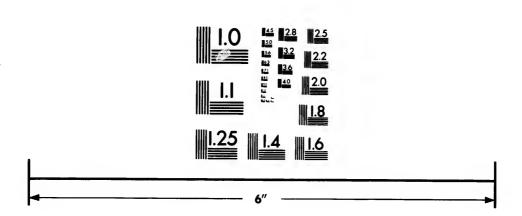


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PRELIMINARY REPORT OF AN EXPLORATION ON THE UPPER PART OF THE STIKINE RIVER.

(By V. H. DUPONT, C.E.)

Ottawa, December 3, 1899.

Sir,—I beg to submit the following preliminary report and sketch plan, of an exploration I made, on the upper part of the Stikine River, to ascertain the feasibility of

building a railway.

Your instructions, dated May 1. directed me to leave Ottawa and proceed to explore the valley of the Stikine River, from where Mr. J. S. O'Dwyre, C. E., completed his work the previous year, viz., 107 miles south-east of Dease Lake, to the head waters of the river, and from that point to endeavour to find a pass to the Skeena River.

In accordance with your instructions, I proceeded immediately to get ready, but

owing to some delays, I was unable to leave Ottawa before May 11.

I arrived at Vancouver on the 17th, and without delay I started to organize my

party and purchase the necessary supplies.

Great difficulty was experienced in procuring a suitable outfit of horses, men, etc., and in making arrangements for the transportation, especially from Fort Wrangel to Telegraph Creek. However, all arrangements were completed on May 27 and at 4 p.m. on that date I left Vancouver for Fort Wrangel arriving at that point on May 30 at 11 a.m.

On June 3, I left Fort Wrangel for Telegraph Creek, but owing to the low stage of water, the boat was utmole to proceed further than Glenora, where we arrived on the 6th. Here considerable time was spent in breaking mules and making packs ready for trans-

portation.

On leaving Glenora on the morning of the 14th, we experienced a bad stampede through the rough bushy mountains, losing four mules. Searches were made without success, and we continued on our journey until we arrived at Telegraph Creek, which is 12 miles from Glenora. These mules we found next day.

On account of unforeseen circumstances it was impossible to leave Telegraph Creek

before June 20.

On July 1, our camp was pitched at the crossing of the Tanzilla River, 21 miles

south of Dease Lake and 72 miles from Telegraph Creek.

Here, the greatest difficulty was experienced in crossing this river. As the season was fully a month behind, the water was at its highest stage and the river was a rushing torrent. We first attempted to ford it but, in trying to do so, one man and several horses were swept away and nearly drowned. We then tried to bridge the river, which seemed almost impossible, but after having built three bridges, we managed to cross part of the outfit, a few minutes before the third bridge was carried away.

Leaving the remainder of the outfit on the west side of the river, we resumed our journey on the 6th and travelled through rain and mud until the 11th. We were then stopped by a very steep hill of over 1,000 feet in height, and as the frost was just coming out of the ground, it was impossible to climb it so we pitched camp, and I ordered the

pack train to go back to the Tanzilla River and bring on the rest of the outfit.

The hill just spoken of was at the foot of the divide mountain between Gnat and

Ptarmigan Creeks.

As the mountain was nearly all covered with snow, and as on examination of the trail over the divide I found it was impossible for the pack train to cross, I at once marked out a new trail, and by the time the pack train returned, which was on July 20, the trail was completed and we were able to cross the divide with a light load, and proceed on towards the point the exploration was to begin.

After having built several bridges and rafts to enable us to cross some large streams, and travelling through mud and rain we arrived on August 4 at the beginning of the

exploration.

On the morning of August 5, we started the exploration.

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At the point where we started work, no trace of a trail could be found and four men were set to work cutting one, in order that the pack train might travel.

On August 28, having connected my survey with the one made by Mr. O'Dwyre on the Skeena River, and taking the old Telegraph and Ashcroft trail where it crossed the head of the Stikine River, we arrived, on September 19, at Kis-pi-ox an Indian village situated on the Skeena, 3 miles north of Hazelton.

At this point, I decided to send Mr. Kerr, my assistant, accompanied by three men, to Asheroft over trail, where they arrived on October 22, having travelled 600 miles in about one month. The remainder of the party and myself left for the coast in an Indian cance and arrived at Port Essington on September 26, at 10 p.m., and taking a steamer four days after, we arrived at Vancouver on October 3, and on the 13th I arrived in Ottawa.

DESCRIPTION OF THE COUNTRY.

Having made a brief narrative of the trip, I will now describe that part of the country

which was the object of my expedition.

Beginning at 111 miles south of Dease Lake and following the river up stream, for the first 28 miles, the valley is from 6 to 8 miles wide, and between the base of the mountains and the river, it is generally bordered by flats and benches of different height and width. On the left side of the river, going up, there is about half a mile of side hill where it will be necessary to make some rock excavations in building a railway line, but in no place will it be deep or will it necessitate a large expenditure of money.

There are two land slides, one about 100 feet in length which is occasioned by a spring, and the other is 500 feet in length and was dry at the time I saw it, but it must be of bad character in the spring when the frost is coming out of the ground. These slides are composed of sandy clay and gravel which becomes very soft when wet and hard like concrete when dry. By careful drainage of the springs and diverting the water elsewhere, the slides mentioned can, without doubt, be stopped.

I also noticed a cut-bank 200 feet in length caused by the action of the river and composed of disintegrated beds of sandstone. This cut-bank will present very little difficulty.

Some short pieces of muskeg are also on the way, but all have a rocky bottom a few feet below the surface. From the beginning of this section of 28 miles and speaking always of the left side of the river (going up), there are 19 streams to cross, 16 of which are less than 6 feet in width.

The important streams are :-

The Ducker River, which is a very uniform stream, having a width of 250 feet in high water, it has a mean fall of 20 feet per mile for a distance of at least 6 miles and flows through a very wide valley, which appears to extend in a direction N. 60 E. This river will require a bridge 250 feet in length and 20 feet above the water. It is possible to bridge this river at any point, as the bottom is of a hard nature.

The Sanabar River is a very crooked stream, running through eafions of sandstone and conglomerate of a greenish colour. At a distance of 5 miles from its mouth, it branches into two equal streams, one running in a southerly direction, while the other follows an easterly course. This river has a fall of 106 feet in the first mile. It could be bridged with a 100-foot span, 12 or 15 feet above the water. The third stream will require a span of 40 feet. This stream after crossing a broken flat divides into three branches, the main one running in a direction S. 25° W.

From the beginning to the end of the first 28 miles, just described, the right side of the river appears to present the least obstacles to the construction of a railway line. Large flats of even height border the river, and the land seems to be dry and no streams

of any importance will have to be crossed.

The Stikine River has a mean fall of 4 feet to the mile for the first 16 miles, and then the water is nearly still for a long stretch. The course followed by the river, is very crooked indeed, describing half a circle of 12 miles diameter and 28 miles long.

From the 28th mile to the 56th, the valley becomes much narrower, being in places not more than a mile wide. The river presents the appearance of a narrow lake with irregular contours of very peculiar appearance. As seen from the top of a moun-

tain, the valley looks like a very beautiful park. At one place, the river describes a very regular S over 4 miles long. The space between the branches of the S, is covered with grass of a fine yellow-green colour, and is cut off by numerous lakes and channels. The water is surrounded by a narrow strip of spruce trees, which gives the scenery a very pleasant effect.

The river for the second 28 miles flows through a muskeg of at least a mile wide, but a line could easily be built, at a moderate cost, by following the foot of the surrounding hills on either side of the river.

On the left side of the river, there are 13 streams, but only two are important. One will require a span of 75 feet, while a span of 20 feet will be sufficient for the other.

I noticed a cut-bank 40 feet high and 300 feet long. The base of this cut-bank is of slate formation.

In the next 12 miles, the river has a fall of 91 feet and becomes narrower and swifter in places.

The land on both sides is dry and very suitable for the construction of a railway line.

The valley, which is not more than a mile wide, becomes an open prairie for the last 4 miles.

There are six small streams on the left side of the river, and only three very small

ones on the opposite side.

At the 68th mile, the river branches into three streams, one branch called the Tennasee Creek, running in a westerly direction, first through a short cañon, 1,500 feet in length, in which a vein of coal appears, and then through an open valley, one mile wide, until it comes within one mile of a branch of the Clappan River, where it turns in the state of the clappan results and here the state of the clappan results are the state of the clappan results.

in a southerly direction and branches out in the mountains.

The second branch continues toward the south, through several short cañons, for a distance of 5½ miles, and then branches off into two streams, one running in a westerly direction and is soon lost in the mountains, the other running toward the east across some high broken benches for a mile or so, and then through a very fine open valley one mile wide. This branch I have called the "Glacier Branch." It continues through the valley for 3 miles, where it touches a small lake which is the source of a branch of the Skeena River. From this lake the creek takes a sudden bend toward the south and runs in that direction for about 2 miles and then ends in a glacier, which I have named the 'Bell Glacier' on account of a black peak which at a distance has the appearance of an immense bell, and which is in the centre of this glacier.

This valley, through which a branch of the Skeena flows, continues to be open and becomes drier for a distance of 6 miles. The continuation of this valley will be

described by Mr. O'Dwyer in his report.

I will now come back to the 68th mile and give a description of the third branch called the East Branch. The valley through which this branch flows presents a more favourable appearance for the route of a railway line than the valley just described. The stream follows an easterly course, running through a cañon about a mile long. The walls of this eañon are 25 feet high, and on the top of which ends the slope of a plateau of 150 feet in height. From here the valley is very open. At a distance of 14 miles, the river branches off into two streams, the most important one running in a north-easterly direction, and then continues toward the east for a distance of 4 miles, where it meets a branch of the Skeena River, which joins another branch of the Skeena meeting the Glacier Branch of the Stikine.

The junction point of the two branches of the Skeena River can be seen from an elevation, and as far as I could judge, this valley presents no serious obstacles to the

construction of a railway line.

The approximate elevation at the divide of the Glacier branch is 4,335 feet above sea level, while it is 4,150 feet at the divide of the 'East Branch,' giving 185 feet lower in favour of the latter pass.

The mean grade by this route is 22 feet per mile, while it is 54.5 feet per mile by

the valley of the Glacier branch, which is also 5½ miles longer than the other.

All the mountains in this part of the country are more or less covered with snow, and present the general appearance of the Rockies.

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Particular pains were taken in studying the geolgy of the country but without any striking results. Colours of gold are found in the Stikine River up to the 38th mile, but then disappear entirely.

At the 48th mile we crossed a red mountain, which no doubt, is part of a mineral belt running practically east and west. Some good quartz might be found in this range.

The formation is chiefly of conglomerate and sandstone up to the 56th mile, where limestone, slate and shale formation commence to appear. At Tenasse Creek there is a vein of about 10 feet of impure coal, this same vein seems to appear on the Glacier Branch. Several indications of coal were noticed in the surrounding gulleys and even on top of the mountains, but all the coal seems to be impure and in small quantities.

Several peaks were ascended. The highest appears to be at the 48th mile, its

elevation 1 sing 7,665 above sea level.

The connate is cool, freezing every night unless the sky is cloudy or the wind blowing. The season was very wet raining more or less ever day. From the time we left Telegraph Creek until we arrived in Vancouver, I am safe in saying it rained five days per week, but I am under the impression that this season was an exception, the climate being generally dry according to some Indians who I met at the head waters of the Stikine River.

Good timber is not very abundant; some white spruce of 2 feet diameter was seen in many places but not in large quantities. Many flats are covered with jack pine of small growth. There are also poplar trees in places, and everywhere there are thick bushes which make it very disagreeable in travelling.

An album containing the photographs taken on the trip will accompany the final report giving a better idea of the nature of the country.

I have the honour to be, sir,

Your obedient servant.

V. H. DUPONT, C.E.

Collingwood Schreiber, Esq., C.M.G.

Deputy Minister and Chief Engineer,

Department of Railways and Canals,

Ottawa, Ont.

THE INSTRUCTIONS OF THE CHIEF ENGINEER (WRITTEN AND VERBAL) GIVEN ME ON APRIL 21, 1899, OUTLINED THE FOLLOWING OPERATIONS IN THE FIELD.

(1.) An exploration of the Skeena River northward from Hazelton to the mouth of the east branch of the Skrena, thence along this branch to the Vicinity of Fort Connolly.

At this point a junction should be made with the work of Mr. C. F. Dibblee, who, during the winter of 1898-9, was expected to have made explorations westward from the mouth of the Omenica River towards Fort Connolly.

A personal interview with Mr. Dibblee was to be had, if possible, and his co-opera-

tion obtained in the exploration of the East Branch of the Skeena.

(II.) A continuation of the explorations of the Skeena River northward to its head, with the object of discovering a pass—suitable for railway construction—between its head waters and those of the Stikine River.

My pack train and party started from Ashcroft for Hazelton, via Quesnelle, on May 20; we reached Hazelton June 30. Here we were delayed until July 5, getting the pack animals reshod, and preparing the supplies, outfit, &c., for the season's trip.

Before leaving Ashcroft, I received from the chief engineer a copy of Mr. Dibblee's report to him, dated April 1, 1899; in which Mr. Dibblee states, 'Have just finished explorations, getting back to headquarters the 30th ultimo. Have found a favourable route via Omenica, Osilinca, head waters of Skeena waters, &c.'

Mr. Dibblee's headquarters, referred to above, being at the mouth of the Omenica River, the proposed personal interview with him was now out of the question, as was also the contemplated assistance from him in exploring the East Branch of the Skeena.

Consequently, I decided to proceed directly to the head of the Main Branch of the Skeens, and explore that vicinity for a pass to the waters of the Stikine; leaving the work on the East Branch toward Fort Connolly for the latter part of the season. I was particularly influenced to adopt this programme of work, by the fact that Mr. Dupont, who had been sent out to continue my explorations on the Stikine River of 1898, southward to its head, would no doubt on reaching the divide between the Skeena and Stikine waters, be on the look out for my party, or evidences of our work. I realized too that it might be a difficult matter to connect our surveys in a wild, and wholly uninhabited territory, unless precautions were taken to reach that vicinity as early as possible, and ascertain the peculiar conditions topographically of the head waters of these rivers. As I was unable to obtain any reliable information regarding this locality, I could form no idea of the probable time required to explore for and secure the desired pass; another reason for proceeding directly to the head of the Skeena. Accordingly, I left Hazelton on July 5, making a track survey of our route, and taking barometer readings for elevation, also observations for latitude, to correct the traverse survey, as we proceeded. The most direct route to the head of the Skeena was taken. By August 8, I had discovered an excellent pass for a railway line between the head waters of the Skeena and Stikine Rivers—the divide being about 164 miles by trail from Hazelton —and had explored some 20 miles down the branch of the Stikine heading here. I then felt quite confident we were on the same branch of the Stikine River that I had explored last season, and which Mr. Dupont was this year following to its head. I was gratified to learn later on that Mr. Dupont had come directly onto my work and connected with reference posts left by me for that purpose on the banks of the Stikine, at the end of my explorations in that direction.

In taking the above-mentioned direct route to the upper Skeena, my trail left the main river about the 91st mile, and ascending to the head of a large tributary branch, passed through a low, wide valley to the head waters of the Nass River. It followed down this branch of the Nass for a few miles, then ascended by another one to an elevated unbroken watershed between the Nass and the Skeena. From here the route descended to the main Skeena, reaching it at the 143rd mile. If it were not for the summit just mentioned, the route of this trail itself would form a good line for a railway, the general direction being almost due north from Hazelton.

Had the season not been so far advanced, on my return from the head of the river to the 113rd mile, I would have explored the main Skeena southward from this point to the 91st mile, where I had left it on my way north. To do this, however, under the circumstances, would have meant abandoning, for the present season, any possibility of exploring the East Branch to Fort Connolly, one of the objects of my expedition.

My explorations so far had established the fact that a railway line from Hazelton to the pass, now located between the Skeena and Stikine Rivers, must follow the main Skeena, the more direct route followed by the pack trail not being feasible. Hence the exploration of the river from the 143rd mile southwards, while necessary to obtain an idea of the approximate cost of construction over this section, was not absolutely essential to the work in hand. This portion of the river must be accepted in any case as part of the railway route northward from Hazelton, as mentioned above. However, before leaving the 143rd mile, I ascended a high mountain in this vicinity, and obtained from its summit a good view down the Skeena for some 20 miles southward. The river valley is quite direct, and timbered generally to the water, it did not appear to offer any serious obstacles to railway construction, and furthermore, my Indian guide, who had previously been over this part of the Skeena several times, told me that similar conditions obtained down to the mouth of the East Branch.

I then returned to the 91st mile on the main Skeena and on August 22 began the explorations eastward toward Fort Connolly, following the main river to the 116th mile. Here the East Branch, or Sestoot River, bringing westward the waters of Sestoot Lake and Bear Lake, joins the Skeena, which, veering around through 90 degrees from its previous east and west course, now turns abruptly north. Looking up the Skeena from this point, I observed for several miles, conditions somewhat similar to those noted at the 143rd mile, and I therefore feel quite confident that the section of the river between the 116th and the 143rd miles will not present serious difficulties to railway construction. Continuing eastward along the East Branch, I reached Fort Connolly at the lower or north end of Bear Lake, on September 6. I ascertained from Indians living here, that Sestoot Lake was distant some 60 to 70 miles by reall, and that this trail cuts across country avoiding the river entirely, and passing or high mountains on which freshly fallen snow could be seen at this early date.

To follow this trail to Sestoot Lake would give me no information regarding the country immediately adjacent to the East Branch, such information could only be obtained by cutting a new trail along the river, a task quite too great for the short part

of the season now available,

In Mr. Dibblee's report, previously noted, he states he had reached the 'head waters of the Skeena waters.' This no doubt means the waters of or leading into Sestoot Lake; as, on his line of explorations he could hardly meet any other of the Skeena waters. Therefore, although an examination of this remaining portion of the East Branch, viz., from the outlet of Bear Lake to Sestoot Lake, is necessary to a proper estimate of the approximate cost of construction over this section, it is not absolutely essential to the immediate results of the expedition. This portion of the East Branch offers the only route to the main Skeena from Sestoot Lake, and must be accepted in connection with Mr. Dibblee's line.

While camped at Fort Connolly, I examined the shores of Bear Lake to its upper or south end, also the divide at this point between the lake and the head waters of Driftwood River. These waters form part of a possible route from the Peace River to the main Skeena, via Omenica River, Fall River (west Branch of the Omenica) Hogem

Pass, Tacla Lake, Driftwood River, Bear Lake, and the East Branch.

Returning, I left Fort Connolly on September 9, and reached Hazelton on the 24th. Here I was detained a few days disposing of my pack train and outfit. From Hazelton I proceeded to Port Essington by canoe; the trip occupying three days, during which I made a cursory examination of the banks of the Skeena at a number of points, as we came down the river.

While waiting at Port Essington for a steamer to Vancouver, I went to Port Simpson, and had a look at its harbour as well as at the western portion of Work Channel, along which a railway line from the Skeena River to Port Simpson would necessarily have to be located.

Returning to Port Essington, I picked up my party and finally reached Vancouver

on October 12.

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From the time we left Hazelton until our return there, about 360 miles of actual explorations were made, and 530 miles travelled by trail; this latter, added to the distance to Hazelton from Ashcroft, 550 miles, makes 1,080 miles by trail. The canoe trip to Port Essington was about 150 miles; so we have a total of 1,230 miles of horse and canoe travel between Ashcroft, on the Canadian Pacific Railway, and Port Essington, on the Pacific coast, from May 20 to October 1.

With this preliminary report, I beg to file a small sketch map showing my explora-

tions of this season. (Scale of 10 miles to the inch.)

The whole respectfully submitted,

JOHN S. O'DWYER, Engineer in charge.

December 5, 1899.

Collingwood Schreiber, Esq., C.M.G.,
Cheif Engineer and Deputy Minister,
Department of Railways and Canals.
Ottawa.

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