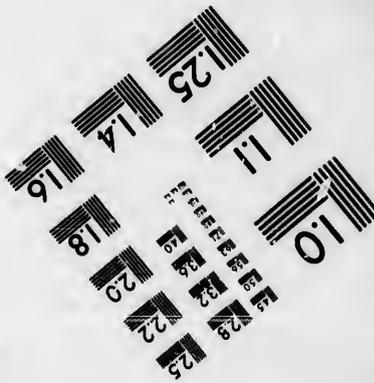
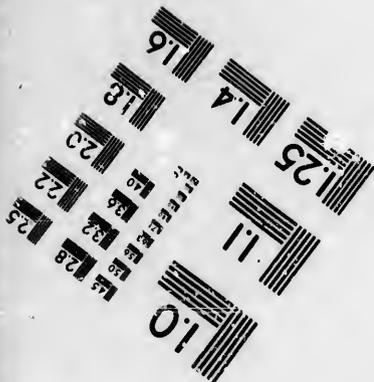
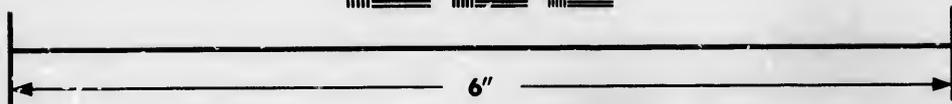
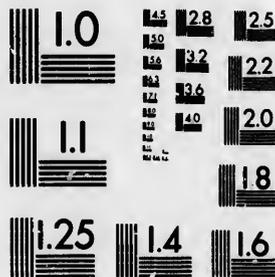


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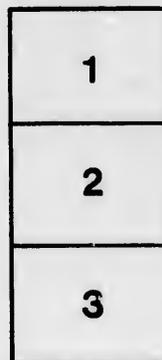
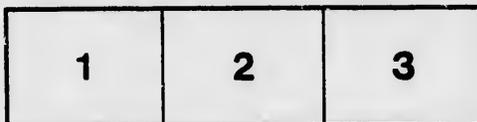
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THE HISTORY
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ANTHRACITE COAL
AT
LEPREAUX,
NEW BRUNSWICK.

COMPILED FROM RELIABLE SOURCES AND PERSONAL OBSERVATIONS.

BY ROBERT ROBERTSON, JR., ESQ.

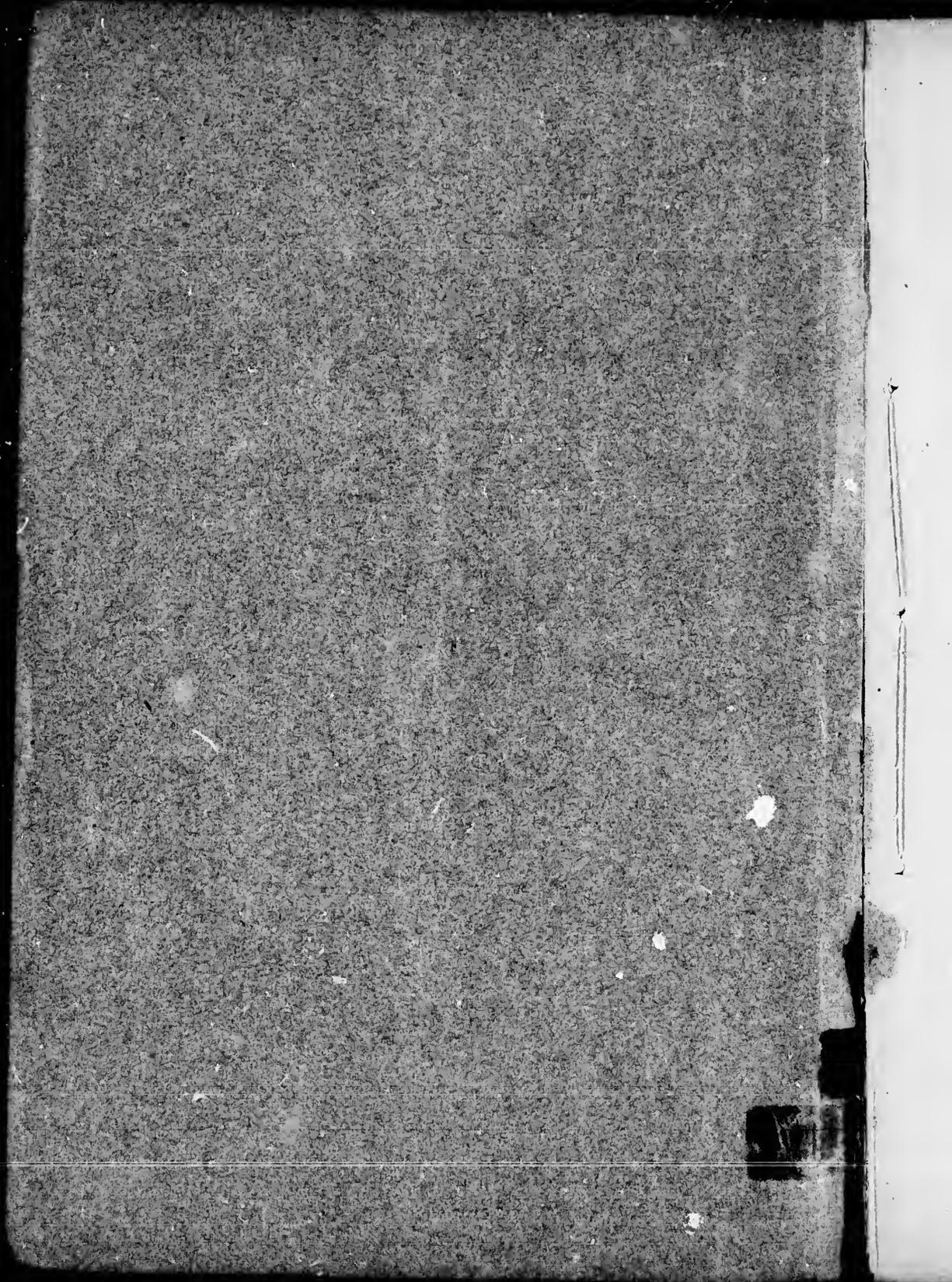
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The object for which this History of the Discovery of Anthracite Coal in New Brunswick is written is to give, in as concise a form as possible, all information on the subject, much of which could not be well given in the Prospectus.

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THE HISTORY OF THE DISCOVERY OF
ANTHRACITE COAL AT LEPREAUX,
NEW BRUNSWICK.

In the year 1872 Mr. Gideon K. Hanson, one of the proprietors of the lands situate at Lepreaux, on which the coal deposits have been discovered, whilst digging sand on the shore, for the purpose of fertilizing the clayey soil of his farm, turned up, in excavating, a quantity of black material, the nature of which was unknown to him. Its peculiar lustrous appearance attracted his attention and aroused his curiosity as to its exact composition. For the purpose of ascertaining this he took a quantity of it to Mr. Geo. Mathews, an official of the Custom House in St. John and a gentleman of considerable repute in geological matters, asking him for an opinion on it. It was pronounced to be a variety of anthracite coal, and he stated that he had found small seams of it in that locality some years previously.

Becoming imbued with the idea that there was coal on his grounds he began "prospecting" for it after his own fashion, but as his ideas of the proper way of conducting such an operation were vague he did not meet with much success, and for the most part his labor was in vain.

During the next season Mr. Harvey Stickney, purchasing agent of the Eastern Railway Co., in Boston, and a connection of Hanson's, came to Lepreaux for the purpose of spending his holidays, avoiding the heat of Boston, among the fog bound cliffs and coolness of the sea shore of the Bay of Fundy.

He became much interested in the plans of his host, and spent some time in endeavoring to prove the combustibility of the products of the deep pits which had been dug here and there in the ground. Finally he concluded to cast his lot in the enterprise and

to contribute towards the attainment of the coal which he fully believed was hidden there.

No definite or scientific plan was adopted in the search; no regular shaft, with its walls well timbered to resist the pressure of the surrounding earth, was sunk; merely deep holes, wide in the mouth and converging towards the bottom, were dug, and sometimes the tide, coming a little higher than usual, washed away and obliterated the marks of their labors. So their efforts continued for a time, frequently interrupted by the chaffing jeers of neighbors and relations. Still they persevered in their well meant but futile efforts, but success did not attend them, and the project was almost abandoned. The time and money expended was counted as lost except by themselves. They clung to the belief that coal existed there, and if properly handled, would be brought to light.

One summer's day of 1875, Mr. Hugh R. Robertson, a mining engineer, and a gentleman who has been intimately connected with many notable projects in his profession, was in the office of J. A. Caldwell, Esq., in Boston. He had just returned from a professional visit to a plumbago discovery in the Northern portion of the State of New York, and was at the moment holding in his hand, and dilating upon, a specimen that had been taken from the deposit he had been visiting. The attention of Mr. Stickney, who was present, was attracted to the specimen. It wore a strangely familiar look, and the expression escaped him almost involuntarily, "I know where there's any quantity of stuff like that. Is it worth anything?" Robertson's answer, "You show me any quantity of that, and I'll make you any quantity of money," was characteristic of him. The locality having been mentioned he was dubious of the *quantity*, for he well knew that no carboniferous formation was allowed by Geologists to that section. Granitic structure was that of the rocks near Lepreaux, and he remembered graphite was a form of carbon. Besides he had the impression that if it actually existed in the immediate vicinity of a city as large as St. John, that in all probability it would have been discovered before, and many would have been subsequently interested in it. So he contented himself at this time with the remark: "Send me some specimens, and I shall give you a report of them."

Some few weeks elapsed and the promised specimen came to hand. It came in the shape of a medium sized ball of apparently

black mud. He was engaged at this time as Chief Engineer and Superintendent of the Merrimac Silver Mines, at Newburyport, Mass., and the specimen was handed over by him to Prof. Steinbach, chemist and assayer to the mine, for analysis. It was pronounced to be fifty per cent. pure anthracite; but in view of all the facts of the case, how it had been taken from the shore, and the locality, and also as it was commingled with mud, and had evidently been affected by salt water, he stated that his opinion was, that some time in the past an anthracite coal laden vessel had been wrecked on the coast, and her cargo had been washed ashore, mixed with the mud, and hence the delusion. Satisfied that this was the correct conclusion in regard to its presence, Robertson dismissed the subject from his mind.

Meeting with Stickney at a subsequent date, he was interrogated in regard to the result of the analysis. The opinion, as stated above, was given, with advice to be guarded against even unintentional hoaxing in the future. Stickney well knew that, in the memory of the oldest inhabitant, no vessel had ever been wrecked on that part of the coast, and also that, unless the tortuous windings of the channel were followed, it would be impossible for a vessel to come over the shoals that lie for miles to seaward of the place, even if she were driven before a ship-wrecking Southwest gale.

Convinced by these statements, and with the fact, that fifty per cent. of pure anthracite was found in the specimen that had been analyzed, Robertson was forced to give a certain credit to the idea that a mine really might exist. Sanguine of success, and hopeful of results, his interrogator endeavored to get him to visit the scene of the deposit at once. This he could not do at the time, and it was not till later, in the spring of 1876, when circumstances called him to the Provinces, that he was enabled to make the promised inspection. In company they travelled to St. John, and from thence took the route to Lepreaux. On the road down—the St. Andrews road—Robertson jestingly pointed out the granitic nature of the rocks and hinted rather freely his doubts of finding anything more than the imported article.

When, however, they had diverged from the main road and taken the one that leads to Lepreaux, his attention was arrested by a change in the *surface indications*. Olive colored shale sprang up under notice, and a number of peculiarities, familiar to the practised

eye, hushed the jests and caused a thoughtful silence to steal over him. Eye and ear were from that time engaged in taking in testimony and evidence, and after the arrival at the place whence the specimen that had been analyzed had been taken, and when a thorough examination of the locality and formation had been made, his answer to the question "What do you think of it?" was: "If there is no anthracite coal here, there is at least every indication of it." After this opinion had been expressed, the next question was in regard to whether it would be a paying speculation to undertake the development of it. It was decided in the affirmative.

Then it was mutually agreed between Messrs. Gideon and Oscar Hanson, who were either the joint or individual owners of all the lands in the neighborhood, on the one part, and Messrs. Robertson and Stickney on the other part, that these latter gentlemen should furnish means and devote attention to the finding of the article in a merchantable state. When this was accomplished, they should equally participate in all the emoluments and benefits that could arise out of the *mineral right* of the properties. With this understanding work was begun. Robertson was *en route* for his native town when he diverged to make this examination. Proceeding thither, he engaged the services of a practical miner, and placed him, with a small gang, to make the initiative in the construction of a proper prospecting shaft.

Before proceeding to follow the progress of the work, it is due to the gentlemen who unwaveringly held to their faith, to state that it was under disagreeable and dissuading circumstances that they prosecuted their well intended but fruitless search for this "treasure-trove." Even those who afterwards entered into it with enthusiasm and spirit, and who were willing to embark their means in the discovering of it, almost by force endeavored to prevent the progression of the earlier stages of the work. Nevertheless they persevered, and at last arrived at the period when, through a fortuitous conjunction of circumstances, the interests and energies of Mr. Hugh R. Robertson were enlisted in the cause.

From that day it assumed another phase, and as foot after foot sunk down through the ground, gave better and better tribute to their faith and judgment, they began to experience a feeling gradually coming over them which increased in magnitude until it

might be likened to a cloud encompassing and enveloping them about. It was the feeling of positive success to be realized in the early future.

Many and various were the opinions expressed upon the nature of the exhumed product. By some it was designated "Plumbago," "Graphite;" in fact so many names were given to it, that one listening to them all would fancy that it contained some of the distinguishing marks of nearly every known substance. Of such is the generally thoughtless judgment of men.

The sinking of the first shaft was commenced in the month of May, 1876. Mr. Robertson having had the offer of Superintendent of the "Denbo Galena Mine," near Eastport, Me., resigned his situation on the "Merrimac Mine," and came East in order to be near the spot that was beginning to be so interesting to him. When he first settled in his own mind the opinion that it was a valuable deposit, he was eager to get a substantial interest in it, and even though he fully believed that three hundred feet, and more, of earth and rocks intervened between the surface and the coal basin, and also that a considerable sum of money would be required to effect a passage *through* to the merchantable article, yet he cheerfully undertook the speculation, feeling assured that at last he would be rewarded more than many fold.

The first shaft was located directly on the shore at high water mark, and on an *outcrop* of shale which can be readily discerned, at intervals, for more than a mile, following the line of the shore. The conclusion why the shaft should be sunk at this particular spot was arrived at through the grades of sound syllogistic reasoning. The shore, from Mace's Basin to Point Lepreaux, is nearly a straight line; and presents in many places bold and abrupt cliffs, showing a cross section of the geological formation of the country. By taking a boat and sailing along the shore, there can be easily traced the different *stratas*, and a definite conclusion can be arrived at in regard to their positions. Two miles South of Mace's Basin an *upheaval* has taken place among the rocks which form the point of land known as Point Lepreaux. By following the shore to the Northward the *stratas* are perceived to take a more upright position, and within a short distance of the *prospecting shaft* the *mountain limestone* can be distinguished overlying the Devonian rocks, it in its turn overlaid by the *mill stone grit*, or *grey rock*, as it is called in Pennsylvania.

Upon this again comes the *strata of coal shale*. If these were found in the positions resultant from the upheaval they would form a high mountain extending to the Southward of Mace's Basin, but *glacier* action, which is clearly perceptible on all the rocks, has washed the upper formations seaward, and laid bare the Devonian as it appears just beyond the Southern shore of the Basin. Tracing the formation inland the *grey rock* is found overlying the coal measures, and three miles further to the Northward the *new red sand stone* is perceived, taking again a more horizontal position, thus placing it in its proper geological place—the *carboniferous era*—and showing clearly and conclusively that the coal basin lies to the North of the shaft. So on this *shale* which *dipped* to the Northward, and on the very edge of the water, which extends Southerly, the first shaft was begun. For fifteen feet naught was brought to light but *coal shale*, save now and then small lumps of *crushed coal*, which seemed to have found their way above their natural bed. Then began the *crushed coal*, and the seam to widen, and for ninety feet, and more, the shaft was sunk, showing a gradual increase in lustre and consistency. When this point had been reached a more encouraging article was found, that showed that gradually, though surely, they were progressing to the El Dorado of their hopes. It is probable that if this better quality had not been reached the history of the enterprise would have terminated at this stage of its existence. For it appears that the foreman, in sinking the shaft, had not taken sufficient precaution in "timbering," and for days there could be distinctly heard, at intervals, the crushing and falling of the earth and coal about it. The soft nature of the seam, through which it had been sunk, rendered it necessary that extra care should have been taken to make it secure, and to guard against the surrounding earth crushing it in and destroying it. The sounds became more and more ominous, and the miners began to feel that working under these circumstances was attended with uncertainty and danger. One Saturday night in September, after work had been done for the day, and operations were delayed until the next night, the final crush took place, and with such force that the strength of the timbers was insufficient to resist, and the labor of months was relentlessly swallowed up in a few hours.

A telegram sent to Mr. Robertsen, who was at the Donbo Mine, brought him by boat from Eastport, fearful that the loss of money

had been supplemented by the loss of life. His fears, however, were groundless; no lives had been sacrificed; but as he gazed upon the ruin of this first regular attempt at scientific *prospecting*, his heart sank within him, and he departed for a time, until, with a better organization, he could prosecute the search. Installing his foreman in the place held by him on the *Galena* mine, he went to New York and there spent the winter of 1876 and 1877.

The information and specimens that had been brought to light by this first shaft were very encouraging, however, and having his theory of the crushed coal, and the place beyond it where he expected to find the regular Anthracite corroborated by several gentlemen of experience from the coal regions of Pennsylvania, he resolved in the early Spring to prosecute the search with redoubled vigor.

Mr. Stickney who had been building hopes of the future being bright, as from time to time news reached him in Boston of the success that was attending the efforts of his partner, now began to feel a despondent reaction, his belief in the presence of the coal did not diminish but the idea that it would involve more expense than at first calculated was his *bete noir*. He remembered though that at one time in the summer, when the shaft was between sixty and seventy feet deep that some samples, which were but *crushed coal* however, had been forwarded by Mr. Geo. Mathews, of St. John, to Mr. D. B. Harrington, Mineralogist and Chemist to the Geological Survey of Canada, for the purpose of having them analysed. Months had rolled on and the statement of the analysis had not come to hand. His curiosity in regard to it was awakened, and after some correspondence on the matter, the post brought him the following from that gentleman:

“Analysis by Slow Coking of Crushed Coal taken from the measures at Mace’s Bay, New Brunswick:

| | |
|------------------------------------|--------|
| Hygroscopic Water, | 1.25 |
| Volatile Combustible Matter, | 4.33 |
| Fixed Carbon, | 57.49 |
| Ash, | 36.88 |
| | 100.00 |

The amount of “fixed carbon” in this analysis was not large, and the amount of ash was far in excess of what it should be, but remembering the fact that it was only *crushed coal* that had been offered, the result was satisfactory in the extreme. Mr. Robertson was but waiting until the cold Winter of New Brunswick would

begin to mellow in the lap of Spring, when he intended to follow up his theories and convictions in regard to the locality of the merchantable article. His return to the scene of his labors was in the month of May, in the present year, 1877. A new shaft was started about one hundred feet to the Westward of the site of the unfortunate one, and it also was placed directly on the shore and upon the *outcrop* of coal *shale*, to which reference has before been made. He himself gave up his positions on other enterprises, and devoted his personal attention to the work and construction of the shaft.

The same experience that had marked their downward progress in the first shaft was repeated in this one—coal *shale* and *crushed coal*—only they worked down the *hanging wall* of the seam, and at intervals *drifted* into it. At forty feet the first *drift* was made, and it was found that at this point the coal still was *crushed*. The theory that the manager had in regard to its being in this state instead of being hard, and exactly of the same nature as the Penn. anthracites, was that in the *upheaval* of the edge of the *basin* the coal had been crushed by the pressure of the surrounding rocks among which it had been turned and forced up. Another reason for its softness has been given at a later date, to which reference shall be duly made. However, he has the theory, and still holds to it, that when once the *basin* of the deposit is touched—when once the upturned edge of the seam has been followed down until it resumes its horizontal position—then shall the coal be found in its normal purity and excellence, and this theory has been verified by the experience that has been gone through with in many mines. Everything worked in harmony with his predictions, gradually a better quality of this soft *hard* coal was obtained, and enthusiasm once more held sway in the breasts of those whose hopes had been dashed down and shattered from the high pinnacle on which they had placed them.

Following down the *hanging wall* of the *seam* they found at sixty to sixty-five feet, an article equal to that found in the first shaft at ninety. At eighty feet a *drift* was cut into the *seam*, and it was here discovered that the breadth of the same was sixteen feet. The coal taken from here kindled readily and burned freely in an open grate, and without a forced draft; it, however, though not *crushed* coal exactly, was yet of a soft nature and would not bear being handled much in export.

Mr. Robertson had become acquainted with quite a number of the people of St. John, which city is situated but a distance of twenty-six miles from the scene of operation, and the theme of having an anthracite coal deposit so near became quite a subject of conversation and speculation among the inhabitants. The fact of its being there was not generally known until May and June, and then was discredited for the most part; but the reports of those who had visited Lepreaux, and who had not only seen the coal hoisted up from the pit, but had handled it, and had also seen the performance it gave as a combustible, became more widely circulated, and a greater inquiry into the facts of its presence began to take place. Visitors came to inspect both by land and water, and it became a favorite route for those who wanted a day's "outing." Tug-boats and steam yachts doing the duty of carriage by water, and on the land pleasant little parties of four or five behind a fast span of horses, soon rolled over the intermediate distance that lay between the city and the mine.

On the ever to be remembered 20th day of June, that "black Wednesday" for the people of St. John, quite a large party had departed, in the early morning, on a tug-boat for Lepreaux. The sun shone brilliantly out of the heavens flecked with fleecy clouds; the wind blowing coolly from the Northwest, dispelled the heat of the day from the party pleasure bent. The bow of the little steamer dashed the water, meeting it, merrily aside, and caused a cheerful sound of progress to be heard. The white crested tips of the wavelets lingered for a moment and then vanished in the circumfluent green. The sea gulls soared on high on breezy pinions, and all nature seemed to lend its influence to make the day one of pleasure. The mine was reached, inspected and admired. Those who descended the shaft gave testimony to the thickness of the seam, and of the appearance of the prospect *below*. Then came the hour for departure. Before leaving some one's attention was attracted by the dense clouds of smoke that arose in the direction of the city, but the reason "fire in the woods" seemed to satisfy any holding doubts as to whether the smoke did not emanate from flames nearer their homes. The party steamed swiftly homeward, and joke and laugh passed heartily among the passengers, though still the smoke rose higher and denser over the city, unheeded for a time; but grave conjecture began to usurp the place of light speculation.

When at last, with rounding the point that brought the doomed city, clothed in its shroud of flames and smoke, in view, the awful truth burst upon them; the hearts of all were filled with terror for an instant, and then an overpowering desire to fly to the rescue of loved ones and home came over them.

The calamity that had befallen the city so engrossed the attention of its people that coal mines and other schemes were forgotten for a time, yet still the work was being pushed rapidly on, and the results of their labors were becoming more satisfactory. At one hundred and ten feet the coal assumed a better appearance and seemed to approach the right article, with an increasing ratio. At one hundred and twenty feet the shaft was sunk into the *seam*, still going downward, and still *dipping* to the North.

A word about the *inclination* of the seam. It has been stated that *hanging wall** had been followed in sinking the shaft. In following it, it was immediately noted that it *dipped* to the Northward, consequently the shaft *dipped* towards the North also. Fifteen degrees was about the angle of the *dip* at the start. This *dipping* was observed to increase its angle as progress was made downward, and this strengthened the theory of reaching the coal basin in a certain length, and escaping from the crushed or soft coal into the hard.

As stated before, the shaft was made to diverge from the *hanging wall* into the seam at one hundred and twenty feet, and a large *drift* was cut across it, disclosing its breadth to be twenty feet six inches, sixteen feet of which was fairly hard coal. A descent into the shaft at this stage was particularly reassuring.

The following, taken from the *Globe* newspaper of the 27th July, gives a fair description of the appearance of the lands above and below:—

“For many years the outcrops and coal indications in the neighborhood of Musquash and Point Lepreaux have given foundations for the belief that this valuable article existed in quantities in those localities. But owing to no exertions having been made to determine the truth of its existence, beyond merely digging deep holes in the ground, no satisfactory conclusion was arrived at, although some of the old inhabitants state that burning coal was obtained in small quantities from the outcrops as long ago as sixty years. Within the last two years, however, the proprietors of land in the neighborhood of Point Lepreaux have been sinking a prospecting shaft,

*The *hanging wall* is the upper surface of a seam that *dips* or inclines. If it were perpendicular there would be no *hanging* or *foot* walls, but both would be the same, viz: vertical walls.

and an invitation having been extended us to visit it, we accepted of the same and have had our expectations more than exceeded by what we saw.

"It has been generally believed that the surface indications do not indicate the carboniferous period of geological formation in this locality, but this is not true, for shales, sandstone, conglomerates and lime-stones abound, and fossils of leaves and vegetable matter have been found in the same in profusion and it is acknowledged that these undeniably indicate the true carboniferous formation.

"The situation of the shaft is on the North side of the arm of Mace's Bay into which the little Lepreaux river empties. The formation of the land to the Southward across the intervening water has the appearance which characterizes the Devonian period, and it dips downward and underlies the land to the Northward, and this again is another proof of the carboniferous formation of the land that is being prospected, for it gives its proper geological position.

"Having arrived at the mouth of the shaft we prepared for descent by donning overhauls to protect our clothing from the drip and dirt incident to such an undertaking, and under the guidance of the affable manager, Mr. Hugh R. Robertson, we step on to the ladders and begin. The first ten to fifteen feet is through shale and the upper crust overlying the seam, from thence begins the crushed coal which crumbles in the hand when brought in contact with the air. Soon all light is shut off from the mouth of the shaft by a slant that it takes to the Northward, and we are dependant for light on the fitful gleam of the oil lamp that is carried in the hat of our guide. After a few turns from one side to the adjacent on the ladders we are told that we have descended forty feet, and are at the mouth of the first drift that has been made. It extends but a few feet from the wall and defines the breadth of the seam. At this point an examination shows that we have passed through the crushed coal and that the seam is assuming the appearance of a true Anthracite. Another descent of forty feet and we are at the mouth of another drift, eighty feet from the surface of the ground. The seam here is broader and the coal, though not as pure as it will be when the shaft has been sunk well into the bed, is a merchantable article.

"A miner detaches a bucketful to be taken to the surface and burnt under our inspection. We went down thirty feet further but our lamps going out we ascended to the surface and prepared for a descent to the bottom of the pit in the "tub," which traverses the other section of the shaft. With one foot in and one out we are lowered away, one hundred and eighteen feet, and when we regain our sight we find that the "black diamonds" on every side in a solid wall are sending back in glancing scintillations the rays of the lamp. Here the coal is almost a pure Anthracite and the indications are that the supply is unlimited. We are struck by the fine appearance of the four solid walls that surround us and cannot resist the feeling that is forced upon us that the future market of supply for the Dominion of Anthracite coal is New Brunswick.

"Stepping into the tub a few moments brings us to the light and heat of the sun. The coal when burning had all the qualities of the ordinary Pennsylvania Anthracite, having a light blue flame and burning very freely in an ordinary grate. Its heat-giving qualities are large, and it leaves a regular ash. When first kindled the odor of sulphur marked the presence of pyrites, but it soon passed away. This is due to the fact that the samples burnt were taken from the upper surface of the seam and from a close proximity to the crushed coal. There is no doubt but that this will not be apparent in the coal from the heart of the seam."

Time was now devoted to excavating and bringing to the surface the coal from this depth. It was of a much superior quality to any

that had preceded it, though for forty feet immediately above, the coal that had been sent up had burnt well and given a good report of itself. It was used in the forge for heating iron for welding, and the blacksmith boasted that he could get a welding heat quicker than with charcoal, and it would produce heat enough to weld iron and steel together, and he talked in an interested manner about its many good qualities—in his eyes it hadn't a bad one.

One of the first days in August was devoted to a visit and a day's sail. The steam yacht "Effort" was chartered for the occasion. It was the first trip by water since the 20th June, of unhappy memory, and as it has been chronicled by one of the leading gentlemen in the medical profession who helped while away the pleasant hours, his version, as it appeared in the *Daily Telegraph* of the 4th August, is here given:—

"SIR,—On Wednesday a small party left the harbor in the *Effort* to visit the Hanson mine near Lepreaux. The day was lovely and the steam yacht gave the company the full benefit of the sea. She pegged away as if she meant to be in a hurry, but made slow progress. No breeze stirred the surface of the bay, and certainly none filled the sails which were hoisted to invite its aid. For lazy people it was a delicious time, as the yacht herself made a five knot breeze, just enough to pass away the sweltering heat which troubled folks on shore. What the vessel lacked in speed she made up in comfort and in good cheer and many a hearty laugh, I am sure must have started the dreamy echoes as we passed along beetling brow and wave worn rocks. At mid-day the very lighthouse turned out its population to see our noble steamer walking the waters as a thing of life and stemming majestically with short snout the stomach trying tide of Lepreaux. We almost cut a *swell*, for the union jack with the Dominion splash upon it was run up to the lighthouse top. Of the four who rushed from the building to witness the sight none was so demonstrative as the large Newfoundlander who bounded to and fro and barked his delight at the show.

"In good (?) time we reached our destination, and as we approached our wharf through the winding channel of the harbor our attention was called to a mass of black earth which lay piled upon the shore, and marked the "Big Find," or whatever name this New Brunswick mine may be called.

"As soon as we landed we were led to a shanty (about equal to some now springing up in our city) where a small round stove added to the heat in the open house.

"On opening the door of the stove a fire of apparent anthracite was burning brightly. I do not speak scientifically but only of appearances. That there might be no deception a fresh supply of the black material was thrown into the stove and the door closed. In twenty minutes the fire again was bright, and shortly the added mass as clear as any anthracite could be. Thus in an inferior stove, and with a moderate draft, the carbonaceous substance taken from the pit, gave a fire as bright and hot as any anthracite. The shaft has been sunk 120 feet, and the seam at that depth has widened to 16 feet. The appearance and hardness of the mass is like that of the Scranton mine, and like it will probably become less friable and better adapted for handling.

"An American is now developing this New Brunswick property, the value of which should be carefully tested.

"Before leaving we had three barrels put on board and two were used to help us steam back to town.

"The night was lovely and as twilight deepened, the evening hour was pleasantly passed with songs which under such conditions partake of the sentimental. It may be, because the brain active all day naturally drops into the dreamy quietness of rest, and like the flowers exhales its sweetness as the daylight passes. I will not say what hour we reached our homes. I have my suspicion that some of the delay arose from one or two of our number who preferred being 'rocked in the cradle of the deep' to rocking the cradle 'at our house at home.'"

PROSPECTOR.

Some of the coal, as stated by him, was taken from the dump, screened, and used to steam home with. It did its work only fairly well, and did not evince that steam generating power that was afterwards produced by it on board the steamer "New York." The reason of its acting in this way is that when anthracite coal is used for steaming purposes, it is necessary that the grate bar surface be broad and expansive, and also that the fire be kept shallow in order to burn freely and well. The "Effort" has a vertical cross tubed boiler, and the furnace is contracted and deep, and not at all adapted to burn anthracite.

One barrel that came up to the city in the "Effort" was reserved for future experiment, and was handed over to Mr. Levi Young, the enterprising proprietor of the New Brunswick Bolt and Nut Factory, situated on Waterloo street. This trial was made on the 7th day of August, in the presence of quite a number of the leading citizens, professional gentlemen both of the medical and legal branches being present. It was noticed in the columns of the *Telegraph* the following morning, as follows:—

"A trial of the coal recently discovered at Mace's Bay, was made yesterday in the Bolt and Washer Factory of Mr. Levi H. Young, Waterloo street. The test was purely practical, and established the fact that in heating and clear-burning qualities, the samples in question were equal to any American anthracite brought to this city. Its appearance in the furnace was identical with that of first class anthracite, and Mr. Young expressed himself fully satisfied with it in every way. The proprietors of the 'find' are having the coal put to a series of tests to ascertain its smelting and steam generating value as compared with other hard coals; and positively assert that it is nothing more or less than genuine anthracite."

Mr. Young was much surprised, and in an agreeable manner, at the performance of the article. His report, which is strong and conclusive, and which emanates from a clear-headed, and practical man, is subjoined:—

"Mr. Hugh R. Robertson, manager of the coal mine at Macc's Bay, requested me to make a trial of some of the coal taken from that mine. Having sent a barrel of the same to my factory, on Waterloo street, on Wednesday, 7th August, I tested the same in regard to its qualities as a welding and forging coal.

"A fire was started in the bolt furnace, a small quantity of wood was first lighted and several large pieces of this coal placed upon it; with a gentle draft it kindled readily, and when in full blast it gave proof of its clear-burning qualities.

"Several bars of iron, bolts, &c., thrust into the furnace, were brought to a white heat, in scarcely more time than it would take the Lehigh coal to accomplish the same thing.

"A decided proof of its heating capacity was noticeable, in the fact that after the fire was well under way, and had increased in size, it began to melt the cast iron front of the furnace, and the drip of the melted iron could be easily distinguished as it descended into the ashes.

"Another quality, worthy of remark, was its durability; the fire was kindled about four o'clock, p. m., and after burning with a forced draft for nearly two hours, was allowed to die down; at six o'clock the next morning the smouldering ashes were again forced into a flame, by bringing the draft to bear upon them, and this after an intermission of twelve hours. The coal left considerable ashes, mixed with a brownish-red clinker. In conclusion I would state, that I was much surprised that the coal sent me evinced such remarkably good qualities, for its appearance was very much against it, it being softer than the usual Anthracite and more easily broken. The most of the lumps, however, had that bright appearance which characterizes that kind of coal. Mr. Robertson wished me to understand that he did not offer this coal as a final sample of the mine, but merely as a sample of the coal taken from the shaft that he is sinking down to the coal basin. He is sanguine of reaching a harder and better article when the shaft has been sunk to the depth of 500 or 400 feet. If he does so, he will have a coal unsurpassed by any; as these imperfect samples have given a wonderful performance, giving more heat than any coal I have ever used."

L. H. YOUNG.

When testimony such as this, coming from a man of unimpeachable character, and whose successful business career is only an index of his general ability, is, it might be said, demanded by the nature of the article itself, little more need be said except that, in order to convince a doubter of its merits, it would only be necessary that the tests take place under his personal inspection.

The month of August had been nearly reaped by the harvester of time when another practical trial brought fresh and valuable evidence of its powers as a heat giving and valuable combustible. Over one ton and one half had been headed up in barrels, and sent to a discerning any practical Scotchman, a man of all men who would cannily stick to his opinion, and whose opinion would be based purely upon the merits of a case, and who would not allow the sophistry of any extraneous matter to deceive him into a wrong

conclusion. The gentleman referred to is well known in St. John and in the engineering world. Mr. Andrew Taylor, chief engineer of the steamer "New York," of the I. N. S. Co. He tells his story in his own quaint way, and his impressions of what he saw at the mine, and his report of the test of the coal in the furnaces of the steamer, both bear the stamp of honest conviction:—

"On Saturday, August 18th, an opportunity was offered me to visit the coal seams at Mace's Bay.

"On arriving at high-water mark, indications of coal were to be seen all over the North side of the bay.

"The seams of coal and shale lie *dipping* to the North and crop out on the surface, washed by the tides. The seams can be plainly traced along the shores of the bay at many places for more than a mile in length. On arriving at the exploring shaft, sunk by the miners, I found they had selected the middle one of three seams for their starting point and sunk their shaft there. I was desirous of descending the shaft, and through the kindness of Messrs. Robertson and Hanson I was allowed to do so, and fitted out with every necessary for the trip. Before going down I took a good look round to see what kind of tackle was going to lower me down and get me out again. I found the motive power to be a good white horse, whose power to lower me down and hoist me up I doubted not, for Tam O'Shanter's good mare Meg need not have been ashamed of any relationship that might exist between them. On a vertical shaft of wood there is a wheel built, with a very broad rim, around which the rope winds—on at one side and off at the other—and to a horizontal arm of the shaft the horse is hitched, and as the horse travels round the rope is wound up on one side and paid out on the other. This rig is called a Miner's Gin. It is a gin, but there is no Holland about it. I had now donned the suit of clothes, examined the horse, the gin, and the rope. Mr. Robertson assured me it was all right and with that assurance I was willing to proceed. I took a good hold of the rope and stepped into the tub. I heard the words, 'git up there,' and saw the white horse get a prod in the ribs with the end of a stick, and the next moment the earth rose up above my head. Twenty or twenty-five feet down and the bottom of the tub took the side of the pit and turned partly up. I found from the tub grinding on the side of the shaft that I was not travelling downwards in a vertical line, and wishing to keep some reckoning of my geographical position in the earth, I took a look upwards and came to the conclusion that if a very large dog was standing facing South I was sliding down his hind leg, for the miners, when constructing the shaft had ignored the law of the plumb and followed the rock on one side of the seam. A few more angles passed, and I was at my journey's end.

"At the surface the seam was about one foot in thickness, and at the bottom of the shaft, one hundred and thirty feet down the seam, had obtained a thickness of about twenty-one feet. At the surface the coal had a crusted, soft and wet appearance, and at the bottom of the shaft the crushed appearance had not diminished, but the coal was harder and much drier than near the surface. The crushed appearance was probably caused by the *upheaval*. As far as I saw the seam it was still dipping to the North. About eighty feet from the surface there is a *drift* cut through the seam to determine the thickness at that point. The seam is about fourteen feet thick. From the eighty foot level, I brought away about half a bushel of the coal and ascended to the surface. Messrs. Robertson & Hanson sent about one and a half tons of the

coal he had saved on board the steamer *New York* to be burnt in the furnaces of the boilers as a trial of its merits as a steam coal, and on Monday, August 20th, it was used in one of the furnaces from the time the fires were lit at 4 a. m. until the steamer was near Eastport at noon. When the coal was first put in the furnace on top of the wood it took fire very rapidly, was of a very free burning nature, and burnt like Anthracite coal, with a bluish flame without any smoke, and for some time gave a great heat. The furnace was fired with that coal until such time as the ton and a half was used up, when the furnace was cleaned out. There was a good deal of partly consumed coal in the furnace, mixed with a thin red clinker. The other specimen I burnt in an open grate, and I thought it burnt even better there than it did in the furnace. The furnace had a strong draft and partly melted the coal; in the grate the draft was much more moderate, and the combustion slower, under which circumstances it did not melt together so much. Upon the whole the coal performed as well as I expected to see a surface coal do.

"If the main coal basin was reached, I expect there would be just as much difference in the coal as there would be in the lumber taken from the top or the but of a tree.—one almost worthless, the other of excellent quality.

"The coal is undoubtedly of the Anthracite class, and that there must be a large quantity of it is plain from the seam thickening up as it does, over 18 feet in about 125 feet in depth. The field for operation is on a nearly level peninsula, one side of which is a good harbor and deep water; the side the prospecting shaft is on is a shallow bay, but with very little expense schooners could load at the pit head.

"I hope those interested in the enterprise will push it along. They are already partly rewarded, for they have a *grate* coal which burns very well, and which is improving in quality as they go down. Good Anthracite is frequently found at depths varying from 500 to 1000 feet below the surface. The question may be asked, Well, what do you think of it? Since I have seen the chance there is to strike something better than they have, I think the seam should be followed down until it was definitely ascertained what was below, and for that purpose I have personally subscribed to the sinking of the shaft."

ANDREW TAYLOR,

Chief Engineer Steamer New York.

Mr. Robertson accompanied the coal on this trip, and was an eye witness to the method in which it was treated. Arriving in Boston, he proceeded from thence to Newburyport, in the same State, and there found Mr. John C. Karsten, in the position of General Superintendent of the Gilberg Silver Mining Co. Mr. Karsten was well known by repute to the manager. He had been officially employed in more than one of the large anthracite mines of Pennsylvania, and his opinion on such matters is valuable. He was persuaded to accompany him back to New Brunswick to inspect the mine and report on it. This he did. His report comes semi-officially, and he presented it as follows:—

"To H. R. ROBERTSON, Esq., Chief Engineer & Superintendent Lepreaux Coal Mine.

"SIR,—I herewith have the honor of submitting to you and others interested in the so-called 'Lepreaux Coal Mine,' my report of examination of it:—

"1st. After a thorough and exact, as well as practical, examination of the formation surrounding your shaft: of the general inclination of the ground: of the appearance of the *strata* on both the East and West sides of the said shaft, as well as the vegetation now upon the lands, and also the *dip* of the veins, I can confidently assert that in almost every particular they agree with the formation in the Anthracite regions of the State of Pennsylvania. The rocks that have been cut through give clear conclusive evidence that the region abounds in pure Anthracite coal, of the same nature as that which is mined in Pennsylvania.

"2nd. The shaft situate on Mae's Basin and now 120 feet deep, shows evidence of a gradual increase in quality, and every foot sunk will, in my opinion, give further evidence of this gradual increase to a better quality.

"3rd. The coal, that has been and is now being taken out, is of a pure anthracite nature, has a shining lustre, and has the fracture and cleavage of anthracite coal, and equals it in weight. It is of a partly soft nature and is covered with a coating of a black compound which resembles graphite, but which still in my opinion is or has been caused by the chemical action of the salt water for the past ages upon the carbon of the said coal, and although it has this imperfection, it to-day burns freer and brighter, and gives a greater heat than poor ordinary anthracite.

"4th. Having made two thorough trials of its burning qualities I am convinced that it is a pure anthracite coal.

"The first test was made on the open hearth at the blacksmith's shop, and I found that after a small quantity of wood had been consumed the coal ignited easily and burnt freely. After the interim of twelve minutes from the time of kindling, the fire was burning bright and clear, with no clogging or coking. A fresh supply was then put on and in fifteen minutes afterwards I distributed the fire and found the coal clear and but very little burnt. The fire was again heaped together, and when one hour and one half had elapsed was again disturbed, when no slate, or clinkers, or coking could be found, but merely a red ash and partly unconsumed coal.

"The second test was made in a large open front stove and gave the same convincing evidence of its being good and pure anthracite coal. The heat imparted by this coal is five per cent. in excess of that from the States, and the trials were in a most general manner satisfactory.

"5th. The fossiliferous formation near the bed of these seams is of the grandest that I have seen North of the State of Pennsylvania, and bears a strong resemblance to that of the Middle States. Some fossils found of splendid ferns, leaves and stems and grasses, now in my possession, all evince the anthracite formation. (The analysis of the coal I have taken with me I shall submit at a future date.)

"6th. What is most needed now is depth, and at the distance of *three hundred feet* I feel sure that you will be rewarded for your faith and perseverance by striking the hard and unaffected anthracite coal. I would suggest that as your shafts are situate too near the margin of the river or bay, and in consequence the action of the tide upon the Southern wall or bank is very dangerous, and may cause a serious inconvenience in the future, that you start your working shaft either to the North of your present prospecting shaft, say 100 to 125 feet, or else on the second or third vein. This would, no doubt, be more expensive in the commencement, but in the end would be the cheapest.

"In conclusion I tender you my best wishes, and trust that your enterprise may be rewarded. If the work is moderately pushed, by Spring I feel sure you will be able to produce 'black diamonds,' mined in your own country, and unsurpassed by those from abroad.

"Let me again wish you success, and remain, gentlemen, your obedient servant,"

JOHN C. KARSTEN,

General Supt. of the Gilberg Silver Mining Co.

August 2, 1877.

Mr. Karsten is a gentleman who has had great and varied experience in the mining world, who is now holding a very responsible position in a large mining enterprise, and whose reputation is at stake in making a report of a partly developed deposit. His report, as published above, has no uncertain sound, and is reliable in every particular. His theory of the coal being covered with a "coating of a black compound which resembles graphite" agrees with the report of Prof. Steinbach which was given about two years previously, viz: "*that it is the chemical action of the salt water upon the carbon of the coal.*" Prof. Steinbach noticed that the mixed specimen of mud and crushed coal which he analyzed had been in contact with the salt water, and hence his theory of the wrecked vessel and the distribution of anthracite along the beach from her cargo. Mr. Karsten thinks that when taken from a position to which the salt water has not penetrated, the coal will be found unaffected and free from any deleterious compound either as regards quality or appearance.

Dr. Bailey, who occupies the chair of natural science at the University of New Brunswick, has stated that a very small quantity of graphite could be found in the coal, causing it to "rub off" and rendering it softer than is usual with anthracites, and yet not affect its burning qualities, nor its value as a combustible. He remarked that the opinions of scientific men on the subject were but secondary to its giving a good account of the qualities that were sought in it, and a practical opinion regarding a test was more valuable than any theoretical one could be. In other words, if the coal can do the work that is claimed it can, it of itself demands and occupies a position where no theory can give it.

Regarding the reports of Messrs. Young, Taylor, and Karsten, there is a singularity in the unity of the testimony of the burning and heating qualities of the coal, and this singularity is redoubled

when it is noted that these gentlemen are unknown to each other for the most part, and could not by any possibility have exchanged ideas on the subject.

The next phase in which to view this discovery, providing that the foregoing reports are reliable, and that the existence of the article is not a myth, is in the position it assumes as a *product of Canada*.

We have in years past been exchanging that representative of wealth—*money*—with our American cousins for anthracite coal. The exact amount that has been paid over yearly, for this one article, cannot at this moment be stated, but an estimate that reaches among the upper hundreds of thousands, towards the millions, cannot be an exaggerated one. Think then, for a moment, of the vast amount of money that will be kept in the country by our possessing a supply, within our own confines, of that which heretofore has been supposed to be a monopoly to Pennsylvania and the adjacent states.

In her present position New Brunswick has but few articles of export. There are but few commodities that we can exchange for the wealth of other countries. The discovery of anthracite coal has given us another article of barter, and we are in proportion so much the wealthier as to the size of the deposit. Judging from the breadth of the seam at the distance that the shaft has been sunk, its probable breadth when the coal basin is reached, and also the fact that its upturned edge can be distinguished at intervals for more than a mile along the shore, there is sufficient data on which to base a calculation which will give eight to ten millions of tons in a circumscribed area, without taking into consideration the probability of its extending some six to seven miles back to where the granitic formation commences.

With these facts prominently in view it becomes—one might almost say—the duty of every well meaning citizen of sufficient means to lend his aid in a substantial manner to the developing of this—it might be called—national resource of wealth. In so doing he not only assists to the increasing of the importance and standing of the community, but he also benefits himself in a material manner.

It is understood that the proprietors are now about placing the properties in the hands of competent and well known men who will

be empowered to sell a portion of the same. The money obtained from such sale will be *guaranteed* to be expended in developing the mine. In a short time a *prospectus* will be issued, which will fully explain the intentions and plans of the Stock Company about to be formed.

If this discovery had been of bituminous instead of anthracite coal, it would bear no comparison in value to what it is. Simply because bituminous coal mines might almost be designated as being a *glut* in the market. As it is, it is the first discovery of anthracite in any country over which the "Red Cross of old England" waves, and, as such, should be met with an "All hail" echoing from every heart.

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ADDENDA.

ALBURTES, PA., Sept. 1st, 1877.

*H. R. Robertson, Esq., General Superintendent New Brunswick Anthracite
Coal Mining Co., St. John, N. B.*

SIR,—Subjoined please find Analysis of Samples of Coal taken from the
80 feet and 130 feet levels. That of the latter indicates a valuable increase
over the former.

80 FEET LEVEL.

| | |
|------------------------------------|--------|
| Moisture, | 1.27 |
| Volatile Combustible Matter, | 3.78 |
| Fixed Carbon, | 73.52 |
| Impurities, | 21.43 |
| | <hr/> |
| | 100.00 |

130 FEET LEVEL.

| | |
|------------------------------------|--------|
| Moisture, | 1.32 |
| Volatile Combustible Matter, | 3.60 |
| Fixed Carbon, | 81.36 |
| Impurities, | 13.72 |
| | <hr/> |
| | 100.00 |

Yours most respectfully,

JNO. C. KARSTEN.

