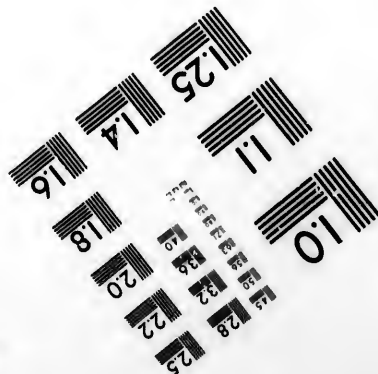
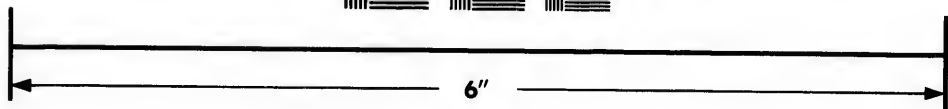
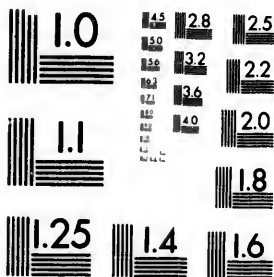


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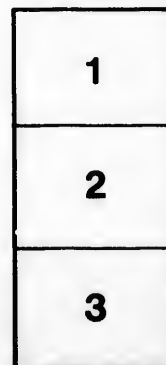
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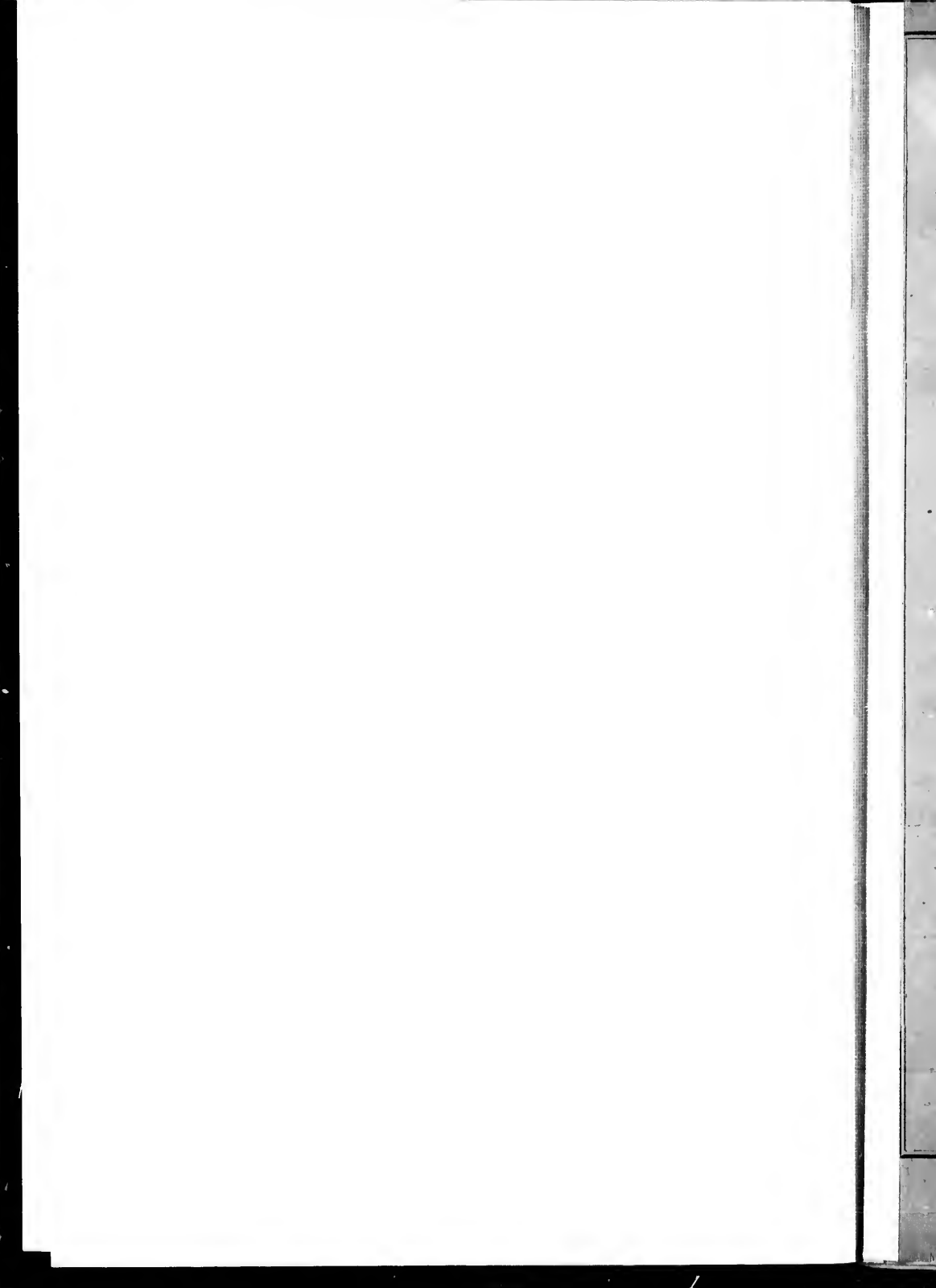
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Sept 1913  
REPORT OF  
E. B. BORRON, ESQ.,

STIPENDIARY MAGISTRATE,

ON PART OF

THE BASIN OF HUDSON'S BAY

BELONGING TO THE

PROVINCE OF ONTARIO.

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PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY.

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TORONTO.

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# REPORT

Of E. B. Borron, Esquire, Stipendiary Magistrate, on the Territory  
belonging to the Province of Ontario, in the vicinity of Lake  
Abittibi.

Presented to the Legislative Assembly.

By Command,

J. M. GIBSON,  
*Secretary.*

PROVINCIAL SECRETARY'S OFFICE,  
TORONTO, 4th February, 1889.



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HONOURABLE

SIR,  
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COLLINGWOOD,  
31st March, 1888.

HONOURABLE O. MOWAT,  
*Attorney-General, etc., etc.,*  
Toronto.

SIR,—I have the honour to transmit herewith a Report on the territory belonging to the Province, in the vicinity of Lake Abittibi, partially explored by me last season.

As heretofore, I received not only needful assistance but every kindness and hospitality that it was in their power to bestow, from the Officers of all the Honourable Hudson Bay Company's Posts visited.

I have the honour to be, Sir,  
Your most obedient servant,

E. B. BORRON,  
Stipendiary Magistrate.

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## REPORT

OF B. BORRON, ESQ., STIPENDIARY MAGISTRATE, ON THAT PART OF THE BASIN OF HUDSON'S BAY BELONGING TO THE PROVINCE OF ONTARIO.

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About eighty miles north of Lake Temiscamingue, on the Upper Ottawa, and some thirty-five miles north of the Height of Land, the eastern boundary line of the Province will, when extended, be found to intersect a large lake, called Abittibi.

Long an important point in connection with the fur trade, and situated as it is on the main canoe route from Montreal to James' Bay, this lake is not only one of the largest but most widely known of any in this northern territory. The only map, however, I have yet seen which affords anything like a correct idea of its position, size and shape, is that issued by the Geological Survey of Canada, shewing (approximately) the geology of the basin of Moose River and adjacent country, and specially intended to illustrate Dr. Bell's Reports. Incidentally I may be permitted to remark, that our knowledge, not only of the geology but of the geography of this and most other parts of the Dominion, has been greatly enlarged by the excellent surveys and reports of Dr. Bell and other officers of the Geological Survey.

On reference to this map, it will be seen that the extreme length of this body of water is nearly fifty miles, and its greatest breadth about twenty miles. It is, however, very irregular in shape, and so contracted at one place that the channel is only a few chains in width. The part above or to the eastward of this channel is known as "Upper," and that to the westward as "Lower" Lake Abittibi.

The upper lake or division is about thirty-two miles in length, from east to west, and varies in breadth from two miles at the narrowest to eighteen miles at the widest part.

The lower division or lake is about eighteen miles in length, with an extreme width of twenty miles. The total area of both, roughly estimated, is not less, I think, than four hundred square miles.

Where the Provincial boundary line will intersect the lake is not exactly known, as it has only as yet been extended a short distance north of the Height of Land.

At the Hudson Bay Company's Post, situated near the south-east corner of the upper lake, a larger number of Indians are gathered during the summer, than at any other post visited by me in this territory, with the exception of Albany Factory and Moose Factory, on the coast of James' Bay.

Several parties, in opposition to the Hudson's Bay Company, having established themselves on Lake Abittibi, there was reason to apprehend that, in the keen competition for furs, intoxicating liquors might be employed in the trade; and, as the territory lying between Lake Abittibi and the Height of Land was still for the most part unexplored, it appeared desirable that I should visit Lake Abittibi this season, and after satisfying myself as to the condition of the natives and others in that part of the territory, employ the remaining time and means at my disposal in a partial examination of the region referred to.

The season was somewhat too far advanced before I received authority from the Government, but having done so I lost as little time as possible making such arrangements as were necessary.

Hitherto, I have always been able to engage voyageurs at Sault Ste. Marie. Owing, however, to the great demand for men, occasioned by the construction of the

Algoma Branch of the C. P. R., and the International Bridge, I found it almost impossible to obtain good men from that quarter. After some little trouble and delay, however, two voyageurs were procured at Sturgeon Falls, Lake Nipissing, whither I had gone for that purpose. One of these had been out with me before, and both were more or less intimately acquainted with a very wide extent of country lying to the north of Lake Nipissing.

Taking these men along with me, I proceeded from Sturgeon Falls to Mattawa by rail, and thence up the Ottawa River by steamers to the Hudson Bay Company's Post on Lake Temiscamingue. From thence, having obtained a guide and canoe, the usual route was followed to Lake Abitibi, which we reached on the second day of August.

Although, as I was led to expect, there had been keen rivalry and competition between the company's officers and opposition traders for furs, it was satisfactory to find that neither party, so far as I could learn, had employed *intoxicating liquors* in the trade.

Having completed my enquiries, and made such further arrangements as circumstances required, I left the Hudson Bay Company's Post on Lake Abitibi on the 5th of August, and proceeded to examine the character of the country lying between Upper Lake Abitibi and the Height of Land. In order to this, we returned by the canoe route to Lake Agotawekami with the view to ascending a tributary of the Abitibi river which falls into the north-west arm of that lake, and is marked "Abitibi river" on the geological map already referred to. At its mouth it presents the appearance of being a good sized stream of one and a half or two chains in width; of considerable depth, but a sluggish current. There can be little, if any doubt, that it discharges a large body of water in the spring, but during the summer season the volume is greatly reduced, as was very apparent when we came to the first rapids. We ascended it in a west south-westerly direction for sixteen or seventeen miles, beyond which, it does not appear to be navigable. In this stretch, rapids are met with, requiring three portages to be made. The first is about  $9\frac{1}{2}$  miles from the mouth of the river; the second occurs about a mile higher up; and the third portage  $2\frac{1}{2}$  miles above the second. These portages, however, are all short. The chief difficulty in the navigation of this, and almost every other small river in the territory at this season of the year, is occasioned by their extreme shallowness and by obstructions in the shape of fallen trees and drift-wood.

Three miles and a half or so above the last mentioned or third portage, and  $16\frac{1}{2}$  miles from the mouth, we were obliged to leave the river and make a long portage on the south side, almost parallel to the river, and terminating at the first of a chain of four small narrow lakes. These lakes, together with connecting streams and portages, extend about 15 miles in a south-westerly direction. The bearing of first  $11\frac{1}{2}$  miles from the river to the 6th portage being about W. S. W., and from that point to the seventh or Height of Land portage a stretch of  $3\frac{1}{2}$  miles (inclusive of the portage), the bearing being about S. S. E.

The fourth portage was four miles in length; the fifth quarter of a mile, and the sixth upwards of two miles in length, entailing a great deal of time and labour in the transportation of canoes, baggage and supplies.

The water of all the four lakes embraced in this stretch, runs into the Upper Abitibi river, as I am informed by my guide.

The seventh or Height of Land portage is two stages, or say about three quarters of a mile in length. It terminates at a lake called "Good Bush Lake," one of the sources of the "Blanche" or White river, which, as will be seen on the map, has its outlet at the upper or north end of Lake Temiscamingue. Good Bush Lake is a narrow lake, the width being only about a quarter of a mile. Our course from the south end of the portage to its outlet was nearly south-west, and the distance about one and a half miles. The total length of the lake, however, must be three or four miles. At the outlet another portage, the eighth from Lake Agotawekami was necessary. This was one stage, or say about six hundred yards in length; course W. S. W. It terminated at another small lake, which we crossed in a W. S. W. direction, and in quarter of a mile came to the 9th portage. This is only some five chains in length, and runs about west. It took us to a small pond seven or eight chains in diameter; crossing this in a southerly direction we

came to its outlet, where, owing to its shallowness, we were obliged to make another short portage, not necessary when the water is higher.

Embarking on this stream, which is very crooked and greatly obstructed with fallen timber and drift wood, two and a half or three miles of very tedious and difficult navigation, on a general course of W. S. W. brought us to another, or the third small lake met with since crossing the Height of Land. This proved to be about one and a half miles in length, and from ten to thirty chains in width. Our course through this lake from where we entered to its outlet, was south-east. Here there is a little water-fall, and it was necessary to make a portage (the 10th), two or three chains in length. Immediately below this, we entered an arm of what proved to be a large lake. It is called by my guide "Wabakabong" and is the principal source I believe of the River Blanche.

From where we entered to its outlet the length, roughly estimated, is nine miles. This lake is very irregular, varying in width from one or two chains in some parts, to as much as a mile in others. Numerous arms and bays occur on both sides the main channel or body of water, the extent of which, the time and means at my disposal would not allow one to ascertain. The shores are bare and rocky sometimes, precipitous and generally steep, rising, not unfrequently, from three to four hundred feet above the level of the water. The scenery is picturesque and would be still more so had not all or nearly all the timber been destroyed by fire. The courses varied from W. S. W. to E. S. E.; but the average course or bearing, lengthwise from where we entered the lake to its southern extremity, or the outlet of the river is about S. S. E.

I descended the River Blanche to a point some four miles below Lake Wabakabong, and about three miles from Round Lake, which will be found laid down on the map of the geological survey. In this stretch two short portages were necessary, one immediately below the lake, where there is a fall of about twelve feet, and the other ten or twelve chains lower down with a fall of ten feet. The current however was rapid and the descent considerable, particularly toward the end of this stretch. Our course was nearly south and from the top of a sand-hill, 200 feet in height, on the east side of the river, we obtained an extensive view of the country around. From this point I returned to Lake Wabakabong, the extreme shallowness of the river and rapidity of the current interposing a serious obstacle to further progress at this season of the year, even if it had been my intention to have gone further in that direction, which it was not.

Some four miles from the south end of the lake a channel or arm takes off in an easterly direction by which my guide informed me, there was another canoe-route that would take us to Lake Matawagogig which will also be found laid down on the map of the geological survey. I concluded to return to Abittibi Lake by this route rather than that by which I had come as it would enable me to see somewhat of the tract of country lying between the Upper Abittibi River and the Height of Land.

One mile nearly due east brought us to the bottom of the bay or arm referred to. Here we found a small stream, which after ascending for half a mile, led us to a little lake about half a mile in diameter. Crossing this we came to where the stream enters that feeds this lake, but it was so obstructed that a portage about quarter of a mile in length was necessary.

Again embarking in our canoes, some thirty chains brought us to where a second portage was required. This was only four or five chains in length. Although far from straight ranging from east to south, our course thus far has been about south-east. From this second portage we ascended the same little creek in an east south-easterly direction for three miles. In the spring when the water is high, this stretch would have been easily got over, but later in the season it is attended with considerable difficulty, and took us four hours hard work. So far, what water there is, flows into Wabakabong Lake, and thence by the River Blanche into Lake Temiscamingue. We now recrossed the water-shed by a portage thirty chains in length.

This brought us to a lake called "Clearwater Lake," seemingly about one mile in length, by three quarters of a mile in breadth. Passing this lake, about one mile in an E. N. E. direction, took us to the commencement of another portage. It is one mile in length, has an easterly bearing and terminates at the point where the small stream given



off by Clear Water Lake unites with a somewhat larger one from another lake lying to the south. Down these united streams we pursued our way for about a mile and a quarter in a north-easterly direction. At the end of this stretch we entered a lake about half a mile in length and bearing E. S. E. Below this lake the river pursues an E. N. E. course for nearly a mile and discharges its waters into the north-west arm of an apparently large lake which I call Boundary Lake, from the fact that an extension of the Boundary Line between Ontario and Quebec almost touches the south-west corner of this lake, and if further extended in a direction due north would, I think, cut or intersect it, not far from where the river we have been descending enters it.

The outlet of the lake is about three and a half miles in a north north-easterly direction from the point where we entered it. Here the river falls nearly twenty feet, the portage around which is three chains in length.

Below this the river runs in an east south-easterly direction for a mile and a quarter, when another fall occurs about the same as last, the portage around which is ten chains or so in length. Still another stretch of one mile and a half in an easterly direction, brought us out into Lake Matawagogig from whence the usually travelled Hudson Bay route to Lake Abittibi was followed.

A short description of this part of the territory will suffice; for whether in regard of its soil, timber or minerals it does not appear to present any feature of interest or to be of much importance or value.

#### SOIL.

The really good soil is confined to the river bottoms; and owing to the smallness of the streams in this section of the country the bottom land is very limited. That which seemed best was found on the banks of the Upper Abittibi; from where it opens into Lake Agotawekami, as far as we ascended, there was more or less of this land. The soil is a clay loam and elm trees as well as black ash were frequently observed, and particularly numerous between the lake and first portage. Elm trees are far from common north of the Height of Land and are confined to the rich alluvial soils on the banks of some of the rivers. Wherever it is found growing in this territory I am persuaded *wheat* will also grow and arrive at maturity.

On the higher ground, if not bare rock, the land is generally too stony to admit of cultivation. Or if capable of being rendered arable, could only be so by an expenditure of labour, altogether out of the question at present. On the high ground at the south end of Lake Wabakabong and as far down the River Blanche as I went the soil was very light and sandy, rising in banks one hundred and fifty or two hundred feet in height on the east side of the river, some few miles above Round Lake.

The basins, hollows or other depressions where one would naturally have expected to find the best land and richest soil, are in this section almost invariably *lakes* or *swamps*. In one or two places, however, I noticed fine beaver-meadows bearing a luxuriant growth of grass, which would have been almost a fortune to a settler if situated in an accessible part of the Province.

#### TIMBER.

While I did not expect to find much arable land in this particular portion of the territory, I felt confident that we would see a good deal of valuable pine. In this expectation, however, I regret to say I was completely disappointed.

Whatever white or red pine there may have been in the past, and there are not wanting evidences of the former existence of valuable pinneries, has been totally destroyed by repeated *bush fires*, for I am satisfied that one fire could not have done it so completely.

On the south-west side of Boundary Lake, which had not been devastated by fire I measured some white pine that were nine feet in circumference.

On the rocky ridges—especially at Lake Wabakabong—not only the timber, but the whole of the vegetable mould or soil has been burnt off. As is also the case on the dry sandy ridges, on the head waters of the River Blanche and elsewhere.

## MINERALS.

With the exception of a few limited areas where the rock is Laurentian, the whole of the country between Upper Lake Abitibi and the Height of Land is occupied, I believe, by rocks included in what is known as the "Huronian system." They consist chiefly of quartzites and altered schists with diorite and other trap rocks. While belonging to the same system they differ, in my opinion, from the typical rocks of the same class found on the North Shore of Lake Huron. Some important members of that group are apparently wanting in this section; or at least they did not come under my notice. Among these I may particularise "Greenstone-trap," the rock in which the copper lodes or veins at the Bruce Mines, Wellington Mines, and others, (the most productive mines on the North Shore) were found much larger and richer than in other Huronian rocks adjacent thereto. I do not think the Huronian rocks in this section "so kindly" to use common mining term or expression, or in other words, so favorable to the occurrence of powerful veins, and the deposition therein of metallic ores, more especially those of copper. I found a few small veins or strings containing copper, in the form of pyrites or yellow ore in several places, but no strong, regular and well defined veins.

It is not at all improbable, however, that minerals of more or less economic value may exist in the diorite or schistose rocks of this part of the territory. To discover, more particularly, the precious metals (gold and silver) much patient search is generally necessary; a great deal of time must be expended on a small area or extent of country. This minute examination is not possible in explorations embracing such large tracts of land as I have to include, and which it is better to include in the first instance, in view of the importance of obtaining as soon as we can an approximate idea of the resources and value of the whole territory.

Until there be some reasonable probability of the settlement of the Boundary Question—of the opening up of the territory—and of obtaining titles to such discoveries as they may make, it would be cruel to induce prospectors, most of whom are poor men, to engage in the exploration of this, or almost any part, of the so-called Disputed Territory, North of the Height of Land.

At some not very distant day perhaps, it may be worth the explorer's while to examine, more carefully than I have been able to do, even this part of the country. But in the meantime there are many other parts of the Province which afford them, in my humble opinion, much better chances of success.

After replenishing our supplies at the Hudson Bay Company's Post at Lake Abitibi, my original intention was to follow westward the south-shore of the lake, ascending any rivers that might fall in on that side and be navigable by canoe. I found, however, upon enquiry, that none of these streams could be ascended any considerable distance inland during the dry season, but that the Black River, which falls into the River Abitibi about thirty miles below the lake, would still be navigable to some extent. I learnt, moreover, that there was a canoe route from Black River to the Hudson Bay Company's Post at Metachewan, near the Great Northern Bend of the Montreal River. And that from there I should have the choice of two routes, by either of which I might return. One of these would take us down the Montreal River to Lake Temiscamingue, the other by Tamagaming Lake and River to Lake Nipissing.

On the 19th of August, I again started out from Abitibi Post taking with me a three fathom canoe, two men and only such supplies as were most essential. Owing to the dryness of the season, the water in the rivers was rapidly decreasing; and as Black River and its tributaries seemed to afford the only means of access to the territory, I was most desirous of exploring, I did not think it prudent to spend much time on Lake Abitibi. We took therefore, a pretty direct course for its outlet; examining only such points here and there in the south side as we could conveniently touch at, or which presented features of more than common interest. We were somewhat delayed by head winds which, (owing to the large extent and extreme shallowness of the water) if at all strong, get up a heavy and dangerous sea in a very short time. This is especially trying in respect of deeply-laden canoes. As my guide "Michel" had good reason to remember, he and another Indian having been swamped and nearly drowned in

this lake on their return from Moose Factory, where they had taken me 1879. The mouth of Black River was reached on the 25th of August, without mishap or event worth relating. It is not necessary to give the general bearings or distances on either Abittibi Lake or River, as these are shewn on the maps of the Geological Survey. But Black River has never (so far as I know) been explored, and is only laid down provisionally on this map. From the outlet of the lake to its junction with Black River, the main Abittibi River pursues a westerly course, the last ten miles or so being almost south-south-west. Immediately below the junction, however, it turns to the north, a course, which with the exception of a stretch some ten miles in length, just above the junction of Frederick River, it pursues with great regularity all the way to James Bay, or more properly, to its junction with the River Moose, about 20 miles above Moose Factory.

Black River is, at its mouth, about two chains in width and of considerable depth. The current is sluggish and water dark, differing in these respects greatly from the Abittibi, in which the current is very rapid and the water exceedingly muddy. Indeed, as stated in my first report, it is muddier than any river I have met with on this continent, with the single exception of the Missouri. The water is thus discoloured when it issues from Lake Abittibi and changes little in its subsequent course, presenting a very remarkable contrast with that of the Moose River at and below their junction.

I was unable to ascend the main Black River more than 24 miles, owing to the lowness of the water. But earlier in the season, say in the month of June, both the river and its principal branches can doubtless be ascended and explored to the lakes, in which they almost invariably have their source or origin. The upward course or bearing is between S. E. and S. S. E. The first portage occurs at a fall, about 15 miles from the mouth of the river. Throughout this stretch the water was so deep and the channel so wide, that notwithstanding the barely perceptible current, I was led to believe the river was still discharging a large quantity of water. This is undoubtedly the case in the spring, but in the month of August, especially if like this, the summer has been a dry one, the volume of water is quite small, as we found to our surprise and disappointment on arriving at these falls, where we were for the first time able to see and estimate it.

In the next 9 miles three other falls or rapids occur requiring short portages to be made. The distance between the first and second is  $1\frac{3}{4}$  miles, between the second and third is  $5\frac{1}{2}$  miles, and between the third and fourth  $1\frac{3}{4}$  miles. The bearing is between S. E. and S. S. E., as stated above. Where the water in the river was *slack* it was still fairly navigable as far as we went, but where the current was at all rapid it was too shallow for even a light canoe. Towards the latter end the channel of the river was in many places impassable on account of drift-wood, and we finally stopped at a long rapid where no portage could be found.

Between the mouth and the fourth portage, the Black River receives the waters of quite a number of streams, some of which are, judging from the size of the channels, considerable rivers in the spring. The first occurs about half a mile only above the junction of the Black and Abittibi Rivers. It falls in on the west side, and it is up this west branch that the route to Metachewan, the Hudson Bay Company's Post, on the Montreal River passes. The next large tributary occurs on the east side about five miles further up; this may be called the east branch. Again five and a half or six miles above this east branch, a good sized stream of very clear water comes in on the west side which my guide thinks has its source in a large lake he calls "Wah-ba-tig," or "Wah-ta-big." He describes this lake as being nearly 20 miles in length, and only about a day's journey on foot in the winter time from Metachewan. The only other tributary I need notice, is one about 15 yards in width which comes in on the east side about four miles above the second portage.

On our return we endeavoured to ascend the principal branch on the east side, which joins as above mentioned about five and a half miles from the Abittibi Junction. When we arrived, however, at the first rapids the quantity of water was so reduced, as to render hopeless any attempt to penetrate further in that direction.

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We now came to the west branch of Black River, called Wa-we-oah-ka-shin, the junction between which and the main river is only about half a mile from that of the latter with the Abittibi. This we ascended to Round Lake, seemingly the principal source. The distance, following the bends of the river, is, roughly estimated, about twenty miles. The general course or bearing (ascending) is about south-west. Seven portages had to be made in the first five or six miles. None of these portages were more than quarter of a mile in length. In the remaining fifteen miles no portages were necessary, but a great deal of trouble and delay was occasioned by fallen trees and drift-wood which, in many places, completely obstructed navigation. These occurred chiefly in the first ten or twelve miles. The upper half of the river was comparatively free from obstructions. In this stretch only one tributary attracted my notice. It occurs on the S.E. side, a little more than two miles below Round lake. It is called Elm-tree river and is about a chain wide at the mouth. A single elm tree standing alone in the midst of an immense marsh or meadow marks the spot and probably gives rise to the name. There are, however, many such trees nearer to Round lake.

Before proceeding further I will endeavour to describe the principal features of the country so far as I have had an opportunity of seeing and judging of the same since my departure from the Hudson Bay Company's Post at Lake Abittibi.

#### LAND AND SOIL.

The south shore of Upper Lake Abittibi is broken and rocky though not mountainous. There may be limited areas of good bottom land on the streams, but I am convinced that there are no extensive tracts of arable land to be found between that division of the lake and the Height of Land. Further west, or on the south side of Lower Lake Abittibi, there appears to be less rock and more loose material or soil. This soil, however, is not always of the best quality, being in some places light and sandy, in others gravelly, with many water-worn stones and boulders. The sub-soil is usually clay, and in some instances it forms the surface soil, not only on the lower flats and islands but on the ridges. It is exceedingly probable that the bottom of both the upper and lower lakes is almost all clay. This clay, if not calcareous immediately at the surface or top, will be generally found to be so at an inconsiderable depth.

Nor is there much good land visible in the immediate vicinity of Abittibi river from the point where it emerges from the lake (Couchiching Falls), to the junction of Black river, a distance of about thirty or thirty-five miles. From what I saw, however, of the country east of Black river I am inclined to think that in this stretch of the Abittibi the land on the south side will be found to be better some distance back than it is on or near the river itself. As already observed, the river flows westward, following, as it seems to me, the strike of the rocks, more particularly a bed of micaceous schist, which is probably somewhat softer than the others with which it is associated. The ridges on either side rise to a height of from fifty to one hundred and fifty feet.

We have here a conformation more nearly approaching to what may be called a valley (though narrow) than I have met with in almost any other part of the territory. As mentioned in former reports, the channels of the rivers are almost invariably of the nature of "troughs," and although occasionally the water may flow through gorges a mile or more in length, as at Hell Gates on the Missinaibi, true, well-defined valleys, so far as my observation goes, are nowhere found north of the Height of Land. The soil, where seen in the banks of the river, is generally clay, and on going back in several places I found a clay soil or sub-soil even on the lower ridges.

I have not as yet been able to explore the country north of this stretch of Abittibi river nor of Lake Abittibi itself, but the north shore, especially of the lower lake, is evidently much higher and bolder than the south shore.

On Black river the land is better drained, less stony and possessed of a richer soil than any other tract I have seen in this eastern part of the territory. It is true that the river bottoms are flooded at the time of the spring freshets, the ice marks on the trees showing that the water frequently rises at that season ten or twelve feet above its ordinary summer level. But as soon as the snow has all melted I have no doubt that it

returns quickly to its channel, and that these river bottoms can be cultivated. They can certainly be converted into valuable meadows. The higher grounds are of a rolling or ridgy character, and therefore well drained. The soil is in some places a sandy and in others a clay loam, and where not recently over-run by fire, there is a good covering of black or vegetable mould. The size of the timber, more particularly of the aspen and the occasional occurrence of elm trees, convince me that, whether in regard of soil or climate, this section of the country will, under a proper system of cultivation, produce wheat and all the more valuable grain and root crops.

From what I have seen I should say that we have here in this Black river basin at least two hundred square miles of land, the greater part of which is either arable or capable of affording good pasture.

#### TIMBER.

The timber consists of aspen, spruce, tamarac, balsam and birch, the quantity being nearly in the order stated.

Cedar, poplar, ash and elm sometimes occur, but more rarely. Very few white or red pine are met with, but they will be found more plentiful, I expect, higher up the river than we were able to ascend, unless, as is too often the case, they have been destroyed by bush fires. In some few localities where the land is poor, rocky or sandy, the timber consists of Banksian pine chiefly.

While the spruce will be of the greatest importance for building purposes, I consider that the aspen will, in an economic point of view, prove ultimately the most valuable, as it is the most plentiful timber in this territory, and will afford, when the country is opened up, an almost inexhaustible supply of wood pulp for papermaking and other purposes.

#### MINERALS.

As regards ores, or minerals of value, the rock is for the most part Huronian, and, therefore, not unfavourable to the occurrence of copper, iron and lead, or possibly the precious metals, but the area of *bare rock* in that part of the Black river basin explored this season is very limited, and I was not fortunate enough to find any veins in the rocks where thus exposed to view. Such, however, may possibly be discovered in the lakes at the source of Black river and its larger tributaries. Small strings of quartz were seen in a few places, but contained no metal excepting a little iron in the state of oxide or of iron pyrites. This last is very common in most of the rocks of this section, but not in large quantities, only in the condition of specks or crystals imbedded in the rock and forming, as it were, part of it.

At Round Lake we were fortunate in meeting with two Indians, whom I engaged to go with us as far as Bank Lake, on Frederick River, one of the largest tributaries of the Abittibi. The junction is seventy or seventy-five miles below that of the Black River and Abittibi River.

Round Lake as we found it was only about two miles in diameter, but as it is surrounded by a wide belt of low, marshy and swampy ground, it must be very much larger earlier in the season. Starting from the Indian camping ground at its outlet, we crossed the lake in a south-westerly direction to the mouth of a creek or stream of very clear water. Had it not been that the Indians took a part of our baggage and supplies in their canoe, we should have experienced the greatest difficulty in crossing this lake, as well as in ascending the small stream up which our route lay, owing to the lowness of the water. Four or five miles of very tedious navigation brought us to a small lake, apparently the source of this brook and to the first portage, which commences on the north side of this lake. The general course or bearing of this stretch is between N.W. and N.N.W. From this point to Bank Lake is roughly estimated at about seven miles, in the course of which five portages were necessary. The first was one and three-quarters miles in length, the second was one and one-half miles, the third one and one-half miles, and the fourth and fifth portages about quarter of a mile each. The first four terminated at small clear water

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lakes, from a quarter of a mile to three-quarters of a mile across. The fifth or last portage brought us to Bank Lake. In this stretch we had upwards of five miles of portaging and only about two miles of navigation or canoeing. The general course or bearing was about the same as that of the preceding stretch, say between north-west and north north-west. With the exception of about three-quarters of a mile of the first portage—which is through a tamarac swamp—the far greater part of the other portages are open, airy and dry, traversing as they do undulating sandy tracts which are from fifty to a hundred feet above the level of the little lakes just alluded to as occurring on the route.

Arrived at Bank Lake, our Indian guides left us and returned to their families at Round Lake. The arm, or southern extremity of this lake, whereat the last portage terminated, is from quarter of a mile to half a mile in width, and about two miles in length, on a course nearly north. Where it joins the main lake the channel, in the summer, is not more than a chain wide, and very shallow. There is generally a current at this point, and the water was flowing out of the arm when we passed, but very likely it runs the other way during the prevalence of northerly winds. It is therefore called "Little Current" by the Indians. On passing through this channel, which is only a few chains in length, we enter the main lake, which viewed from this point is seemingly eight or ten miles in length and from two to four miles in width. The bearing of the longer axis is northerly. On the east side tolerably high banks of white sand are conspicuous, and hence it derives in all probability its name. The shores elsewhere appear to be low and flat. Although very shallow at the south end—and I believe all over—very few, if any islands are visible, in which respect it differs from Nighthawk Lake, which contains a number of islands. The water of Frederick River is derived chiefly from this lake and from Nighthawk Lake, lying to the south-west. The river enters Bank Lake about a mile and a half west of the "Little Current." The outlet is at the extreme north end, and not more, I believe than half a day's journey (in the spring) from its junction with the Abittibi River.

Understanding that the Hudson's Bay Company had a small post on the Upper or Nighthawk Lake, and in view of the fact that we had only been able to bring with us a very limited quantity of provisions from Lake Abittibi, I thought it better to proceed at once to this post—which was not very far off—and return to complete my exploration of Bank Lake and the river from thence to Abittibi river, if I could see my way to accomplish it.

Arrived at the entrance of the river at the south-west corner of Bank lake, we found it four or five chains in width, and although shallow at the mouth it became deeper as we ascended, and in some places where the channel was contracted to three chains in width only, the depth was nearly twenty feet.

The distance from the Lower, or Bank Lake, to the Upper, or Nighthawk Lake, is about six and a half miles, and the general course or bearing is south-westerly. The banks on both sides are low and the current is very gentle, although in the spring of the year it may be otherwise. Soon after entering the lake we observed an Indian camp on the west side, and on going ashore ascertained from an elderly Indian woman and young girl, its sole occupants, that the Hudson Bay Company's post was deserted, the officer in charge, who had gone to Metachewan for supplies, not having as yet returned. They further informed us that Dr. Bell had visited this lake about two weeks before us, and had returned to Metachewan, from whence he had come.

On arriving at the Hudson Bay Company's post, which is situated on the west side of the lake, three miles or so from its outlet, we found the place locked up and no one there, as the woman had led us to expect. This, like many other outposts, as they are called in the Territory, is maintained partly for the convenience of the Indians in winter, who would otherwise be compelled to travel long distances on snow shoes to the principal posts to trade their furs for such articles as they stood in need. They would thus lose time which might be more profitably employed in trapping. They might possibly also fall into the hands of opposition traders, and the Hudson Bay Company, who are almost always under heavy advances to the Indian hunters, might thus lose the furs altogether. The servants or postmasters at these outposts, having collected

all the furs they can during the winter and spring, often lock up their houses and stores, and in the month of June go off in their canoes to headquarters, where they remain until August or September, when they return with a fresh stock of goods and provisions for the next winter's trade. No stronger proof could be afforded of the honesty of the Indians in this Territory. From the outlet of Nighthawk Lake to the post, as has already been observed, is about three miles, and the bearing is about south south-west (S.S.W.). From the post to the mouth of the principal feeder or tributary, called Big Mouth River, the course is between S.E. and S.S.E., and the distance roughly estimated nearly six miles. About midway of the stretch long arms are given off, one of which extends towards the N.N.E. and the other S.W. The length of the lake in this direction is variously estimated from twenty to twenty-five miles. The width of these arms does not appear to exceed three miles, however, at any point, so far as I could judge, but I did not traverse the lake in that direction and was unable, owing to the lowness of the shore and the number of islands, to get a good birds-eye view of it. This lake, like that below, is very shallow. Its depth does not exceed nine feet in some of the widest parts. As on Lake Abittibi a moderately strong wind raises a very nasty sea, and the weather was unfortunately boisterous during the short stay I was able to make.

We ascended the Big Mouth River about fourteen miles in a S. S. W. direction, without meeting with any obstruction other than drift wood, and that only in the last few miles. The depth is from twelve to twenty feet, and width from one to two chains. There is scarcely any perceptible current in the lower ten miles, and very little anywhere as far as we ascended.

The canoe route from Nighthawk Lake to Metachewan is up the river for some nine or ten miles. At this point it strikes E. to N.E. by a long portage to a clear water tributary which joins Big Mouth River, (the water of which is very dark), some three miles lower down. Only one of my two voyageurs had passed over this route before, and that but once, many years ago.

We experienced therefore some difficulty and delay in finding it. Having succeeded however at last, I concluded, in view of all the circumstances, but more especially Dr. Bell's recent exploration, my somewhat scanty stock of provisions, the absence of the Hudson Bay Company's officer, and the possibility of my voyageurs experiencing further difficulties and delays in finding the route to Metachewan, that it would not be expedient to remain longer to explore either Nighthawk or Bank Lakes. Before entering upon the next stretch, however, I will describe the country passed through, on our route from Round Lake to this point under the usual heads.

#### SOIL.

Between Round Lake and Bank Lake, I saw but a very small proportion of good arable land. It consists for the most part, either of low-lying and wet marshy ground or ridges, from fifty to sixty feet in height, of "drift"—chiefly sand. These ridges might be more properly described as "plateaus," for they extend apparently in some cases a number of miles in all directions, the surface undulating, level or gently sloping.

Owing to the lightness and dryness of the soil, it would seem that these areas are periodically swept over by fire, or whenever sufficient vegetable matter has accumulated to burn. What timber there is, consists of Banksian pine, almost exclusively. Such of these as have escaped destruction, are thinly scattered and not large. With a few shrubs and bushes of other kinds, they serve to give the land a pretty park-like appearance. The ground, usually unencumbered with dead wood or fallen trees, is smooth and even, with little or no underbrush or covering, unless it be a carpet of beautiful white crisp moss, or a thin growth of dwarf blueberry bushes. Here and there a boulder may be seen of the harder Laurentian or Huronian rocks lying to the north, resting upon the surface, or half buried in the sand, and imparting a weird or wild appearance to the scene as viewed in the dim twilight. To the geologist, who imagines at least, that in both the boulders and the sand he sees the ruins of an ancient world, these solitudes are more particularly striking and impressive. To the voyageur or explorer who has been

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toiling through a muskeg or tamarac swamp, the change is a very agreeable one, when the portage he has been following emerges on to these open dry ridges. If sown with grass seed suited to the soil (a very light sandy loam), this land may possibly afford pasture of more or less value for sheep and cattle, but otherwise it appears almost worthless. The sand at or near the surface is generally destitute, or nearly so of lime, but at greater depth it is not unfrequently calcareous, and in many instances rests upon calcareous clay or marl. Hence, wherever we find ravines and lake basins, the soil contains a larger proportion of lime and alumina, and is not nearly so arid or dry. The greater fertility of the soil and more abundant moisture in such situations, cause a very great and sometimes sudden change in the size and character of the timber; aspen, spruce and birch of good size, taking the place of the Banksian and pitch pine. On the east side of Bank Lake, the land is I believe principally of the light sandy nature above described, and extends as far north, probably, as the lake itself. I took a sample from the bank on that side near "Little Current," and found that it effervesced freely with muriatic acid, thus indicating the presence of a notable proportion of lime. The land on the west side of Bank Lake, is seemingly low near the shore, as is also the land on both sides of Frederick River, between Bank Lake and Nighthawk Lake. The soil is a clay loam, and the clay if not calcareous immediately at the surface, is generally so at two feet or so in depth. The timber consists chiefly of spruce, aspen and tamarac, but not generally of large size. The soil is fairly good and there are few if any rocks or stones, but the land is for the most part too low and wet to be arable.

On Nighthawk Lake, the soil is also a clay loam, and on the south and west sides there is, I believe, a very considerable extent of arable land which will some day be settled and cultivated. Potatoes the only thing we found planted at the Hudson Bay Company's little post, grow well. We dug up a few, and found them large and of good quality. And the officer in charge (whom I afterwards saw at Metachewan) informed me that they always came to maturity, and that he believed all or nearly all, the most common root and grain crops would do so. There are extensive marshes capable of yielding a large quantity of grass and hay, which cannot fail to be valuable to the first settlers.

On the Bigmouth River, I noticed elm trees not very large but healthy, and black ash in many places. The spruce and aspen are especially large on the river bottoms. Some of the latter being nearly seven feet in circumference. I am fully convinced that wheat may be grown here with quite as good, if not better, prospect of arriving at maturity than most parts of the North-West. Owing to the greater depth of the snow and to the circumstance that it remains *constantly* on the ground from the commencement until the end of the winter, I am very strongly of the opinion that there is a wide belt of land in this territory extending from our eastern to our western boundary, in which fall wheat can be cultivated more successfully than on the north-western prairies where it is liable to be winter killed.

I think it very probable that the land on Frederick River, between the point where it issues from Bank River and its junction with the Abittibi River, will be found equal if not superior to the greater part, if not to the best of that on either Bank Lake itself or Nighthawk Lake. Although my men spoke of it as being not much more than half a day's journey by canoe in the spring of the year, I am persuaded this stretch cannot be less than forty miles. Neither of them had ever descended the river, and at any rate very long distances can be covered on many of these northern rivers, when descending them in a light canoe at that season of the year. On the occasion of my first journey to Moose Factory, we camped upon an island at the junction referred to, and I recollect noticing with surprise the very great size of many of the trees which had apparently been brought down Frederick River during the spring freshets and lodged on the upper end of the island.

Should I be spared to go north again I will endeavor to explore the land on this stretch of the river which has produced such trees as those I then saw. I have a great desire to ascertain also what difficulties, if any, there may be in regard of the drainage of Bank Lake and Nighthawk Lake, both of which are exceedingly shallow.



## TIMBER.

There is no timber in this section of any economic value from a lumberman's point of view. Some red and white pine were seen on the south-east arm of Bank Lake and on Nighthawk Lake, principally red pine, but they were widely scattered and few in number. They appeared to be somewhat more plentiful on the south-west arm of the last mentioned lake. The spruce on the river bottoms is frequently well grown and of good size. About twelve miles up Bigmouth River, I measured seven trees which were from forty-eight to sixty-five inches in circumference at the butt and growing on a space not exceeding 100 square yards. The largest tree was 100 feet in height, and measured about forty inches in circumference at half its length, or say fifty feet from the ground. The river bottoms however on which trees of this size generally grow, are not very wide. Tamarac is common on the low wet swampy ground, but is not often large, rarely exceeding four feet in circumference at the butt. Aspen poplar is plentiful wherever the soil is moderately dry and good. Banksian pine is the most common tree on the light sandy ridges, as also on sand plains or flats if sufficiently elevated to be dry. Cedar, balsam, birch, ash and elm are all met with in greater or less numbers, but are not so common as the other woods above mentioned.

## MINERALS.

Between Round lake and Bank lake I nowhere met with rock "in situ," and only in one or two places on the Frederick river—between Bank lake and Nighthawk lake. On the west side of the latter lake the exposures are more frequent, but limited to points and islands, and never rising more than a few feet above the water nor extending far inland. In fact the rock is almost entirely overlaid to a greater or less depth by the gravels, sands and clays, of glacial origin, as I believe.

While it is obvious to even the most superficial observer—that the boulders, which are embedded in these, have been transported or brought from the north, a careful examination of the gravel, sand and clay, will, I am persuaded, satisfy any one whose mind is unbiased by preconceived notions or theories, that the material, at all events, of these gravels, etc., has also come from the north. While some, not only of the finer materials, but boulders many tons in weight, have apparently been brought several hundred miles, others have evidently been torn from rock "in place" not more than a few miles away.

The rock, where visible, is most frequently Huronian, consisting of micaceous chloritic and silicious schists; some of the latter resembling in appearance what is commonly known as clay slate. I noticed on Frederick river one small exposure that seemed to me quartzite, and on one of the tributaries of Bigmouth river I observed diorite.

In some places the underlying Laurentian rock has been denuded and laid bare. It consisted, where seen, either of massive hornblende gneiss or syenite. A very large trap-dyke appears on the west side of Nighthawk lake—a short distance from the Hudson Bay Company's post, the course of which seems to be nearly north and south. It is not less than fifty or sixty feet in width and dips slightly toward the east. It is a dark coloured trap, spotted rather peculiarly with a light greenish yellow mineral, which I have met with before, but do not exactly know the name or nature of. A large dyke of the same kind of trap is to be seen, if I am not mistaken, at Sturgeon falls on the Mattagami river. I only found one vein and that was in what appeared to be micaceous schist on Frederick river, midway between Bank lake and Nighthawk lake. Iron pyrites was the only mineral it contained, so far as I could judge by the eye. I do not think, on the whole, that either Bank lake or Nighthawk lake offers a very inviting field to explorers, but, as already stated, I was only able to examine a small part of either of these lakes and that very hurriedly before I was obliged to turn my steps southward for Metachewan.

After my voyageurs had succeeded in finding the first portage from Bigmouth river to the Clearwater branch on the east side before mentioned, they managed to pick out and follow the route much better than I had supposed was likely.

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The distance from the south end of Nighthawk lake to the Height of Land, following the bends and sinuosities of the route, is not more than about thirty-four miles, roughly estimated; but, as there happens to be no fewer than seventeen portages, varying in length from a few chains to three miles (or about eleven miles in all), over which everything had to be carried, it is, at best, a very hard bit of country to get through.

The Clearwater stream, at which the first portage terminated was only navigable, and that with difficulty, for two and a half miles. Thereafter, commencing with the third portage, the route is a succession of portages, from one small lake to another, until the Height of Land is reached. Most of these lakes are less than half a mile in length, some of them mere ponds. Only one of the whole chain exceeds a mile; that is about five miles long and half a mile in breadth, and is called Big-trout lake. The water in all these lakes, some fifteen in number, is remarkably clear, and speckled trout were seen in several of them. I think it is probable that all are drained directly or indirectly by the Clearwater branch of Bigmouth river.

Knowing that Dr. Bell would make a track-survey of the route as he passed over it, I did not take the bearings very particularly, but the general course, roughly estimated, is between south-south-east and south-east.

The country rises very gradually, and with the exception of Big-trout lake, very little solid rock is exposed or met with anywhere.

The Height of Land portage leads to Lake Metachewan, and from the south end of the portage to the Hudson Bay Company's post is about nine miles. The lake, which varies in width from a few chains to half a mile or more, is considered as extending to, if not a little below, the post. It becomes, however, at that point, more properly, I think, apart of the Montreal river, the water of which is discharged into Lake Temiscamingue.

As regards the resources of the country between Nighthawk lake and the Height of Land, a brief description will be now given under the usual heads.

#### SOIL.

From Nighthawk lake to the third portage—a stretch, following the bends and turns in the route, of about fourteen miles—the soil is either a clay or sandy-loam, and makes tolerably good land where sufficiently dry, but much of it is low and marshy or swampy. From the third portage to the Height of Land the soil (almost without exception) is light and sandy or gravelly. Boulders, some of large size, were occasionally met with, but are by no means as numerous as in many other parts of this territory. The soil is not so arid and dry as that on the higher grounds or ridges between Round lake and Bank lake described in the preceding section. And it is evident that before the bush fires which have over-run the whole country, considerable areas in this section supported a growth of large red, if not also white, pine. It is probable that previous to the occurrence of these fires there may have been a considerable thickness of vegetable-mould in many places, which has been burnt-off along with the timber.

I am of opinion that fire has passed over most of the surface of this dry sandy belt of country, at least twice during the present generation. Once seemingly thirty or forty years ago, and again quite recently. The first fire usually burns up only a part of the soil, the underbush and some of the larger timber. The trees, however, that are not entirely burnt, are almost always killed. After an interval of time, longer or shorter, according to circumstances, a second bush fire is started some dry season, and consumes the old dried logs and trunks of the trees left by the former fire, the second growth, if any, and the remaining vegetable mould so thoroughly and completely that in many instances little or nothing but the sub-soil is left. It probably takes a very long time for a soil thus impoverished to regain even a moderate degree of fertility. That it will do so even if left to Nature alone I am perfectly satisfied. Nor do I doubt that after a certain rotation of crops (if such an expression may be applied to the trees), these burnt lands will again be clothed with forests, consisting at least in part of pine.

Much of this land if sown down to grass, with seed adapted to both soil and climate, would afford more or less pasture; and with a liberal application of manure might be

rendered otherwise productive. Swamp-muck which is obtainable almost everywhere, and the calcareous-clays or marls which frequently underlie the sand; as well as certain deposits in some of the smaller lakes, apparently rich in organic matter, will all some day or other be utilised for this purpose.

#### TIMBER.

From what has been stated under the previous head as to the almost total destruction of the timber by fire, it will be readily understood that there can be very little to add on this subject. I have already said that on some parts of the belt of country under consideration there has been, before the fire occurred, large pine and other trees. I particularly noticed a number of both red and white pine which had escaped the fire on the third and fourth portages, say some 14 miles from Nighthawk Lake. I measured half a dozen red pine growing on a gravelly ridge at the north end of the fourth portage, and found them from 80 to 87 inches in circumference three or four feet from the ground. They were well-grown trees, carrying up their thickness without boughs or branches to a good height. Again, on the seventh, eighth and ninth portages, or say from the 20th to the 24th mile, I saw single trees and numerous logs lying rotting on the ground of both red and white pine of good size. There was more or less pine too on the lake immediately south of the ninth portage and upon Big-trout Lake, only three chains separate therefrom. But in the stretch from Big-trout Lake to the Height of Land (about five miles) I noticed very few either red or white pine, the timber (where any) consisting principally of Banksian pine, spruce and aspen, the latter chiefly on the sixteenth portage and the lake at the south extremity thereof, where the soil is of better quality than usual.

On both sides of the Height of Land fires have, within the last forty years, passed over and destroyed the timber of an enormous extent of country. Much of this timber consisted of pine, and the loss to the Province in that timber alone must be many millions. Of the remaining pine bearing territory it is morally certain that in spite of every precaution a considerable portion will in like manner be destroyed before the timber can be cut down and removed.

This loss, serious as it undoubtedly is, would be at least somewhat mitigated if red or white pine would again spring up and grow on this burnt land. In due time it would replace that which the fire had destroyed. But the succeeding growth is seldom if ever the same, more especially on the light sandy or gravelly tracts which I have just been describing. This may be owing to one of three causes. Either (1) the soil is for a time rendered incapable of growing red or white pine, or (2) it favors the growth of some other tree or plant, which displaces pine, or (3) the seed of the pine has been destroyed by the fire. That immediately after a fire the soil may be temporarily less favourable to the growth of pine is probable. That in the struggle for existence this less favorable condition of the soil may turn the scale in favour of some other kind of tree is also possible. But, while attaching some importance to these causes, I am inclined to think that the principal reason why other trees replace the red and white pine is to be found frequently in the fact that the seed has been almost entirely destroyed. While the seed of the aspen, poplar, willow, and other trees in this territory is so admirably adapted to that end, that by the simple action of the wind they are sown broadcast almost immediately all over the burnt country. The cones of the pine are too heavy and cumbersome it seems to me to be thus carried more than a short distance from the trees which have produced them. Hence the distribution of this seed over vast tracts of burnt land from the outside, or from the few distant and widely separated pine trees which may have escaped the fire, would, in the absence of other agencies, require a great length of time. Water plays an important part in the distribution of the seeds of many plants and trees but is inoperative in this case.

There is no question, however, that animals and birds, if not insects, are active agents in the distribution of the seeds of many trees and plants. Among birds I have noticed that the cross-bill, common in our northern territory, feeds partly at least on the cones of the Banksian pine, and may thus be an active agent in the distribution of its

seed, which, in many instances that have come under my observation, is the first to spring up on the dry and sandy ridges. Among the animals of this country I am of opinion that the squirrel is one of the most industrious and useful agents, especially in the distribution of nut bearing trees and of the pine, the cones of which I have often noticed them gathering, carrying away and burying or hiding quite a long distance from the trees from which they were taken. Although vast numbers of them must perish in the fires I am inclined to think that those which escape, and others on unburnt but contiguous bush, may render more or less valuable aid and assistance in replanting these burnt lands with pine.

It might be worth while to enquire what part the squirrel really plays in this important matter, and if he should be found to be one of nature's most intelligent, active and industrious agents, whether as a forester-in-chief or in a much more humble capacity helping as far as in him lies in replant with our most valuable timber these burnt lands, this poor little creature, which is being cruelly, thoughtlessly and often needlessly destroyed, might, in unorganized and unsettled regions at all events, receive some small measure of protection at the hands of the law, such as is accorded to insectivorous birds, to fur-bearing animals and game.

Whatever else this northern part of the Province may be valuable for, no one who has ever visited it or read the reports of others who have, can entertain any reasonable doubt as to its fitness at all events to grow trees. These trees may not be exactly everything that we could wish either in respect of kind or quality, but in view of the rapidly increasing population and consumption of timber on this continent, of the equally rapid destruction of its forests, and of the inadequacy of the efforts made to replace them, nothing can be more certain than that in the near future any kind of timber whatever that this vast territory may be capable, spontaneously or otherwise, of producing will be required and become of more or less economic importance. In order to obtain the best results, however, the judicious and timely intervention of man is indispensably necessary.

A judicious expenditure in the drainage of lakes marshes and swamps, if not also of muskegs, in promoting the growth of the more important trees and plants and at the same time in repressing the growth of those of least value, in the prevention of bush-fires, where certain to be hurtful, and in the cautious use or employment of fire where likely to be beneficial, as it sometimes undoubtedly is—such an expenditure (however large) would, I verily believe, in due time be returned to the Province many fold, in the vastly increased extent of our forests and the better quality of the timber obtained.

Unfortunately, though it is easy to persuade peoples and legislatures to launch out in expenditures the benefits anticipated from which are *immediate*, it is almost hopeless to expect them to do so if the returns, however large, are distant or tend to the advantage chiefly, if not wholly, of posterity. It might not be amiss, however, to remember that while drawing so largely on the patrimony that has descended to us in the matter of timber it may not be either unfair or unwise to make some such provision as I have suggested for the future, even if the benefits anticipated should fall chiefly to the share of the children or grandchildren of the present generation. I know few instances in which the borrowing of the money necessary and its prudent and economical expenditure would be, I shall not say as *justifiable*, but *commendable* or which would be fraught with greater benefits and advantages to them, even if they should have, ultimately, to pay *both the principal and the interest*.

#### MINERALS.

As regards minerals I have merely to say that the only place where any rock "in situ" worth mentioning was met with in this section is on the lake called Big trout Lake. The rock at the north end of this lake is either syenite or massive horn-blendic gneiss and is there associated with a dull brick-red rock, which I remember seeing on Lake Kneogamiassee on the Mattagami river and have noticed elsewhere, generally, as I

imagined, at or near the junction of the Laurentian and Huronian rocks. About the middle of the lake the rock is, I think, Huronian on the west, if not on both sides. And here there are favorable indications of copper; indeed I found a vein which contained the green carbonate, as well as the yellow ore, known as copper pyrites, but not in paying quantity, even if the vein had been advantageously situated for working.

### THE PRACTICABILITY OF DRAINING MANY LAKES AND THEREBY RECLAIMING LARGE AND VALUABLE TRACTS OF LAND.

There is one feature common to almost all the lakes in this territory which I regard as of the greatest importance in estimating its capabilities and value in an agricultural point of view. And that is—the remarkable shallowness of the water, and the apparent ease with which many of these lakes can be drained and vast areas of fertile land reclaimed.

For instance, in this south-eastern portion of the territory we have Lake Abittibi with an area of not less than four hundred square miles—and incredible as it may appear—a mean depth of water, in the summer, not exceeding in my opinion *ten feet*. The soundings taken by us on the south side of the lake never exceeded nine feet, even in the widest stretches and when furthest from the shore. I have been told, however, that it is somewhat deeper on the north side of the lake—though shallow even there. Then we have Bank Lake—the area of which is seemingly thirty or forty square miles—and the average depth of which, judging from what I saw of it, does not exceed six feet. And thirdly—there is Nighthawk Lake with its marshes, covering an area of at least one hundred square miles, and yet nowhere, that we tried, is it more than ten feet in depth. Thus without taking into account the smaller lakes, such as Round Lake, and numerous marshes, I find in the comparatively limited section explored this season, no less than five hundred square miles or three hundred and twenty thousand acres—the far greater part, if not all, of which can in my opinion be drained at a very trifling cost as compared with the value of the land reclaimed.

Lake Abittibi is very advantageously situated in this respect—there being at its outlet a fall “called Couchiching”—which is estimated to be about fifty feet. If the apparently narrow reef of rock over which the water descends were only partially removed, it would, so far as I am able to see and judge, in all probability completely drain the greater portion of the lake above.

In Europe very costly operations of this description have been undertaken, with the view of reclaiming areas of land, at a tithe only of what might be expected in the case of Lake Abittibi. One notable instance is that of Haarlem Lake in Holland, where forty thousand acres of fine land were thus reclaimed. In that case, however, the water had actually to be pumped out. This, difficult as it may appear, was successfully accomplished by an English Company, who employed several large and powerful steam-engines made in Cornwall, famous in those days if not still, for the excellence of its pumping engines and machinery. It took a number of years, however, to drain the lake, and even when completed, some of the engines had to be retained in order to keep it drained, for the bed of the lake being below the level of the sea, the water could not be otherwise got rid of.

Lake Abittibi, on the other hand, is at least seven hundred feet above the level of the sea, and at its outlet there is a sudden drop or fall of fifty feet, or to a level forty feet below the bottom of the lake. The reef of rock which occurs at this place has at one time been much wider, if not higher than it is at present. But the action of the water and ice, operating slowly but surely during unnumbered ages, has broken down and removed by far the greater part of this barrier; and now, so far as I am able to see, there remains comparatively little to be done in order to complete the drainage of this immense lake.

If a passage were cut through the remaining portion of this reef of rock sufficiently wide and deep to discharge or let off the water at this point, very little further expense would,



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I think, be necessary. The main river and tributary streams would soon excavate channels for themselves in the clay of which, in my opinion, the bed or bottom of the lake is chiefly, if not entirely composed. The uniformity of the depth, the colour of the water and the character of the soil in the marshes and swamps, as well as on the islands, all tend to confirm me in the belief that the greater part of the bed of the lake is clay or clay-marl. There may be areas where more or less sand has been deposited upon and covers the clay, and there may be places where peaks of the underlying rock may rise above both the clay bottom and the water itself forming islands in the lake; but these, in my opinion, constitute but a small part of the whole.

That this deposit of clay is of considerable thickness I infer, from the fact—that wherever there is a current, whether it be near the mouths of the tributary streams for a greater or less distance before they enter the lake, in channels of the lake itself, or at and below its outlet, I have invariably found in both this and other lakes similarly situated, that the depth of the water in such places greatly exceeds that of the lakes themselves, being rarely less than fifteen and sometimes as much as thirty feet. In order to this, the bed must be composed of material easily excavated and removed by a moderate current of water, and on examination this is almost always found to be clay.

As regards the fertility and value of the land thus reclaimed, I have no sufficient data to guide me. I am well aware that there may be, and probably is, a great difference in the amount as well as in the kind of organic matter in the sediments deposited in our lakes and in those of Central Europe. I am even inclined to believe that this difference is likely to make in favour of the greater fertility of land reclaimed from lakes in old and densely peopled countries, or in warmer climates where land and water alike teem with animal-life. Still I do not see why the soil should not be as fertile, if not more so than much of the land in the older parts of Ontario or even in the North-West. This is a question of the first importance, but one notwithstanding, which can only be decided by actual experiment.

I have already observed that it is by no means improbable that the climate of a wide belt of this northern territory is better adapted for the growth of fall wheat than that of Manitoba, and it is at least possible that the calcareous clay or marl which forms the bed of this, and many other lakes north of the Height of Land, may prove when properly drained and worked a good wheat soil.

If this should happily turn out to be the case, or even if the soil and climate be less suited to the growth of wheat, but capable of yielding abundant crops of barley, roots and grass, this land must, beyond doubt or question, become sooner or later of great economic importance and value to the people of this Province.

Lake Abittibi is situated about five degrees or say three hundred and fifty miles due north of Toronto, and is nearly equi-distant from Toronto and Montreal. It lies to the south of any part of Manitoba or of our North-West territories, and even of some parts of the north shore of Laker Superior. Roughly speaking, this part of the disputed territory is no further from Toronto than Sault St. Marie.

When this Abittibi section of the country is opened by means of railways, it will be really much more advantageously situated, in respect of markets for its produce, than Winnipeg, Regina, Calgary, or any other part, in short, of the North-West.

If the projected railway from North Bay, Lake Nipissing to Lake Temiscamingue should be constructed and afterwards extended to Lake Abittibi, this part of the territory will be about 375 miles only from Toronto and 540 miles from Montreal by rail. Comparing these distances with those of the places above mentioned from the same cities, we find that Abittibi is some 880 miles nearer than Winnipeg, 1,240 miles nearer than Regina, and 1,720 miles nearer than Calgary to Toronto, Montreal, Boston or New York. Thus, whether the climate and soil of this Abittibi country be best fitted for the growth of grain, the raising of cattle or for dairy husbandry, the produce can be sent to the markets of Europe by way of Montreal, or to those of the United States by way of Toronto or Hamilton at very much less cost for carriage or transportation than like articles produced in the more distant North-West.

Should the navigation of Hudson's bay and straits prove practicable, Abittibi is not more than two hundred miles from either Moose Factory or Rupert's House on James'

Bay. But failing that as a safe and reliable route, it is quite within the bounds of possibility, nay even probable, that when this territory is fully developed and settled, those products intended for European markets will be sent by rail to the Saguenay river or Hamilton inlet and shipped thence to their destination.

Another trans-continental railway has yet, in my opinion, to be made—a railway which will pass north of Lake Winnipeg and have its Atlantic terminus probably on Hamilton's inlet, and its Pacific terminus on or about Portland inlet, if not further north.

This railway must pass through the territory claimed by Ontario north of the Height of Land, probably through this fertile belt and at no great distance north of Abitibi. When completed, this section of the country will be brought as near (if not nearer) to the markets of the Old World as Toronto itself.

Another important factor in estimating the value of the land that may be thus reclaimed is suggested by the consideration that it will be "cleared land." Wild lands in the older provinces are encumbered with trees and under-brush which must be cut down and burnt up before they can be cultivated at all. This clearing of bush-land is itself a laborious and expensive operation; but if the stumps and the roots of the trees have also to be removed as they must be in order to admit of *prosp*er cultivation, and the use of labor-saving machinery, the cost is greatly enhanced.

But the soil of these lake basins when drained will, I apprehend, be not only unencumbered with trees and roots, but absolutely free from noxious weeds if not also in such a state of tilth as to allow of the seed, grass or grain as most suitable, being at once sown or put into the ground.

Thus, as compared with the prairie land of the far off North-West, reclaimed land such as I have described, at or near Lake Abitibi, is, other things equal, much more valuable as being from eight hundred to eighteen hundred miles nearer to the common markets for the produce of both. And as compared with the wild lands of the older provinces, it is (other things being equal) much more valuable, inasmuch as the soil will be ready for the reception of the seed, and therefore should be worth as much as cleared land in Western Ontario if not elsewhere.

I shall not enter into any calculation of the expenditure that may be necessary to drain these lakes. That will vary almost indefinitely according to circumstances; and in order to make any even approximately correct or reliable estimates, very careful examinations by competent men would be requisite in each case. I will simply repeat my firm belief, "that the cost will be trifling as compared with the value of the land reclaimed."

I may be too sanguine in regard of the results to be expected from the drainage of the lakes in this territory. But the possibility of being able to drain them and of thus reclaiming, at a moderate cost, such vast areas of land as we find either altogether under water or in the condition of marshes, swamps and muskegs in this northern territory, is a subject, in my opinion, second in importance to no other as bearing on the fitness of the country for settlement and its value not only to the Province of Ontario but to the Dominion at large. It is a subject in which I have felt the deepest interest, and which I have kept more or less in view during all my explorations. It is one, moreover, which has not attracted as yet that attention from engineers and capitalists which I think its importance deserves. For not only in this disputed territory but in many other parts of Ontario and of the older provinces may be found numerous lakes so favourably situated as to admit of their being more or less completely and easily drained, and the drainage of which would be most profitable even in a *financial point of view* if reasonable arrangements could only be made with the governments and the proprietors of the land fronting upon or adjacent to such lakes.

Holding these views in regard to the reclamation of the soil and the agricultural resources of our northern territory, and as to the possibility at least of its proving of immense importance and value to the province, I regret exceedingly that our northern boundary should still remain unsettled. But for this delay, steps would ere this have been taken to set all doubtful questions relative thereto at rest.

I may be wrong, but am nevertheless fully persuaded, that both the commercial and manufacturing interests of the Province of Ontario will be more surely and effectually

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promoted by the opening up and development of the modest resources of our own territory in the immediate north than those of the far off western prairies, of the Rocky Mountains, or of the still more remote and distant regions of the Mackenzie river.

#### ADMINISTRATION OF JUSTICE.

As stated in the first part of this report, I had some reason to apprehend that competition having at length sprung up at Abittibi between the Hudson Bay Company and opposition traders, intoxicating liquors might be introduced and employed in the fur trade, and thus the Indians, comparatively few of whom are able to use such liquors in moderation or to abstain therefrom altogether, would be cheated and demoralized if not killed, as many doubtless are in those sections of the country where untaught and untrained to habits of self-control, this terrible temptation comes suddenly upon them. Aside from the injuries they may inflict upon each other, their mode of life exposes them to many dangers when intoxicated. They upset their canoes and are drowned in the summer, or lie out and are frozen in the winter, and are always liable to maim or disable themselves or others with guns and axes which are rarely out of their hands.

I was glad, however, to learn from the Rev. Father Nedlec that, much to the credit of all engaged in the trade, intoxicating liquors have not as yet been employed. Father Nedlec has been the zealous and indefatigable Catholic missionary among the Indians not only at Abittibi but in nearly the whole of the disputed territory ever since my appointment as Stipendiary Magistrate. He visits his people as far north as Albany Factory every year, and we have repeatedly met on the Abittibi river and on the coast of James' Bay. At Abittibi the native population is almost entirely Catholic, and here, therefore, more particularly, the worthy Father has great influence—an influence which, he assured me, he has exerted and would continue to exert to prevent a traffic so demoralizing and ruinous to the Indians as he was well aware that in intoxicating liquors would be.

This was more especially satisfactory to me, inasmuch as the Hudson Bay Company's post is in a sort of no man's land. It may be in Quebec, in Ontario, or in unorganized territory, and this uncertainty must continue until the boundary question is settled. While many (possibly a majority) of the Indians who trade at this post and are camped there during the summer have their hunting grounds in the territory claimed by Ontario, the post itself lies, in all probability, to the east of the provincial boundary, and if so it cannot possibly be situated within my jurisdiction. Nor is it so far as I am aware within the jurisdiction of any other magistrate whether of the Dominion or Province of Quebec. This state of things has a direct tendency to encourage lawlessness by the supposed impunity with which minor offences such as those arising out of the sale of liquor to Indians can be committed.

As opposition traders (sometimes unprincipled) penetrate further into the territory which, owing to increased facilities of transport by railways and steamers, they are gradually doing, this danger will increase. And it is to be hoped, in the interest of the Indians and of the law-abiding fur traders—be they officers of the Hudson Bay Company or others—that this state of doubt and uncertainty will not be permitted to continue.

I have now only to add that, on leaving the Hudson Bay Company's post at Metachewan, I took the route which led to their post on Lake Tamagaming, and thence down the Tamagaming and Sturgeon rivers to Lake Nipissing.

The region thus traversed presents some features of interest both in respect of minerals, timber and soil. But as it is not included within the limits of the territory which is the subject of this report, I think it will be better, if required, to submit a separate report in reference thereto.

Respectfully submitted,

E. B. BORRON;  
Stipendiary Magistrate.



