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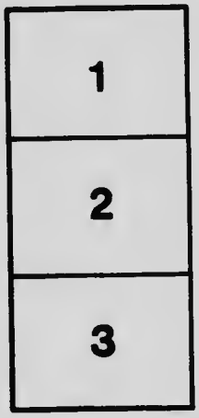

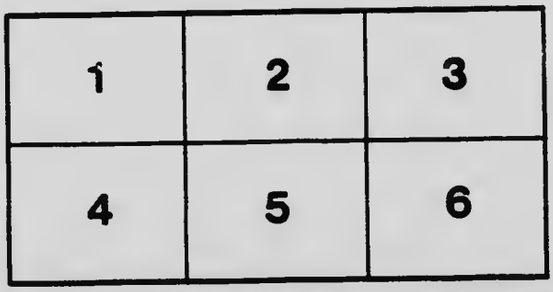

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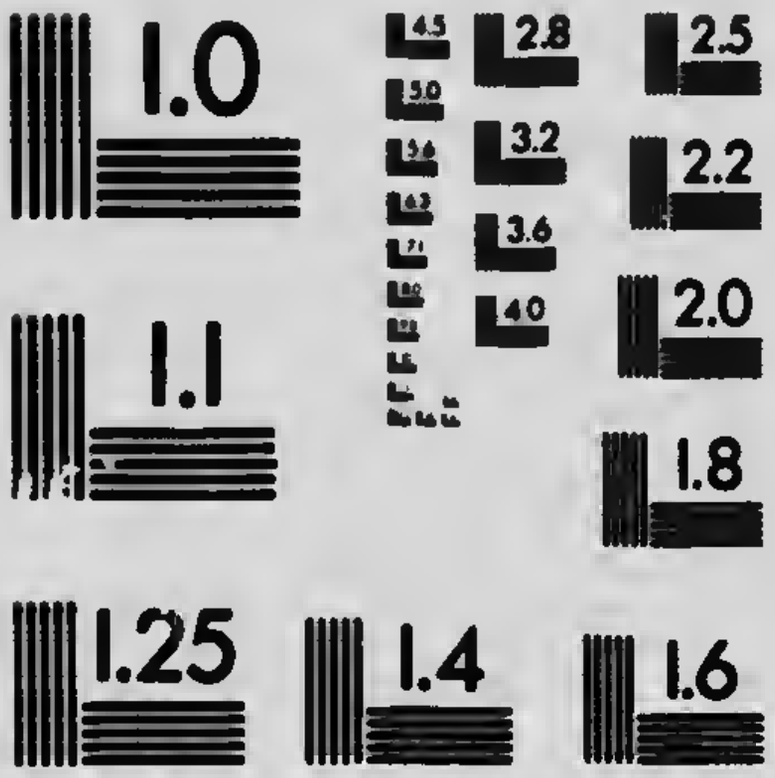

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Second Report of Progress

OF

Exploration in the Country

BETWEEN

Lake St. John and James Bay

Including the region of Lake Mistassini and the basins of the great Nottaway and Rupert rivers together with a key plan to accompany remarks on the different proposed railways between Quebec and James Bay

MADE UNDER INSTRUCTIONS FROM THE DEPARTMENT OF COLONIZATION AND MINES, QUEBEC

BY

Henry O'Sullivan, D. L. S. & C. E.

Mem. Can. Soc. Civil Engineers, and Inspector of Surveys, P. Q.

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1901

REPORT OF EXPLORATIONS

IN THE

LAKE ST JOHN, MISTASSINI AND JAMES BAY REGIONS

To the Honorable Commissioner of
Colonization and Mines,
Quebec.

Sir,

I have the honor to submit you the following report with accompanying plans and profiles of the different sections of exploratory survey between Lake St-John and James Bay, together with those of part of the Mistassini and St-Maurice regions made under instructions from your department.

Section No 1 shows the country from Roberval on lake St-John north-westward to a little beyond the height of land between the Saguenay and James Bay waters, lat. 49° 24' N. long. 74° 30' W.

Section No 2 shows from there to the Hudson Bay Company's post at Waswanipy, lat. 49° 39' 55" N. long. 76° 34' W.

Section No 3 comprises from Waswanipy to lake Nemiskow on the Rupert river, lat. 51° 20' N. long. 76° 34' W.

Section No 4 comprises the lower part of the Rupert river, from the lake Nemiskow down to its mouth at Rupert House on James Bay.

Sections Nos 5 to 9 inclusively have already been transmitted with accompanying reports ; with the exception of No 6 A which is hereto attached ; they comprise the following regions :

No 5, river *du Chef* from its mouth or junction with the Chamouchonan river northward to beyond the height of land embracing File Axe lake and river *à la Perche* to the borders of lake Mistassini.

No 6 shows the region from lake Nicaubau northward to the H. B. Co's post on lake Mistassini, including lakes Obatagoman, Chibougamou, Wahwanichi, &c.

No 6 A shows the region from lake Wahwanichi westward to the confluence of the Obatagoman and Chibougamou waters.

No 7 shows the region west of lake Obatagoman, including lakes *Eau Jaune* and *Presqu'ile.*

No 8 shows part of Great lake Mistassini, from the southern extremity of Cabistachonan Bay northward to little lake Mistassini.

Section No 9 comprises the region of Little Lake Mistassini, including part of the Porcupine river and Basalt lake.

Section No 10 shows the region from the head of Grand lake Mistassini south-westward to Poonachonan Bay.

Section No 11 shows the canoe route via the Rupert and Martin rivers, westward from lake Mistassini to lake Neiskow.

Section No 12 comprises the region from the H B. Co. post called Kikindatch on the St-Maurice northward to lake Ascatscie on the Chamouchonan waters.

Section No 13 shows the country from the discharge of lake Presqu'ile (shown on section No 7), to the junction of the Obatagoman and Chibougamou waters with the nameless river shown on section No 2, surveyed in 1897.

Section No 14 shows the country from lake Witetnagami northward to Lichen lake.

Section No 15 comprises lakes Waswanipy and Patikamika and environing country.

Section No 16 comprises the main or Great Nottaway river and chains of lakes from Gull lake northward down to its mouth at tide water on James Bay.

Two of these sections, viz : Nos 10 and 11, are not yet completed, but they may serve in the meantime for the compilation of a general map of the country.

SECTION No 1.

Section No 1 has already been described in my report of progress of November, 1897.

SECTION No 2.

Section No 2 begins at the discharge of Two Islands lake, lat. 49° 24' N, long. 74° 30' W. and elevation 1176 feet above sea lelel.

About 1 mile and a half of rapid river takes us down to another small lake one mile in length and a quarter of a mile in width ; the total fall in this stretch is 39 feet, and then one mile broken by chutes and rapids takes us to another expanse, where a considerable-sized branch comes in from the south.

There is good loamy soil all along here, and the country is level or gently rolling. The rock formation is gneiss and granite.

At the discharge of the latter expanse, I found the lat. 49', '6', 37" and long. 74° 32', 18" W., and the elevation 1118 feet, above sea level.

About two miles below this, a fair sized stream called river Desert, comes in from the north.

Thence, the river flows about due west 3½ miles to a larger expanse 1 mile in width and 1½ in length.

Here Huronian rocks are first encountered, rich clay soil and larger timber all around.

From there, the river flows north-west about three miles to lake Kespatnaginska or Tamarac lake

This is a pretty large lake, measuring eleven miles in length by about four miles in width in the widest part, with several deep bays and picturesque islands.

Its altitude is 1073 feet above sea level and, notwithstanding this high elevation, the country around is well timbered with spruce, and along the lake shore ash is found in the sheltered vales and large cedar is seen along the portage at the discharge of the lake, sturgeon, pike, doré, whitefish, grey trout and different other kinds of fish are taken there in abundance

The discharge of this lake flows turbulently northward through a crooked valley for a mile and a half, to where it opens into another large lake.

On this discharge the total fall is 33 feet, 15 feet of which is in the first cascade. Here a good water power can be had, and by damming the discharge at its narrowest point above the cascade, 50 feet head may be had with a surface of thirty square miles to draw from.

The next lake below, we called Windy lake, on account of being held there wind-bound. It lies parallel to Tamarac lake, nearly east and west. Its extreme length is eight miles. Its easterly end is narrow, measuring only from ¼ to ½ mile in width, for about half its length where it discharges northward, and thence westward it expands to over three miles in width. Forest fires have done considerable damage around this lake years ago, but it is now well covered with second growth.

From its discharge the river runs north by east about four miles, and then turns sharply south-westward and runs about five miles amid rapids and expanses on the latter course, approaching nearly to the west end of the last mentioned lake, where it turns again sharply northward and after passing a short rapid, giving six feet fall, we enter lake *Bras Coupé*, 994 feet above sea level.

This is a curiously shaped lake. For the first six miles it runs about north-east and measures from a quarter of a mile to a mile in width; then it turns sharply south-westward and flows about eight miles in the latter direction to its discharge.

The soil is good along here and the timber, which is chiefly grey spruce, is exceedingly tall and abundant where the primitive forest exists. Looking northward from the lower end of this lake, a charming country meets the view; rich clay soil is seen all along the shore and as far as the eye can reach easy slopes and gentle swells rise one above another well timbered with spruce, poplar and *bouleau* or white birch

From lake Bras Coupé the river flows south-westward placidly for about three miles, and in the next two miles, there are rapids and falls that give a total difference of level of 20 feet.

Here good water power may be had also.

We now come to the largest lake of the whole series from the height of land to lake Waswanipy, mentioned on pages 6 and 7 of my report of November 1897.

It is called by the Indians, Doda Sagaigan or Father's lake and by others it is called *Lac Brulé*; but the latter name is applied to so many

lakes that I have discarded it, particularly as there is no great extent of burnt country around the lake.

This is the most irregularly shaped lake imaginable.

As mentioned in said report, its length is 32 miles and contour over two hundred miles. Its shores are generally well timbered with grey and black spruce of good size and quality. Tamarac, poplar and *bouleau* are also found here in abundance. Its elevation is 974 feet above sea level.

The large river coming in from the south near its eastern end is called by the Indians Mitchinesk-Sibee or Eagle Head river.

We explored it for about four miles and found a sameness of country all through, viz: level or gently rolling land, good loamy soil, large grey and black spruce, *bouleau* and poplar; no mountains to be seen in any direction.

Returning from the mouth of this river, we cross the lake in a north westerly direction about five miles to where its waters are contracted to half a mile in width.

These narrows lead to the discharge and one can imagine by looking at the plan how long it might take the most expert explorer to find his way to the discharge without having some one who knew the way, for one would naturally think that the outlet would be at the other end of the lake.

The lake here turns westward and again southward, where it widens out to nearly two miles in width, and about three miles further on it turns again westward and narrows in to about five chains in width in the narrowest part, where there is a pretty swift current, which gives a sense of relief when we know that we have struck the right bay at last and that the discharge must be in this direction anyway,

But we are not yet at it, a broad expanse two miles in width meets our view, beautiful slopes of the richest clay soil are seen on either side, well timbered with spruce, *bouleau* and poplar; and after making about three miles in a still westerly direction, we come to other narrows and swift current. Here the country on the north side has been overrun by fire and is now covered with a thick second growth of poplar, *bouleau* and spruce.

Beyond the last mentioned narrows, another expanse extends south-westward a couple of miles to where a pretty large stream comes in from the south-west, and a deep bay extends a couple of miles more in a southerly direction, and immediately north of this bay, we come at last to the proper discharge, where there is a fall of 20 feet, which is passed by a portage 9 chains long on the left bank.

For the next fourteen miles following down stream there is nothing very remarkable.

The general course is west by north, and a succession of rapids and chutes, bays and expanses of no great extent, bring us to another lake lying about at right angles to the general course of the river. Most of the country along here has been overrun by fire some twenty-five or thirty years ago and is now well covered with a second growth of mixed timber.

The elevation of the last mentioned lake is 880 feet above sea level. It measures four miles in length by from $\frac{1}{2}$ to $\frac{3}{4}$ of a mile in width and about midway up its north-west side the discharge flows off in a south-westerly direction, four miles to another lake (Tongue lake), measuring six miles in length and from half a mile to a mile and a half in width.

In the latter four miles there are two chutes and one cascade, giving a total fall of 24 feet.

The last mentioned lake is bordered by a beautiful gently rolling country, excellent clay soil well timbered with large spruce, *bouleau* and poplar. There is a small round mountain about 500 feet in height near its north easterly end, but in every other direction the country is level or gently undulating.

Following the discharge of the latter lake, which turns south-eastward, we soon come to rapid water which, with a chute of ten feet at a sharp bend passed by a short portage on the right, brings us to a long expanse called Lichen lake, fifteen miles in length, varying from ten chains to over a mile in width and lying in a nearly due westerly direction.

The country on either side is gently undulating, well timbered clay land.

About two miles from the westerly end of the latter lake, a fair sized river comes in from the south called Micouhi or Red Willow river.

There is a canoe route to the old Mekiscan post by this river, which is the discharge of lake Wetetnagami and which will be more fully described farther on.

INDIAN CHAPEL, GRAND LAKE VICTORIA.

MAKING HAY AT JAMES BAY.

Continuing down stream from the end of the latter stretch, we turn northward a couple of miles to another large lake called Yatotskuan or Rat lake. This is a fine sheet of water, measuring about twelve miles in length by from one half a mile to two miles in width, lying in a nearly north-east direction and bordered by a well wooded gently rolling country.

Near its north-easterly end, there are two discharges: the first turns due west, while the other continues in a north-easterly direction and flows into Opowakow Sagaigan or Sandy Point lake, forming an island about three miles in length and nearly a mile in width. Lake Opowakow lies nearly paralled to Yatotskuan for about nine miles, but flows in the opposite direction, and is separated from the latter by a long tongue of land that has been burnt over and is now covered with a beautiful second growth of bouleau and poplar.

At its western end, it expands to about four miles in width, and nearly in the centre of this expanse, there is a large island 2,500 acres in area, of the richest clay soil, covered with a large second growth of poplar and bouleau.

This island is a great resort for the Indians who inhabit this region.

All kinds of fish taken in the Nottaway waters are here to be had in abundance, particularly the sturgeon, which is the staff of life of these wandering people.

Leaving this lake, the river runs north-eastward for about six miles through chutes, rapids and expanses, giving a total fall of forty feet to the head of the Sturgeon Falls.

Here the river turns sharply westward and falls in beautiful cascades through a narrow gorge formed by perpendicular walls of Huronian rocks.

An excellent water power may be had here of over 30 feet head and a never-failing supply can be held in the large lakes above described, at comparatively small cost.

Below this fall the river runs northwest-ward about five miles to where it meets the mightier stream coming from the north-east—the united discharges of the Obatagoman, Chibougamou and other large lakes to the north and east which drain the country to the rim of lake Mistassini.

Now we embark on a broad rolling river which flows steadily westward for 1 mile and a half when it turns sharply north in a racy rapid through which your bark is carried at railway speed for another mile, and then you come calmly to rest in a broad expanse, studded with long islands.

From here to lake Waswanipy, a distance of 26 miles, descending, there is nothing very remarkable in the river or in the country on either side. The river keeps its average width of about 10 chains, or 660 feet, except in a few places, where it is contracted by rapids or broadened out by large islands, as shown on the plan

Most of the country here has been overrun by fire many years ago and is now well covered with poplar and *boulean* on the level clay flats and occasionally spruce and Banksian pine on the drier elevated ridges.

On approaching lake Waswanipy, the shores flatten out in level clayey plains, and the river spreads off in channels, forming several large islands, some of which are covered with a luxuriant growth of blue joint grass, which serve as meadow and pasture land for the Hudson Bay Company.

On one of the islands here overlooking the lake is situated the H B. Co's post of Waswanipy, already described in a previous report.

SECTION No 3.

FROM WASWANIPY TO LAKE NEMISKOW.

For about five miles below the discharge of lake Waswanipy, the river runs due north, spreading out in divers channels through a level clayey plain, forming several large islands well wooded with spruce, fir and tamarac. The latter timber is mostly dry from the ravages of the saw fly.

At the end of the latter distance, the river turns westward and flows nearly due west for a distance of twelve and a half miles to where it empties into Gull lake.

On the latter stretch, the current is generally swift, with one long shallow rapid about midway between the two lakes.

These rapids are easily run or tracked or poled up with ordinary loaded canoes.

The total difference of level between Waswanipy and Gull lake is 20 feet.

The country on either side is gently rolling and is generally well timbered with grey and black spruce, poplar, *cyprès* and bouleau.

About ten miles below Waswanipy post, some dry burnt hills are seen on the north or right side, but the area of burnt country does not appear to be of great extent.

Gull lake is a magnificent sheet of water. Its main body is about 15 miles in length and 9 to 12 in width.

A long peninsula on the west side juts out into the lake.

There are not many islands and therefore not much shelter for *voyageurs*. Canoes are often wind-bound here for several days on their way to and from the Company's headquarters at James Bay.

Along the eastern and northern shores of the lake, the land rises in gentle slopes of the richest clay soil, well wooded with large spruce, poplar and bouleau, but towards the west high ranges of hills are seen capped by blue mountain peaks in the distance.

Its discharge falls off in a rough, crooked rapid at its north-west end, and about five miles east of the discharge a long arm extends north-eastward for seven miles, varying from half a mile to a mile and a half in width, when it expands to nearly three miles in width with two large bays at either end of the south-east side of this expanse, while another arm extends north-westward for twelve miles.

The last mentioned arm is about a mile and a half broad at its south-eastern end, but it gradually narrows in for about six miles until it is only about 5 or 6 chains in width and for the next 3½ miles it may be called only a river varying from 5 to 15 chains in width, and then expands again into another lake about nine miles in length, lying at right angles to the course of the last mentioned arm.

The country along here is generally low, level, clay land timbered mostly with black spruce and tamarac, excepting on the north side of the last mentioned lake, where burnt hills from one to two hundred feet elevation, covered with second growth of bouleau and poplar, meet the view; and from there, I may say that there is neither land nor timber worth mentioning for several miles northward.

We follow up a sluggish, muddy river, about two miles eastward from the last mentioned lake, to where a small stream enters from the north, which stream we follow on a nearly due north course for about seven miles, in which distance we pass through five small lakes, and then turn around south-westward, following the same waters, and soon come to a lake 1 and ¾ miles in length and from 10 to 40 chains in width, lying close to the summit where a short portage ⅛ mile in length over a rough, unworn rocky waste, brings us over the height of land into a bay of a large lake of the Broad Back, or Swell Back or Little Nottaway chain of waters.

This is a peculiar river. It lies parallel to the Rupert river and drains a comparatively narrow basin extending from the western rim of lake Mistassini to James Bay.

On this ordinary travelled route, from Waswanipy to Rupert House, we pass through several large lakes on this chain of waters, and where it leaves the main river, there is only a distance of 5½ miles to lake Nemiskow, a large expansion of the Rupert river.

I have not yet given any names to these lakes, for I think they deserve something more specific than "Big lake", "Pike lake", "Mud lake" etc etc., and as for the river itself it is time that it should be known by some name that would cover it from end to end. Big lake is named Turgeon lake on the general map, and shall be henceforth known under that name.

At its mouth, which is on Rupert Bay, midway between Rupert House and head of tide in the great Nottaway, it is called the "Little Nottaway", and further up, it is called the "Broad Back", and still further up, the "Swell Back", in fact every family or band of Indians have their own local name for every lake and river and part of river; and the burning of a patch to grow blueberries at either end of a lake is enough to have the name changed to *lac Brulé* or *lac aux Bluets*, etc.

I therefore respectfully suggest that, as soon as all these plans of surveys and explorations are compiled and laid down on a uniform scale an appropriate name be given the main river to cover it from its source to its mouth, and the different large lakes on its water should be given appropriate names also.

Starting from the last mentioned watershed, elevation 720 feet above sea level, we follow a large bay northward four miles, and then turn sharply south-west for three miles to the main body of the lake.

HEIGHT OF LAND — PORTAGE BETWEEN SAGUENAY AND JAMES BAY WATERS.

EAST MAIN FORT H. B. CO. POST.

This is a magnificent sheet of water lying in a north east direction, measuring 18 miles on said course from its western bay to its discharge.

Another bay extends southward from the main body, which we did not explore and which probably may extend several miles in that direction. This lake is about five miles broad in the widest part.

Along here the soil is good loam, but the country appears rather broken. Some of the lower flats are well covered with black spruce and bouleau and the drier portions that have been burnt over from time to time are generally covered with a dense growth of small *cyprès* or Banksian pine.

After passing the broad expanse above mentioned the lake narrows into an average width of half a mile and runs for about four miles through a broken hilly country and again widens out to about three miles in width, where it divides into two large bays, forming two discharges that enclose an island three miles in length and over a mile in width.

The eastern discharge is the one generally followed.

A splendid water power can be had here, for the water falls rapidly from the lake in a succession of cascades that are passed by a short portage on the right.

About a mile and a half below the confluence of the said two discharges, the river expands again to over a quarter of a mile in width.

Here a pretty large stream, much larger than the one we followed, down, comes in from the east called the Kaitisequans.

The country around here is poor and broken and looks as if it had been repeatedly burnt over.

From the junction of said river, an expanse from a quarter to halt a mile in width extends northward for a couple of miles and then narrows to about six chains in width for another couple of miles until it opens into Long lake.

This is a fine sheet of water measuring 22 miles on our canoe route, lying in a north-east direction and from where we strike it a large bay or, more properly speaking, the main body of the lake, continues south-westwardly as far as we could see.

This south-western part we had no time to survey as the season was too far advanced ; we thought it more advisable to try and reach the bay as soon as possible.

The country along here on either side is more or less broken by hills that range from 200 to 800 feet in height and are generally covered with a dense growth of middle sized spruce, excepting on the dry burnt knolls, where small *cyprès* is chiefly found.

Near the lower end of this lake, another large river comes in from the east, which the Indians say, drains the country near to lake Mistassini

The river now puts on a majestic appearance ; its increased volume of water is at once visible in the narrows that occur half a mile farther down.

There is, immediately below these narrows, another crooked expanse, a bay of which extends north-eastward that we did not survey, but following down the main body we come to a portage on the left bank 20 chains in length which passes a chute 13 feet in height.

Here a very fine water power can be had, for by placing a dam at the head of this chute, twenty-five feet head may be had and the whole surface of the lake, 25 miles in length, would serve as a reservoir.

An approximate measurement of the river section and flow here gives the discharge in the neighborhood of 1,000,000 cubic feet per minute, which, with a head of 20 feet, would give over 37,500 horse power.

Below this chute the river flows on a westerly course for about seventeen (17) miles to where it empties into an arm of a very large lake known to the H. B. Co. only by the name of Big lake, now lake Turgeon.

In the latter stretch of river, there are several expanses from ¼ to ½ of a mile in width, and between these there are a number of cascades and rapids, seven in all, giving a total fall of 44 feet. The first six of these rapids can be run with half loaded canoes, but in the last, on approaching the lake, there is a cascade five feet in height which is passed by a portage 8 chains in length on the right bank.

In the latter stretch there are 4 considerable sized tributary streams, one from the north and three from the south.

The first is from the south and is called the Pasquetnck of Moulting river. At its mouth it appears to average 1 chain and a half in width and is said to drain several good sized lakes.

The next, about a mile and a half further down, comes in from the north and is called by the Indians the Pocastastnau-Sibee or Canoe Hidden river, and averages about one chain in width.

The Indians say that the best birch bark for canoes anywhere in this region is found along this river.

The other two streams come in from the south close together about four miles farther down.

The first is about half a chain and the other over a chain in width.

The formation here is chiefly Huronian, with large veins of blueish white quartz.

I took a few specimens of the different rocks as often as time would permit in passing along, particularly when anything remarkable was seen in the portages.

We are now fairly launched on lake Turgeon.

This is the largest sheet of water so far known in our province north of the height of land and west of lake Mistassini.

Its extreme length, from north-east to south-west, is (31½) thirty one and half miles, and its width, from south-east to north-west, is about 18 miles.

It lies between the parallels of 50° 41′ 40″ and 51° 03″ 30″ north latitudes and 76° 44′ and 77′ 16′ west longitudes and its elevation is 612 feet above sea level.

By these dimensions, it would appear to be larger than lake St John but still it does not contain so great a body of water, being mostly made up of large bays, peninsulas, points and islands, and like the latter lake its waters are generally very shallow.

In fact, most of the lakes of the James Bay slope and Labrador peninsula are surprisingly shallow in proportion to their extent.

One of my assistants who had been with Mr A. P. Low, told me that the latter gentleman having discovered a very large lake in the interior and wishing to ascertain its depth in about the deepest part, tied together all the tracking lines he had and put on a couple of axes for additional weight on [illegible]unding lead, and paddled out several miles

to the centre of the lake, and, to his utter astonishment, when he threw out his lead, it reached the bottom at only twelve (12) feet. There are exception, of course,as in Mistassini and Wahwanichi, Chibogamou and some other northern lakes where we find deep water, but the majority of them are shallow.

But to come back to the lake here, I did not find more than 30 feet in depth anywhere, and in the broad expanse crossed by us, from where we entered the main body of the lake to the central portage, a clear sheet of water nearly six miles broad, we found bottom with the paddles nearly all the way across; of course, in the broad expanse near the southern end there may be some parts much deeper, but this I had no time to ascertain.

The low swampy portage across the central tongue or peninsula of the lake, by which a shortening of over twenty one miles in the canoe route is made, is one of the meanest, nastiest, wettest and dirtiest holes that ever a christian put foot on.

The distance across is only a mile and a quarter, and, as my guides said, it was only a mile. I started with my instruments ahead of the men expecting to reach the other end in time to take an observation before the sun would get too low.

I was mistaken, however, for between bogging knee deep in mud and jumping from one nigger-head to another, and softly crawling my way over shaking bogs, &c., the sun had gone too far down before I could reach the other side or find a place solid enough to plant an instrument; and notwithstanding that the thermometer was within one degree of the freezing point on that calm sunny evening of the 20th September 1897, the mosquitoes, sand-flies and every other kind of flies, seemed to welcome our arrival in their quiet abode with an attention and energy that only the flies of the East Main coast could rival.

The loaded canoes of the H. B. Company brigade generally make the round unless in very unfavorable windy weather when they are sometimes obliged to take the portage.

The country around this lake is generally level except at the south end where isolated hills and knolls rise some two or three hundred feet above the level of the lake. The soil is a good brownish clay and seems to rise in easy slopes westward, well covered with black and grey spruce, tamarac, etc.

From the end of the portage the canoe route leads north through the middle channel about six miles to the northern extremity of the large island on the left, and thence, the river flows north-eastward 2½ miles with a steady current until we come to the upper jumping portage.

This is a good well beaten portage, fifteen chains in length on the left bank, by which the upper jumping chute is passed.

The difference of level there is only ten feet, but with a dam at the head of the chute, a good water power can be had, converting the vast surface of the big lake into a never failing reservoir.

About seventy chains further down we come to the lower jumping portage, a good well beaten portage about the same length as the upper one and on the same side of the river, but the fall here is twice as great as at the upper portage.

Another magnificent water power can be had here; in fact I believe that the banks are sufficiently high to admit of a dam being built here at moderate cost that would flood back the water and efface the other chute and have the reserve of the Big lake to draw from, with more than double the head of water to work with. The elevation of Big lake is 612 feet and that of the foot of the lower jumping chute 576 feet, so that a head of 40 feet can be had with a flow of at least 1,000,000 cubic feet of water per minute, giving over 75,000 horse power with never failing head.

Below the chute the river runs rapidly northward for about a mile to where it opens out into a broad expanse, a mile in width, and then turns westwards in a sort of crooked lake ¼ to ⅓ of a mile in width.

The country here seems to have been burnt over some thirty years ago and is now covered with a thick growth of poplar, *bouleau* and *epprès*. About six miles below, the last mentioned portage we come to a pretty large lake lying N. E. and S. W. nearly at right angles to the general course of the river.

We surveyed the south-west shore of this lake throughout and part of the easterly shore, but had not time to follow the great bay north-eastward, where a second discharge flows off forming an island several hundred acres in area.

The elevation of the lake is 575 feet above sea level and at its western discharge, a portage one mile in length on the west side passes chutes and rapids that give a fall of 40 feet.

At the foot of this portage, the river expands again to ¾ of a mile in width and extends due north two miles, growing gradually narrower until, at its junction with the other discharge, the united waters flow due west, and from this point we enter the long portage to cross to the Rupert river.

This portage is 3¼ miles in length, the longest on the whole route.

The first stage is partly through swampy land and then we ascend on dry, sandy, rocky ridges.

The summit is 115 feet above the level of the Broad Back, or Little Nottaway, and from there a descent of 50 feet in a little less than a mile, takes us to a small lake about 1 mile and a half in length, a feeder of the Rupert river.

Both soil and timber are worthless all along this portage, and on approaching the Rupert the country has been repeatedly overrun by fire and is covered with only a small second growth of black spruce and *cypres* with some small stunted poplar and bouleau.

From the foot of the last mentioned lake a portage of half a mile on the left hand takes us to lake Nemiskow, a large expansion of the Rupert river; elevation, 549 feet above sea level.

We had not time to survey this lake, so we simply took in the portion of it shown on the plan as we went along.

The canoe route skirts the west shore of the lake from point to point for a distance of about seven miles, and then follows down a small discharge for about 4½ miles to where an easy portage of about 15 chains on the left bank crosses a long narrow point, and we come at once to the main discharge, the broad, wild, rapid rolling Rupert river.

SECTION No 4.

About half a mile above the last mentioned portage, I found by astronomical observation the latitude to be 51° 23' 39" N. and longitude 77° 00' west.

The Rupert is only about twelve chains in width where we embark at the foot of the last mentioned portage, but it soon widens out to nearly a mile in width and the impetuosity of the current through the narrow

part above mentioned is felt for nearly a couple of miles eddying and bubbling through this expanse.

Below this, the river averages half a mile in width for over six miles on a west-by-south course and then turns sharply north-westward through a deep narrow gorge about a mile in length and then due west six miles varying from fifteen to forty chains in width.

For the last four miles there are two channels, embracing an island 4½ miles in length and over 1 mile and a half in width, as far as we could see from the south channel which is considerably the largest.

There is good clay soil all along here and for a couple of miles below, where the river is divided again by another large island, and 2½ miles further on, there is a third channel, forming another island over two miles in length.

The country here is low and marshy, and on the last mentioned islands and river shores, layers of peat from 5 to 10 feet in depth cover the clay banks on either side.

Below these islands the river flows calmly west for 1 mile and a half and then turns sharply southward in racy rapids until we turn off from the main river into the mouth of a fair sized branch to the right where we come to the head of the oatmeal portage.

This portage is three quarters of a mile in length through a rolling country covered with second growth.

The total fall in the river here is sixty feet nearly in one majestic chute.

Taking the flow of the Rupert here to be 3,000,000 cubic feet per minute, as approximately measured, with this head of 60 feet, it would give 339,818 horse power.

Below this portage the river broadens out to over a mile in width and then flows off calmly for about three miles to where we arrive at the White Beaver portage.

Here the river turns sharply southward and forces its way through a narrow gorge over a clear chute 18 feet in height.

Over 100,000 horse power is available here. Below the chute, the river soon expands eastward into a bay nearly a mile in depth and over

half a mile in width, and then flows westward about nine miles between low banks of brownish blue clay, which soon rise to a height of from 50 to 60 feet above the level of the river.

Several good sized creeks fall into the river from both sides along this stretch and along the valleys of these creeks, there is an abundance of good spruce. The soil appears to be of excellent quality all along here.

We are now at the head of the four portages. The first on the left about a mile in length, passing a chute and rapids that give 32 feet fall and from there, we have barely time to cross the river, when we come to the second portage, which is about half a mile in length, giving a sudden drop of 63 feet, offering upwards of 340,000 horse power.

From the foot of this portage we only can go about ¾ of a mile to the next portage, which is also on the right nearly a mile and a half in length, passing a chute and rapids, giving a total fall of 80 feet, about 453,000 horse power.

From this portage we run nearly a mile through a broad expanse to the last of the four portages which is on the left bank.

This portage is short, there is no chute here, but the rapids are too rough to be run with ordinary canoes.

It will be seen by referring to the plans and profiles of the river here that there is rather a sudden drop in the stream and the country bordering it on either side for the last five miles.

At the head of the first of the four portages the elevation of the water is 312 feet above sea level, and down at the foot of the last mentioned portage the elevation is only 132 feet, giving a total fall of 180 feet.

We have now before us a stretch of five miles of beautiful river, with rich clay banks and no stones on either side, and well timbered with large spruce, poplar and *bouleau*.

At the end of this stretch, we come to another portage 1 mile and a quarter in length, giving a fall of 74 feet.

There is a remarkable change here in both soil and timber; a poor sandy *cypres* country throughout the entire length of this portage. Below this, however, the country changes again and the river flows calmly due west for seven miles between clay banks that rise from 40 to 60 feet above the level of the water.

Many landslides are seen in this stretch and the country is well timbered with spruce, poplar and bouleau. At the end of the seven mile stretch just mentioned, the river turns sharply northward and spreads out into two channels, enclosing an island about 100 acres in extent.

The canoe route follows the smallest channel which is on the west side and we soon come to a portage on the left bank ¼ of a mile in length, giving a difference of level of 14 feet.

Below this portage, the river turns due west again and flows on calmly for another seven miles, in which stretch there are several islands showing a rich clay soil, but there is a covering of peat from three to four feet deep overlying the banks on either side.

The route now follows the southern channel where the river divides around a large island, at the foot of which there is a short portage, eight chains in length and, after descending the river about a mile, we come to another short portage on the right.

From the foot of the last mentioned portage, about two miles of calm river, nearly a mile in width, bring us to the head of Smoky Hill portage

This portage, 1 mile and a half in length, is separated in two by a small lake which is situated about midway between either end.

We camped at this lake and I found by astronomical observation the latitude to be 51° 23' 45" N and longitude 78° 30' 50" W.

The portage is on the right bank and a considerable portion of it is cut into the steep clay banks or steep side hills that rise from 50 to 150 feet above the river

The total fall here is 52 feet. This head, with the increased flow of water, gives over 300,000 horse-power

At the foot of this chute is the great resort of the Indians and Hudson Bay Company's crews for catching their supplies of fish for winter.

The sea trout and white fish ascend as far as here and are taken in abundance with landing nets and bag nets among the rocks at the foot of the chute.

From here the river flows broad, calm and majestic for nine miles north-westward, to the House rapids, which are generally run with large canoes, and passed by a portage over the rocks on the right with small canoes.

At ordinary high tides here, there is about ten feet difference of level from head to foot, but in extreme high tides, when the bay waters are driven southwards by strong northern gales, the high tides eliminate these rapids.

From the foot of these rapids to the Hudson Bay Company's post of Rupert House the distance is two and a half miles and the river expands to over a mile in width.

The land on either side from the Smoky Hill portage to tide water is excellent clay soil, free from stones, level and well timbered with grey and black spruce of good size and quality, as far as can be seen from the river.

About midway down I saw some spruce stumps over two feet in diameter that were cut by the H. B. Co., and down close to tide water at the mouth of the river on the north side I saw several spruce trees from 18 inches to two feet in diameter and sixty to ninety feet in height.

This completes the report of exploration of 1897 from lake St John to tide water at James Bay.

Since then the whole coast line of the province, as far north as East Main Fort, has been surveyed by me and will be reported on in due time as soon as the plans &c., of same are completed.

SECTION No 5.

RIVER DU CHEF

The river *du Chef* where it joins the Chamouchouan river 84 miles from lake St-John, and 913 feet above sea level, is by far the largest branch of that great artery.

Properly speaking, the river du Chef and the river Nestaskano, should be called the Chamouchouan, or Ashuapmouchouan or the Moose river, to give the literal translation from the native Indian, the place where the Moose feed.

The river du Chef is nearly twice the size of the branch that drains lakes Chamouchouan and Nikanbau; and the Nesta-kano is twice the size of the branch that drains Canoe and File-Axe lakes.

Starting from the Chamouchouan Forks, a stretch of a little over two miles on a north course a majestic river, varying in width from ten to twenty chains, brings us to *Rapide L'Orignal* where a portage of about

fifteen chains on the west bank brings us past the rapids the difference of level being about ten feet.

From here we have a comparatively level stretch for about eleven miles to the mouth of the river Azianne, where the elevation is 947 feet above sea level.

The river Azianne is a considerable sized stream, coming in from the east: it is fed by some forty lakes

It branches into three fair-sized streams about ten miles from its mouth, and each stream is sufficiently large to carry canoes a considerable distance inland.

About half a mile above the mouth of the Azianne river, we come to the rapids of the same name, which are passed by a portage of about five chains on the west bank. The total difference of level here is about six feet.

About a mile above these rapids, we come to the *cyprès* portage on the east bank, near the head of which comes in the river *Doré* from the west side.

My guides informed that there are eight fair-sized lakes drained by the latter river.

On this service, I engaged men who knew the country for miles on either side, who had been born here and live by hunting.

At night by the camp-fire, after plotting each day's work, I used to get them to trace approximately the adjacent lakes, rivers and portages, as shown by dotted lines on the accompanying plan sect. No 5.

About 2½ miles around the mouth of the *Doré*, the river du Chef makes a sharp bend south-westward, and here I found the latitude to be 49° 32' 15" N. and longitude 73° 21' W., and the elevation above sea level 980 feet

Two miles above this point we come to the Bouleau rapids, but before reaching them, we turned northward through a chain of lakes and portages that make a short cut to meet the river again several miles farther up as shown on the plan.

The distance by this short cut is only three miles, while the distance around by the river is over nine miles.

There are speckled trout in the small lakes on this route but there are none in the river.

Half a mile above where we meet the river again brings us to Big Pike bay, a sort of lagoon on the west side, and on the same level as the river here, 1054 feet above sea level. This bay is the Indians' refuge for fish food. Pike and mascalonge are taken here in plenty at all seasons weighing from 10 to 30 lbs each.

This is also the country for bears. My guides told me that an Indian family named McAbee killed 18 bears here one spring without moving camp; and that five other Indian families came and camped beside him, and helped to eat the meat, and while there they caught 18 more, and went down to the post with their 36 bear skins and other furs as soon as the ice went off

Otter, beaver, mink, marten and other fur-bearing animals are plentiful in this region also.

They say that, a good hunter can always make his two dollars a day on an average on these waters and some times double and treble that amount; therefore it can be easily imagined how independent these fellows may feel, and how difficult it may be sometimes to get them to work as they have to do, in ascending these rapid rivers and portages heavily laden.

About a mile and a half above Pike Bay we come to the main river forks or confluence of the Nestaskano river with the File-Axe and Canoe lake waters, 26 miles from the mouth of the Chef river and 1060 feet above sea level.

The Nestaskano is a magnificent river averaging about 300 feet in width, with deep water and steady current as far as we followed it. The Indians say that it drains an immense basin stretching far beyond the parallel of lake Mistassini.

As above stated it should be called the main river Chamouchouan, for it is by far the largest of all its branches at this distance, 116 miles from lake St John.

The easiest route going to Mistassini follows up this river a couple of miles beyond the forks, to the *Grande Mère* portage, where a short carry of about twenty chains, through a level *brulé*, takes us into a small lake, or rather a succession of ponds that connect with the other branch about 3½ miles above the forks.

Thence, up to the Little Grande Mère a distance of 10¼ miles, there is very little worthy of remark, the country looks poor on either side, level stretches of water with occasional rapids that give a difference of level of ninety feet, bringing the elevation of the latter point to 1165 feet above sea level.

Having camped at this point, I found by a mean of observations of the sun and stars, the latitude to be 49' 47' 22" and longitude 73' 34' W. and the magnetic variation 18° 45' W.

From here up to the river Petite Meule forks, a distance of about 7½ miles, the river runs nearly north and south, and then runs nearly due west for 5½ miles.

In the neighborhood of the latter forks, the country has been lately overrun by fire and the soil is so poor and sandy that it can hardly grow blue-berries.

Some small withered black spruce and *cyprès* and stunted blue-berry bushes and swamp tea is all that can be seen.

At the west end of the latter stretch there are two portages separated by a small river and a level stretch of five chains.

The aggregate length of these portages is about 1 mile and a half overcoming 45 feet difference of level.

From there up to lake *Bonhomme*, a distance of about 9 miles, the river lies again nearly north and south, but before reaching the lake we pass over the swampy portage about a mile in length overcoming a difference of level of 58 feet.

Lake Bonhomme, or Old Man lake, is simply an expansion of this river; it is of circular form and measures about half a mile in diameter, its elevation is 1330 feet above sea level.

From lake Bonhomme up to Canoe lake, the distance is 5½ miles and the difference of level 75 feet, 50 feet of which is overcome by the Bonhomme portage on the west bank as shown on the plan.

Lake *des Canots* is a peculiarly shaped lake, measuring about seven miles in length, and three miles in width in the widest part but, being a make up of islands, points and hidden bays, it is difficult to get a view of any considerable portion of it from any one point.

Its elevation is 1405 feet above sea level, and the surrounding country is generally level and well timbered with black spruce.

From the upper end of Canoe lake we ascend by a rapid running stream and a couple of portages to a small lake giving a rise of 35 feet in less than a mile.

This small lake is about a mile and a quarter in length, and from its northern end an easy portage of fifteen chains takes us to Loon lake where the elevation is 1450 feet above sea level.

Loon lake is a fair sized sheet of water and dotted with some picturesque islands.

Its extreme length is 4½ miles and width about one mile.

From a bay on its west side a portage of about 20 chains takes us into File Axe lake, the last and largest lake on this chain of waters, measuring ten miles in length by five miles in width in the widest part, surveyed, by us and its elevation above sea level is 1470 feet.

A long bay extends eastward from its north eastern end, which the Indians say is as long as the part I surveyed.

The country here as far as can be seen from the lake is rolling and hilly, and where not overrun by fire is well timbered with black spruce and *cyprès*.

Immediately at the north end of this lake we come to the height of land, or summit between the Saguenay and James Bay waters.

The highest summit of the portage is only 30 feet above the level of the water and 1,500 feet above sea level.

MISTASSINI WATERS.

Lake Travers, the first lake on the Rupert river waters met with on this route, is a nice sheet of water 2½ miles in length by about 25 chains in width. It discharges westward from its northen end into Perch river, a tributary of Lake Mistassini.

We portage from lake Travers into another small lake, and then another portage, half a mile in length, takes us to the Perch river, which we descend about six miles, and then cross over by the long portage, a

well beaten trail, through a dry rolling *cypres* country ¾ of a mile in length, which brings us to Cabistachouan bay, an arm of Grand Lake Mistassini.

There is nothing remarkable in the country from the height of land to lake Mistassini, with this exception that throughout the country drained by the Chamouchouan, the rock formation is all gneiss and granite, while shortly after crossing the height of land, sedimentary rocks are seen on the lower part of the Perch river and along the last mentioned portage. The distance from the summit to Cabistachouan bay by our canoe route is about 8 miles and the difference of level 300 feet, which brings the elevation of Grand Lake Mistassini to be 1,200 feet above sea level.

We follow Cabistachouan bay westward for three miles, and then cross over the tongue which separates it from Abatagush bay by a level portage 30 chains in length and then descend the latter bay northward about five miles to reach the Hudson Bay Company's post on Grand Lake Mistassini.

SECTION No 6.

We went southward from the Hudson Bay Company's post through Sassikan and Abatagush bays. The former does not appear to have ever been surveyed, and as Mr Lemoine had followed the east shore of the latter bay, my check on his work on closing with him at the south end of the bay insures a correct map of both sides.

The shortest canoe distance from the H. B. Co. post to the southern extremity of Abatagush bay of lake Mistassini is 12½ miles, and the distance from there to lake Wahwanichi is about four miles.

Lake Wahwanichi takes its name from the mossy mountains, that border the lake. *Wakwan* means rock weed, and *Achi* mountain; the weed or lichens are used as an article of food by the Indians.

It is a magnificent sheet of water measuring twenty miles in length and from one to three miles in width. It lies nearly parallel to the dividing ridge or height of land, viz, N. E. & S. W.

Its elevation is 1239 feet above sea level, and 39 feet above Mistassini.

This is considered one of the best lakes for fishing of any on the northern slope. One of our Indians with only half a net out one night, caught ninety seven trout, from 3 to 9 lbs weight. Of course, all kinds of fish that are found in Mistassini lake are taken in this lake also, for there

is no chute sufficiently high to prevent them from going from one lake to the other. The country bordering the lake, particularly on the north west side, is rather uninviting. Forest fires have swept over the greater part of it many years ago, and it is now partly overgrown with poplar, boulean and black spruce.

On the north-west side the land is generally more rough and broken than on the south-east, and near the north end bare moss-covered mountains rise from 300 to 500 feet above the level of the lake.

About the middle of the lake a portage leads westward to the Nottaway waters, and at the south end another route leads southward, through a chain of lakes and portages, a distance of about five miles to a bay of lake Chibougamou, near Juggler's mountain.

There is an elevation of one hundred feet in the first portage in a distance of half a mile to the first lake where the elevation is 1330 feet above sea level.

The dividing ridge here between the Rupert river and Nottaway waters is 1350 feet above sea level.

Sturgeon abound in the Nottaway waters, but there are none in the Mistassini or Rupert waters.

On the last portage near the shore of lake Chibougamou I found by solar observation that the declination of the magnetic needle was 166° 00, caused of course by the proximity of beds of magnetic iron :

The normal variation here should be about 20° W.

The country is a mass of magnetic iron, and the rocks are red from the decomposing pyrites.

Here there is a remarkable geyser-like spring of pure clear cold water that seems to boil up intermittingly

Juggler's mountain not far distant, from its fortress-like summit, was supposed by the native Indians to be the dwelling place of the Matchimanitou, and they believed that this boiling spring throbbed in connection with the placid or turbulent feeling or disposition of the great master of the mountain.

Even at this date the half-breeds of Lake St John are superstitious regarding this, and would rather go thirsty than partake of its waters.

Lake Chibougamou is a magnificent sheet of water, measuring eighteen miles in length by six miles in width.

It is studded all over with beautiful islands, and the land rises in easy slopes all around except at the north end where the Vermilion, Sorcerer and Juggler mountains rise from 300 to 500 feet above the level of the lake.

A few burly cedars border its shores here and there, and on some of the islands and easy slopes of the mainland, fair sized black and grey spruce are found.

The lake is 1152 feet above sea level or 88 feet lower than lake Wahwanichi. It discharges by two outlets into another lake near its northern end, forming one of the main branches of the Nottaway river.

At its southern end, a sluggish creek and a chain of lakes and portages, covering a distance of eight miles in a south-westerly direction, brings us to lake Obatagoman ; and on this stretch there is little to be seen, but burnt hills covered with second growth of poulean and poplar and occasional clumps of spruce and larch, in the low bottoms.

OBATAGOMAN

Obatagoman is the most bewildering lake imaginable : its length on the canoe route is about fourteen miles, but it stretches out into so many bays, arms and nooks and is dotted with so many islands and points etc, that it is not uncommon for the Indian hunters themselves to be lost for days in its intricate waters.

Its elevation is 1120 feet above sea level and 32 feet below the level of lake Chibougamou.

At one place near its center two long points close in and leave between only a narrow passage a couple of chains wide.

After passing through these narrows, we surveyed one route through the islands and another around the southern shore until we came to the inlet which we followed for about five miles to the height of land between the Nottaway and Saguenay waters, which we found to be 1275 feet above sea level.

On the latter stretch there are seven portages, and unless in high water part of the stream cannot float more than half loaded canoes, some of the portages are only short jumps, and the longest is not over ¾ of a mile in length.

About ten chains east of the summit, we come to a small pond which discharges into a lake nearly a mile and a half in length and half a mile in width and from there a portage of about $\frac{3}{4}$ of a mile takes us into Whitefish lake.

The country west of Whitefish lake is rather mountainous.

The longest arm of the lake leads south about 3½ miles and the shorter arm east 1 mile and a half.

From there a quarter of a mile portage following the discharge from the shorter arm takes us into Branch lake 2½ miles in length

At the discharge of this lake I saw some very fine spruce. There is good loamy soil here overlying rich clay bottoms, but the elevation being 1164 feet above sea level in this latitude, 49° 30' N, the climate cannot be expected to be very favorable.

Continuing down the discharge we pass through several small rapids (all of which we ran with half loaded canoes) we pass through several expanses, the largest three of which are called respectively Obamiscatcie, Rush, and Gordon lakes, and enter lake Nikaubau at seven miles from Branch lake.

Lake Nikauban is a fine sheet of water, measuring 5½ miles in length and 2 in width.

Its elevation is 1150 feet above sea level.

At its southern end come in the united waters of lake Ascatscie and lake Nemeujish, where I closed on my survey of 1897, as shown by the accompanying plans No 1 and No 6.

The environs of lake Nikaubau show a good, loamy soil and are ly well timbered with spruce, boulean and poplar.

SECTION No 6-A.

Section 6-A, comprises from lake Wahwanichi westward to the confluence of the Chibougomou and Obatogoman waters.

On leaving lake Wahwanichi a portage 70 chs in length in a N. W. direction over the height of land separating the waters of the Rupert, from those of the Nottaway, brings us to a small lake or pond about 20 chains in length.

Following its discharge through a swampy and rocky country for a distance of about 6 miles, we arrive at a lake measuring two miles in length by ¾ mile in width; the lake shores are generally level and well wooded with black spruce.

From the head of this lake we turn to the right for about 10 chs to take its discharge. Then a stretch of crooked river of 8 miles through mostly worthless country, brings us to the Kawasajewan Forks.

The country here has a better appearance, good level clay soil generally well covered with black spruce averaging 10 inches in diameter.

Coming on for 8 miles of slow current through a loamy country chiefly wooded with black spruce we arrive at the junction of the Chibogomon river coming in on the left; it is about the same size as the one we followed down and will be more fully described further on.

Following their united waters for ¾ mile without rapids we arrive at Rush lake.

Rush lake is no misnomer for its upper end is for ½ mile choked with rushes, some of them measuring 14 feet in length.

This is an excellent place for duck shooting; we shot 18 big black ducks in going through.

Continuing on the north side of the lake for a distance of ¾ mile we come to a point where the H. B. Co. once had a trading post, but there is no vestige of it now; the point is all covered with boulean from one to two feet in diameter.

The distance from here to the lower end of the lake is about 6 miles studded with beautiful islands and gently rising shores, well timbered with spruce, poplar and boulean.

From here down to Little Rush lake the distance is 9 miles through generally low and swampy country mostly wooded with black spruce.

Little Rush lake is 6 miles in length with an average width of ½ mile. The country around here is higher and well covered with black and white spruce, boulean, poplar and good sized cedar around the lake shores, excepting a few burnt patches and bare hills on the S. E. shore opposite the middle of the lake.

Continuing down the discharge of Little Rush lake for a distance of 30 chs, we come to a portage on the right passing a chute 10 feet in height and 30 chs further down lake Opamiska comes in view.

Lake Opamiska or (Sandy Beach lake) is a fine sheet of water measuring 12 miles in length and from 2 to 3 miles in width in its widest parts. The country to the south near the head of the lake is well timbered with tall black spruce, bouleau and poplar. The land rises towards the lower end and some bare hills that were visited by fire years ago are seen in the distance. The country to the north is lower and better timbered with black and white spruce and large cedar all around the lake shores.

On leaving lake Opamiska we make a portage of 12 chs to the left passing a strong rapid, giving a total fall of 20 feet.

A distance of 2 miles from this portage brings us to a sharp bend in the river where there is a very strong current, and from here two more miles bring us to lake Mikwasash

Lake Mikwasash or (Red Sucker lake) is rather a pretty sheet of water; bordered on its west shore with high rocky hills, some of them rising 500 feet above the level of the lake. The east shore is generally low or gently rising land wooded with black spruce.

From lake Mikwasash, a distance of two miles takes us to a portage 40 chs in length on the right of a rapid and chute giving a total fall of 20 feet.

The country here is mostly all a rolling old *brulé*.

Continuing down for a distance of 4 miles, we come to another chute giving a fall of 8½ feet which is passed by a portage 4 chs in length on the right bank.

Three quarters of a mile below this chute we leave this river by a portage on the right 25 chs in length which takes us to a larger stream coming from the north.

Going down about 60 chs with swift water we meet the river we had descended, and from this point down to the forks of the Obatagoman river the distance is 28 miles through a level sandy plain: the country has been overrun by fire some 30 years ago, and is now covered with a thick growth of poplar, *cyprès*, fir and bouleau.

DISCHARGE OF LAKE CHIBOUCAMOU

From lake Chibougamou a portage 7 chs in length takes us down to lake *Doré* with 25 feet difference of level.

Lake *Doré* is a very picturesque sheet of water measuring 12 miles in length by one to two miles in width; it is bordered to the south and west by easy slopes, to the north and east mountains creep up from 200 to 600 feet above the level of the lake. The country all around is generally well wooded with black spruce, *bouleau* and poplar averaging one foot in diameter.

On leaving lake *Doré* a stretch of river two miles in length brings us to a rapid giving a fall of 3 feet and within a few chains we arrive at a crooked lake about 6 miles in length by an average width of 20 chs.

The country here is low and generally swampy, well wooded with black spruce, and poplar, on the dry ridges.

Going down a stretch of river in which there is a small rapid we arrive at another lake two miles in length by 20 chs in width. Following its discharge for about 3 miles, we go through a burnt rocky swampy country, and reach a lake measuring about 8 miles in circumference.

As you will see by the plan there is a short cut from this lake back to lake *Dore* which I surveyed as a check on the survey of the roundabout water way just described.

On the stream which we followed up, there is a remarkably large beaver dam; it measures 150 feet in length and from 8 to 10 feet in height. Otter and beaver appear to be plentiful here and will likely be so for a long time to come. The country is worthless; nothing to be seen but high rocky ridges with barren swamps between.

Returning to the lake we left to survey this short cut, we followed down its discharge in a westerly direction, running three very strong rapids which give a total fall of 40 feet, in a distance of one mile; thence ten chains to the south brings us to a lake one mile in length by ten chains in width.

The country all around is low and thickly covered with black spruce.

Continuing down by the discharge for a distance of 10 chains we come to another lake measuring three miles in length with two bays one to the N. E. and the other to the S. W. of the lake each measuring about

a mile and a half in depth The country all around the lakes is well wooded with black spruce.

On leaving this lake we come to a rapid, giving a fall of 10 feet, which can be run with ordinary small canoes and 10 chains further on we enter lake Assinibastats (or blocked by stone).

Lake Assinibastats measures 9 miles in length by an average width of 20 chains the country to the N. W. of the lake is mostly all a rolling old *brulé*, to the S. E. it is generally low and well covered with black spruce and bouleau, excepting near its discharge where rocky burnt hills rise 400 feet above the level of the lake.

Then going down for three quarters of a mile of slow current we arrive at another lake which is also about 9 miles in length with an average width of 20 chains.

The country on the N. W. side is generally rocky and mountainous, near the head of the lake but lowers gently towards the foot, the low land being covered with bouleau and poplar from 12 to 18 inches in diameter. The country on the S. W side is high and rolling and increases in height towards the discharge, forming a beautiful chain of mountains, some having an elevation of 600 feet above the level of the lake.

From here to the forks of the Kawasagewan river, 12 miles in distance, the river runs through a generally low country thickly covered with black spruce.

SECTION No 7.

OBATAGOMAN WATERS

Leaving the canoe route on lake Obatagoman about four miles from the narrows, we follow the western arm of the lake down to its discharge, a distance of about 5½ miles, where there is a chute giving about 6 feet fall; and about ten chains further down there is a small rapid giving a fall of two feet, and from thence a crooked lake extends northward, about six miles, and then turns sharply westward 2½ miles to the narrows.

At this point I observed the latitude to be 49° 35' 20" N.

Beyond these narrows another bewildering lake stretches out with arms and bays on every side, and dotted with countless islands as shown on the accompanying plans.

Before leaving Quebec, I received from Mr Gauvin, Superintendent of Surveys, a plan of part of this lake made by Mr C. E. Lemoine, P. L. S., and I found that where that gentleman terminated his work, a channel which he took to be the discharge, was only an arm of the lake.

It really looked like a river but on following it eastward a couple of miles, I found that it divided again into two other arms, and at the head of each, streams flowed in instead of out.

Returning we found another arm stretching northward which we followed for about a mile, until we came on the real discharge, which turns around westward, and after a run of about three miles on the latter course, passing several rapids and one chute of 9 feet fall, we came to another lake 69 feet below the level of Obatagoman, and 1,060 feet above sea level.

This lake winds crookedly westward for about five miles, varying from 5 to 50 chains in width, and then expands into a grand sheet of water four miles in length, and one mile and a half in width, forming a large *presqu'ile* on the easterly side.

From about the middle of the westerly side of this lake, the discharge flows rapidly through rocky islands giving a fall of three feet in a distance of a couple of chains, and then a calm steady river about three chains in width and 5 to 10 feet in depth flows northwestward, with a current of about two miles per hour for a couple of miles to the point where we terminated our survey in that direction.

At this point I found the latitude to be 49° 41' 40" N. and longitude 74° 45' 30" W. and elevation above sea level 1055 feet.

Here I blazed several trees on the right bank and marked the date, the latitude and my name thereon.

The country is rather poor looking around here ; the chief timber is *cyprès* and black spruce of inferior quality ; part of this region has been lately overrun by fire.

There is some good spruce on the island and lake shores below Obatagoman.

The rock formation is chiefly gneiss and granites but some of the islands are partly composed of magnetic iron, particularly around where Mr Lemoine terminated his work ; the variation ranges from 0 to 60° W.

SECTION No 8.

PART OF GRAND LAKE MISTASSINI

We surveyed the west shore of Cabistachouan bay from the last mentioned portage, a distance of about seven miles, to where another portage of quarter of a mile thr ugh low swampy ground takes us into Abatagush bay, a couple of miles beyond the H. B. Co's. post, and having surveyed the bay around to connect at the post with my former work, we continued over through the lo.g portage to Ponachuan Bay and thence up said bay about six miles to where another portage of about half a mile takes us back again into Abatagush bay about 8 miles north of the H. B. Co's post as shown on the plan, section No 8.

The country here is level or gently rolling and fairly well timbered with black and grey spruce, bouleau, poplar, larch, etc.

Returning to the post we surveyed up the west shore of the long mainland point that separates Abatagush bay from the main body of the lake as far as the Big Narrows, a distance of about 15 miles, and thence followed the east shore a distance of twenty miles, to where a chain of small lakes and portages takes us into Mistassinis or Little Mistassini lake.

There is a general sameness in the country all along here:—easy slopes covered mostly with spruce, bouleau and poplar, and a soil well worthy of cultivation if the climate were suitable.

The distance from the big lake into Mistassinis or Little Mistassini by this chain of lakes and portages, is five miles.

The land is very poor in this direction on nearing Little Mistassini, and the unworn rocks and crags that cover the surface except in the marshy holes and ponds, are of a flinty nature and the timber appears small and stunted; and still in the midst of this poverty-stricken region I was surprised to see several large and beautiful Scotch thistles, blooming most fragrantly, a fit emblem of the hardy race, that can generally thrive well on any soil or in any climate.

SECTION No 9.

Lake Mistassinis or Little Mistassini is no small sheet of water.

We followed it for 44 miles, from the last mentioned portage to its most northern bay.

Near the middle it narrows to less than a quarter of a mile, and then widens out in the direction of its discharge by the Temiscamie river into the big lake, where it attains a width of nearly six miles.

The land on the west side is generally low and level and fairly well timbered with black and grey spruce.

The land on the east side rises gradually from the lake shore to an elevation of 300 feet or so, except near the upper end looking eastward, where the blue heads of mountains some ten or fifteen miles distant rise over a thousand feet above the level of the lake.

Some of the islands in this lake look like broken walls of cut stone; the layers are of equal thickness, lie nearly horizontal and are squarely broken in sections of nearly equal length.

Quartz veins containing beautiful crystals are seen at many points along the shore. I took several specimens, hoping to find some showing of gold, but failed to find any indication of the precious metal.

Some good looking slopes of land are seen here and there but, as before stated, climatic conditions may debar the hope of cultivating any part of this region.

All kinds of fish found in inland Labrador peninsula waters are found in abundance in this lake, with the exception of the ouananiche and sturgeon.

Grey trout from five to fifty pounds weight are here in inexhaustible quantities: speckled trout, *loré*, &c., are taken in quantities also.

Deer of every kind are scarce or I might say wanting in this region

One would naturally think that in a country like this where the choices food for the moose and caribou is found in abundance, mossy barrens and rocky escarpments covered with lichens, &c. &c.. and with scarcely a soul to every hundred square miles to disturb them, those animals should be found in herds, and still I did not see a single one, nor hardly any traces of their existence.

Mink, otter, lynx, marten and different other fur-bearing animals are plentiful here, and different kinds of duck and other waterfowl are also numerous.

The mean of different tests of the temperature of the water in this lake on the 16th September was 55° Fah. taken at depths of from 1 to

50 feet. The water is dark greenish in color and clearer than that of lake St John

Leaving the most northern bay of this lake a short portage of a little less than a quarter of a mile takes us over the dividing ridge to a small lake 15 chains across, and elevated 15 feet above Mistassinis.

This little lake discharges by its northern end into another small lake about ¾ of a mile in length and 5 to 15 chains in width, lying nearly east and west, and discharging at its eastern extremity where there is a short portage on the left bank, and then a sluggish little stream barely floats the canoes into lake *Clair*.

Lake *Clair* is exactly on the same level as Mistassinis 1250 feet above sea level. It is a very picturesque lake about 3¼ miles in length and one mile and three quarters in width.

BASALT COLUMNS

Its south western shore resembled at a distance the ruins of some dismantled fortress. On closer observation I found that a great part of the shore line was composed of immense columns of basalt, standing out as bold and regular as if they were a work of art.

In some places they were hexagonal and in others quadrangular and going westward from there the lake shore is composed of very finely and smoothly stratified slaty stone which the Indian use for whetstones. I brought home some specimens and they make excellent razor hones.

If ever railway communication could be had to this locality these quarries would be valuable.

Descending the discharge of this lake, a crooked stream some twenty feet in width, winds through low swampy ground for a distance of fifty chains to another lake about 2½ miles in length and ¾ of a mile in width.

The country around here is level or gently rolling and is timbered mostly with black spruce, cypress and larch.

Following down the discharge of this lake about six miles in a north easterly direction, through a rather poor looking valley, we come to a small lake or expanse, where another river comes in from the east, and thence their united waters wind northward 2½ miles to join the Sikawako Sibee or Porcupine River, at an elevation of 1230 feet above sea level.

A short distance above the forks, Porcupine mountain rears its head about 900 feet above the level of the river bed on the west side as shown on the plan.

The country here has a very poor and desolate aspect, as far as I could see on either side ; the soil is poor, cold grey sand, and the only timber small black spruce and *cyprès*.

The Porcupine river here is about three chains in width and 6 to 20 feet in depth with a current of about 2½ miles per hour.

On following it down about six miles in a westerly direction, in which distance we pass through three small rapids, another fair sized river comes in from the north.

Below this the united waters flow placidly, with the exception of two rapids, which we ran with half loaded canoes, into the extreme north east end of Grand Lake Mistassini, a distance of six miles.

On this latter stretch, some fair sized black and grey spruce are seen, particularly on the south side.

SECTION No 10.

GRAND LAKE MISTASSINI

From the mouth of the Porcupine River, we followed southwestwardly along the tongue that separates the upper part of the lake into two bays for a distance of twenty one miles, as shown on plan No 10.

About six miles from our starting point on this stretch we pass the mouth of the Poponapinan Sibee or Sitting River, on the right, a fair sized river having an average width of 2½ chains.

The country along here is very level, rising with an easy slope from the lake shore.

About six miles further on, or 12 miles from our starting point, the lake shore is composed of pure hard blue limestone in thin layers, and both the main shore and the islands are well timbered with large black and grey spruce.

On looking back from a mile or two beyond here, high ranges of mountains are seen from N. 30° to N. 60° E. about 20 miles off.

Porcupine mountain must be the beginning of this range, and it is needless to say that unless minerals of economic value may be found there, there is nothing else worth looking for in that region and it will always remain the home of the otter, the beaver, the bear an . porcupine, for the few scattered Indians that roam over this wild waste are not sufficiently numerous to disturb their peaceful abode or diminish their number.

Continuing south-westward some six miles or 21 miles from our starting point, we come to the end of the tongue as above mentioned.

Here we were delayed by contrary winds; it blew a pretty strong gale from the south west, and on attempting to cross over to the main western shore one of our canoes swamped, and we were obliged to return and camp on the point for the night.

The swell that rolls up here in a strong south west gale is too much for any ordinary sized canoe.

I improved the time here, however, by taking repeated astronomical observations, the mean of which give the latitude 51° 14' 40" N. and longitude 78° 6' 45" W.

We crossed over from the point to the nearest land on the west shore, a distance of five miles, and thence followed the said west shore for a distance of fifty miles, passing on this stretch, the discharge of the lake or head of the Rupert river, and the portage to the same which takes in about nine miles further down.

In this neighborhood the lake is so crowded with islands that one rarely gets a glimpse of its main body or of the opposite shore.

Our courses and distances were checked by several astronomical observations as shown on the plan.

There is nothing very remarkable in the country along here. I went on shore in a few places, and penetrated the country more or less inland.

The soil is fairly good loam, level or gently rolling, and covered with moss from one to two feet deep.

The whole country along here seems well timbered with fair sized black and grey spruce, excepting some burnt patches which are grown up with poplar and bouleau.

About twenty miles south of the Rupert portage w crossed over to a long island, which lies outside of and close to the point or tongue of land that seperates Ponachuan bay from Abatagush bay as shown on plan; and thence southward along the western side of said tongue, or peninsula, until we closed on our former work at the end of the long portage.

In following down the latter stretch, a splendid view is had of the opposite side, or country west of the lake, which seems to rise in gentle swells far inland, alternately covered with coniferous and deciduous trees of varying color, forming a most delightful landscape, which we fully enjoyed on a calm clear September day, particularly after braving a storm of hail, snow and rain the day before.

Looking south, however, the aspect is not so encouraging; for like at the north end mountain ranges appear to rise one above another, and broken spurs show up here and there over a space of nearly ninety degrees or from south nearly to west; but from west to north the country is level or gently rolling as above stated.

The temperature of the water in the lake here on the 24th of September was 45° 00' and that of the atmosphere 50' Fahrenheit.

There are splendid quarries on some of the islands and points along this shore and in some places, bold bluffs rise from the water's edge 50 to 100 feet perpendicular, composed chiefly of cherty limestone, evenly stratified from one to two feet in thickness.

Along this shore and down among the islands, about three miles north of the end of the long portage, is considered the best fishing ground on the lake.

Here the Hudson Bay Company's men salt some 300 barrels every year; and such solid fish are the grey trout here that only one pound of salt is required to keep 47 lbs of fish in good condition for the whole year.

In the waters of the St Lawrence slope the *touladi* or large grey trout are generally soft and flabby, as compared with the speckled trout, but in the Mistassini waters the large grey trout are considered far superior to the brook trout. Our grey trout have whitish flesh, while their is a solid reddish flesh, much resembling the sea trout in color and flavor

The lake is actually swarming with fish of different kinds : grey and speckled trout, doré, pike, whitefish *par excellence* and a kind of fish they call the *Maria* which as closely resembles the cod fish as the onananiche does the salmon.

More details regarding this region may be given as soon as sections Nos 10 and 11 are completed ; but in the meantime owing to the exaggerated accounts that have been going the rounds of the press in Canada and the United States and even in France regarding this apparently mysterious lake, it may be well to say here that the extreme length of the portion surveyed by me, that is, from the western end of the Ponachonan or long portage to the mouth of the Porcupine river at the head or north-eastern extremity of the lake, measured in a straight line, is 82 miles ; and the distance from said portage continued in nearly the same straight line to the south western extremity of the lake, as measured by Mr C. E. Lemoine P. L. S., and checked by Mr Gns. Rinfret draughtsman of the department and myself is 18 miles, which gives a total length of 100 miles in a direct line from one extremity to the other. The distance from the southern extremity of Abatagush bay to the said western end of the Ponachonan portage is 15 miles as surveyed by us. Mr Lemoine shows a river which he says may average a chain in width coming into the south western extremity of the lake, and from what I have seen of Mr Lemoine's work taken in connection with our survey, I may safely say that the length of Grand Lake Mistassini cannot be less than one hundred nor more than 101 miles

Its width in the broadest part, that is, from the Rupert river portage to the south eastern shore a little above the portage to Little Lake Mistassini on a course at right angles to the general trend of the lake, is 16½ miles, but the average width of the main body of the lake is not over twelve miles as given by Mr Low.

I find Mr Low's description of the lake an l environs true and correct in every respect. He did not survey the whole lake ; he only continued the work that had been commenced by Messrs Richardson and McOnat and the southern extremity of the lake was never surveyed by any one excepting Mr Lemoine.

Although the lake falls far short of the dimensions ascribed to it by the hunters whom Mr Bignell met on his way there, and in whom he appears to have had a little too much confidence both as regards their walking capacity and their ideas of geography, it is still a very large lake.

But it is not only regarding the size of the lake that we have had misleading reports ; the climate and capabilities of the country have been the subject of more serious misrepresentation, as you will see by the following extract from a report of a celebrated Frenchman named André Michaud, which appeared in the bulletin of the American Geographical Society in 1888.

" In the neighborhood of Hudson Bay and the great Lake Mistassini " the trees which some degrees further south form the mass of the forest " have almost entirely disappeared in this latitude in consequence of the " severity of the winters and the sterility of the soil.

" The country is cut up by thousands of lakes and covered with " enormous rocks piled one on the top of the other, which are often car- " peted with large lichens of a black color, and which increase the sombre " aspect of these desert and almost uninhabitable regions.

" It is in the spaces between the rocks that one finds a few pines " (pinus rupertis) which attain an altitude of three feet, and even at this " small height show signs of decay.

" However 150 miles further south this tree acquires a better and " stronger growth, but it never rises higher than eight or ten feet."

Mr. Michaud claims to have gone up to Mistassini *via* Lake St. John and descended the Rupert river to within a short distance of James Bay and returned by the same route. In the interest of the province it is time that such reports should cease.

I do not understand how any man could have made such a report Certainly there are lots of spruce trees around lake Mistassini that measure between one and two feet in diameter, and Mr Miller assured me that he cut one that measured 2½ feet in diameter on the stump. Spruce trees from one to two feet in diameter are found at intervals all the way from lake Mistassini to James Bay.

In the environs of lake Mistassini the soil is good, but the season is so short and subject to early frost that I do not think farming would ever succeed there. Mr Miller raises good potatoes and cabbages, etc. but like most H. B. Co's men his forte is not in the agricultural line.

SECTION No 11.

Section No 11 embraces the canoe route from Grand Lake Mistassini *via* the Rupert and Marten rivers to the western end of lake Nemiskow connecting there with section No 3 on the route from Waswanipy to Rupert House.

Starting from the portage which crosses from Grand Lake Mistassini to its discharge (the Rupert river) we follow its waters nearly due south-west for about twenty-five miles in a direct line and over 35 miles by the river which spreads and turns in every direction.

Thence it turns nearly south-west, and we follow the main river in that direction for about six miles to lake Miskittenau, where we leave the main river and follow a chain of lakes leading into the valley of the Marten river. Then we follow the latter river for a distance of about one hundred miles in a general westerly direction to where we meet the Rupert river again thus avoiding several rapids, chutes and portages on the main river. About nine miles below or west of the confluence of the Marten and Rupert rivers we come to the eastern end of lake Nemiskow and thence through said lake about 10 miles more on the same westerly course through said lake Nemiskow to where we connect with our survey from Waswanipy above described

As stated in my report of the 6th December 1898, the work here was done by one of my assistants, while I was occupied on the other sections above mentioned; and as all the details available are clearly shown on the plan it is needless to lengthen this report by repeating them: suffice to say that the greater part of this extensive section appears to be well covered with grey and black spruce. A good country for pulp-wood, fish and fur-bearing animals.

SECTION No 12.

The most northern Hudson Bay Company's post on the St Maurice waters, called Kikindatch, is situated on a point jutting out in the lake of the same name, 1200 feet above sea level, and is the rendezvous of all the Indians inhabiting the country bordering on the height of land from Lake Mistassini south-westward to the Ottawa and Mekiscan waters.

Starting from this point, about a mile in a north-westerly direction brings us to the head of the lake, and then we ascend a sluggish stream from 3 to 4 chains in width for a mile and a half to the site of the old H. B. Co's post and cemetery.

Above this point, the river widens out in channels and lagoons, covering a valley nearly a mile in width and two and a half miles

in length, after which there is a level stretch about eight miles in a north-westerly direction before reaching lake Cantidewasten, a nice sheet of water measuring ten miles in length by two and a half miles in width in the widest part; near its discharge, the river *Castor Noir*, a considerable sized stream, comes in from the north.

The country around is generally rolling sandy soil and fairly well timbered with middling sized black and grey spruce, poplar and bouleau.

Three small rapids and a stretch of lake-like river, 2½ miles in length separates lake Cantidewasten from lake Kapinnitokinnac 1215 feet above sea level.

We only surveyed the north end of this lake. There is a sameness of country all along here: rolling sandy land, mixed middle-sized timber, mostly spruce and cypress.

We follow this lake about four miles on the canoe route, and after ascending some small rapids that give an elevation of 8 feet, we come to lake Asawewasenam or Sandy Beach lake, 1220 feet above sea level.

This is the largest sheet of water on the whole St Maurice route, measuring sixteen miles in length, by from half a mile to two miles in width.

It lies in a nearly north and south direction, and from the southern end the canoe route to the old Mekiscan post leads off westward.

Near its northern end the main river comes in from the west, which we ascended for about three miles, as shown on the plan. Returning to the lake, we ascended to its extreme northern end, where a portage of about thirty chains takes us to lake Memicasisioui 1245 feet above sea level.

This is an irregularly shaped lake, measuring about six miles in length, with winding bays from one to two miles in width; and from its northern end a stretch of nine miles through portages, crooked streams and small lakes and ponds, we come to Clear Water lake, the last lake on this branch of the St Maurice waters.

Clear Water lake is about 5½ miles in length, narrow at either end, and spreading out to over two miles in width in the middle.

The surrounding country is poor, worthless, sandy, gravelly soil, covered with scrubby spruce and cypress.

From its north-eastern end a portage of 55 chains in an easterly direction takes us over the height of land to a small lake of the Nottaway waters.

The summit of this portage is 1375 feet above sea level, that is, 175 feet above the lowest summit between the Chamouchouan and Nottaway waters in the vicinity of Lake Ascatscie.

After crossing the small lake of the Nottaway waters above mentioned the portage route takes us back again over the height of land on to lake St John waters.

This is rather an interesting country to the geologist.

The portage is about a mile in length and about midway it skirts a small pond on the right, which has no outlet, and follows a ridge of well-worn rounded boulders and gravel that appears like an abandoned railway dump several chains in length.

The summit is only 1352 feet above sea level, and thence we rapidly descend to lake Normandin, the first lake on the Chamouchouan chain of Saguenay waters, 1275 feet above sea level.

This lake is six miles long, and at the upper end spreads out in bays and marshes and is a general make-up of islands, nooks and bights; in the middle, it narrows into a few chains in width for over half a mile and then widens out to nearly a mile in width.

About half a mile north of the discharge a good portage, about a quarter of a mile in length, leads due east across a long point to avoid rapids that give a fall of ten feet.

Below this portage the river widens out again, and for three miles it averages from ½ to ¾ of a mile in width, and from there an easy current for another three miles takes us northward to the Foam Falls Chute.

These are picturesque falls. They start in jumps and cascades and then in one decided perpendicular leap of 20 feet fall into the lake below giving a total difference of level of 26 feet.

They are passed by a well beaten portage on the right about four chains in length.

Although the drainage area is comparatively small, owing to the frequent rains and fogs or mists hovering here, the water at ordinary summer

level gave with current meter and approximate measurement of section of river between six and seven hundred horse power with obtainable 40 feet head.

Below the Foam Falls, lake Kapeakeeducton opens out in a beautiful broad sheet six miles in length and over two miles in width in the widest part.

The country on either side is generally rolling, sandy land, timbered mostly with black spruce, tamarac and cypress.

From this lake down to lake Ascatscie, a distance of five miles, the river flows with a slow, steady hardly perceptible current, except in the last turn to the right where there is a slight rapid, giving a fall of about two feet.

Lake Ascatscie, described in a former report, is one of the largest, if not the largest lake on the Chamonchouan chain of waters. It discharges by its northern end nearly opposite the entrance of the Foam Falls river and continues in a northward course until it meets the discharge of lakes Nemagoss and Nemengis, where their united waters turn eastward and flow calmly into lake Nikauban.

Lake Ascatscie is 1189 feet above sea level, but, notwithstanding this elevation, the country around is closely timbered with fair-sized spruce.

SECTION No 13.

This is the continuation of section No 7 and comprises from the discharge of lake Presqu'ile down to where the united discharges of lakes Obatagoman and Chebongamou meet the unnamed branch of the Nottaway explored by us in 1897, shown by section No 2 of these surveys.

This river, the discharge of lake Obatagoman, after leaving lake Presqu'ile, flows due west a distance of fifteen miles in a direct line, but nearly thirty miles, by following the sinuosities of the stream.

The greater part of the land along its course seems low and swampy and timbered only with small black spruce, with some *cyprès* on the drier knolls.

At the end of the latter distance, it meets another river of nearly equal size coming from the south and from there the course is due north for six miles.

Along the latter stretch, there is an immensity of excellent tamarac for railway ties, etc, but it has been all killed by the saw fly. If it could be utilized at once the timber is still good, but being so inaccessible, it is likely to waste and rot there.

Five fair sized streams join the river in the latter stretch and at its end a river a chain wide and three feet deep, with sluggish current, comes in from the east.

From there the course turns again westward for about twelve miles, to where it touches the north side of a lake about three miles in length and half a mile in width, and four miles further down, it touches the north side of another lake of rounded form about a mile and a half in diameter.

The expression that a river touches a lake may seem odd, but it cannot be described otherwise, for in both cases the river flows into the lakes and immediately the discharge flows out again, as shown on the plan.

Before reaching these lakes, we pass through several rapids that give a total fall of 60 feet.

The same level, poor, sandy, swampy land, covered with small spruce, *cyprès*, poplar and bouleau, borders the river on either side all along

After passing through the lakes above mentioned the river puts on a more majestic appearance and then rapidly falls off westward again for about six miles, to where it meets the discharge of lake Chibougamou. The total fall in this stretch is 30 feet.

The Chibougamou river is by far the largest stream of the two ; it falls in rapidly from the north, but their united waters now flow on, keeping the same westward course with many rough rapids, all of which we ran until we came to the portage on the right ; the first and only portage we made on this river since we left lake Presqu'ile.

The distance from the last mentioned forks to this portage is 15 miles and the total fall 56 feet.

The soil and timber seem to improve as we descend, but on the lower part of this stretch the country has been overrun by fire some years ago and is now covered with a dense growth of spruce, bouleau and *cyprès*.

Properly speaking, the portage here is over half a mile in length and overcomes a fall of 54 feet ; but we ran most of the rapids and only portaged the canoes some five or six chains.

A splendid water power of over sixty feet head may be had here and an approximate measurement of the flow of water, then at a very low stage, gave over ten thousand horse power.

From the foot of this portage, the river continues on the same courses nearly due west, until it meets the other branch, where we closed on our work of 1897, about twelve miles further down.

On this latter stretch, both soil and timber considerably improve : fine flats of rich clay soil are seen on either side, covered with large poplar, spruce and bouleau.

The average fall in the river here is about four feet to the mile, the foot of the portage being 746 feet above sea level.

The general rock formation all along here is gneiss and granite without indications of any mineral, except iron.

The remaining portion of these waters has been described in section No 2, but it may be well to remark before closing with the section that it is one of the easiest, if not the easiest canoe route between Lake St John and James Bay.

Only three short portages on the whole route from lake Obatagoman to Waswanipy, a distance of nearly two hundred miles by water.

SECTION No 14.

The plan accompanying my report of exploration in 1894 shows the discharge of lake Wetetnagami as if flowing into lake Paketamika, according to the information given me by the Waswanipy guides I had with me on that expedition ; but in 1897, on my exploration from Lake St John through that country, I discovered that the waters of Wetetnagami, instead of discharging westward, followed a north-easterly course, and, after passing through a pretty large lake, finally emptied into Lichen lake.

I was anxious to make this connection, and last year the opportunity offered, when I sent one of my assistants in charge of supplies to Waswanipy *via* the old Mekiscan post ; I had him to do this work and the accompanying plan No 14 is the result of his operations.

On the first half of the distance from Wetetnagami lake downwards the country is utterly worthless.

Nothing but burnt hills and crags can be seen on either side; but, on the lower half there is a decided improvement: good clay flats, well timbered with black and grey spruce, tamarac, bouleau, poplar, &c., stretch away from the river as far as the eye can reach on either side.

Lake Nicobi, a fine sheet of water, nine or ten miles in length and widening out to about three miles in width in the middle, is passed through on this route. Only an approximate sketch of this lake is given; it may extend much further eastward than shown on the plan.

The canoe route passes on the left of large islands that intercept the view of the opposite shore.

Below these islands the lake narrows in to only a few chains in width, but before reaching the discharge it expands again and appears to extend far towards the north-east.

Following the discharge of lake Nicobi down four miles, we come to Lichen lake, a long narrow sheet of water lying at right angles to our course or nearly east and west.

This lake is described in my report of section No 2 of 1897.

The rock formation around lake Wetetnagami is mostly gneiss of a pinkish red color; immense blocks of granite are also seen rising high above the general level, but around lake Nicobi and between there and Lichen lake outcroppings of Huronian rocks are now and again met with.

SECTION No 15.

While waiting for supplies from Rupert House last year, before following down the main Nottaway river, I surveyed lakes Waswanipy and Paketamika.

These lakes were partly sketched in on my tract survey of 1894, but their form and extent was so vagnely given by the guides I then had that when the opportunity offered I seized it at once to put all doubt out of the question regarding the same.

Beginning at the Hudson Bay Company's post, situated on an island at the northern extremity of the lake, lat 49° 39' 55" N., lon. 76° 34' W., we followed the western or right hand shore around until we came to the

portage which crosses the isthmus which joins the large central presqu'ile to the main shore, and measuring across said portage, we continued our survey to the extreme north-eastern end of the lake.

Here, a river, about a chain and a half in width, comes in from the east, which I called Isroff river, for a hunter named Isroff, an old servant of the Hudson Bay Company, has built a house and shed and made a clearing of a couple of acres of land close by its mouth.

Some fine timber, chiefly grey spruce, is seen all along here; I saw some that measured over seven feet in circumference at four feet from the ground.

Following back along the southern shore of the lake, the land is rough and poor for the first four miles, and looking up the valley south-eastward, the country is not very inviting, but on approaching the Metabetchouan portage, there is a decided change.

No better land can be found in any part of the Dominion than that on either side of said portage, and I may say that the whole area between lake Waswanipy and lake Paketamika is equally good.

A rich blueish grey, clay soil, covered with from six inches to a foot of yellow loam or vegetable mould, was seen on every side.

The timber here is large and of exceedingly tall growth; spruce trees measuring about two feet in diameter generally run from 75 to 80 feet in height.

The portage is a little over a mile and a quarter in length and overcomes rapids and cascades that give a total fall of 55 feet.

Here, an excellent water power can be had, for the banks on either side of the stream are high and a dam placed anywhere below the head of the portage could easily flood the waters back to above the level of lake Patekamika and thus have that great body of water as a reservoir to draw from.

The elevation of lake Waswanipy is 630 feet above sea level and that of Paketamika 744; a head of 70 feet may be had here, which, with the minimum flow of water of about 200 feet per second, would give over 1,500 horse power.

Lake Patekamika is a fine sheet of water, measuring seventeen miles in length by about four miles in width in the widest part.

It lies nearly north-east and south-west, and nearing its north eastern end there are numerous large islands

Near Mount Wabinomi an arm of the lake stretches south westward about four miles.

There are some excellent flats and gentle swells, well timbered with large spruce, fir, bouleau, tamarac, poplar, &c, all around this lake.

Returning from here, we scaled the eastern shore of lake Waswanipy right around to our starting point at the Hudson Bay Company's post.

At its most eastern extremity, a small river comes in from the east and from there a trail leads right through to Lichen lake.

The fish of lake Waswanipy are the mainstay of the Indians and Hudson Bay Company's men of that locality. The white fish are exceedingly large and of most delicious flavor, but the Indians prefer the sturgeon to any other fish, and here they get them in plenty, also large trout, pike, pickerel, &c.

Moose and caribou are scarcer than one would expect in such a region so little hunted and there are no small red deer in that direction; but, for fur-bearing animals, Waswanipy is considered one of the best posts that the Hudson Bay Company have on the northern slope.

SECTION No 16.

(Report of the River Nottaway from the discharge of Gull Lake to its mouth at tide-water on James Bay.)

Starting from Gull lake, 660 feet above sea level, the discharge draws off north-westward and sweeps around to west in a strong rough rapid-half a mile in length, giving a fall of six feet, and then runs in a northerly direction one mile and a half amid rapids and expanses; then turns north-east where it falls off in a racy rapids nearly a mile in length, giving a total fall of 20 feet since we left Gull lake, distance 3½ miles.

The country on either side is level or gently sloping clay land timbered mostly with grey and black spruce, bouleau and poplar.

The river now broadens out and sweeps around westward varying from ¼ to ½ a mile in width for a distance of six miles, when it opens into a bay of a pretty large lake.

H. B. CO. POST, LAKE MISTASSINI.

WINTER PACKET FROM RUPERT HOUSE TO MOOSE FACTORY.

This lake measures over sixteen miles from east to west, and its main body is about four miles wide in the broadest part.

Near its westerly end, apart from the bay by which we enter the lake, there are three other bays extending eastward or east by south.

The first measures a mile in depth, the second three miles, and the last or most southerly measures five miles in depth; and from the south-eastern extremity of the latter bay, measuring north westward to the discharge, the distance is nine miles nearly at right angles to the general lie of the lake.

The country around here is level or gently rolling clay land and fairly well timbered with mixed spruce, poplar and bouleau, but south of the lake, hills, from two to three hundred feet in elevation, are seen not far off.

At the discharge of this lake, an excellent water power can be had: there is a fall of 15 feet and by damming the river at its head a fall of probably thirty feet can be had, which with a flow of 1,500,000 cubic feet per minute,—the mean of three different approximate measurements—would give about 85,000 available horsepower.

Below this chute the river runs north-west for a mile and a half and then turns north-east for about the same distance when it suddenly turns south westward, and continues for over a mile and a half on the latter course until it turns again northward, opening into an arm of lake Matagami 615 feet above sea level.

Lake Matagami is a magnificent sheet of water; its extreme length from east to west is twenty-four miles, and from one to three miles wide, excepting at its westerly end, where it broadens out to about six miles in width, and encloses several beautiful islands.

Near its south-westerly end the broad majestic Mekiscan river described in my report of May 1895, comes in from the south.

South of the lake and east of the Mekiscan a range of mountains parallel to the lake rises from five to six hundred feet above its level: in every other direction the land is level or gently rolling and well timbered with spruce, fir, bouleau and poplar.

The soil is a rich brownish clay and outcroppings of Huronian rocks are seen here and there along the lake shore.

Near the middle of the lake the water flows off in a broad river nearly half a mile in width, with easy current, and deep water, until it opens out to a mile and a half in width two miles further down, and this broad arm extends eleven miles due north from the main body of the lake

On the west side of this northern arm the country is well timbered with spruce, tamarac and other timber, but on the east side a great part of it has been overrun by fire, and is now covered with a thick second growth of boulean and poplar, intermixed with sapling grey and black spruce.

The soil is a good clayey loam and free from stones as far as we could see from occasional runs made inland.

At the lower end of this arm the river turns sharply west and runs for about three miles on a south by west course when it winds again north-ward in a succession of rapids and cascades, with expanses here and there between, and continues on a north north-west course for nine miles when it opens into a large lake twenty-one miles in length and from one to four miles in width.

For twelve miles this lake lies due north, and at the end of that distance expands north and east, forming a large bay twelve miles in circumference, and whence it turns due west six miles, and thence three miles north-westward to its discharge.

The country on either side all along is level or gently rolling clay land well timbered with black and grey spruce, boulean, poplar and larch, with *cypres* here and there on the drier knolls.

About three miles above the discharge a pretty large, muddy river comes in from the south-west.

While waiting on a party of Indians, who were to meet us here with supplies, we surveyed this river up some twenty miles.

At four miles from its mouth it opens into a beautiful lake four miles in length and from one and a half to 2½ miles in width.

From its south-westerly end the same sluggish, muddy river leads due south-west five miles to another and a much larger lake, one arm of which extends south westward seven and half miles.

Another arm extends nearly due west which we surveyed about four miles in that direction, at the end of which distance the valley seemed to open southward in bays and morasses.

The country around here is low and swampy and generally covered with black spruce and tamarac. There are no stones and the water is so muddy that even the fish can hardly see through it.

These waters are alive with fish: in going up and down the river my Indians killed several large pike and doré with their paddles: they did not appear to see us or move until touched by the canoe or paddles, and then they jumped clean out of the water as if trying to see what was the matter.

Along the lower part of the river there are some most inviting flats of clay land covered with large poplar and bouleau.

A little over two miles below the mouth of this river, another good sized stream comes in from the west. We followed it up a couple of miles to where it forked into two nearly equal sized branches, and finding these too much encumbered with fallen timber and the water being rather low for canoeing we desisted.

Returning to the discharge of the lake on the main river, a fierce rolling rapid runs off in a nearly straight line due north-west, giving twenty feet fall in a distance of 1½ miles.

Below this, the river spreads out to over half a mile in width, for a mile and a half still north-westward, and thence becomes contracted again for about a mile on a due north course, to where it forks around a large island, the eastern channel broadening out to over half a mile in width.

The country on either side is level or gently rolling clay land timbered chiefly with black spruce and tamarac.

Below the island the river rolls rapidly north-westward for five miles falling ten feet in said distance and then flows placidly three miles on a due westerly course.

At the end of the latter distance, a good sized stream falls in from the south; and the main river turning due north receives three other fair sized creeks on the west side in a distance of two miles.

At the end of the latter distance the entire river passes through a narrow gorge not a hundred yards in width. The fall here is ten feet,

but by damming the river over thirty feet head can be easily had, which would give over 160,000 available horse power.

This must be a wild looking spot during spring freshets, for the great volume of water choked up in this narrow gorge, raises its level upwards of twenty five feet, as seen by the drift wood scattered along either side above the chute.

Below this chute the river turns east by north in a broad expanse over a mile in length and then turns northward again in a succession of rapids that give another ten feet fall in a distance of a mile and a half.

We are now at an elevation of 536 feet above sea level: the country on either side is still level or gently rolling clay land, free from stones and fairly well covered with spruce and tamarac, with occasional patches of birch and poplar.

The river now broadens out to over a mile in width, and encloses a couple of large islands and runs in a north-westerly direction for seven miles, and then runs north-eastward for two miles falling 16 feet in the distance of nine miles.

The river now runs north-west for four miles, in a series of racy rapids, giving another 16 feet fall in the latter distance.

We now turn sharply to the right and soon come to a cascade, giving ten feet fall, which is passed by a portage twelve chains long on the right bank.

This cascade can be run with large H. B Co. canoes at ordinary low water.

Below the last mentioned portage the river falls swiftly in a series of rough rapids for three miles on a N. N. E course until we come to another portage on the left 22 chains in length, passing a wild chute and cascade that give a fall of 36 feet.

At the head of this chute, the banks are high and rocky—solid granite on either side—therefore 50 feet head can be easily had with a flow of, say, 3,000,000 cubic feet per minute, which would give 275,000 available horse power.

It will be seen by the accompanying profile and the red figures on the plan that we have been falling rapidly for the last 25 miles;—I mean rapidly, in comparison with other parts of the river, our total fall in that

distance being 125 feet, and the land on either side keeps about the same elevation all along above the river bed, therefore there is a gradual slope of five feet to the mile falling towards the north.

The country here appears to have been burnt over some fifty years ago, and is now thickly covered with a second growth of spruce and tamarac, with some scattering boulean, poplar and *cypres* on the drier ridges.

The rock formation is chiefly granite in the river bed, and the same land clay soil is seen on either side all along.

Below the last mentioned portage the river widens out to nearly a mile in width, flows northward for three miles, and then flows broad and majestic for seven miles in a northwesterly direction, averaging ¾ of a mile in width and enclosing some beautiful islands.

One of these islands, at the lower end of the latter stretch, measures two miles in length and over a mile in width in the widest part. There are spruce trees over two feet diameter on this island.

The same level clay land covered thickly with black and grey spruce is seen all along on both sides.

We are now down to an elevation of only 400 feet above sea level at the large island last above mentioned, and from there the river runs in a due north-west course for ten miles, and in this stretch we fall 180 feet or an average of 18 feet to the mile, the land on either side continuing to slope evenly to the north-west all along.

There are several rough rapids and two heavy cascades, that are passed by portaging over the rocks on the right side as shown on the plan.

Several good water powers could be had here, but they will never likely be utilized. For at the lower end of this stretch there is a sheer fall of seven feet, giving about 400,000 available horse power.

The river here divides into two channels and the portage is on the island the western channel is dry at low water.

We are now down to only 150 feet above tide level and the lands on either side seem to fall evenly with the river bed, the same level lands continuing all along well covered with spruce and tamarac.

From the foot of the last mentioned chute the river turns and flows on that course for over ten miles in a series of

rapids ; and, the river bed being so broad, one has to maintain a sharp look out to keep in the main channel, which as the river lowers is continually changing from side to side, leaving shoals and gravel bars, through which the water oozes off, leaving your canoe often high and dry in mid channel and you are left to choose whether to portage ahead or back up and seek more water elsewhere.

The same level clay land covered with black spruce and tamarac is seen on both sides all along.

The river now turns again north west and continues nearly on that course to its mouth a distance of twenty five miles.

There are several wild rapids, but no chute on this stretch and the river broadens out to from half a mile to a mile in width and encloses several low islands.

The banks are never more than from ten to thirty feet above the level of the river and the country on either side is level clay soil covered with spruce, tamarac, bouleau and poplar.

About half way down this stretch the Kitchigaoma, a pretty large river, comes in from the south west, and it appears that a canoe route follows this river to reach the head waters of the rivers flowing into Hannah Bay.

About two miles below the mouth of the Kitchigaoma, the Nottaway spreads out into four channels enclosing three large islands.

Some of these channels are dry at low water, and the dreadful havoc made by the mighty river during spring freshets leaves nothing but the largest boulders and granite crags to meet the eye when the floods drain off.

The fall here is about ten feet to the mile for three miles, and the water appears as if simply spilled over the surface of the land, for above the islands the bed of the river is nearly on a level with the surrounding country.

One can imagine what a wonderful sight this must be during spring freshets, when the flow of water must be over twenty million cubic feet per minute, roaring and tumbling down this broad rocky waste, a galloping sea of foam several miles in length and from one to two miles in width.

SCENE ON THE JACQUES-CARTIER RIVER ABOVE LAKE ST. JOHN RAILWAY BRIDGE, SHOWING HEAD OF MOUNT ISONONTOUAN.

PAPATI,

GRAND CHIEF OF THE UPPER OTTAWA INDIANS.

Below this the river narrows in, still rolling on in racy rapids and bubbling eddies a distance of five miles to where it passes through the narrow gorge near tide-water where the total width of the river is less than a thousand feet as described in my report of the 29th of November 1897.

GEOLOGY

In making a hurried survey like this over so great an extent of country, only a very superficial knowledge of the geological formation could be obtained; but having given some copies of plans of my surveys to the late Dr Dawson, he kindly offered to give me any plans or other information I might require from his department in return.

I had written that gentleman a day or two before his untimely death asking for certain notes and plans, and a few days after I received an answer from Dr Bell, acting director, stating that the geological map of the country in question was not yet printed, but if I would go to Ottawa he would be most happy to show me the originals and give me any other information he could regarding the geology of the country.

Accordingly I went there and met both Dr Bell and Mr A. P. Low, and was most kindly received by them.

Here is what Dr Bell says:

The whole country is underlaid with Archean rocks: these are divided into the Laurentian and Huronian which constitute the base of mineral bearing rocks in Canada east of the rocky mountains.

The largest Huronian belt so far known is the one which Dr Bell has called the "Great Belt."

It runs continuously from the eastern side of Lake Superior all the way to the southern extremity of Grand Lake Mistassini.

One of the greatest expansions of this belt lies within the region under description.

If we draw a straight line due north from the northern extremity of Grand Lake Victoria, it will be found to pass over Huronian rocks for a distance of about 100 miles or to a point slightly beyond lake Matagami.

Dr Bell regards the Huronian rocks of this region as very promising in a general way for metalliferous ores, especially gold, copper, iron and nickel. Veins were seen in various localities; some of them carrying copper and in one case traces of gold.

Owing to the large amount of purely topographical and geological work which Dr Bell was obliged to accomplish in so limited a time he could not give much attention to prospecting for minerals: still he regards the indications as very favorable.

In addition to the great belt Dr Bell discovered smaller areas of Huronian rocks on the Broad Back river, just east of the big Lake, and another on the lower part of the great Nottaway river.

Mr A. P. Low says :

The Eastern extension of the Huronian belt carries copper at lake Chibougamou and the granites of lake Obatagoman may carry gold.

The Huronian rocks show up again at the north end of Lake Mistassini, and continue eastward to beyond the Manicouagan river.

The basalts found by the writer north of Little Lake Mistassini are part of this belt.

Mr Low says that he caught tommy cods near the mouth of the East Main river and cod-fish have been taken further north in James or Hudson Bay, but it requires more investigation to find whether they may be found in paying quantities or not.

Sea run brook trout are taken in the mouths of all the rivers and excellent large whitefish also.

Further north in Hudson Bay, the Arctic trout, a very excellent fish, are taken in abundance by the Hudson Bay company and are sold, salted in London for nearly the same price as salmon.

The writer while taking observations for latitude on an island near the mouth of the East Main river saw a number of large porpoises, or white whales as they are called there, playing all around.

Mr Low says that spruce for pulp wood is seen along the East Main river all the way up, and that areas of the same wood extend beyond the northern limit of the province of Quebec.

He also says that New Quebec will be found better than New Ontario for agricultural purposes, and that no doubt rich minerals will be found in the northern areas of our province as well as in Ontario.

The new plan they are now about publishing is made on a scale of ten miles to an inch which together with their accompanying detailed reports will no doubt throw new light on the mineral resources of that region.

The following meteorological table kindly prepared for me by the Director of the Meteorological Bureau of Toronto will give a fair idea of climatic conditions.

MONTHLY AND ANNUAL TEMPERATURES, RAINFALL AND SNOWF

	TEMPERATURE.													
	Moose Factory.	Abittibi.	Dalhousie.	Chicoutimi.	Winnipeg.	Port Arthur.	Ottawa.	Montreal.	Quebec.	Rimouski.	Moose Factory.	Abittibi.	Dalhousie.	
	°	°	°	°	°	°	°	°	°	°	In.	In.	In.	I
JANUARY.....	-2·5	2·7	7·6	4·7	1·0	8·8	13·3	14·2	11·4	9·4	0·00	R	0·07	0
FEBRUARY.....	-0·2	3·2	12·9	5·9	-1·6	6·7	16·0	17·5	15·5	13·2	R	R	0·03	0
MARCH	12·2	13·8	21·4	18·1	10·7	17·6	24·7	25·6	23·5	20·9	R	R	0·47	0
APRIL.....	33·4	34·4	33·7	38·9	40·6	37·1	43·3	42·7	38·3	33·2	0·13	0·06	0·29	0
MAY.....	45·3	47·2	46·7	49·4	53·5	47·9	55·6	54.2	50·8	43.6	2·15	0·75	1·60	2
JUNE	55·0	57·6	55·7	58·1	62.1	55·5	65·2	64·3	60·4	52.5	2·13	0·85	2·48	4
JULY.	65·2	64·7	62·7	63·5	66·3	62·0	69·9	69.4	66·8	56·8	2 97	1·01	3·60	4
AUGUST	59·9	61·5	59·5	60·7	63.8	60·9	67·5	67·0	63.9	55·4	3·19	0·53	2·75	3
SEPTEMBER.....	51·7	52·9	51·2	52·4	55·7	54·1	59.2	58·1	55·2	49·0	2·22	0·57	2·45	3
OCTOBER	42·2	43·0	42·8	44·2	42·6	44·9	48.8	49·5	46·1	41·1	0·83	0·58	2·37	2
NOVEMBER.....	22·6	24·9	29·3	26·9	21·3	28·2	32·4	33·1	30·3	29·0	0·37	0·22	1·80	1
DECEMBER.	5·4	8·9	17·1	11·3	6·8	13·7	18·7	20·5	17·5	17·2	R	0·08	0·67	0
YEAR.....	32·5	34·6	36·7	36·2	35·2	36·5	42·9	43·0	40·0	35·1	13·09	4·65	18·58	22
WINTER.....	3.2	6·6	14·0	9·6	3·4	11·0	18·0	19·1	16·8	14·5	R	R	0·57	0
SUMMER	58.9	59·7	57·8	58·9	61·9	59·0	65·5	64·8	62·0	53·7	7·48	2·11	8·80	11
January to March	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

R and S in the columns for rain and snow signify that the amount was too small to measure.

The above table shows that taking the sum of the average temperatures for each month for the six months Rimouski; and that Abittibi, although situated near the height of land, is 7° warmer than Moose Factory, 8° warmer

SNOWFALL DERIVED FROM THE YEAR 1897 TO THE YEAR 1900 INCLUSIVE

RAINFALL								SNOWFALL.								
Dalhousie.	Chicoutimi.	Winnipeg.	Port Arthur.	Ottawa.	Montreal.	Quebec.	Rimouski.	Moose Factory.	Abittibi.	Dalhousie.	Chicoutimi.	Winnipeg.	Port Arthur.	Ottawa	Montreal.	Quebec.	Rimouski
In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
0·07	0·24	0·01	0·14	0·50	1 24	0·74	0·47	....	18·7	29·0	13·2	11·3	5·1	20·4	37·6	23·1	19·8
0·03	0·13	R	0·00	0·69	1·11	1·29	0·51	....	13·9	20·5	13·3	7·5	5·2	17·5	25·9	26·3	16·5
0·47	0·28	0·08	0·08	1·29	1·68	0·78	0·41	....	30·5	42·6	8·8	12·2	5·2	27·4	28·7	29·9	27·5
0·29	0·96	0·99	0·95	0·99	1·63	1·46	1 53	....	0·8	9·9	4·2	1·3	2·0	1·0	1·5	2·2	4·4
1·60	2·32	1·19	2·22	3·59	2·76	3·13	2·49	....	S	...	0·1	0·1	...	...	S	0·1	...
2·48	4·11	3·48	4·16	2·71	4·03	4·12	2·84	....	...	...	...	...	...	...	...	...	...
3·60	4·60	3·29	4·49	4·92	5·41	4·89	3 67	....	...	...	...	...	...	...	...	...	...
2·75	3.77	2·58	4·49	2·45	2·54	2·99	2·39	....	...	...	...	...	...	...	...	...	...
2·45	3·11	1·99	4·08	3·11	3·98	3·56	3·32	....	S	...	...	...	...	...	...	...	...
2·37	2·15	2·42	2·80	2.57	2·72	2·52	2·03	....	5·7	S	1·5	0·3	S	...	S	S	0·4
1·80	1·09	0.12	0·76	1·67	2·24	2·09	1·61	....	11·3	8·9	7·2	9·1	2·0	6.9	18·0	9·6	18·1
0·67	0·16	0·00	0·23	1.12	1·59	1.23	0·69	....	24·6	18·4	18·6	4·8	3·5	19·0	27·5	13·4	19·1
18·58	22·92	16·13	24·31	25·61	30·99	28·80	21·96	*	105·5	129.3	66·9	46·6	23·0	92·2	139·2	104·6	105·8
0·57	0·65	0·09	0·22	2·48	4·03	2·81	1 39										
8·80	11·48	7·84	12·97	10·48	11·93	11·44	9·58										
.....	.....	.....	.....	....	.....	.....	...	.....	63·1	92·1	35·3	31·0	15·5	65·3	92·2	79·3	63·8

* The snow fall has not been measured.

six months of summer, May to October inclusive, Moose Factory is about one degree warmer than Dalhousie and 21° warmer than , 8° warmer than Dalhousie, 1° warmer than Port Arthur, and 28° warmer than Rimouski.

H. O'SULLIVAN, C. E.

(Certified correct) R. F. SHEPARD,
Director.
Dominion Met'l. Service.

The Honorable COMMISSIONER of
Colonization and Mines,
Quebec.

SIR,

I have the honor to transmit you a duplicate of plan and report which I have addressed to the Hon. Commissioner of Lands, Forests and Fisheries regarding a portion of the James Bay territory, which it may be advisable to have recorded in your department.

I have the honor to be,
Sir,
Your obedient servant,

HENRY O'SULLIVAN,
D. L. S. & M. Can. Soc. C. E.
Insp. of Surveys, P. Q.

To the Honorable COMMISSIONER of
Lands, Forests and Fisheries,
Quebec.

Sir,

The enclosed dossier No 7913-1900 of your department *re* the purchase of Middleboro Island and lands opposite on both sides of the Little Nottaway or Broad-back River on Rupert Bay, was referred to me by E. E. Taché, Esq., Assistant Commissioner, with request that I should report to you on the situation and value of the premises, with any other information that I could give for your guidance regarding the same.

In order that you may clearly understand the situation I have prepared the accompanying plan or map on a scale of forty chains to an inch, showing the coast line of Rupert Bay from the mouth of the Nottaway river to the Pontiac on the east, and the west coast as far north as the mouth of the Shebish river.

I may say at the outset that any attempt at setting a value or stipulated price on the property asked for by Mr Gemmil can be only problematical or speculative as matters stand at present.

Certainly the situation is one of the most inviting on the whole coast; but until such time as railway communication is had with some point

on James Bay, the resources of all that basin must remain dormant and of little value to any one.

The only access at present (if I except the voyageur's canoe) is *via* Hudson Straits and from all we can learn from Lieutenant Gordon's reports made for the Dominion Government and from the records of the Hudson Bay Company and inquiry among its officers, &c., those straits are only navigable about three months of the year and if we take into account the various obstacles and dangers to which the navigation of that far northern region is exposed we may conclude that the navigation of Hudson straits is commercially impracticable at any season.

We must not infer from this, however, that that great northern slope of our province is valueless. On the contrary, viewed from another and a more practical standpoint, the objections above mentioned should be the stepping stones whereby those northern wild lands may be more advantageously developed by us as will be better explained further on.

SURVEY

In accordance with my instructions from the Department of Colonization and Mines, I have surveyed and taken the levels of the Great Nottaway river from its source to its mouth; and on the Rupert river from lake Nemiskow to tide water; but on the Little Nottaway I only measured the portion of it traversed by us on our canoe route from Waswanipy to Rupert House and at its mouth, from Middleboro Island up to the first rapids at the point marked A on the accompanying plan.

The party I left at Rupert Bay during the winter of 1897-8, surveyed the river some ten or twelve miles further up, but they did not take any levels.

However, from what I have seen of the river I believe that a good water power can be had close to tide-water, which is exceptional around James Bay.

On the Rupert river there is no chance of a water power below Smoky Hill portage which is twelve miles from its mouth at Rupert House.

There is a small rapid near the Hudson Bay Co's post at Rupert House which is more or less eliminated at high tide, and thence up to Smoky Hill it is all smooth running water.

On the Pontine and East Main rivers, no water power can be had anywhere near the coast ; and on the Hannah Bay rivers no rapids occur within twenty miles from their mouths ; while on the Moose and Missanabie rivers no water-powers can be had within one hundred miles from the coast.

On the Great Nottaway there are rapids near tide-water, but no chutes, and to stem the flow of that enormous river with any kind of a dam that could resist the ice-flows during spring and autumn freshets would be no easy task.

Although the Little Nottaway appears small in comparison with the Great Nottaway and Rupert rivers, lying close on either side, it is no insignificant stream.

It takes its rise near lake Mistassini, and after draining several large lakes, comes within seven miles of the Rupert near lake Nemiskow and then runs parallel to the latter from there to its mouth, a distance of eighty miles.

On the portion of it traversed by our canoe route above mentioned from Waswanipy to Rupert House, the first lake we come to measures 17 miles in length, with an expansion of about eight miles in width at right angles to the line of route.

The second lake we come to is called Long Lake and measures twenty five miles in length and varies from a quarter of a mile to two and a half miles in width ; and the third lake we come to is one of the largest on the whole northern slope, measuring 32 miles in length by about 18 miles in width.

But in the latter lake there are several large islands and peninsulas, which considerably lessen the water area : otherwise it would be larger than lake St John.

I did not take any actual measurements to determine the flow of the Little Nottaway at its mouth, it being then considered only of secondary importance ; but, judging by the size of the river compared with the Great Nottaway and Rupert rivers where careful measurements were taken, I should say that its flow must be at least 1,500,000 cubic feet per minute at ordinary low water ; and with the great lakes above mentioned to serve as reservoirs it is needless to say that a steady flow may be maintained there the whole year round.

As will be seen by the accompanying plan or map the mouth of the Little Nottaway is most advantageously situated for extensive pulp industries ; the forest products of the lands drained by the different large rivers falling into the bay can be so easily concentrated there.

There is a world of spruce on the Great Nottaway and its tributaries and from the foot of the last rapids on that river, rafts of any size can be floated down to Middleboro Island with any outgoing tide.

Last summer we made this run of at least fourteen miles, with loaded canoes on the ebb tide, in two hours and a half.

In like manner the [illegible] may be brought from the mouths of the Pontiac and Rupert rivers with the incoming tide.

There is an immensity of pulp wood on all these rivers.

Spruce from one to two feet in diameter is seen all the way from the height of land to James Bay.

I have seen spruce fully two feet in diameter right at the mouth of the Rupert river, and the Hudson Bay men tell me that the best spruce they get is on the Pontiac river.

The land asked for on each side of the Little Nottaway or Broad Back is excellent clay soil, all along the river ; in fact all the land bordering Rupert Bay is excellent clay soil, and no stone can be seen anywhere there, excepting in the river beds at the rapids, and occasional boulders and limestone flags scattered along the sea shore.

Middleboro Island measures nearly three miles in length by a little over a mile in width in the widest part, and contains an area of about 1500 acres.

At the southern end it rises boldly from the water, and is well wooded with spruce, offering secure shelter from the rolling swells of the great bay that sweep down with the north wind over nearly a thousand miles of unbroken sea ; but the northern end flattens out in low marshy land and is always covered by ordinary high tides.

The channel separating it from the main shore is a deep narrow creek, sluggish and muddy, measuring only from a quarter to half a chain in width.

STACKING HAY AT ROBERT HOUSE.

LATUQUE, ON THE RIVER ST. MAURICE.

The Indian hunters and voyageurs take advantage of this channel, and go as far as the summit, which is about opposite the middle of this island, with the rising tide ; and then wait for the falling tide to continue on their route, having the advantage of going with the current either way.

By dredging this channel, which would be an easy matter, it being all alluvial clayey bottom, the sides could be raised above the level of high tide and thus form wharves on either side.

Vessels of sufficient draught for the navigation of James and Hudson bays can come here at any ordinary high tide, and safely anchor in the mouth of the Little Nottaway, in the shelter of Middleboro Island, where I found from 15 to 20 feet of water at low tide.

Rupert Bay is in general very shallow, but according to Captain Taylor, who has navigated these waters for the Hudson Bay Company, for upwards of twenty years, there is a deep channel extending from Stag Rock southward to Middleboro Island.

Vessels from Moose Factory and other posts on Hudson and James Bay, bound for Rupert House, generally lie in shelter of Stag Rock to wait for high tide to cross the bar at the mouth of the Rupert river.

GAME AND FISH

The environs of Middleboro Island are *par excellence* the choice hunting grounds of the Hudson Bay officers and men of the Rupert Bay district.

Here, wild geese, wavies, duck, snipe, plover and different other kinds of water fowl are found in countless numbers ; I have seen wavies (a kind of small geese) rise in such dense flocks that the opposite shore was eclipsed by them.

Trout and whitefish are taken in quantities by Indians at the mouth of the Little Nottaway and are smoked for food for themselves and their dogs during winter.

Notwithstanding the different reports to the contrary, the resources of that vast region are not unworthy of the attention of the Government and they cannot forever remain shut out from the commercial world.

The forest wealth of the great areas drained by the mighty rivers flowing into Hudson and James Bay can alone be developed by utilizing the natural water courses.

The whale and other fisheries of that great inland sea, 350,000 square miles in extent, the various indications of minerals, more or less prominent throughout the entire region, must sooner or later call for direct railway communication; and when we consider that the southern extremity of James Bay may be touched by the shortest and best practicable transcontinental line of railway available on our continent, whereby the combined lines for commercial relations between Europe and the Oriental empires, may be shortened from five hundred to a thousand miles, and the grades reduced to one half of those of any other line, we may take it for granted that sooner or later the iron horse will awaken the solitudes of Rupert's Bay.

With this development in view, a glance at the general map of the country will show at once the advantageous position of our province, and particularly of our shipping ports for the future trade of that region.

Every year adds to the demand for larger ocean freight carrying vessels, and of course they will seek the best port on the shortest route, which against all odds must ultimately be Quebec.

Quebec must have its counterpart somewhere on the shores of James Bay, and possibly the very territory asked for by the Albany River Pulp Company, may in the not far distant future become the site of a growing city.

This is not simply a question of local interest; it may involve questions of the highest imperial interest, and therefore in my humble opinion it would be injudicious for the Government to alienate any such prominent portion of our northern seaboard for any price or consideration that could likely be obtained for it at present.

The whole humbly submitted.

I have the honor to be

Sir,

Your obedient servant,

HENRY O'SULLIVAN,

D. L. S. & M. Can. Soc. C. E.

Inspector of Surveys, P. Q.

Lachine, 25th May, 1900.

To the Honorable A. TURGEON,
Commissioner of Colonization and Mines,
Quebec.

Sir.

I have the honor to acknowledge the receipt of your letter of the 6th ultimo, stating that it was your intention to put all the returns available of my exploratory surveys of the Lake St John, Mistassini and James Bay regions before the House during the present session of the Legislature, and asking in addition to the same that I should give you my appreciation of the most feasible and advantageous route for railway communication between Quebec and James Bay.

The different plans and profiles with accompanying reports transmitted herewith, together with those transmitted in November 1897, June, 1899, and August 1900, complete the whole series from section No 1 to No 16 inclusively, giving the general topography, resources and capabilities of the country, and it only remains now to add a few remarks on the different proposed routes for a railway line or lines to develop that vast inaccessible region.

Many routes have been suggested and more or less advocated to reach James and Hudson Bay, at least seven in the province of Quebec and probably as many more from Ontario.

In 1897 the Quebec and James Bay Ry Company's charter was extended and confirmed by Dominion Act of Parliament, for a railway from some point on the Quebec & Lake St John Railway to James Bay, and it appears by the press that other companies are now applying for charters starting from points west of Quebec even as far west as lake Temiscamingue to reach James Bay also.

Having had occasion to examine more or less during the last twenty years the country traversed by the different proposed routes. I have prepared a table of distances of the seven possible lines which is herewith submitted, giving the number of miles of railway already in operation that may be used, and the number of miles to be built to reach James Bay by each route.

Where no surveys have been made, the distances are obtained by measuring on the plan and adding 10 per cent for curvature in each case.

In my report of progress of the 29th November, in speaking of the route from Roberval to James Bay, I said that this would be the most

advantageous route in the interest of the province for the development of the newly acquired territory north of the height of land, for, while other proposed routes only skirted its western border, this route traverses it through its centre, and I also said that the location of this line should be chosen with a view of its becoming, in the perhaps not far distant future, part of the best and shortest transcontinental railway for trade between Europe, the Great North West and Oriental empires.

Ha ! Ha ! Bay, Roberval, the southern extremity of James Bay, Norway House near the northern extremity of lake Winnipeg and the Peace river valley are nearly in the same straight line and the pass through the Rocky Mountains at the head of the Peace river being more, than two thousand five hundred feet lower than the summit of the Canadian Pacific Railway through said mountains, it is needless to say that ere long the fertile valley of the Peace river will echo to the whistle of the railway engine and then will follow the building of the best possible line for its outlet to European markets which unquestionably must pass through the points above mentioned

The only objection is that owing to the early freezing of the Saguenay river and its remaining too long ice-bound in spring, the season is too short at Ha! Ha! Bay and the same arguments militate against the port of Montreal also.

It can be safely relied on that the shipping season at the port of Quebec will be always at least two months longer than from either of the above mentioned ports.

Even at this moment the port of Quebec is clear of ice and during the month of February last. Mr John Thom has been shipping timber from the Louise Basin to the opposite side of the river and up to the site of the new bridge on the St Lawrence with his ordinary tug boats and lighters without the least difficulty.

I take it that in spite of all opposition Quebec must become the principal shipping port of the St Lawrence and that the future transcontinental imperial trunk railway of the Dominion must pass close to, or touch the southern extremity of James Bay, and I have therefore taken these points as terminals for the accompanying table of distances. I will now endeavor to give an outline of each route in numerical order from east to west as shown by the red lines on the accompanying Key plan.

Route No 1 follows the Q. & L. St John Ry, from Quebec to Roberval 192 miles and thence *via* the Chamouchouan and Nottaway valleys to James Bay.

This route was surveyed and reported on by me in 1897 from Roberval to Waswanipi and thence *via* little Nottaway and lake Namuska to Rupert House. The portion of the great Nottaway from Gull lake to James Bay was only surveyed in 1899 and the description of that section is given in the reports transmitted herewith.

With the exception of a few miles along the Chamouchouan river, there is no difficulty in getting a good line on this route. Quebec & Lake St John summit 1535 feet; Lake St John & James Bay summit 1200 feet above sea level Total distance, 622 miles, 430 to build.

Route No 2 follows the Quebec and Lake St John railway about 77 miles to the mouth of the river Jeannotte. Thence follows the Jeannotte and Algonquin valleys westward to Latuque; thence following the St Maurice to its source and westward over the height of land to the old Mekiscan H. B. Co. Post and down the Mekiscan valley to lake Matagami and thence direct to James Bay.

I surveyed the Jeannotte and Algonquin waters and traversed from there to the St Maurice below Latuque in 1891-2 and in 1899 I followed the St Maurice valley from Latuque to Kikindatch H. B. Co. Post and thence over the height of land; and the region between the Mekiscan post and James Bay was explored by me in 1894 and 1899.

I do not apprehend any trouble in getting a good railway line all over this route with the exception perhaps of part of the distance between the Algonquin waters and Latuque. My line passed through lake Wayagamack and the fall from there to the St Maurice is too sudden to overcome with ordinary grades, but I think that by keeping farther north towards the mouth of the Bistonnais river better ground and easier grades may be had. The highest summit of this line would be between 1300 and 1400 feet above sea level. Total distance, 557 miles, 480 to build. M. J. G. Scott, secretary and manager, of the Q. and L. St J. and Great Northern railways informs me that they intend building a new line from St Raymond to St Thècle or St Tite which will shorten the road and avoid the objectionable grades on the line *via* Rivière à Pierre, and that in continuation of this a good line with easy grades has been explored from St Thècle to Latuque on the St Maurice.

Route No 3 follows the Q. & L. St John Ry. the Great Northern and C. P. Ry to Grand Piles, thence *via* the St Maurice and Mattawan rivers to the source of the latter stream, th nce *via* lakes Baskatong, Kakebonga and Grand Lake Victoria, and then over the height of land direct to James Bay.

In 1885, I surveyed this part of the St Maurice and the Mattawan river from its mouth to the township of Brassard, near its source, and found no difficulty in getting a good railway line through there: but I never crossed from the source of the Mattawan to lake Baskatong. However, from what I could see in following the Rouge and Lievre rivers, I dare say a good line may be had there.

In 1891-2-3-4, I surveyed lake Baskatong and the Gatineau and Jean de Terre waters, through, to lake Kakebonga, and all the Ottawa waters between there and Grand Lake Victoria, and thence over the height of land to the Mekiscan valley.

Taken as a whole, a comparatively easy line can be had throughout this section and owing to the enormous distance that timber would have to be driven in following the Ottawa waters, a railway through here would secure a immense lumber traffic. Part of this line would likely be followed by the Q. & Lake Huron projected Railway.

The highest summit on this line is only 1000 feet above sea level, the total distance 640 miles, 545 to build

Route No 4 follows the C. P. Ry to St Martin's Junction near Montreal and thence to St Jerome and Labelle, or *via* Q & Lake St John and Great Northern to St Jerome and C. P. Ry to Labelle, th nce *via* Nominingue and Maniwaki and up the Desert and Tommasine valleys to lake Kakebonga.

From lake Kakebonga the route is the same as route No 3. Between 1882 and 1894 I made a continuous survey from Labelle to lake Kakebonga and although the country is hilly from the Rouge to the Gatineau, I think that a fairly good line can be had. From Maniwaki westward no trouble need be apprehended on this route.

Highest summit 1000 feet, total distance 727 miles, 478 to build

Route No 5 follows the C. P. Ry to Hull and thence by the Gatineau Valley Railway to Gracefield and thence to Maniwaki. From Maniwaki westward it is the same as route No 4. Highest summit 1000 feet, total distance 780 miles, 420 to build.

LUMBERING IN THE UPPER OTTAWA.

CHUTE, NEAR LAKE WAHWANACHI.

Route No 6 follows the C. P. Ry to Hull and Ottawa, thence by the P. & P. Ry to Fort Coulonge, thence by the valley of the Coulonge river to Grand Lake Victoria and from there westward it is the same as route No 5.

In 1893-4, I explored the Coulonge river from its mouth to its source and also the country between there and Grand Lake Victoria and with the exception of a few rocky points jutting out here and there along said river, an easy line can be had there also. Highest summit 1000 feet, total distance 810 miles, 440 to build.

Route No 7 follows the C. P. Ry from Quebec to Mattawa and thence to Gordon Creek at the foot of lake Temiscamingue, thence along River and lake des Quinze to lake Abittibi and thence direct to James Bay.

I followed this route from Gordon Creek to Abittibi in 1899 and had previously surveyed most of the country on the Quebec side from Mattawa to lake des Quinze and I must say that the region east of lake Temiscamingue is not an easy country to build a railway through ; but from lake des Quinze to lake Abittibi there will be no difficulty. I cannot say what the country may be like from lake Abittibi direct to Hannah Bay, but on the route traversed by my party from Rupert House to lake Abittibi in 1898 no insurmountable obstacles were encountered any where.

I have followed the Abittibi river from its month on the Moose river about 20 miles above Moose Factory to its source and I am afraid that if ever a railway is built in the direction of lake Abittibi, it would likely follow the river valley from there to Moose Factory which would be wholly outside of the limits of the province of Quebec and therefore undeserving of much attention from us.

The highest summit on this line is about 950 feet and following the direct line from lake Abittibi to Hannah Bay the total distance from Quebec is 1000 miles. 352 to build.

Reviewing the different routes above described, route No 1 as a colonization road takes first place, but as part of a future transcontinental railway system, first place must be given to route No 2, and for the development of lumbering industries, first place must be given to route No 2 also.

There is far more and better timber in the St Maurice basin than in that of the Chamouchouan and by following down the Mekiscan river to lake Matagami, all the timber of the Nottaway basin traversed by route No 1 can be floated or driven down and tapped by route No 2 at the said lake Matagami.

The chief objections to routes Nos 3, 4, 5, 6 and 7, apart from their increased distance, is that they pass too far west to develop the resources of any portion worth speaking of on the Hudson Bay slope within the limits of our province.

In distance route No 2 has the advantage over all the others as follows

Route No 2 is			65	miles	shorter	than	No 1
"	"	"	83	"	"	"	3
"	"	"	170	"	"	"	4
"	"	"	223	"	"	"	5
"	"	"	253	"	"	"	6
"	"	"	443	"	"	"	7

Of course, if the much talked of ice-breaking steamers could keep the Saguenay clear a few months longer, Route No 1 continued to Ha! Ha! Bay would take first place as regards distance and have the double advantage of having two seaports, Quebec and Ha! Ha! Bay or Chicoutimi instead of only one and the objectionable summits between Quebec and Lake St John would be avoided for the carrying of heavy freights but owing to its geographical position, no point near Ha! Ha! bay can ever become an emporium for west bound freight and trains delivering the bread-stuffs of the North-West there might often have to return empty.

I see by the Press that the Ontario Government intends pushing a railway northward from Toronto in view of reaching James Bay and no doubt they will, unless we can take the lead from Quebec.

One thing is certain that no railway will ever reach James Bay without substantial aid from both local and federal governments and the special advantages of the location of lines Nos 1 & 2 in view of their being continued to the Pacific as above indicated should enlist substantial aid from the Government of Great Britain also. The C. P. Ry following so close to the United States frontier, might in case of hostilities between Great Britain and our southern neighbours be broken up in a dozen places, while the direct line from Quebec to the Peace River and thence to the

Pacific coast would be from 200 to 600 miles from the frontier, forming a safe inland backbone to the country.

No such arguments as the latter can be brought in favor of the proposed lines from Toronto and Sault St Marie to reach James Bay: on the contrary, these lines would have the tendency to divert to New-York the trade that should naturally come to Canadian Ports. It should not be forgotten that at Toronto you are still nearly as far inland as James Bay itself, 338 miles from Montreal, over 400 miles from New-York and upward of 500 miles from Quebec on the shortest possible route between Toronto and the European markets and as for supplying the New-York markets with any product of the James or Hudson Bay region, the distance *via* line No 2 and the Quebec Central and Central Vermont Railways would be about as short as any line that can be had *via* Toronto.

Table showing distances by the different routes from Quebec to a common point at southern extremity of James Bay.

	Built.	To build	Total.
No 1 Quebec, Roberval, Waswanipy and James Bay	192	430	622
No 2 Quebec, River Jeannotte, Latuque Kikendatch, Mekiscan, Managami and James Bay	77	480	557
No 3 Quebec, Grand Piles, Mattawa River, Lakes Baskatong, Kakebonga, Grand Lake Victoria, Mekiscan river and James Bay	95	545	640
No 4 Quebec, Montreal, St Jerome, Labelle, Maniwaki, Kakebonga, Grand Lake, Victoria, James Bay	249	478	727
No 5 Quebec, Hull, Ottawa, Maniwaki, Kakebonga, Grand lake Victoria, Mekiscan river & James Bay	360	420	780
No 6 Quebec, Ottawa, River Coulonge, Grand lake Victoria, Mekiscan river and James Bay	370	440	810
No 7 Quebec, Ottawa, Mattawa, Temiscaminigne, Abittibi and James Bay	648	352	1000

In conclusion I would respectfully refer the reader to a speech delivered in the House of Commons, Ottawa, a few days ago by Mr. Charlton M. P. for E. Norfolk, Ontario, wherein among other things he

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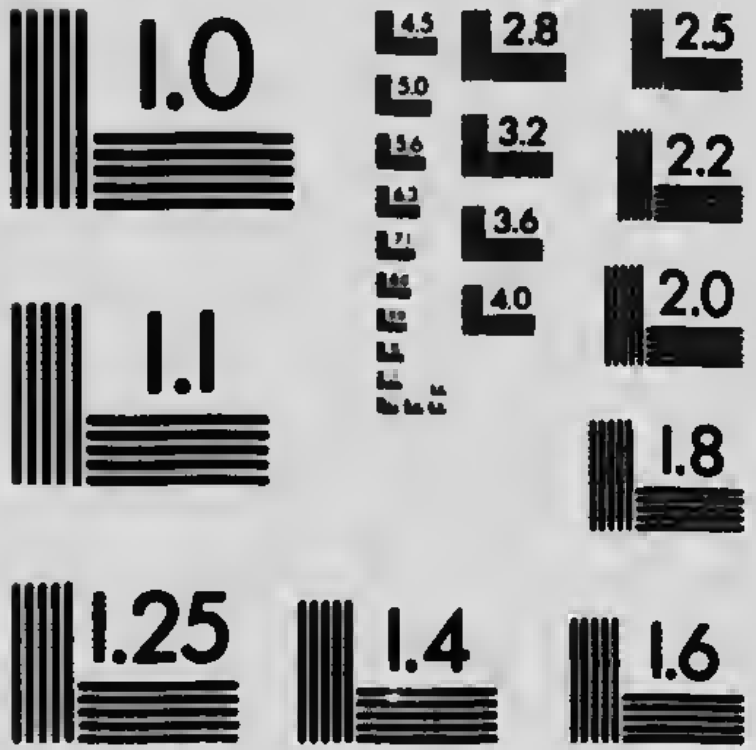

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disapproves of sinking money to dig a hole in the bottom of lake St Peter while we have a natural port 100 miles nearer the seaboard where the largest ships in the world can ride safely at anchor.

The whole humbly submitted.

I have the honor to be
Sir,
Your obedient Servt,

HENRY O'SULLIVAN

D L. S. Mem. Can. Soc. C. E.
Insp. of Surveys, P. Q.

Lorette, P. Q., 19th March, 1901.

Honorable ADELARD TURGEON,

Minister of Colonization and Mines,

Quebec.

Sir,

Since the above was written the debate on the transportation question was continued in the House of Commons at Ottawa, in the course of which, much valuable information was elicited, therefore in accordance with the following paragraph of a letter addressed to me and bearing date the 6th of February last, containing among other remarks the following: "Ce rapport à mon avis, devra contenir de forts arguments en faveur du tracé par Québec, et il importerait de n'en pas trop retarder la publication, si le "Courrier du Canada," No du 31 janvier que je vous envoie est bien renseigné, (signé) S. Dufault, Assistant-Commissaire." Of course the object of the letter above mentioned was that I should explain in my report the advantages offered by a railway from Quebec rather than from Toronto or any other western point, for the development of our northern territory under description in the foregoing pages; but as that development is so intimately connected with the development of the port of Quebec, as will be fully understood further on, I may be allowed to make a few quotations from the Ottawa Hansard of the 18th April last, and offer a few remarks on this all important transportation question.

In the course of the debate, Honorable Chas Fitzpatrick, Solicitor General and member for the county of Quebec, spoke as follows:

"I want to say here that I with all other Canadians believe in the future prosperity of Montreal. I, in common with all otner Canadians, cannot help realizing that Montreal is the great commercial metropolis of this Dominion, and that no harm can come of the city of Montreal that does not result in harm to the whole Dominion of Canada. Everything that can further the progress of that great city is near and dear to us all. But, Mr Speaker, we do not advance our cause by shutting our eyes to the fact that the port of Montreal has limitations. Up to the present time the port of Montreal has been treated as the national port of Canada; yet 90 per cent of our products go from Montreal to the American seaboard to be carried thence across the water to Europe. We cannot overlook that

fact. We must realize that up to the present time, for one reason or another, Montreal has not met the demands made upon it; and the result has been that Montreal has not been our national port, but that Portland, Boston, and New York have been our national ports." ***

"It is idle to shut our eyes to these facts. Then, the conditions are such that you cannot get to that city vessels such as you should have if you mean to compete with Portland, Boston and New York.

Now, I am not going to give my own opinion on that subject; I am going to give to the House the opinion of Mr Reford, one of the most prominent steamship men in Montreal, and one who has been identified with the steamship business there for many years. What do we find Mr Reford saying in a letter written to the Globe of the 23rd of March last? He says:"

"At many points between Montreal and Quebec, and those the most dangerous ones "where the current is strongest, the ship channel is only 300 feet wide, with a so-called "depth of twenty-seven feet, which, however, is not at times to be depended upon owing "to boulders and other impediments in the channel. The current on almost the entire "route between Montreal and Quebec is swift, at places exceedingly tortuous, and a "steamer sailing from Montreal with a full cargo is in constant danger, owing to her "inability to anchor at any of the narrow parts of the river should she meet fog, storm or "snow, or any accident occur to her machinery, because she can only anchor safely from "her bow, and not having room to swing with the current, would certainly go ashore, "and if more than 300 feet in length could completely block the channel for, it may be, "an unknown period. It might, indeed, occur that the only way to get rid of such an "obstruction with a vessel, say 500 feet long, might be the blowing up of the vessel."

"Therefore you have to realize that dealing to Montreal you have a channel that is not quite 27 feet deep, and that does not exceed 300 feet in width. I do not say that the people of this country may not be willing to make a channel enabling a vessel drawing 30 feet to go to Montreal—not only to dredge out the channel, but to widen and straighten it; but if the people of this country are prepared to do that, let them realize beforehand what it means. Realize that if you are going to dig a channel between Quebec and Montreal, it must accommodate vessels which, if you are to compete with New York and Boston, will draw 33 feet of water. In winter, for instance, you have your goods at Montreal; what will you do with them? You cannot keep them there; you must get them out of Montreal to the market in Europe. How are you going to reach that market?"

Many interesting speeches were made *pro* and *con*, but the whole debate boiled down might be put in a nutshell as follows:

If the natural advantages offered by the port of Quebec, are appreciated as they should be by the people of Canada, the bulk of the trade of our country, and a great part of the United States, with the european markets will follow the Saint Lawrence route, and if not it will go by New York, Boston and Portland.

New York is now dredging her harbor to a depth of forty feet, with a channel 2,400 feet wide to the open sea. The estimated cost on the start was $10,000,000 but in all probability it will cost $20,000,000 before it is finished.

Our southern neighbors are not afraid to spend money for the development of their country. Last session the United States congress voted fifty millions of dollars ($50,000,000), for river and harbor improvements.

Evidently we must bestir ourselves if we want to keep pace with them.

It was said during the debate that the channel from Quebec to Montreal would be dredged to a depth of thirty feet and a width of six hundred feet at an estimated cost of two million dollars.

I am afraid that like New York this first estimate is rather low.

As a member of the Canadian Society of Civil Engineers I am not afraid to risk my reputation in saying that to make and maintain a channel 600 feet wide and 30 feet deep clear of obstruction between Quebec and Montreal it will cost double that amount.

But this is not the question whether it is to cost two or four millions, the question is will it be ample when done?

I say positively no!

Unless we have a depth of 40 feet, with the increasing demand for larger ocean freight-carrying vessels, we cannot compete with the port of New York, and the trade will go there notwithstanding our shortening of distance.

At a meeting called at the suggestion of Hon. Mr Dobell and held at the Quebec Harbor Commissioners rooms a few days ago, attended by our most trustworthy pilots and other men of experience, it was admitted on all sides, that it would only cost a trifle, comparatively speaking, to have a 40 foot channel of ample width from Quebec to the ocean at low tide.

It is needless to say that a 40 foot channel between Quebec and Montreal is impracticable.

Quebec has three miles along her river front with a depth of 40 feet and upwards where no public money was ever spent, in fact we have ten miles or more from Pointe à Carey to Cap Rouge and beyond, facing the main channel where the depth is from 60 to 150 feet. Of course the same can be had on the Levis or opposite side, and if more is required, the St Charles Valley might be easily dredged, with freight sheds on either side; thus offering within a radius of five miles about forty miles of available frontage, in fact the capabilities of Quebec as a shipping port are unlimited.

Referring again to the hansard above mentioned we find that, at certain seasons, vessels of over 25 ft 6 in. draught are not allowed to leave the port of Montreal.

We have now loading at the Commissioners Wharf, Quebec, the ss. "Indian" of the Leyland Line, and as she is booked to sail about the beginning of June with the largest cargo that ever went down the St Lawrence the following notes kindly given me by her commander, captain Henry Daniel may be of interest:

Total length	500 ft.
Width	57 "
Depth	43 "
Carrying capacity	13.353 tons.

Average speed loaded, 12 knots or about 14 statute miles per hour.

Total crew including captain 55 men.

Compare this with the "Mexican", another of said Company's ships that loaded here a few days ago.

Capacity	5,000 tons.
Number of crew	50 men.

The capacity of the Indian is over 2½ times that of the Mexican and it only requires five hands more to run her.

It will thus be seen that where these ocean monsters can go no small craft can compete with them. This accounts for the lowering of cost of transport from New York to Liverpool from $8.40 per ton in 1871, to $2.40 per ton in 1898.

Where the "Indian" is now loading there is 31 feet of water at low tide, and the captain says that they will load her to 30 ft draught at stern and 28 ft draught at bow. About 13,000 tons of cargo.

The Indian was built at Belfast, Ireland, last year (1900) and the Mexican was built at Barrow in Furness, England, about 1892. The Mexican costs £55,000 and the Indian £99,000.

The horsepower of the Indian is 3600
" " " Mexican 1800
Draught of Indian 30 ft
" " Mexican 25 ft 5 in'
Speed of Indian 12 knots loaded
" " Mexican 10 " "

The Mexican burns 37 tons of coal per day and the Indian 58.

The "Great Eastern" measured 692 feet long 83 ft broad and 24 feet deep.

Evidently modern ship building guided by the experience of the past calls for vessels of deeper draught.

The White Star line has now the ss. Celtic about to sail from Belfast and the Runic on the stocks there, of 34 feet draught each, and carrying capacity 18000 tons; about 2 00 tons more than the Great Eastern.

These two ships are about 4000 tons bigger than the Oceanic their last new mail and passenger ship, and the Cymric, a freight vessel, and carrying 100 first class passengers as well, launched about eighteen months ago, and were the wonders of the world at the time

It has unfortunately been the rule to measure the capacity of the St Lawrence route by what can be done at Montreal, and this is why said route is only considered available for six or seven months of the year while it is well known that we have at least nine months if not all year round navigation from Quebec. Certainly when the piers of the new bridge, now in course of construction over the St Lawrence river are built there will be no trouble in keeping our port open all winter, and the problem of winter navigation in the gulf of St Lawrence may be solved in the near future also.

Our fast Atlantic service has been hanging fire for a dozen years or more and many reasons have been given for the delay, but if I may venture to speak the truth, the chief reason is that vessels of the necessary capacity cannot go to Montreal. Possibly we may have to wait until the channel is deepened!

The two million dollar estimate for that purpose is in my opinion only the small end of the wedge, and for Quebec it is an unfortunate wedge, its small end diverts the current of trade of our country towards the United States ports, and its but end blocks the Saint Lawrence route.

Some will say "Where is the use of talking of Quebec? you cannot get the freight there etc., etc."

What is there to hinder the canal boats and railways from bringing freight to Quebec as well as to Montreal?

Surely it is not the difference of 160 miles on such level railway lines as we have on both sides of the Saint Lawrence, that would make freight trains loaded in the west, and after covering thousands of miles of rougher roadways stop short before reaching Quebec.

Let the railways and canal boats have the savings that would be made by the ocean steamers making three or four trips more of a season from Quebec, and it would make a mighty big paying freight rate on their lines between Quebec and Montreal.

The sailing craft of the whole atlantic sea board, and of the world for that matter, can come to Quebec with unfurled sheets, but they must be towed to Montreal

I appeal to the representatives of the Dominion at large, from Halifax to Vancouver, to take an impartial view of the matter, and they must decide in favor

Yes, let the [illegible]rence route be improved and equipped on the same scale as t[illegible] w York, which can be done at comparatively small cost from Quebec to the ocean, and with a shortening of six or seven hundred miles in our favor, even the great city of New York, which the americans are proud to call the "Hub" of the world, shall not long outstrip us in the race for supplying the european markets with the breadstuffs of our country.

Possibly some of the above remarks may be considered a too wide digression from the ordinary field or scope of a report like this; but the development of the forest and mineral wealth of the northern regions of our province, under description, is so intimately connected with and dependent on the development of the port of Quebec that said arguments cannot be considered as wholly out of place. There are in the Province of Quebec, north of the St Lawrence and the Ottawa, roughly speaking, about 280,000 square miles of unsettled lands.

Draw a line north westward from Quebec at right angles to the general course of the St Lawrence from Montreal to Bellisle, and it will be found that more than two thirds of this area lies east of such line and less than one third west of it : therefore any shipping point situated at any distance west of Quebec is so much the more out of the way.

To-day a goodly portion of the pulp products of the lumbering regions of the Saint-Maurice are shipped westward to Montreal, thence southward to New York and thence eastward to Liverpool and London. How much more might the government realize for the timber on the stump if the products were shipped directly from Quebec ? Even the cheese and butter of the Lake St John and Saguenay districts are sent westward to Montreal, to be shipped in the same round about way.

Unless the axiom is wrong that the value of raw material in the field where it is found, is what it can be sold for in the market less cost of production and delivery, I think it becomes the duty of our local government to watch with interest the oscillations of this transportation question.

The thousands of square miles of spruce covered lands extending from the settlements skirting the Saint Lawrence northward to James Bay, and to the northern limit of the province at East Main River, are among the most valuable of the assets of the provincial government, and for their development no stone should be left unturned to secure the best, shortest, and cheapest means of transport.

This is probably the last report I may have the honor of addressing you as my chief for in another month our department of colonization and mines will be abolished and I will have to serve under a new master.

Allow me before concluding to sincerely thank you for the many acts of kindness which I have received at your hands, and for the generous confidence with which I have been favored ever since you became head of the department.

Trusting that I have not been unworthy of that confidence,

I have the honor to be,

Sir,

Your obedient servant,

HENRY O'SULLIVAN,
D. L. S. & C. E.
Inspector of Surveys, P. Q.
Mem. Can. Soc. C. E.

Glengariff, 29th May, 1901.

ADDENDA

Regarding the dredging of the channel between Quebec and Montreal, mentioned on page 75, I wish to say that if said channel is straightened, broadened and deepened, as proposed in order to compete with the United States ports, its effects may be serious in lowering the water in the port of Montreal

It is well known that according as the country along the St Lawrence, westward to its source, becomes cleared and settled, the surplus water flows off faster in spring; and the increased amount of evaporation in summer, due to the same cause, together with the diversion of a goodly portion of its waters by the Chicago canal, which according to Chevalier Bailtairge is 600,000 cubic feet per minute, or more than three per cent of the 18,000,000 cubic feet flowing over Niagara, has made a very perceptible difference, in the flow of that mighty river, in dry seasons now, towards what it used to be in years gone by.

Thus it might happen that after millions would have been spent on enlarging the channel the Montreal wharves would be inaccessible for any kind of sea going vessels, and the whole harbor would have to be dug out again, or else a dyke would have to be built.

This is a question that my opinion should be well weighed by the highest engineering authorities in the Dominion, before any further serious expenditure of public money is made thereon.

If we want to compete with U. S. ports we should begin by the beginning!

As already said the largest ships in the world can come to Quebec with any ordinary flow of tide, but it would only cost a trifle comparatively speaking, to fix the channel so that they might come and go at the lowest stage of tide.

HENRY O'SULLIVAN.
C. E.

Key Map by H. O'Sullivan, D. L. S. & C. E.


RIVIÈRE EAST MAIN
R. EAST MAIN
R. Rupert
R. à la Marte
L. MISTASSINI
Petit L. Mistassini
Ligne de partage des eaux
ROUTE No. 1
ROUTE No. 2
ROUTE No. 3
ROUTE No. 5
R. Chibougamau
L. Chibougamau
L. ST. JEAN
Roberval
HA-HA-BAY
R. Saguenay
CHARLEVOIX
MONTMORENCY
QUEBEC
LEVIS
LOTBINIERE
DORCHESTER
BELLECHASSE
MONTMAGNY
MÉGANTIC
ARTHABASKA
BEAUCE
DRUMMOND
RICHMOND
WOLFE
COMPTON
SHEFFORD
BROME
STANSTEAD
MISSISQUOI
MONTREAL
OTTAWA
MANIWAKI
Grenville
Carleton Place
L. St. François
Cornwall
Morrisburg
L. Manouan
L. Mégantic
L. Pletipi
L. NICHICUN
Opemisko L.
L. Mégantic
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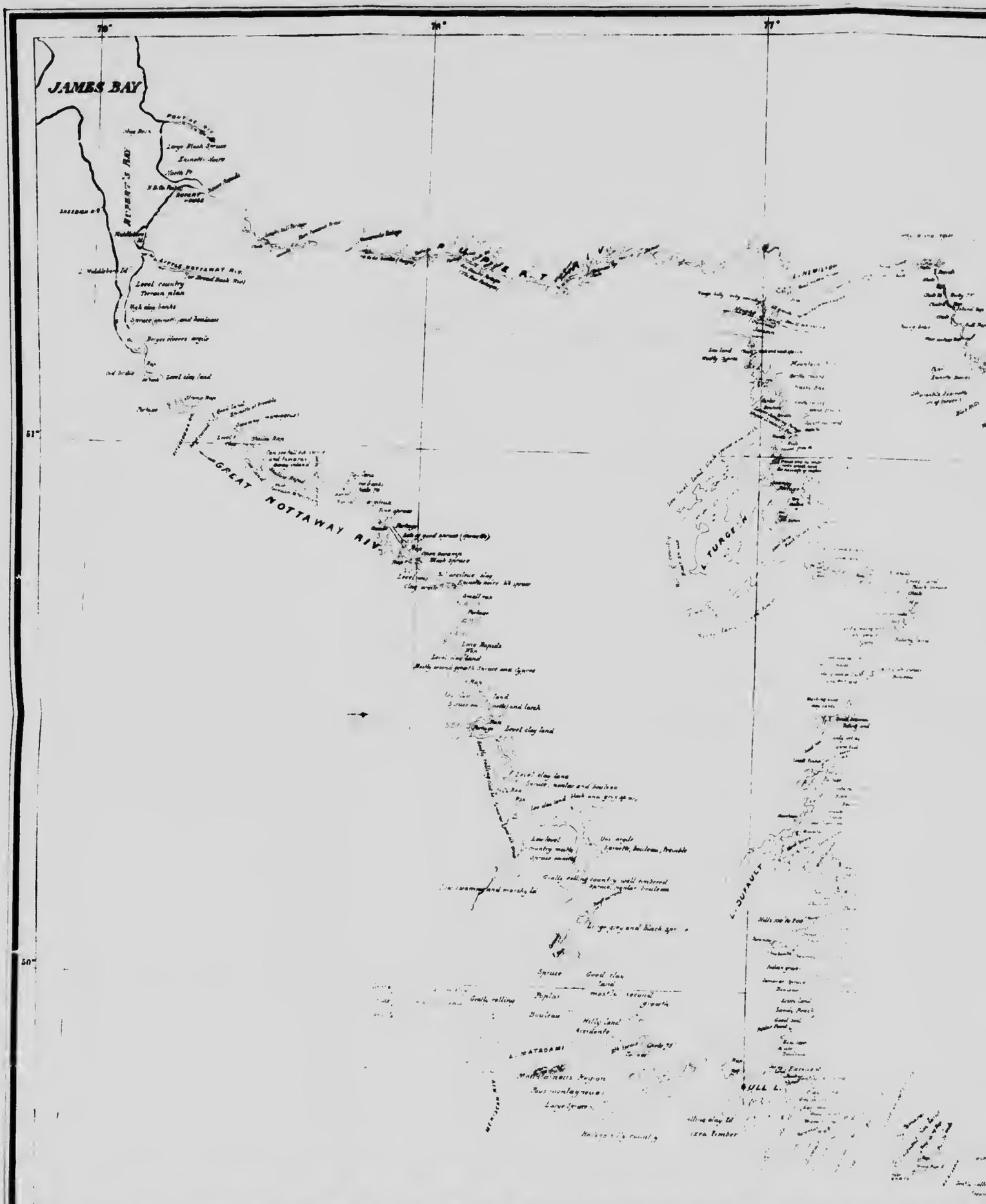
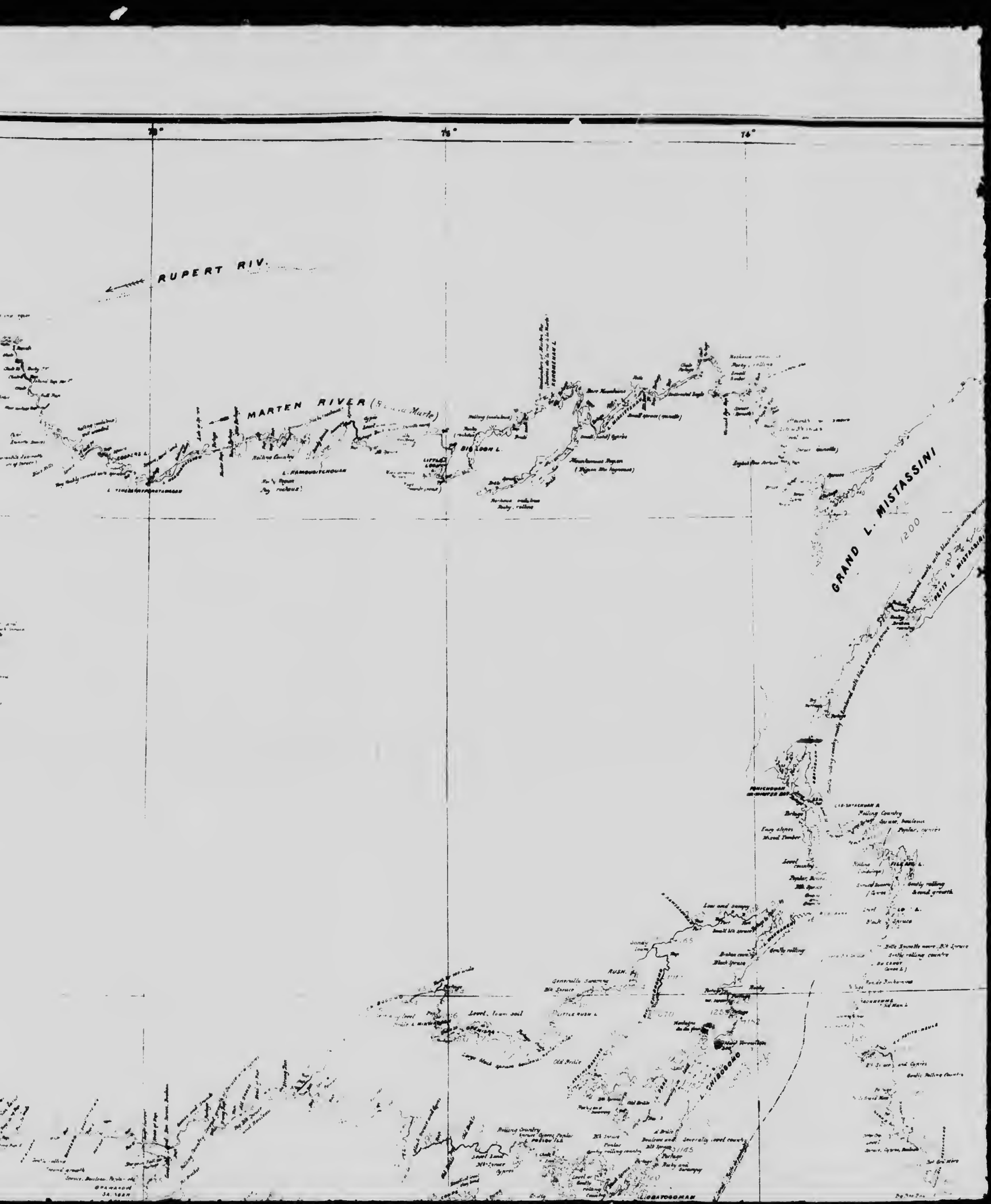
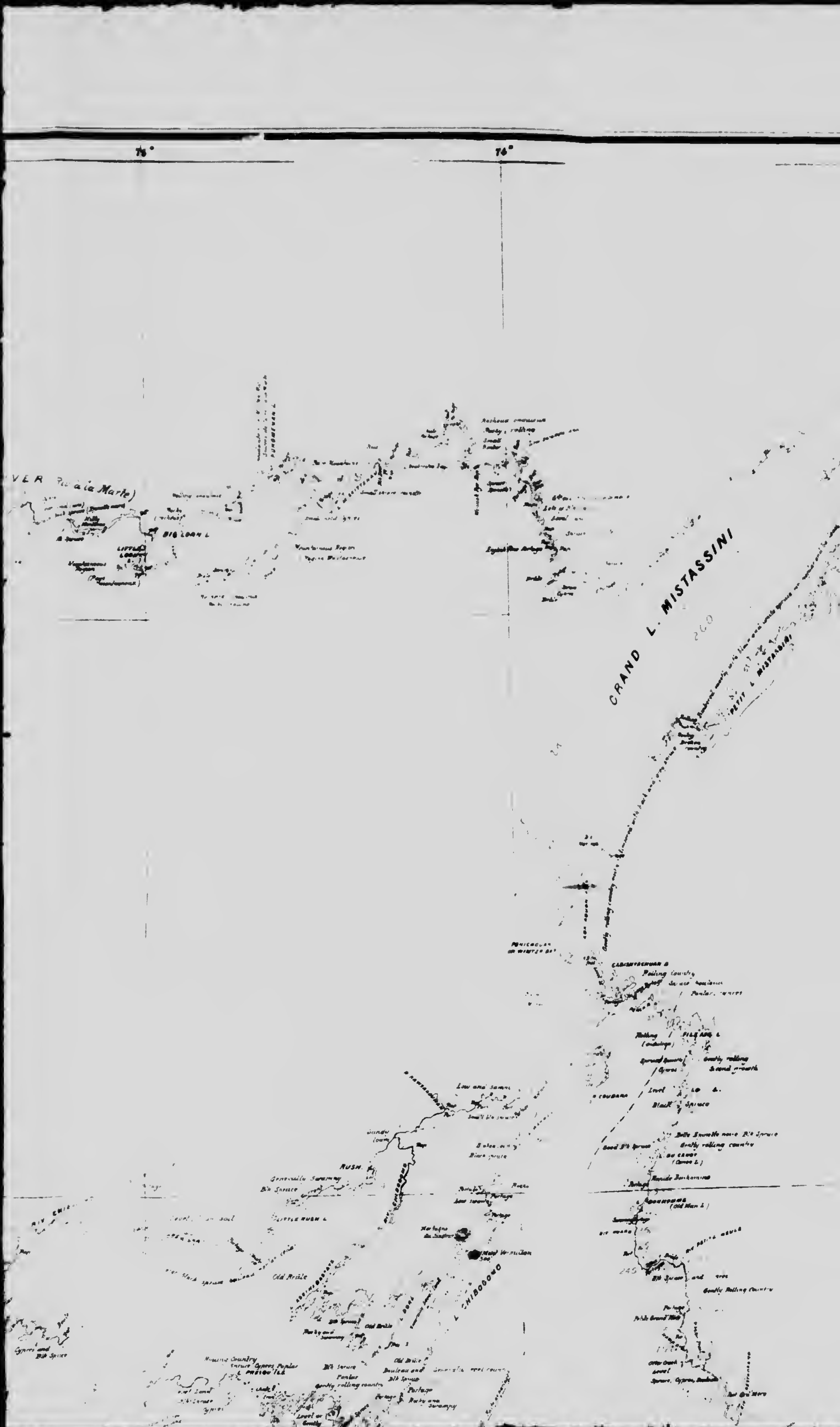
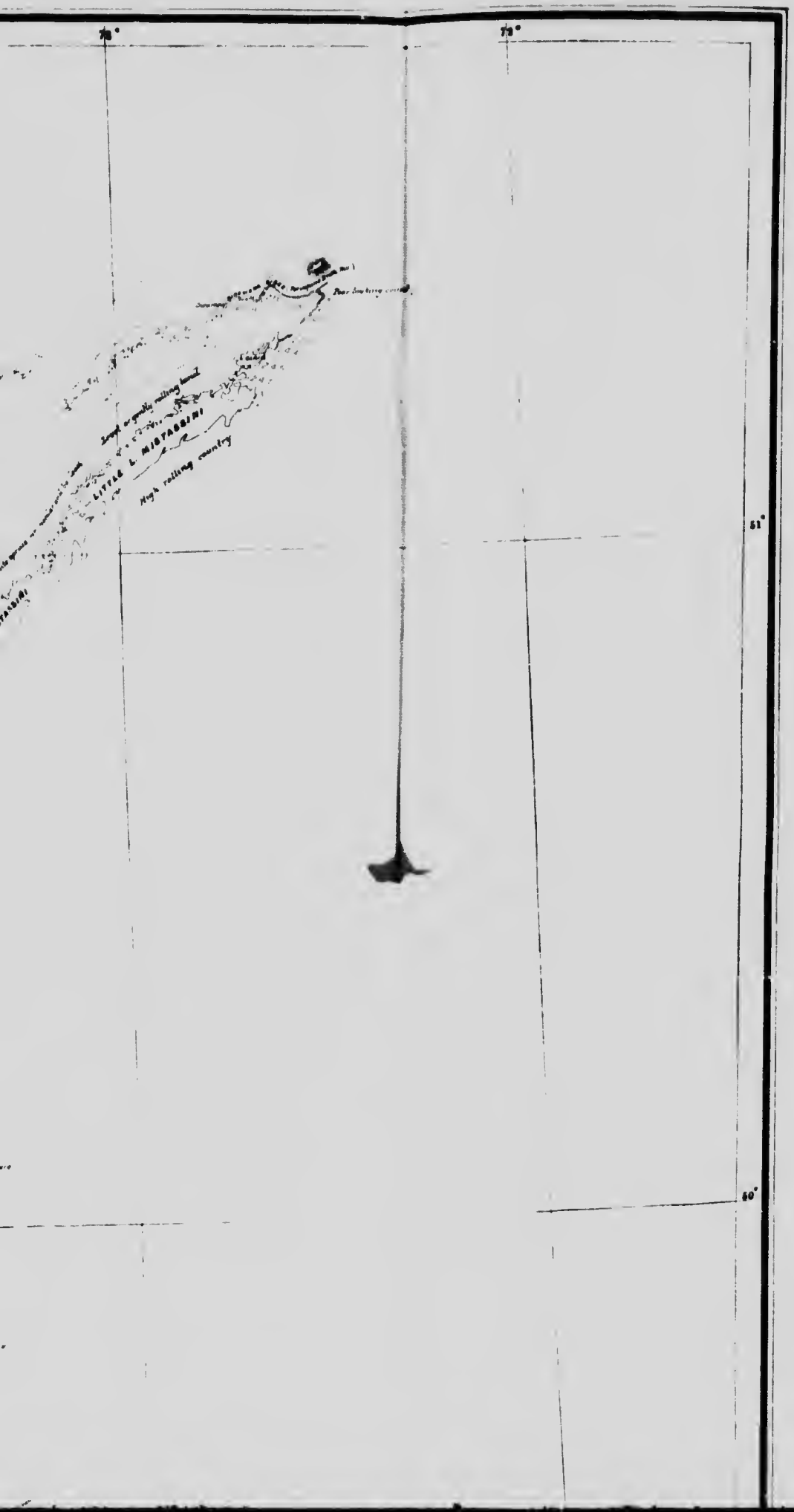

JAMES BAY
RUPERT'S BAY
GREAT NOTTAWAY RIV.
L. MISTASSINI
L. ATABASKI
L. TURGEON
L. DUPAULT
HULL L.
78°
79°
77°
51°
50°


RUPERT RIV.
MARTEN RIVER
GRAND L. MISTASSINI
L. CHIBOUGAMAU



GRAND L. MISTASSINI
BIG LOON L
RUSH L.
L. CHIBOGOMO
Old Brûlé
Gently Rolling Country


78°
79°
51°
60°
LITTLE L. MISTASSINI
High rolling country

CARTE

D'UNE ROUTE CONDUISANT DU

LAC ST-JEAN A LA BAIE JAMES

PAR LES RIVIERES

CHAMOUCHOUAN, NOTTAWAY ET RUPERT

EXPLORÉE EN [illegible]

PAR

HENRY O'SULLIVAN, A.D., A.P. et I.C.

[illegible]

MAP

OF ROUTE FROM

LAKE ST. JOHN TO JAMES BAY

VIA

Chamouchouan, Nottaway and Rupert Rivers

SURVEYED IN 1897-98-99

BY

HENRY O'SULLIVAN, D.L.S., P.L.S. and C.E.

[illegible]

Echelle de milles anglais — Scale of English miles

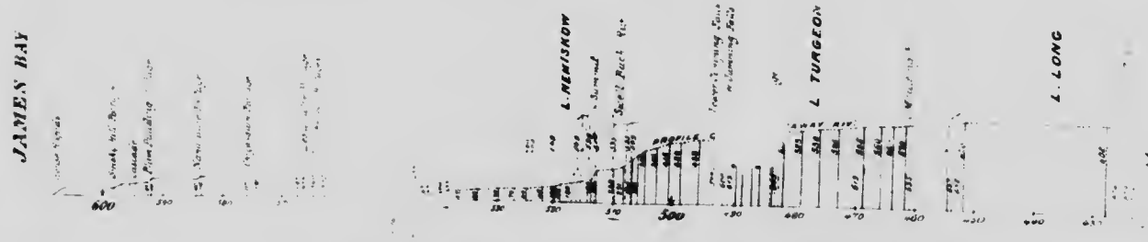
N.B.—The surveys of the Mistassini region, and part of the St. Maurice basin shown on this map, in addition to the route described in the above title, are based upon from actual field work made by and under the direction of the undersigned

N.B.—La région du Lac Mistassini et [illegible] du bassin du Saint Maurice indiquées sur cette carte, de même que la route [illegible] dans le titre ci-dessus, ont été faites par le soussigné lui-même ou sous [illegible]

Henry O'Sullivan

PROFIL DE LA

PROFILE OF

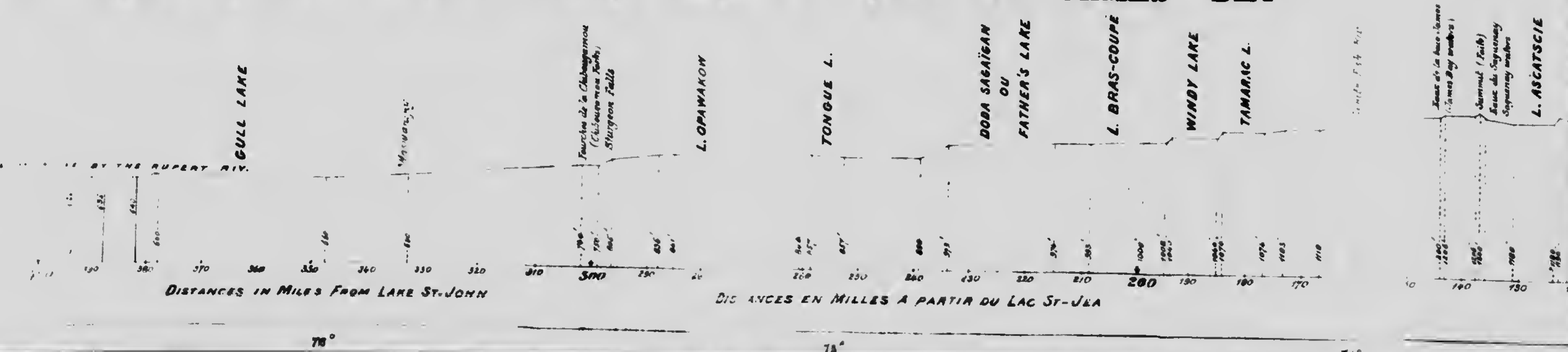


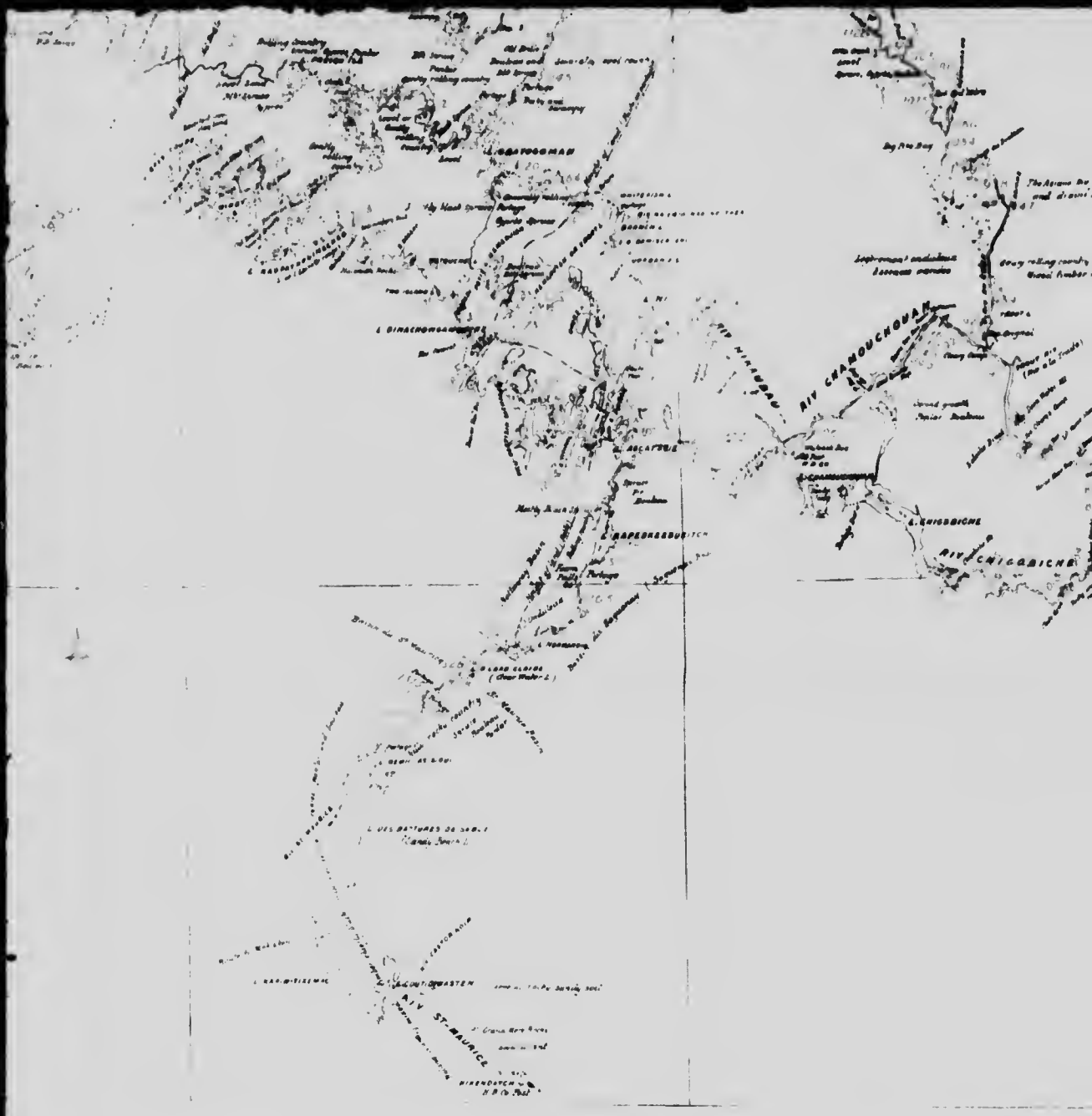
78°

77°

E LA ROUTE EXPLORÉE ENTRE LE LAC ST-JEAN ET LA BAIE JAMES

OF EXPLORATORY SURVEY FROM LAKE ST. JOHN TO JAMES BAY





LAC ST-JEAN ET LA BAIE JAMES

LAKE ST. JOHN TO JAMES BAY

OPAWAGAN
TONGUE L.
DOBA SAGAIGAN OU FATHER'S LAKE
L. BRAS-COUPE
WINDY LAKE
TAMARAC L
White Fish Rapids
L. ASCATSCIE
L. CHAMOUCHOUAN
L. CHIGOBICHE

270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100

DISTANCES EN MILLES A PARTIR DU LAC ST-JEAN

75° 74°

Good timber Sound ground
RIV. CHAMOUCHOUAN
Poplar
ST FELICIEN
LAC ST-JEAN
L. ST JOHN
ROBERVAL
Chicoutimi
48°
L. CHAMOUCHOUAN
L. CHIGOBICHE
Chute Gras
Chute Vermillon
Chaudière Falls
White Spruce Rapids
Riv. du Cran
Pemoka
St. Felicien
Summit
ROBERVAL
LAC ST. JEAN
(L. ST JOHN)
SEA LEVEL
100
80
70
60
0
73°
72° West from Ouest de Greenwich