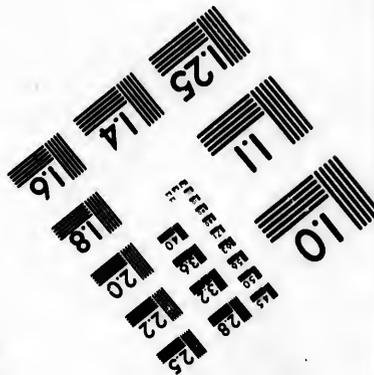
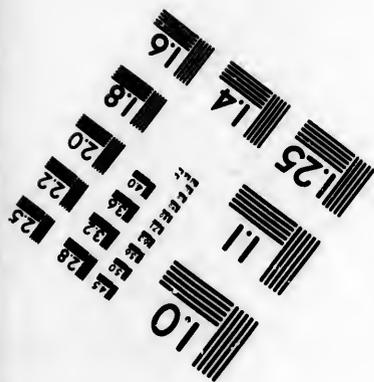
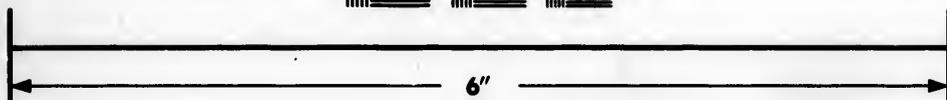
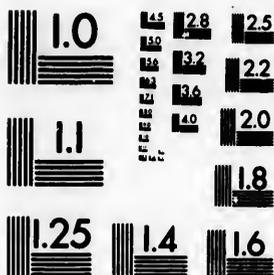


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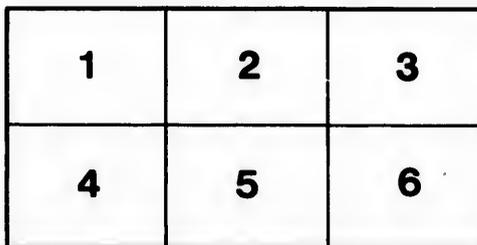
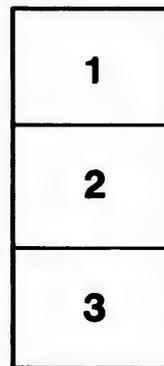
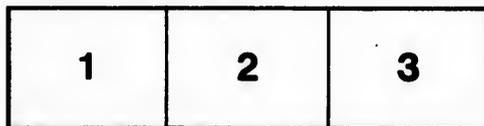
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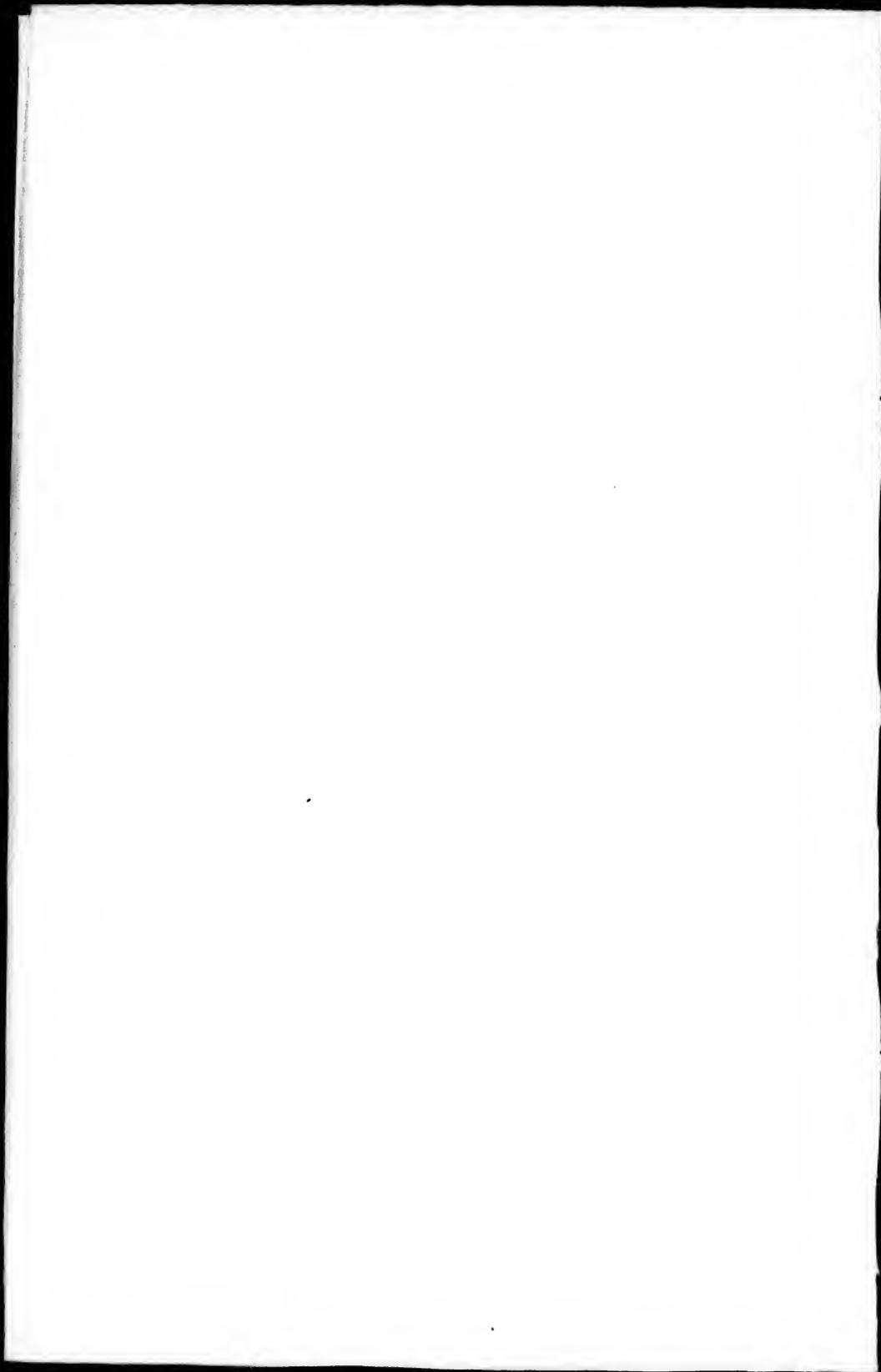
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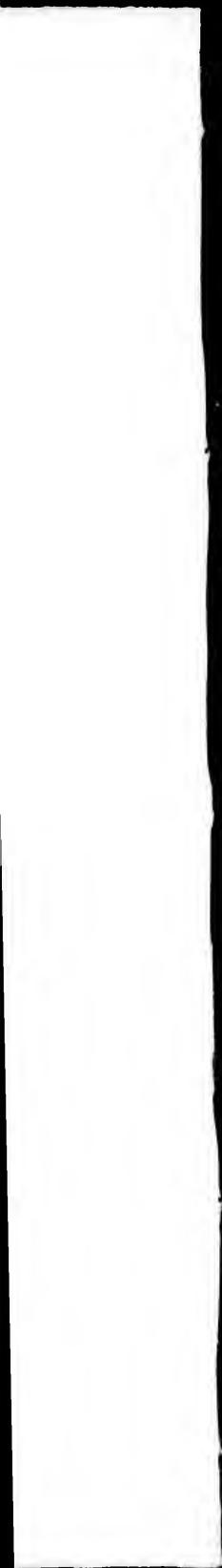
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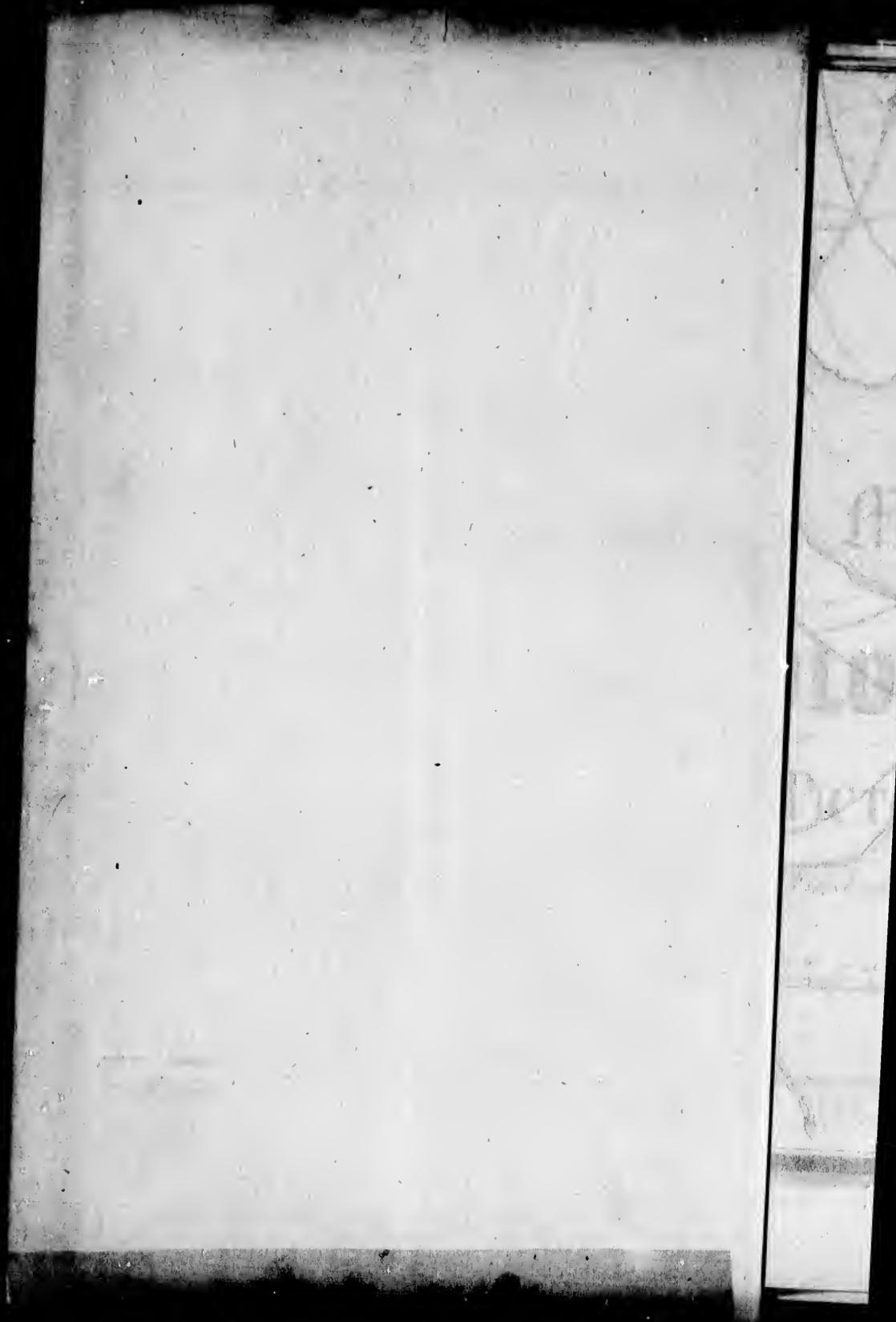


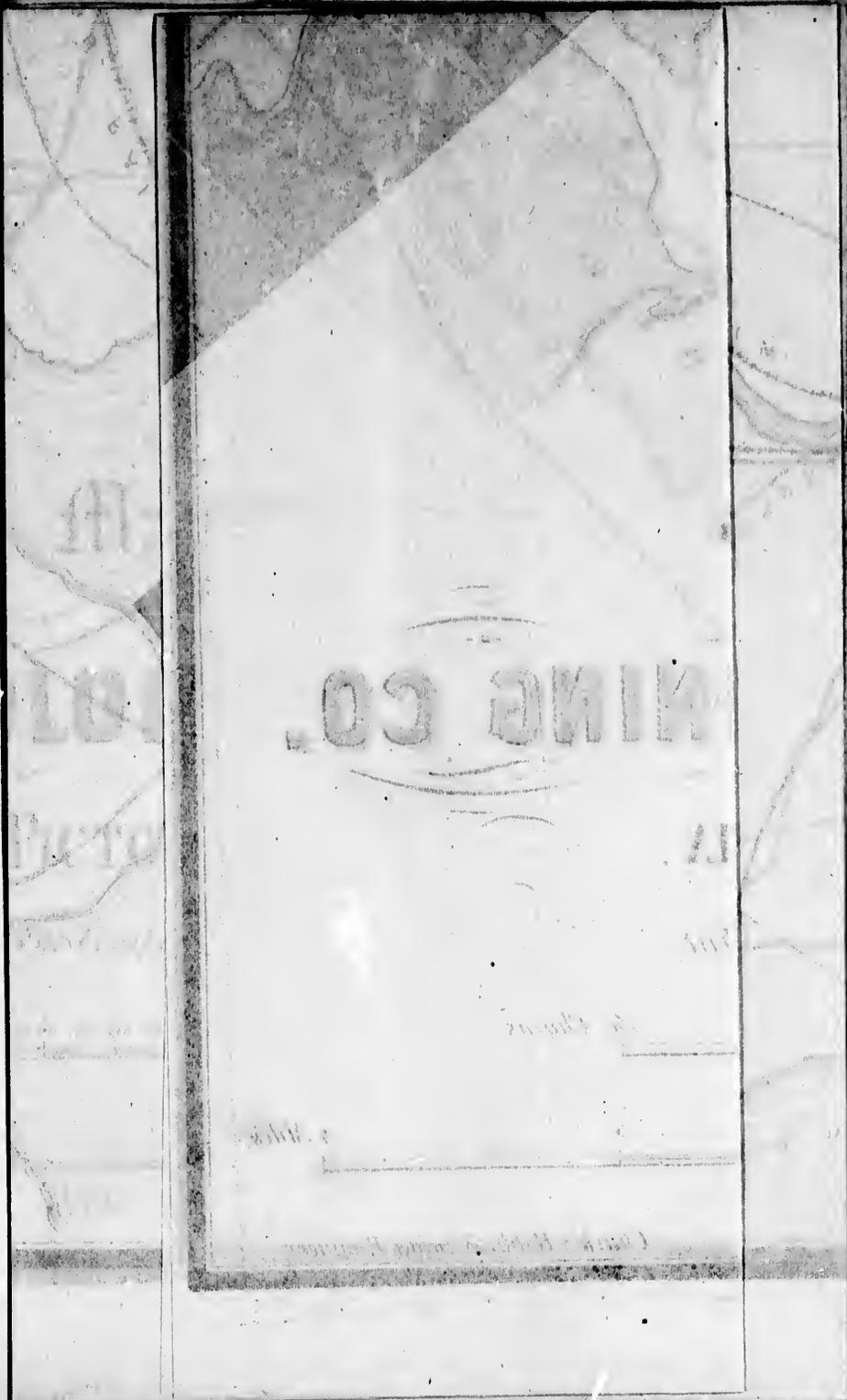




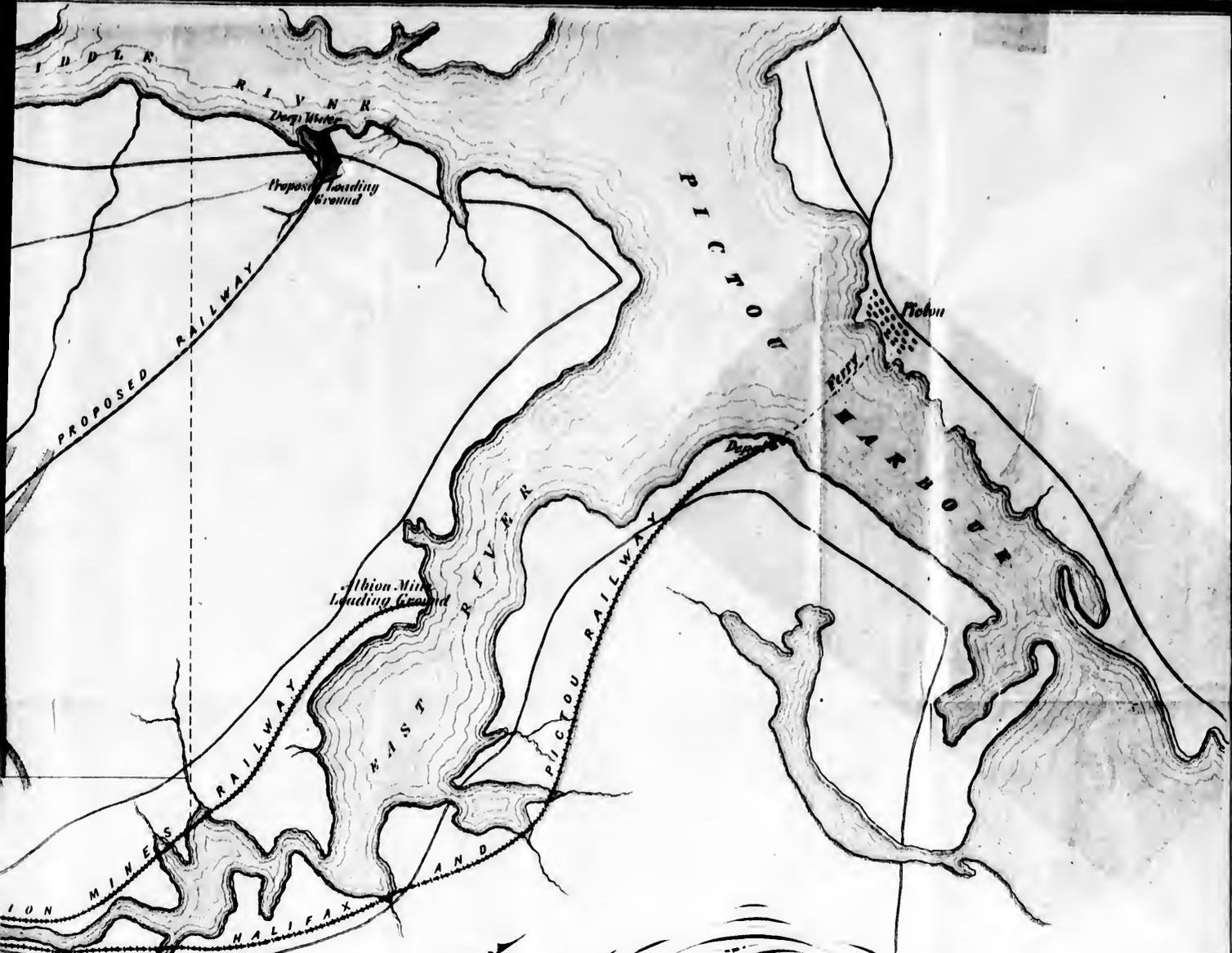


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MINING CO.



Map of the Lands
 OF THE
INTERCOLONIAL COAL MINING CO.

PICTOU COUNTY NOVA SCOTIA.

The Company's Property denoted by the red tint.



Charles Robb, Mining Engineer.





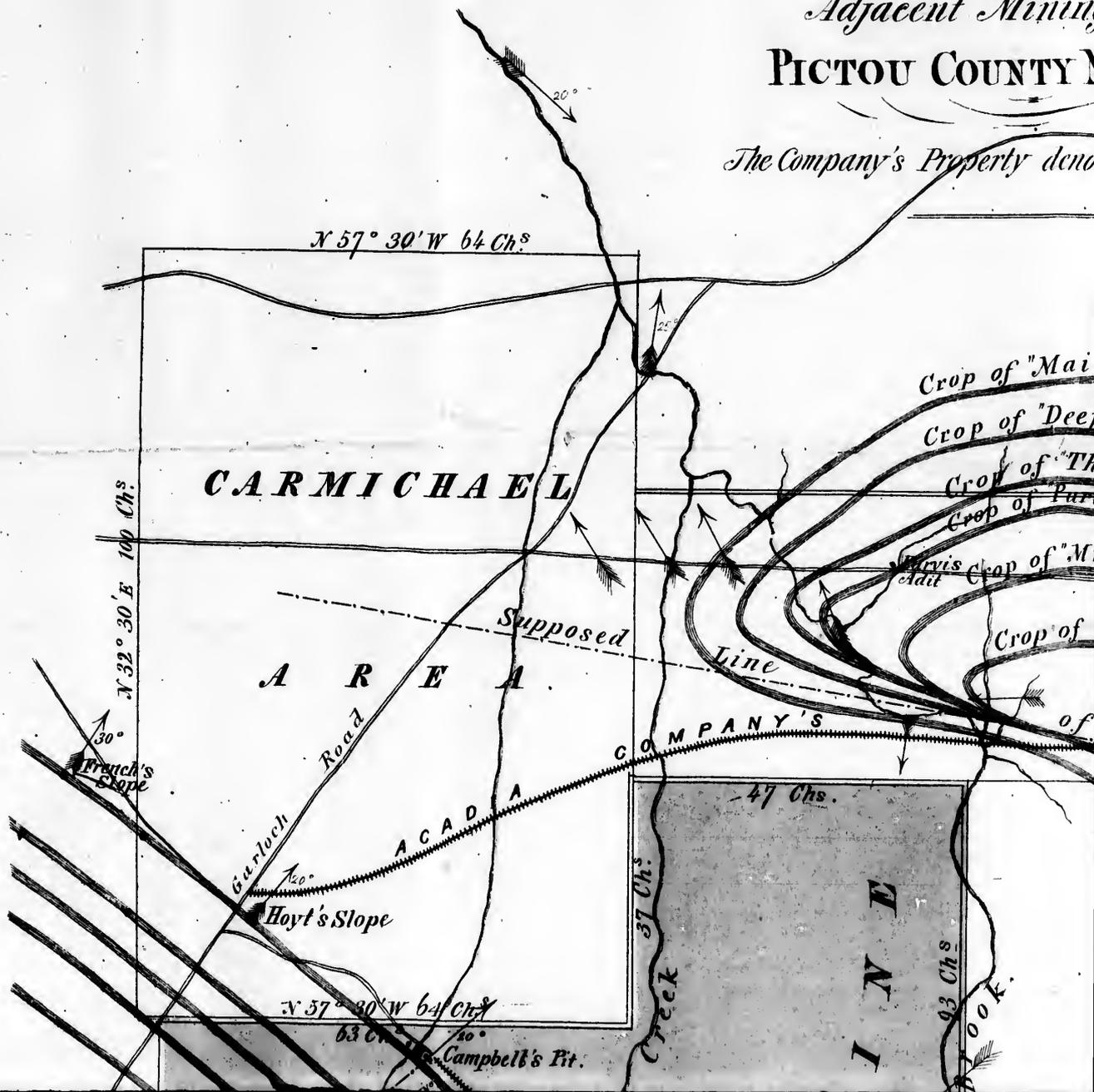
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Showing probable course
on the

BEAR CREEK

and
Adjacent Mining
PICTOU COUNTY

The Company's Property denoted



PLAN

probable course of the Coal Seams,

on the

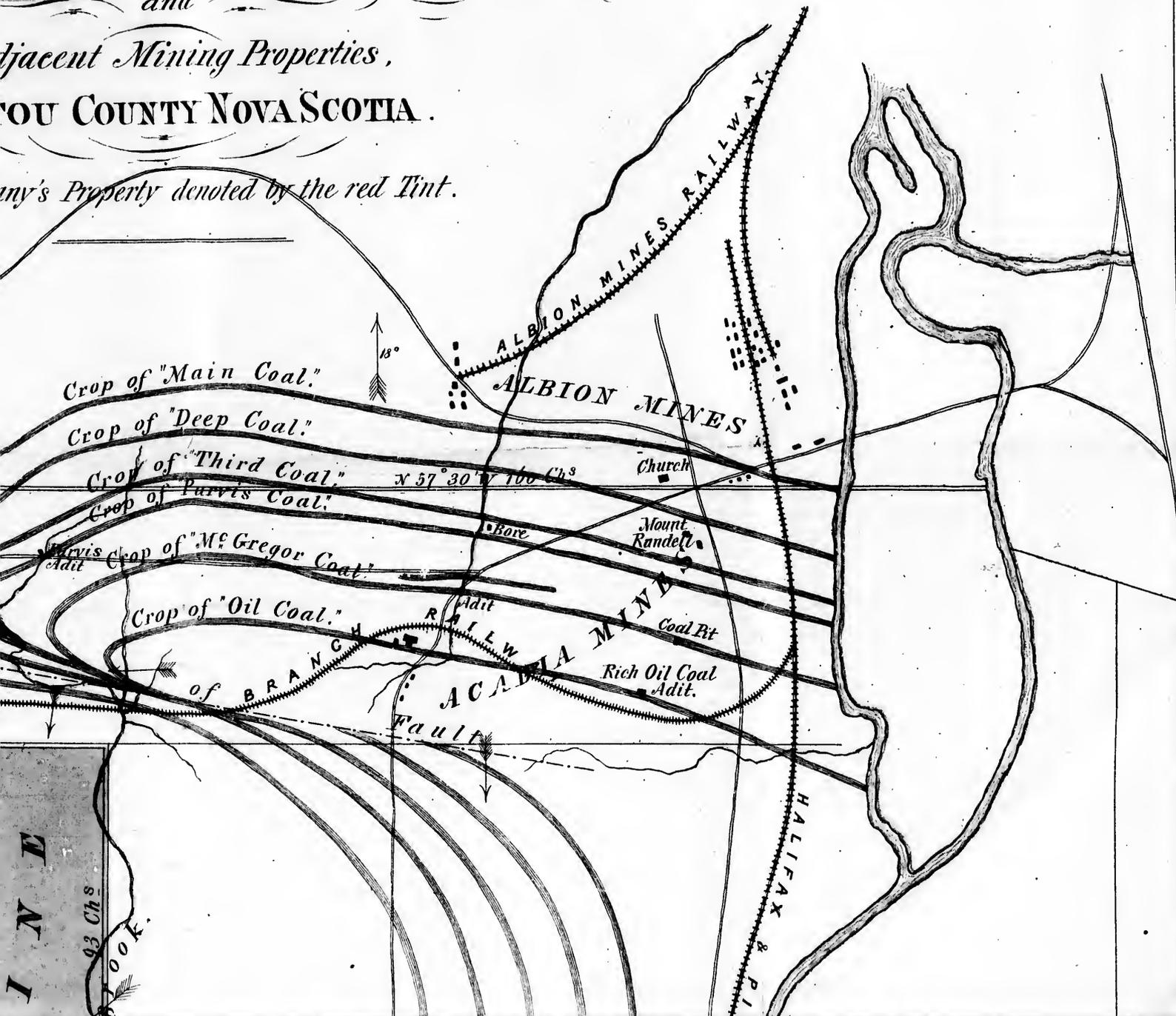
CREEK MINE.

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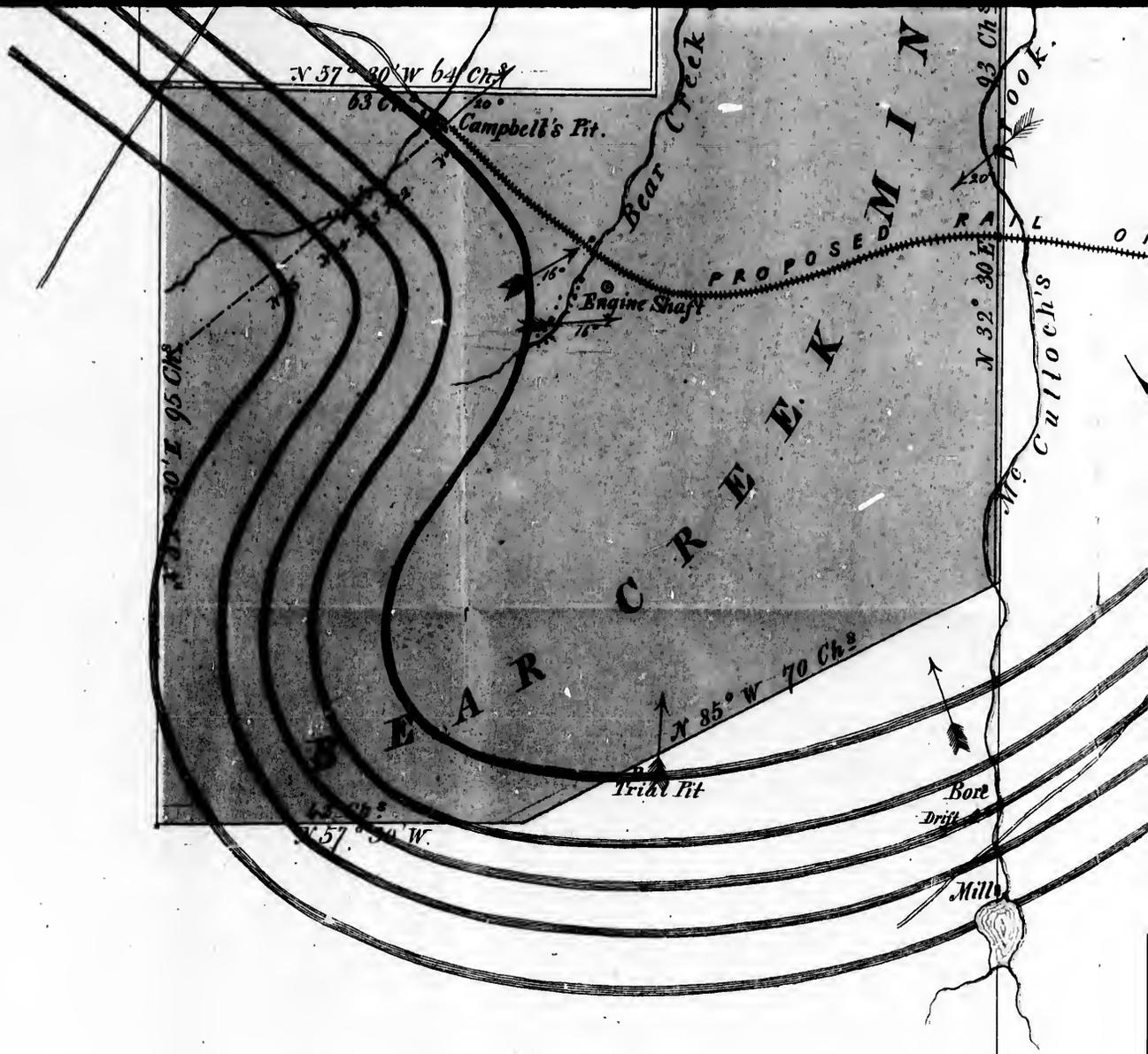
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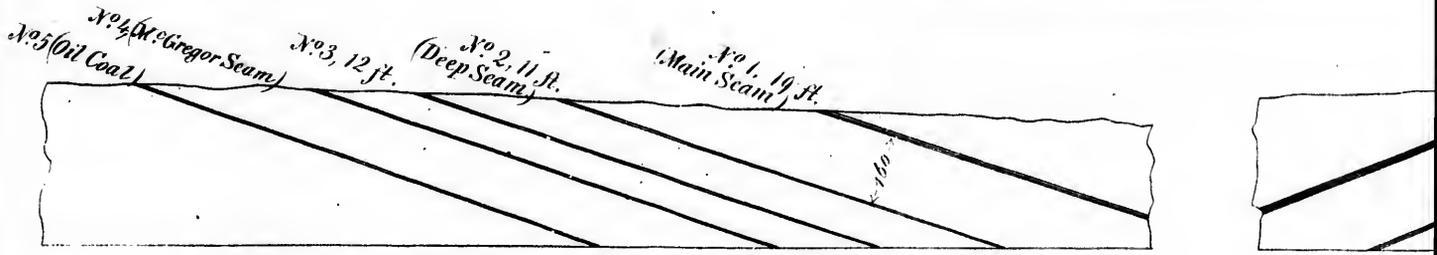
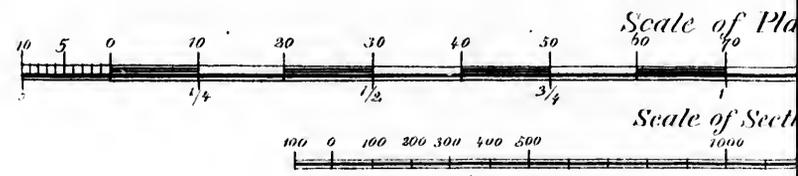
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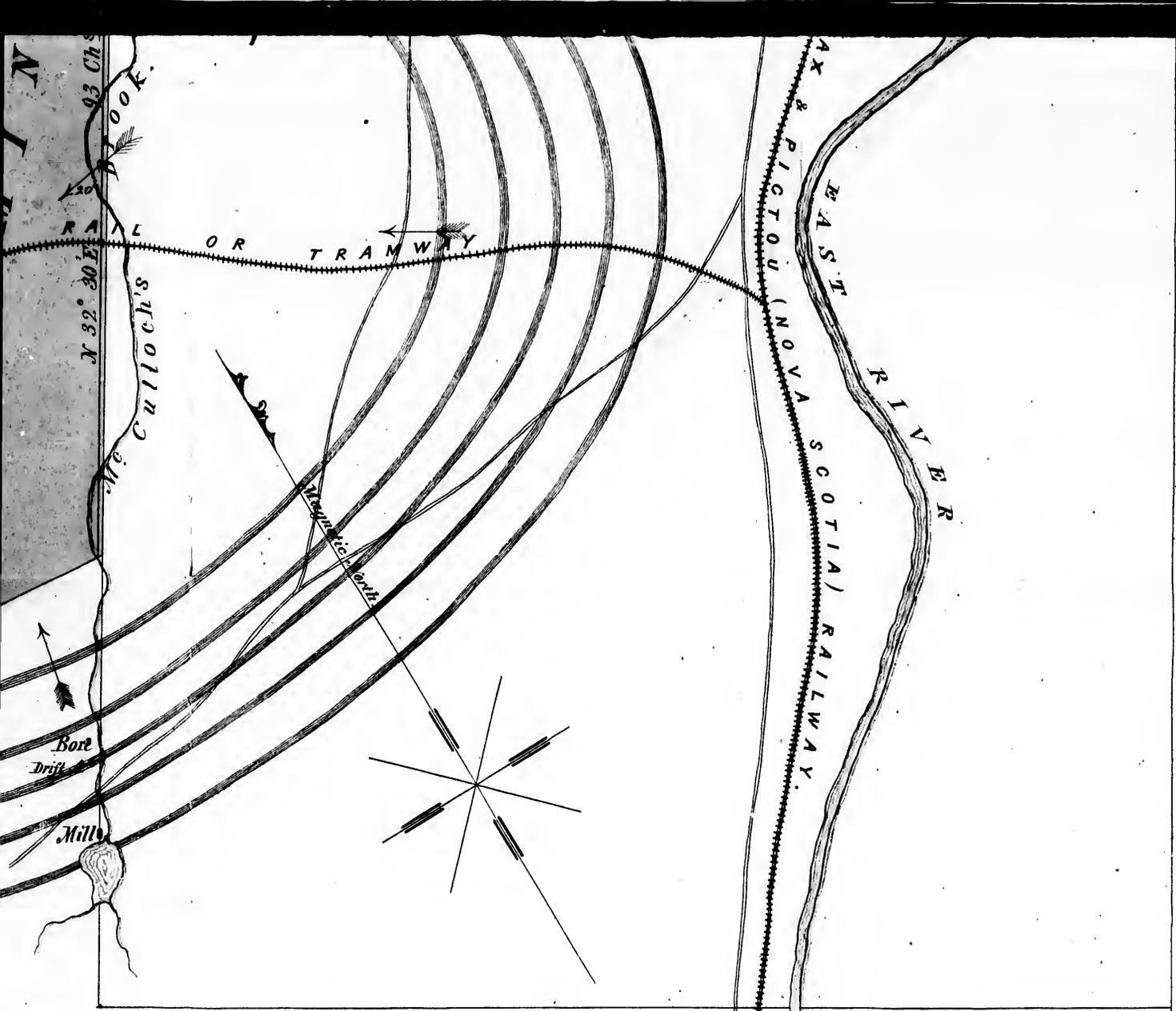


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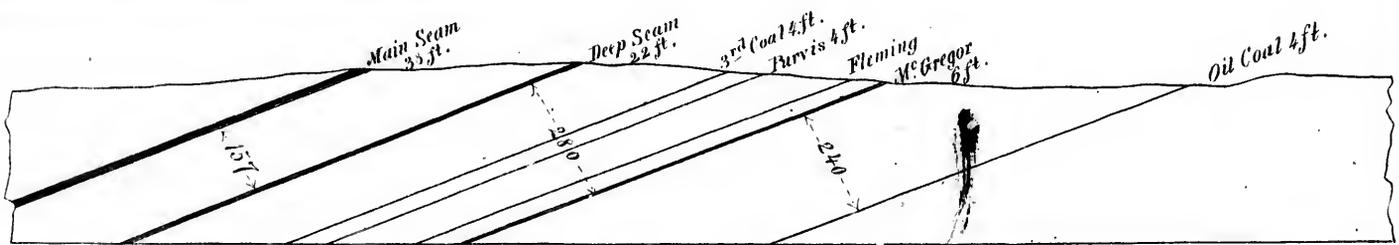
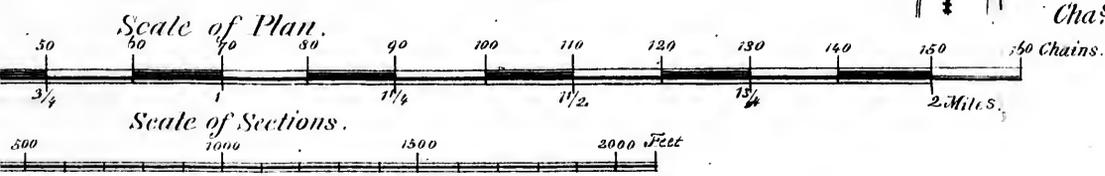


Section of the Coal Seams on the Bear Brook Area.

Section

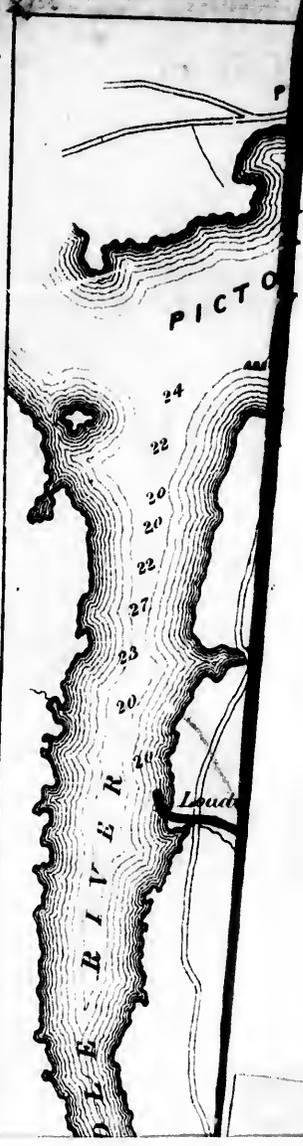


Chas Robb, Mining Engineer.



Section of the Coal Seams of the Albion Mines and Acadia Coal Company's Property.

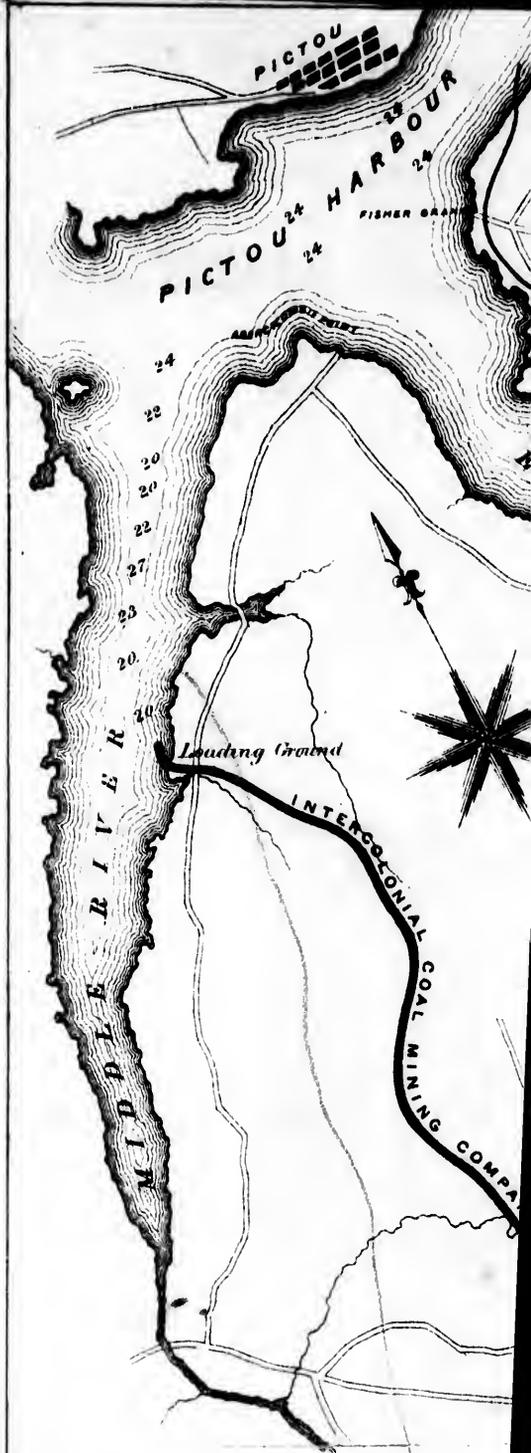




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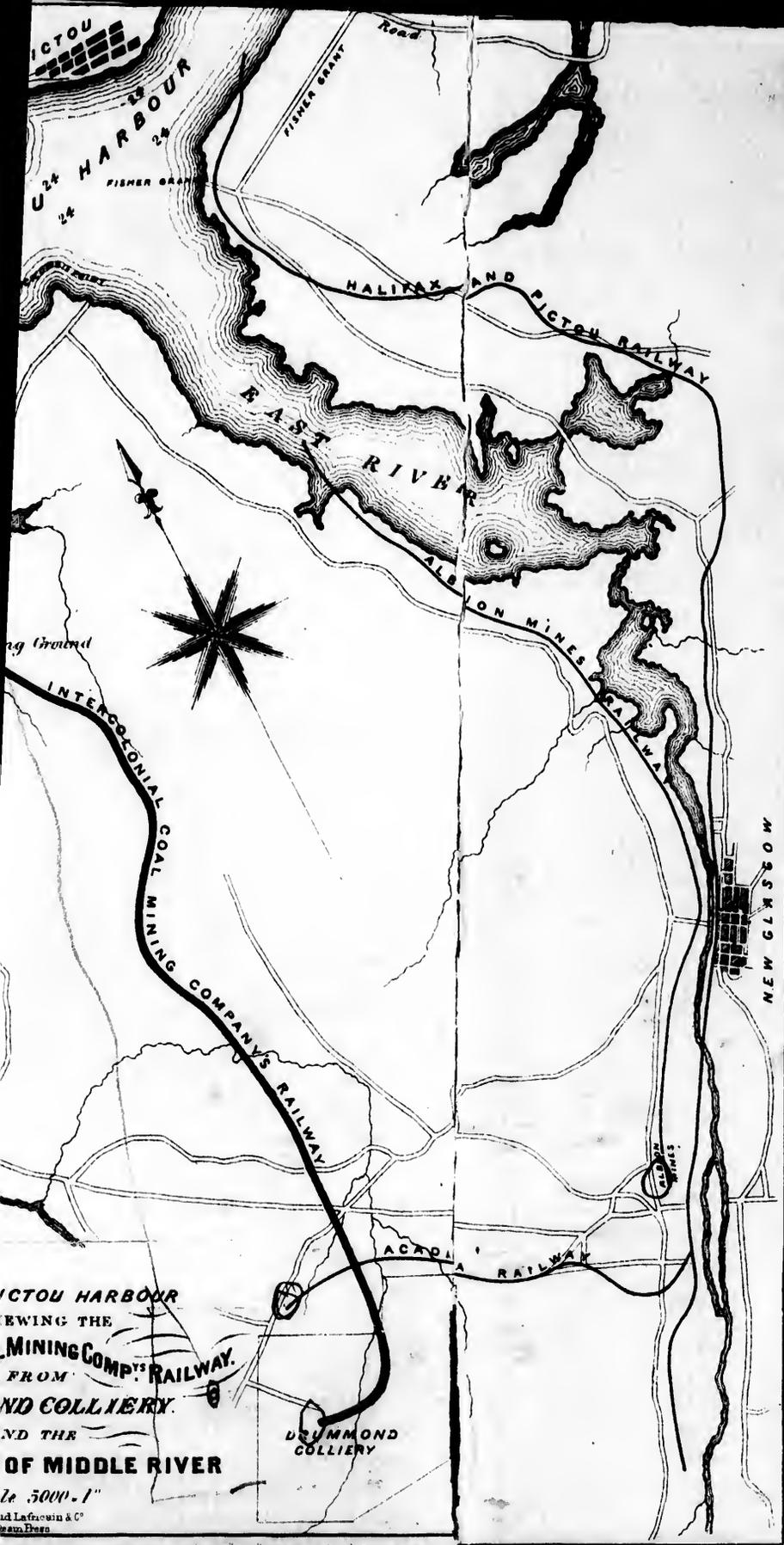
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PLAN OF PICTOU HARBOUR
 SHEWING THE
INTERCOLONIAL COAL MINING COMPY'S RAILWAY
 FROM
DRUMMOND COLLIERY.
 AND THE
NAVIGATION OF MIDDLE RIVER

Scale 5000.1"
 Burland Lefebvre & Co
 Steam Press



PICTOU HARBOUR
 FISHER GRANT
 FISHER GRANT
 FISHER GRANT

HALIFAX AND PICTOU RAILWAY

EAST RIVER

ALBION MINES

INTERCOLONIAL COAL MINING COMPANY'S RAILWAY

NEW GLASGOW

ACADIA RAILWAY

PICTOU HARBOUR
 SHOWING THE
 MINING COMPANY'S RAILWAY
 FROM
 DRUMMOND COLLIERY
 AND THE
 EAST RIVER
 OF MIDDLE RIVER

DRUMMOND COLLIERY

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REPORTS

ON THE PROPERTY OF THE

INTERCOLONIAL
COAL MINING COMPANY,

SITUATED IN

PICTOU, NOVA SCOTIA;

TOGETHER WITH THE

CHARTER OF THE COMPANY.

MONTREAL:

PRINTED BY JOHN LOVELL, ST. NICHOLAS STREET.

1866.

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REPORTS

ON THE PROPERTY OF THE

INTERCOLONIAL COAL MINING CO.

FIRST REPORT OF DR. DAWSON, LL.D., F.R.S., F.G.S.,
ON THE BEAR CREEK COAL LOCATION.

HALIFAX, *27th July*, 1866.

GEORGE A. DRUMMOND, Esq.

MY DEAR SIR,—According to promise, I made it my first business, on arriving at Pictou, to visit the Campbell Coal property on the East River; and found that Mr. Robb had been collecting the information required with diligence and skill, but that his preliminary work had been increased by his finding the pit full of water and few excavations open. I went with him at once upon the ground, and spent the greater part of three days upon the property and its vicinity, Mr. Campbell being present and giving his aid. The results may be shortly stated as follows, in anticipation of the more full reports and plans which Mr. Robb will prepare, and to which I shall no doubt be able to add a statement of my own concurrence.

1. Campbell's pit has exposed a bed of excellent coal 19 feet 9 inches in perpendicular thickness, or say about 18 feet at right angles to the bedding. It dips N. 75° E. at an angle of 20°.

2. To the north-west this bed extends beyond the boundary of the Campbell lot (only about 284 feet distant), to a slope sunk by the Acadia Company, 2112 feet distant, and beyond this to an

opening on the "French" property, 2178 feet farther. To the south-west the nature of the ground and the trials that have been made indicate that the *bed is continuous probably for half a mile at least, without any interruption*, but Mr. Robb hopes to confirm this by positive proofs.

3. The coal in Campbell's pit presents the following section :

Roof, Black shale.	ft. in.
<i>Tender good coal</i>	0 ,, 11
Shaley coal.....	0 ,, 1
<i>Good coal</i>	5 ,, 3
Shaley parting.....	0 ,, 4
<i>Good coal</i>	4 ,, 0
Pyritous coal.....	0 ,, 2
<i>Good coal</i>	7 ,, 0
Coarse coal.....	2 ,, 0
Total thickness.....	19 ,, 9

Mr. Robb has taken a series of samples for assay. All of the coal characterised in the above section as good is of *excellent quality*, superior in appearance to the ordinary Pictou coal; and a specimen tried at the Pictou Gas Works is said to have proved much richer than that of the Albion mine.

4. The Campbell seam may thus be stated to contain at least *sixteen feet in vertical thickness of good coal*, favourably situated for extraction; and if, as appears probable, it is continuous nearly across the area, it presents *one of the finest mining properties in this or any other country*.

5. It had been supposed that the Campbell seam is the equivalent of the "Deep Seam" of the Albion mines, but on actual inspection, and considering the statements made by Mr. Robb and Mr. Campbell, I was led to regard it as rather an *extension of the "Main Seam,"* diminished in thickness but improved in quality. Trials were accordingly made, at a distance from the out-crop corresponding to that of the deep seam from the main seam, and before my departure, Mr. Robb had uncovered a bed apparently twelve feet thick, and corresponding in position and accompaniments with the deep seam. I have no doubt that the smaller

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though workable beds known as the Purvis, Fleming, McGregor and Oil Coals will be found in their proper positions below the second seam, and will greatly augment the value of the property.

6. On the south side of Campbell's property no excavations had been made; but on the adjoining "Culton" or Haliburton lot coal measures had been uncovered, and were stated to contain a bed of coal six feet in thickness. These measures dip N. 10° E. at an angle of 10° to 15° , which would carry them at an easily workable depth below the Campbell property. Though the larger beds do not at present appear in this place, I have no doubt that they will be found; constituting a second workable area, perhaps not inferior to that already referred to.

7. On the east side of the Campbell area, the continuation of the Albion coal measures no doubt exists, but owing to the disturbed state of the beds in this direction, I do not at present attach much value to this part of the area.

8. The Campbell property also includes the "Sutherland" area, north of that of the Albion Company. On this no discoveries have been made, but coal said to be of good quality and dipping S. E. at an angle of 50° , has been struck on an adjoining lot, and may probably extend under this area.

9. I do not regard Mr. Campbell's lot on the Middle River as at present of much value.

On the whole, the present known value of the property attaches principally to the Campbell lot, on which coal mining *on the largest scale and under the most favourable circumstances* may be at once commenced.

All the above points will be more fully illustrated in Mr. Robb's Report; but, in the meantime, in so far as my information extends, I have no hesitation in recommending the purchase of the property.

Truly yours,

J. W. DAWSON.

REPORT OF MR. CHAS. ROBB, MINING ENGINEER.

96 ST. FRANCOIS XAVIER STREET,

MONTREAL, 12th August, 1866.

GEORGE A. DRUMMOND, Esq.,

DEAR SIR,—In compliance with the instructions with which, on behalf of yourself and associates, you have honoured me, I have visited the coal mining areas referred to, in Pictou, Nova Scotia; and have devoted the greater part of one month to the investigation of the points at issue respecting their value. I beg now, as the result of my observations, to lay before you the following Report, together with illustrative maps and plans, as hereafter specified.

In the prosecution of this enquiry I have enjoyed the great advantage of Dr. Dawson's co-operation and advice, both previous to my departure from this city and during my visit to the properties. I had the pleasure of being accompanied on the trip by Mr. J. B. Moore of this city, who had previously visited the district and reported on the properties in question; and I may here remark that, in all essential particulars, I found his Report verified by my own observations. I had also the good fortune to meet Messrs. John and Alexander Campbell of Halifax, who had selected, and partially tested the areas specified; and who accompanied and assisted me during the whole of my explorations.

DESCRIPTION OF THE MAPS.

The Maps accompanying this Report consist, first, of a plan of the principal location, styled in Mr. Moore's Report, "*The Bear Creek Mine*," shewing the exact position and direction of the coal seams found on it and on the adjoining properties; and their probable continuation and connection as inferred from a careful survey and study of the structure of the rocks &c. And secondly, a map of the entire district, including the two other mining areas in which you are interested, and the lot on the Middle River, which has been secured as a loading ground in connection with the whole, as also the roads, railways and depots. This map shews also approximately the run of the productive coal measures throughout the district, with their dips.

The properties in question consist of three distinct areas, as indicated by the red tints on the maps, each comprising one square mile, more or less. On that marked No. 1, which at present appears to be the most important, and to which you have specially directed my attention, the amount of work already done is sufficient to entitle the proprietors to claim from Government the mining lease, in accordance with their regulations. Upon the other areas effective mining operations have not yet been instituted.

METHODS OF EXPLORATION.

In the Pictou, as in most other carboniferous districts, the rocks are, for the most part, concealed under a great depth of soil and drift clay; and the new mining areas are covered with dense forests; moreover the geological structure of the region is *locally* somewhat complicated and difficult to trace. Hence the direct method of exploration by tracing and uncovering the coal seams to a sufficient extent to determine their precise value upon any given area, would have been a work of extreme difficulty, involving the expenditure of much more time and money than I could command, or should consider, in any case, necessary or justifiable.

Fortunately, in the present instance, this method is not indispensable in order to arrive at satisfactory results. Notwithstanding the intricacy of the structure, the productive coal beds are found, upon a comprehensive survey of the district, uniformly to occupy their proper position in the measures, although their attitude, quality and thickness may vary in different localities; and the faults, or disturbances by which they have been affected subsequently to their deposition, do not appear to have impaired their continuity to any great extent.

Accordingly, while the direct exploration of the properties received all due attention, so far as the means at my disposal would admit, I devoted considerable attention to the investigation of the structure of the rock formations immediately surrounding or underlying the respective areas; ascertaining their relative positions, dips and directions, as exhibited in natural exposures or otherwise. The details of these enquiries, as regards the dips of the rocks, the approximate probable position of the coal seams, &c., are shown on

the maps; and the general result I regard as highly satisfactory—with respect to two of the properties at least—as confirming the views and expectations of the parties who selected these properties for mining purposes.

STRUCTURAL FEATURES.

The geological structure of the carboniferous district of Pictou has been minutely described by Dr. Dawson in his "*Acadian Geology*," to which work I would also refer you for much valuable information as to the Albion Mines, the quantity and the quality of the coal, and the results of working there. Without entering, on this occasion, into any purely theoretical discussion, I may state briefly my view as to the causes of the peculiar and exceptional character of the Pictou coal field, and of the local complexities of structure which it has been my business to attempt to unravel.

These I conceive to be due, first, to the existence of folds or flexures in the older rocks previous to the deposition of the coal measures; causing irregularities of surface, which by determining the direction and intensity of currents, would produce a great diversity in the thickness and quality of the beds. And secondly, to the continuance of the same elevatory forces which have originated the folds, subsequently to the filling up of the troughs; and producing, in the coal measures themselves, a series of anticlinal and synclinal forms, with dips varying in direction according to the original trend of the rocks; and in amount according to the sharpness of the folds.

AREA No. 1.—THE BEAR CREEK MINE.

This mining area, which comprises 1084 acres, or nearly one and three-quarters square mile in extent, is situated about four miles from the village of New Glasgow; and although, for the most part covered with an unbroken forest, is accessible by good roads at the north-east side. On this side also, and towards the south-east boundary, it abuts upon the lands of the Acadia Coal Company, which have been recently secured, and are now being very efficiently equipped, with a view to extensive mining operations.

In surveying and examining this property, I have very carefully applied both methods of exploration above adverted to, so

far as means and opportunity were afforded ; and from the structure of the rocks underlying, taken in connection with the actual discoveries made upon the area, I cannot resist the conclusion that the entire series of coal seams found on the Albion Mines and Acadia Company's property will be found to underlie the greater part of the area, at no great depth, and in good and workable condition.

The *structural evidence* is afforded by numerous natural exposures of the rocks in two small brooks lying to the west, south and east of the property, showing the rocks dipping inwardly in each case, and at angles which seem to indicate their undisturbed condition. The entire area is nearly level, constituting a table-land situated about midway between the East and Middle Rivers ; it is elevated from 200 to 250 feet above the river valleys, and the champagne country to the north, which is also occupied by the same measures ; and the conditions appear to indicate that, during the carboniferous era, it has constituted either a sheltered bay or upland swamp ; in either case admitting of greater tranquillity and regularity, as well as richness, of deposit than in the more exposed areas surrounding it.

Such theoretical views are amply confirmed by the results of actual explorations within the area. Although these explorations have exposed the great coal seams only on one part of the property, the numerous trial-pits and borings which have been sunk at various points throughout its extent (within or below the crop of the main seam) shew everywhere the peculiar soft laminated black shales which overlie the "*Main Seam*" of the Albion Mines, charged with their characteristic fossils, and invariably *dipping inwardly*.

The seams traversing the Albion Mines and that part of the Acadia Company's property lying immediately to the south undergo a rapid deterioration in the western extension of their crops, and even appear to terminate abruptly ; having nowhere been found west of the points marked on the larger map, although numerous and costly attempts have been made to trace them further in that direction.

This must have been occasioned either by a pre-existing sharp promontory of the older rocks occurring at this point, and affecting the measures in the manner above alluded to ; or by a fault or

succession of faults throwing them down to the eastwards—of which there is direct evidence—or more probably by a combination of both causes. Practically the value of the property in question will not in my opinion be materially or prejudicially affected by this disturbance; as the measures must have resumed their normal attitude and condition before approaching it; and the discovery, upon the opposite side of the property, of a series of coal seams bearing such a close resemblance in relative position and character as to prove their identity with those of the Albion Mines, affords the strongest collateral evidence that these valuable deposits will be found to embrace the entire area in which you are specially interested.

DESCRIPTION OF THE COAL SEAMS.

Seam No. 1.—I shall proceed to a more detailed description of the results of actual exploration and work upon the property, both previous to and during my visit. I found that at the position marked upon the map (No. 1.) quite near to the north-east boundary of the area, a pit or shaft had been sunk to the depth of forty feet on the crop of a great seam of coal of most excellent quality; and about 1400 cubic yards, equal to 1350 tons of coal extracted; of which a pile of about 200 tons still remained upon the bank, the balance having been previously disposed of and removed. This amount of excavation is sufficient to thoroughly test the thickness and quality of the seam, making allowance for its proximity to the surface.

On my arrival I found this excavation filled with water, the drainage of which was accomplished just before the arrival of Dr. Dawson, by working day and night, with the aid of a span of horses. The thickness, dip and direction, as well as quality of the coal were carefully measured and noted by Dr. Dawson and myself. We found the dip to be north 75° east, at an angle of 20° ; and the total thickness of the seam, as measured in the shaft (exclusive of a two feet band of shaley coarse coal at the bottom) to be *nineteen feet and nine inches*, or upwards of eighteen feet at right angles to the dip; the whole being composed (with the exception of a few inches of fire-clay &c.,) of pure, solid, bright, bituminous coal. The coal excavated, although taken so near to the out-crop, is of a quality

superior to any mined in the district; and even in the very short distance to which it has been worked to the dip, shews a very marked improvement in sinking.

Samples were taken by me for assay at each foot apart in the thickness of the seam, but no opportunity has yet been afforded for a thorough examination. Dr. Dawson has however made a rough assay of samples representing three different levels in the seam, with the under-noted results.

	Volatile Matter.	Fixed Carbon and Ash.	
No. 1.....	25.6.....	74.4.....	per cent.
No. 2.....	27.4.....	72.6.....	“
No. 3.....	27.8.....	72.2.....	“

The lower three or four feet of this seam are harder and tougher than the rest; and appear to be peculiarly well adapted for the manufacture of illuminating gas, for which the Pictou coal is highly esteemed and largely exported to the United States.

An unselected sample of the coal from this seam was tried at the Pictou Gas Works with the following results, as certified by the manager.

“ Pictou, 31st July, 1866.

“ I have tested the coal for gas from the Campbell area and found it to yield nearly 10,000 cubic feet of gas per ton. This is more than the best quality of coal from the Albion Mines produces. The coke is also more per ton and of better quality than that produced by the Albion coal.

ALEXANDER THOMPSON,
Manager of Pictou Gas Works.”

By referring to Dr. Dawson’s “Acadian Geology,” I find that the largest quantity of gas yielded by the best sample of the Albion Mine coal was 8,500 cubic feet, which is also about the average produced in the Montreal Gas Works from Newcastle coal.

In a north-easterly direction from the pit above described, and upon adjoining properties, openings have been made upon the same seam of coal by Mr. Truman French and by the Acadia Coal Company at distances respectively of sixty-five and thirty-two chains, at

both which points preparations have been made for permanent working, and considerable quantities of coal already extracted ; further operations having been, in the meantime, suspended until pumping machinery can be erected, and railway connection with shipping ports effected.

At the nearest of these openings the dip is the same as at Campbell's pit (20°) ; and the quality of the coal is similar, although apparently not so good. At the further pit referred to the dip is 30° , and the earthy impurities contained in the seam are found to have largely increased in amount, a certain fire-clay parting occurring about six feet from the roof of the seam being here fourteen inches thick, while in Campbell's pit it is only about four inches. The measures when traced still further to the north-west dip at still higher angles, and a corresponding deterioration occurs. From these facts we are justified in inferring that the extension of this seam in the opposite direction, that is, further to the south-east on the Bear Creek area will be marked by a corresponding improvement in quality and purity.

About twenty-five chains in this direction, and on or near the line of strike at the main pit, an extensive series of borings had been made by Mr. Campbell along the banks of a small brook cutting the measures diagonally ; but apparently without striking the crop of the seam, although much gas was evolved from some of the borings. I sunk three trial-pits to the rock near this point, chiefly for the purpose of determining the dip. In the nearest of these I found it to be east 7° south, angle 16° ; and in the furthest, which is about five chains to the south-west, east 27° south, angle 16° . These observations indicate that while no evidence of any fault exists, the out-crop of the seam will be found further to the west than the line of strike from the main pit ; and that it continues to bend in a westerly direction, on tracing it farther on to the property. The effect of this change in direction will be to cause a much larger area to be underlaid by the coal than would otherwise have been the case.

Seam No. 2.—In the Report made by Mr. J. B. Moore upon this property, the seam above described is regarded as being the continuation of the "*Deep Seam*" of the Albion Mines. My investiga-

tions, however, seem to place it beyond a doubt that it is the equivalent of the "*Main Seam*." Of this I am satisfied from its position in the measures; from its being found everywhere overlaid by the same thick body of soft laminated black shales which is characteristic of the main seam; and from the fact that diligent search made on this and the adjoining properties have failed to discover any great seam of coal overlying the one in question. The most conclusive and satisfactory proof, however, is the discovery both on the Bear Creek, the Acadia, and Mr. French's properties, of a seam corresponding in position, and apparently also in quality with the deep seam of the Albion Mines, supposing that marked No. 1 to be the equivalent of the main seam. This discovery was made upon the Bear Creek property during the time of my visit; and is of the utmost importance, not only as affording a vast increase of the available amount of coal on this part of the property, but as corroborative evidence of the probable unbroken connection of the seams found here with those so successfully worked on the Albion Mines, and Frazer areas. This fact, taken in connection with the northerly and westerly dips of the shales at the south and east boundaries of the property, respectively, would prove the whole area to be underlaid at a workable depth by these valuable deposits.

A shaft was sunk by me to the depth of twenty-two feet upon the crop of the seam No. 2, above referred to; exposing its whole thickness—eleven feet at right angles to the measures. The coal appears to be nearly homogeneous throughout the whole thickness; and is of a harder, heavier and tougher quality than that of the overlying seam, with which, for general purposes, it will not compare at all favourably. It is, moreover, more of a laminated shaley structure, corresponding in this respect, as in position, with that of the deep seam of the Albion Mines. It is remarkably free from sulphur, and highly bituminous; and appears especially adapted for the manufacture of illuminating gas, for which also the deep seam coal of the Albion Mines is greatly preferred. An average specimen, as analyzed by Dr. Dawson, gave

Volatile matter	24.4 per cent.
Fixed carbon and ash	75.6 do

Mr. Henry Poole's assays of the deep seam coal of the Albion Mines gives as an average,

Volatile matter.....	23.00	per cent.
Fixed carbon and ash.....	77.00	do

Thus shewing a superiority in quality in the Bear Creek coal, although taken quite at the out-crop. On working to the deep an improvement in quality may be safely calculated on; and as there is a very marked superiority of this coal over that taken from the corresponding position in the Acadia and Mr. French's properties, we may also infer, as before, a still further improvement on tracing the seam to the south. A remarkably hard solid plate of clay ironstone which forms the roof of this seam, will probably be found greatly to facilitate the working of it.

Seam No. 3.—The coal seam just described occurs at an intermediate point between the principal or main seam and that noticed in Mr. Moore's Report as having been discovered previously to his visit, and by him considered to be identical with the "*McGregor Seam*" of the Old Mines. I regard it rather as an aggregation of the "*Third*" and "*Purvis*" coals; but having made no explorations upon it, I have no further remark to make respecting it, but to express my firm belief and concurrence in Mr. Moore's opinion—(which facts discovered subsequently to his visit enable me to do more positively than that gentleman might feel justified in doing) that it may confidently be expected to improve in sinking, and that it may probably be relied on as, in part at least, a fair marketable coal.

Seam No. 4.—Being strongly impressed with the importance of discovering the entire series of coal seams, as developed on the adjoining properties, I left a small force of men to work for a limited period after I had left the district, upon certain indicated points. A few days ago I received a telegram announcing that a further seam has been discovered in one of the pits located by me, and which is regarded as the *McGregor Seam*—six feet in thickness—now being extensively and profitably worked upon the Acadia property, as described by Mr. Moore. I have no details to offer, but regard the existence of this valuable seam of coal upon the property as fully established.

Seam No. 5, or The Frazer Oil Coal.—This is the lowest seam which we expect to find upon the property, and although not yet struck, I entertain no doubt that it will be discovered, and in good condition. In other parts of the district it has been worked to some extent, but its thickness is precarious and uncertain, varying from a few inches to four feet. On this property, for reasons already stated, I should expect that it will be found more regular. On distillation this material has been ascertained to yield from 45 to as much as 200 gallons per ton of crude oil; the yield of the celebrated Torbane Hill mineral being 125 gallons; that of the Albertite of New Brunswick, 100 gallons; and that of the Lesmahago cannel coal of Scotland, 40 gallons per ton. Mr. Campbell states that a ready market, at remunerative prices, could at once be opened up for the produce of this seam.

South Part of the Property.—Towards the south boundary of the area, considerable exploratory work has been done, and is now being carried on, upon the property immediately adjoining, and chiefly along the left bank of the McCulloch Brook; proving the existence of a series of coal seams dipping at a low angle towards the Bear Creek property. For reasons already stated it is highly probable that these seams are identical with those of the Albion Mines, and with those found on the west side of the Bear Creek property, although no facts have been yet positively established to prove their identity. At the point marked A a short drift has been cut into a seam of bright bituminous coal, intermixed with oil coal and oil shales; the irregularity seeming to be due to a small fault occurring here. Near to the same point, a bore-hole put down to the depth of forty feet has penetrated a six feet seam of bituminous coal. At the point B, over fifty chains distant from the former, and seventy or eighty feet south of the boundary line, I found a pit opened upon a seam of excellent coal, which, although at the crop it appeared to be of small dimensions, obviously dips on to the Bear Creek property; and is important as proving by direct evidence the existence of the productive coal measures near this point.

QUANTITY OF COAL IN THE AREA.

The following is an estimate which I have framed, of the quantity

of coal contained in this property, assuming the accuracy of the conclusions above stated.

Seam No. 1 will underlie 694 acres, and supposing a uniform thickness of 18 feet, will yield a total quantity of 19,434,000 tons; or allowing for pillars and waste 12,412,000 tons.

Seam No. 2 underlies 818 acres, which at 11 feet thick will yield 14 millions of tons, or with allowance for pillars and waste, say 9 millions of tons.

Seam No. 3 underlies 875 acres, and assuming only half the thickness, or 6 feet, to be good marketable coal, will yield 8 millions of tons, or with deductions as above 5,250,000 tons.

Seam No. 4 underlies 932 acres. The thickness is unknown to me, but supposing it to be the same as the McGregor seam on the Acadia property, 6 feet, this will give 8,700,000 tons, or 5,592,000 tons allowing for pillars and waste.

The Oil coal will underlie about 1000 acres, but as its thickness is uncertain, I shall omit it in this estimate.

Thus the aggregate amount of coal contained in the four seams discovered on the property is 50 millions of tons, supposing the pillars to be robbed, or if left standing, 32,252,000 tons. If we allow a further deduction of one-fourth for possible deterioration from faults &c., we have still an aggregate amount of 37½ millions of tons, or if pillars left standing, upwards of 24 millions, which would be equal to a yearly supply of *two hundred thousand tons for one hundred and twenty years.*

SPECIAL ADVANTAGES.

In addition to the number of rich seams known to exist so near the surface, one great and special advantage possessed by this property consists in its uniform level character, combined with its very considerable elevation above the drainage level. This is important not only as facilitating communication within the property, but as indicating the probable absence of hard bands of rocks, which on some of the adjacent mining locations renders the operation of sinking shafts somewhat costly. The entire area comprised within the crop of Seam No. 1. appears to be occupied with the uniform and comparatively soft black shales which overlie the main

seam to the extent of 450 feet in thickness, and is very favourable ground for the sinking of shafts, &c.

The streams which traverse the property, though somewhat sluggish, can easily by a little artificial improvement of their channels be made available for the drainage of the mines. I have the best reasons for believing that the amount of water to be pumped will not be large. The property contains within itself abundance of timber of the kind required for mining purposes.

A rail or tram-way not over two miles in length can be constructed with easy grades, to form a junction with the Nova Scotia railway connecting with Halifax—a distance of ninety-six miles—and Pictou—distant about ten miles. Halifax being an open port during winter, will be a great market for the produce of the Pictou coal mines; and the very superior quality of the coal from Seam No. 1 on this property must always command the highest price.

For extensive shipment during the summer season, however, it will be found most advantageous to establish a depot and loading ground for the special use of the Company, at some point on Pictou Harbour. For this purpose, a lot of one hundred acres has already been secured at a most eligible point near the entrance to Middle River, as shewn on the small map, and to which an independent railway should be constructed.

In view of all the facts connected with this property, there seems no room to doubt that it possesses very great value, and will justify the outlay of any reasonable amount of capital to acquire and equip it, with the prospect of carrying on a very large and lucrative business.

Mr. J. B. Moore has in his Report given a careful approximate estimate of the cost of equipment and probable profits of working; thus rendering it unnecessary for me to enter upon the consideration of that part of the subject.

OTHER PROPERTIES.

It only remains for me to notice the other two areas specified to me, and designated on the small map by the red tint. That on the Middle River, although traversed by the productive coal measures, will not be found to contain them in good condition, and consequently is not to be regarded as of much value for mining purposes.

The other area to the north of the Bear Creek Mine I regard, on the other hand, as very favourably situated, as will be obvious from inspection of the map. The out-crop of the coal seams will be found to occur towards either end of the area, and dipping towards its centre ; and thus the entire area will probably be underlaid by them, and in good condition, especially towards the north-west end.

During my visit some trial-pits were sunk, and other exploratory work done to a small extent upon that end of the property, but we failed to strike any coal seam. The drift clay at the pits sunk, however, bore unmistakeable evidence of the proximity of such deposits ; being copiously charged with angular fragments of coal, black shale and fire-clay. A little beyond the opposite boundary of the area, another company are engaged in extensive explorations, and with very promising results ; and as the seams run on to the area in which you are interested, their operations will establish the value as effectually as if carried on upon the property itself.

This area is undoubtedly well worthy of extensive exploration, and there can be little doubt that it will prove an important coal mining location.

The railway from the Bear Creek Mine to the loading ground on Middle River should, if possible, pass through this lot, for which purpose it is believed that favourable grades can be obtained.

I have the honour to be,

Dear Sir,

Your most obedient servant,

CHARLES ROBB.

Mining Engineer.

SECOND REPORT OF DR. DAWSON, LL.D., F.R.S., F.G.S.

TADOUSAC, 15th August, 1866.

GEORGE A. DRUMMOND, Esq.

DEAR SIR,—For the information of the gentlemen interested in the Campbell Coal property on the East River of Pictou, I beg leave to state, in addition to my letter of July 27th, addressed to you, that Mr. Robb has submitted to me a rough copy of the Report of his explorations, and that I entirely concur in the high opinion which he expresses of the value and capabilities of the property which, in my judgment, *is one of the most important and valuable coal mining locations in Nova Scotia.*

The development of the "Main Seam" in the western part of the area, is alone sufficient to establish this conclusion, and to this must be added the value of the "Deep Seam" and of the other underlying beds, and the strong probability that the whole of these beds will be found also to underlie at a workable depth the southern and eastern portions of the area. *The excellent quality of the coal*, of which I have farther convinced myself by trials made since my return, and referred to by Mr. Robb, is also an important consideration, as well as the proximity of the mine to the Provincial Railway and to navigable water on the Pictou Harbour and the Middle River of Pictou.

I further agree with Mr. Robb that while the Campbell or Bear Creek area is that to which the highest value attaches for immediate mining operations, the probability of the extension of profitable coal beds through the second or "Sutherland" area, should induce effective explorations of this part of the property.

I have the honor to be,
Your obedient servant,

J. W. DAWSON.

REPORT OF JOS. B. MOORE, Esq., CIVIL ENGINEER.

MONTREAL, 16th August, 1866.

GEORGE A. DRUMMOND AND HENRY MCKAY, ESQUIRES.

GENTLEMEN,—Through you, I beg to report to the gentlemen interested in the negotiations for the purchase of the "Bear Creek Coal properties," and at whose requisition I undertook to proceed to Halifax for the purpose of obtaining from the owners of the properties, the ratification of the agreement prepared by the Hon. J. J. C. Abbott. Having accomplished my object, I proceeded to New Glasgow, and found Mr. C. Robb busily engaged in prosecuting his labours on the property, which I visited and where I also found Mr. John Campbell, ready to render any and every assistance required. After remaining a few days, and instituting enquiries on many subjects which I thought would be beneficial to the interests of all concerned, I left for a short time; and on my return I found that Mr. Robb had made most satisfactory progress, and some important discoveries of other seams of coal.

It is not for me on the present occasion to make any comment concerning the property, its condition and value; that will be done by Prof. Dawson and Mr. Robb in their respective Reports, and I feel assured these gentlemen will set forth the merits and value of the property in a manner more satisfactory than I could. I will merely say that a more compact and reliable property is not, I think, to be found. It is favourably situated so that the coal can be got easily and cheaply to market; and for quality the coal will, I consider, compare most favourably with that of any other mine.

I will now draw your attention to the routes by which the coal can be conveyed to shipping points.

The first route is by making a road to intersect with the government railroad from Halifax to Pictou; the length would be about two miles to the main line and thence about ten miles to Pictou Harbour. A heavy descending grade will be on the route from the coal field; then a portion of level road; after which an ascent of about 52 feet to the mile; from that, down grade to the intersection with the main line. The cost of this railroad would be moderate.

The second road is by a railroad to the Middle River, which may be reached within a distance of five miles, to a point where a good shipping place exists with deep water. I may mention here that a piece of land on the Middle River, with a good water frontage, has been secured for the Company, should they deem it advisable to construct a railroad to this point. The route is quite practicable and of easy character. I received valuable information concerning both these routes from C. Schrieber, Esq., C. E., and had opportunities of consulting several drawings and profiles made by him of this section of the country. From what that gentleman tells me I do not think the cost would exceed \$16,000 to \$17,000 per mile. I had also an opportunity of seeing a section for a line over or near route No. 1 surveyed and located by Mr. Cambey under the direction of Mr. Schrieber; this was prepared for the Acadia Company and will be made by them to transport their coal from the Carmichael area, from a slope situated near the Campbell shaft. A route to Middle River would likewise accommodate this portion of the Acadia Company's property very well.

The third route will be over line No. 1 to the government road, and then to Halifax, which outlet would of course be only used in winter, if ships found it profitable to resort to that port in the winter season to prosecute the carrying trade in coal.

The outlets for the coal are now before you, and the most mature and careful consideration should be given as to the route to be adopted, and no determination should be come to, until plans, sections, estimates and reports are made as to the cost, advantages and disadvantages of the respective lines. In connection with this subject I would draw your attention to the advisability of getting the Acadia Coal Company to act with us in this matter, and make one or other or both these roads (if deemed advisable) on joint account, as they would serve our common interest; a brief study of the map will prove this. The same remarks would apply to the French mine, the proprietors of which would find these roads advantageous to them.

I hope I may be excused for advancing my views and opinions as to the mode of opening up and developing this fine property—much, very much of its future success depends on a wise course of procedure at the outset, and I should strongly recommend that thorough and

well matured plans should be prepared before any outlay whatever is incurred for works. I would advocate all convenient despatch in preparing plans and acting thereon ; but would deprecate all hasty decisions, or operations with a view to realize immediately out of the coal. Coal properties, however favourably situated, cannot be opened and equipped hastily, if the work is to be well and wisely done ; and therefore some time must elapse before a return can be expected. Shafts or slopes have to be opened, houses built, engines planted, roads cleared away, and much other work done. Let a good plan be adopted, then push forward the work with economy and despatch under a competent practical superintendent and managing director.

The first step to be taken will, of course, be to obtain a transfer of the property, then to have plans and estimates got up and prepared without loss of time. With regard to the value of the fee-simple of the lands on which the mines are situated, I instituted enquiries ; it can be but small as the land is poor, covered with hemlock, balsam and spruce. The first-named timber might prove serviceable for props and other under-ground supports, though too much importance should not be attached to its value. A large portion of the timber would have to be cleared off and burnt to make room for the necessary works and buildings, as a safe guard against fire ; and further it is generally found cheaper to contract for the delivery of timber than to send your own men and horses into the woods to make and haul it. I should advise that the purchase of these lands be made, provided they can be obtained at a moderate cost.

No rate has yet been established for the transport of coal over the government line ; assurances, are however given that liberal terms will be conceded. It is not yet settled whether government will furnish coal wagons. I should strongly advise the Company to furnish their own, otherwise much loss of time, and vexatious delays will occur, especially towards the opening and close of the navigation, when a brisk demand exists for coal. Of course a reduced rate of freight will be charged to companies furnishing their own coal wagons.

With respect to calculations of cost of working and equipment, correct and detailed estimates can only be prepared when the plans and sections of the road are obtained, and other information got ;

then the actual outlay will greatly depend on the mode that may be adopted of opening the mines, the class of houses that are erected, the description of working plant selected and many other circumstances. To attempt to deal with this subject now in the absence of full particulars would occupy time to little purpose. I believe the mine can be well and efficiently equipped within the approximate but rough estimate of \$128,000.

Little more remains for me to add on the present occasion, except to express my hope that my labours and efforts in the two visits I have made to the property may meet the approbation of those concerned. I cannot conclude without expressing my entire satisfaction with the zealous manner in which Mr. Charles Robb devoted himself to the discharge of his duty, and the ability with which he conducted his labours.

I remain, Gentlemen,

Your obedient servant,

JOSEPH B. MOORE.



PROVINCE OF NOVA SCOTIA.

AN ACT TO INCORPORATE THE INTERCOLONIAL COAL MINING COMPANY.

29 Vict., Cap. 110.

(Passed the 7th day of May, A. D. 1866.)

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|---|---|
| 1. Incorporation. | 6. Company, when to go into operation. |
| 2. Capital Stock. Shares. | 7. Meetings—when held. |
| 3. First meeting, when and where held. | 8. Proceedings—to obtain lands. |
| Company—how organized. Vacancies, how filled. | 9. Books, &c., open to inspection. |
| 4. Liability of shareholders. | 10. Lists of stockholders. |
| 5. Agent—service of process. | 11. Company may construct railways, &c. |
| | 12. Act—when to cease. |

Be it enacted by the Governor, Council, and Assembly, as follows:

Incorporation. 1. The Honorable James Ferrier, E. M. Hopkins, George Moffatt, John Campbell, Samuel Leonard Shannon, Henry Thomas, George A. Drummond, William H. A. Davies, J. B. Moore, and Henry McKay, and their associates, successors, and assigns, are hereby constituted a body corporate and politic, by the name of the *Intercolonial Coal Mining Company*, by which name they may transact all business herein authorized, for the purpose, and with the power of opening and working coal and other mines in the county of Pictou, or elsewhere in the Province of Nova Scotia; and purchasing, holding, using, and conveying lands, mills, machinery, vessels, vehicles, and other property, and manufacturing coal oil or other substances from coal; boring, pumping, or otherwise producing petroleum, and trading in such coal, coal oil, petroleum, and other substances; and constructing such roads, railways, and tramways, as may be necessary for the transportation of coal, coal oil, and other substances and supplies from and to the mines, and using the same for the

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purposes aforesaid, and all other purposes for which roads, railways, and tramways may be used; and constructing, purchasing, or hiring and holding such wharves, water lots, docks and piers as may be necessary or proper for the working of their mines, the storing, banking, and shipment of coals and other substances, or for the protection or safety of shipping, and constructing dwellings or other works and buildings for the miners and workmen of the company, and for other uses of the company; and of doing all other things which the company may deem incidental or conducive to the foregoing purposes or objects, or any of them.

2. The capital stock of the company shall be five hundred thousand dollars, divided into shares of one hundred dollars each, which shall be personal property, transmissible and assignable as such. The company may issue stock in payment for lands or other property on such terms as the directors may think best, and such stock shall be deemed to be full paid up stock as if paid in money. The company may also issue bonds bearing any legal rate of interest, payable in Halifax or Montreal, and secure the same, if deemed expedient, by mortgage of its property or franchises, and dispose of the same in such manner and extent, and at such price as the directors may think best. It shall not be necessary to affix the seal of the company to any of its acts or contracts, except its conveyance of lands and its stockholders' certificates.

3. The first meeting of the company shall be held at such time and place in this Province, or in the Province of Canada, as any three of the corporation shall determine, of which public notice shall be given in one or more of the newspapers published in Halifax and Montreal at least twenty days previous to such meeting, at which meeting, or at any subsequent meeting, the company may be organized by the adoption of bye-laws, and the election from the shareholders of a Board of Directors, not less than three nor more than nine in number. The number of directors may be changed from time to time by an alteration of the bye-laws. There shall be an annual meeting of the stockholders at such time and place as the bye-laws shall prescribe; at such, or at any subsequent annual or special meeting, the bye-laws may be made or changed and the Board of Directors elected. Special meetings of the stockholders may also be called by the directors on due notice thereof being

Capital stock.

Shares.

First meeting—
when and where
held.Company, how
organized.

given to the stockholders. The directors shall have power to transact the business of the company, subject to the bye-laws. A majority of the Board of Directors shall constitute a quorum for the transaction of business. The directors for the time being shall hold over until others be chosen in their places. In case of a vacancy in the Board of Directors by death, resignation, or otherwise, it may be filled for the residue of the term by the remaining members of the Board. The President and Secretary, and such other officers as may be required, shall be appointed in such manner as the bye-laws may provide.

Vacancies, how filled.

Liability of shareholders.

4. No member of the company shall be liable in his person or separate estate for any debt or obligation of the company, or for any further, greater, or other sum than such as may remain unpaid on the stock taken or held by him, unless he shall have rendered himself liable for a greater sum by becoming surety for the debts of the company; but no stockholder who may have transferred his interest in the stock of the company shall cease to be liable for any contracts entered into before the date of such transfer unless he shall have paid up in full for his stock, so as any action in respect of such liability shall be brought within six months after the date of such transfer.

Agent—service of process.

5. The Directors shall appoint an agent resident in this Province, service on whom of all process, notices, and other documents, shall be held to be sufficient service on the company. The name and address of such agent shall be filed with the Registrar of Deeds of the County of Pictou; and in case of the death or absence of such agent from the Province, and before the appointment of another, service of process may be made by affixing a copy upon some conspicuous building or office of the company in the County of Pictou, and advertising the same for two weeks in a newspaper published in that county.

Company—when to go into operation.

6. The company may go into operation as soon as it shall have been organized by the adoption of bye-laws and the election of a Board of Directors, and a sum equal to twenty-five per cent. of the capital stock actually paid in; provided the amount so paid up be not less than one hundred thousand dollars.

Meetings—where held.

7. The meetings of the stockholders and of the directors may be held at any place within this Province or in the Province of Canada

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as the bye-laws may from time to time prescribe ; and the office for the receipt of subscriptions to stock, the transfer of shares, and the transaction of all business of the company, except mining, may also be established at such place within this Province or in the Province of Canada as the bye-laws may from time to time prescribe.

8. Whenever it shall be requisite for the construction of any ^{Proceedings to obtain lands.} road, railway, or tramway, contemplated by this act, that the company should be invested with the right or title to the lands over which the same shall pass, and contiguous thereto, for the track or stations, and no agreement can be made for the purchase thereof, it shall be lawful for the company to apply by petition, with a plan annexed, to any one of the Judges of the Supreme Court, setting forth the nature and situation of the lands required, the name of the owner or occupier thereof, and praying a conveyance of the same to the company ; whereupon such Judge, being satisfied that such lands are required, and are not more extensive than may be reasonably necessary, shall appoint a time and place for the consideration of the petition, and shall direct notice thereof in writing to be served upon the owner or occupier of the lands if in the Province, and to be published for the period of one month in at least two newspapers published at Halifax, and also in one newspaper of the county, if there be any, where the lands lie ; and at the time and place so appointed the Judge shall require the directors to appoint one appraiser, and such owners to appoint another appraiser, and the Judge shall appoint a third appraiser ; and the appraisers, having first subscribed an affidavit in writing, to be sworn to before a Justice of the Peace and annexed to such order, to the effect that they will faithfully make such appraisement, shall with all convenient speed, proceed to and appraise such lands ; and shall make such appraisement in writing, and return it under the hands of the appraisers or a majority of them, to a Judge, who may confirm, modify, alter, or reject such appraisement, or direct a new appraisement ; and the company, upon paying to the owner, or into the Supreme Court, the amount of appraised value as finally confirmed and the expenses of the appraisement, and registering the order, affidavit, appraisement, and confirmation in the office of the Registrar of Deeds in the county in which said lands lie, shall be vested with the title to such lands and entitled to the immediate possession thereof.

Books, &c. open
to inspection.

9. The books and accounts of the company shall at all times be open to the examination of such persons as the Governor in Council shall appoint to inspect the same.

List of stock-
holders.

10. A list of the stockholders of the company, and of the number of shares held by each of them on the first day of January in each year, certified under the hand of the President and Secretary, shall be filed in that month with the Registrar of Deeds of the county of Pictou ; and it shall not be necessary to file any other certificate.

Company may
construct rail-
ways, &c.

11. It shall be lawful for the company to make or construct any road, railway or tramway, over, under, or across any river, brook or stream ; subject, nevertheless, in such cases, to such regulations as may be made by the Court of Sessions for ensuring the safety of the inhabitants and of their property.

Act—when to
cease.

12. This act shall cease and determine if effective works shall not be commenced and continued under it within two years from the date of its passing.

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