New York Herald* a minor official of a colliery in the *Anthracite* regions said:

"They get so used to danger, I suppose, that they lose respect for it. Anyway, you can't make 'em careful.

"They'll fill a three foot cartridge with a light-

ed lamp in their hats and the sparks falling down all about them. They'll open a powder can with the sharp end of their picks. They'll tamp a drill hole with coal dust and an iron bar that knocks sparks into it.

"One day recently I caught a man putting twelve pounds of powder into a 'shot'. The State law makes six pounds the limit.

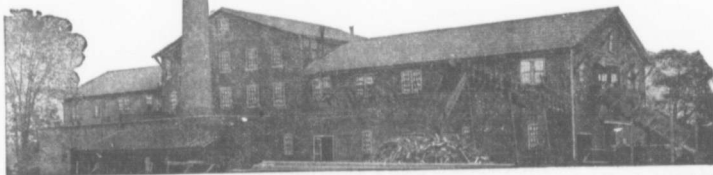
"Here" said I, 'you're breaking the law.'
"He laughed. 'I'm two hundred feet under the State' he said. 'There ain't no law here.'
And this is the home of the U. M. W.

FIRING HIGH EXPLOSIVES.

In firing shots of high explosives safety is obtained in proportion as the stemming is complete. One authority says that in ordinary shot holes he considers a safe proportion is a minimum of 9 inches of stemming to a charge of 3 oz. of high explosive, with a proportionate increase of stemming for larger charges. The knowledge that shots charged with a high explosive will blast the work required with little or no stemming, has caused a mistaken idea that the stemming of shot-holes is of only minor importance. Every experienced miner knows that shots fired without proper stemming emit a dangerous amount of flame, sufficient in most cases to ignite either fire-damp or coal dust.—S. and A. of Mining.

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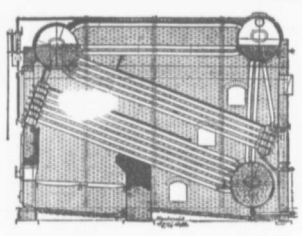
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Time Table No. 26, Taking effect at 1 a. m. OCT 11TH., 1908.

EASTBOUND			STATIONS.	WESTBOUND		
Read Down	No. 52	No. 54		Read Up	No. 51	No. 53
k. m.	p. m.	p. m.		p. m.	p. m.	
L 10 45	L 12 50		P TUPPER JUNCTION	A 10 35	A 3 35	
S 10 51	S 2 55		P FORT HAWKESBURY	S 10 27	S 3 27	
A 11 10	A 4 08		P PORT HASTINGS	L 10 07	L 3 10	
	L 4 13		TROY	P 9 02		
	F 4 5		CREIGNISH	S 309		
	S 4 28		JUDIQUE	P 9 22		
	F 5 05		CRAIGMORE	S 8 45		
	P 5 4		ATHERINE'S POND	P 8 32		
	A 5 33		PORT HOOD	A 8 27		
	S 5 25		GLENCOE	S 8 14		
	S 6 16		MABOU	S 7 40		
	S 6 50		GLENDYRE	F 7 50		
	S 6 48		BLACK RIVER	F 7 34		
	S 7 02		STRATHLOENE	S 7 09		
	A 7 12		INVERNESS	L 6 48		
	p. m.			S. B.		

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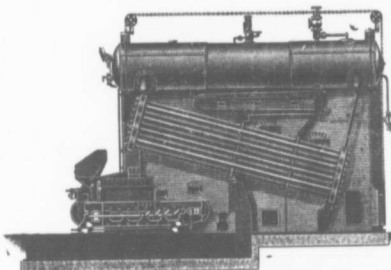
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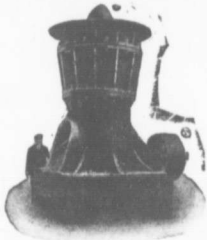
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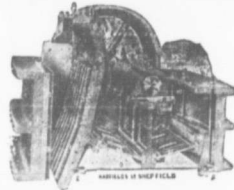
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2nd. Vice-President and Gen'l Manager.

Glace Bay, Nova Scotia.

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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	13.94%	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.

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