

ESTIMATED COSTS

24' Grade with Graveling 20' Wide.
Based on Wages, Material, and Equipment
Costs as prevailing in April, 1940.

<u>"B" Route</u>	<u>Miles</u>	<u>Cost</u>
Section 1 - Vancouver to Prince George, B.C. via existing highways (Improvement and Revision).	525.5	\$4,710,000
Section 2 - Prince George to Yukon Boundary via Summit Lake (New Construction)	526	7,900,000
Sections 3, 4 & 5 - Yukon Boundary to Dawson	586	8,310,000
Section 6 - Dawson to Alaska Boundary via routes "A" and "A-1"	68	1,880,000
Total		\$22,800,000
Engineering & Contingencies (10% approx.)		2,200,000
Total - Vancouver to Alaska	<u>1705.5</u>	<u>\$25,000,000</u>
<u>"Central A" Route via Dawson</u>		
Section 1 - Vancouver to Fort St. James via existing highways (Improvement and Revision)	639.5	\$ 5,760,000
Section 2 - Fort St. James to Yukon Boundary (New Construction)	736	12,170,000
Sections 3, 4 & 5 - Yukon Boundary to Dawson	458	6,790,000
Section 6 - Dawson to Alaska Boundary via routes "A" and "A-1"	68	1,880,000
Total		\$26,600,000
Engineering & Contingencies (10% approx.)		2,600,000
Total - Vancouver to Alaska	<u>1901.5</u>	<u>\$29,200,000</u>
<u>"Central A" Route via Whitehorse and Kluane Lake to Mirror Creek</u>		
Section 1 - Vancouver to Fort St. James via existing highways (Improvement and Revision)	639.5	\$ 5,760,000
Section 2 - Fort St. James to Yukon Boundary (New Construction)	736	12,170,000
Section 3 - Yukon Boundary to Whitehorse	76	1,170,000
Section 4 - Whitehorse to Alaska Boundary at Mirror Creek via Kluane Lake	307	4,000,000
Total		\$23,100,000
Engineering & Contingencies (10% approx.)		2,300,000
Total - Vancouver to Alaska	<u>1758.5</u>	<u>\$25,400,000</u>

With the approximate cost data now available it is possible to weigh the merits of the different routes.

The main advantages of "B" route can be summarized as follows:

- (a) It is the shortest and most direct route through British Columbia and the Yukon to the Alaska Boundary. (1)
- (b) It is the least costly of any of the routes under consideration. (2)
- (c) No major construction difficulties are involved and the topography of the country traversed affords every opportunity for securing satisfactory grades and alignment.
- (d) It is conveniently located in regard to the air route from Edmonton to Fairbanks via Fort St. John, Fort Nelson, Watson Lake and Whitehorse and is crossed by the air route at Watson Lake. It is also crossed by the air route between Prince George and Fort St. John.
- (e) Climatic and ground conditions are quite favourable from the standpoint of air transportation along the entire route. Landing fields could be constructed without difficulty and numerous lakes and rivers are available for the landing of planes equipped with pontoons. A highway on "B" route would thus serve a safe and alternate air route from Edmonton or Prince George to the Yukon and Alaska.
- (f) It gives the opportunity for convenient highway connections with the Province of Alberta either by way of the Peace River through Hudson Hope or by way of the Monkman Pass route from the vicinity of Grand Prairie,

(1) 196 miles shorter than "A" route through Dawson and 53 miles shorter than "A" route via Whitehorse and Kluane Lake.

(2) \$4,200,000 cheaper than "A" route via Dawson, and \$400,000 cheaper than "A" route via Whitehorse and Kluane Lake.

Alberta. It also affords a possibility of a very practical and important connection from Edmonton, Alberta, to Prince George, B.C., via the existing Edmonton-Jasper Park Highway and by the proposed Jasper-McBride-Prince George Highway.

- (g) There are no high passes to be crossed. The highest elevations ⁽¹⁾ that will be reached north of Prince George are as follows:
- 2,315 feet on the direct route between Prince George and Finlay Forks;
 - 3,275 feet at Sifton Pass;
 - 3,150 feet on the Arctic Behring Divide just north of Finlayson Lake.
- (h) Precipitation is moderate, the maximum snowfall on the ground at any one time being 3 feet in the vicinity of Sifton Pass, and from 3 to 4 feet on other sections.
- (i) Construction will not be difficult, and average costs ⁽²⁾ per mile would be well within reasonable limits. Maintenance costs would also be reasonable.
- (j) It will have a comparatively long traffic season, approximately from the latter part of May to the end of October. It appears that the limitations of this route, in so far as the length of season is concerned, will not be any greater than connecting routes to the South.
- (k) It will serve Dawson and adjacent areas.
- (l) It will afford access - through the construction of lateral roads to the West - to areas of considerable promise from the standpoint of mineral development.
- (See information on Natural Resources.)

- (1) The highest point between Vancouver and Dawson, if the "B" route were adopted, would be on the Caribou Highway at 83 Mile House, where the elevation is 3,830 feet.
- (2) It is considered costs per mile would be lower than those on the Golden-Revelstoke Highway recently completed, on the basis of the same width of road.

While construction on "B" route would make accessible large hunting and fishing districts, as well as areas with considerable scenic value, these advantages are common to all routes under consideration and are not a particular feature of "B" route.

Certain disadvantages of the "B" route such as remoteness, inaccessibility for construction purposes, and lack of populated areas, are shared to a greater or less degree by all routes and are not confined to "B" route only.

From a casual study of the accompanying maps it might be thought that the "Central A" route would be more accessible from a construction standpoint since camps on the lakes sections can be serviced by water transport and the Dease Lake section serviced by supplies brought up the Stikine River to Telegraph Creek. On the other hand the southern section of the "B" route can be serviced over the Manson Creek mining road and the character of the terrain followed by this route permits the cheap and rapid construction of a tote or tractor road for the transportation of supplies. Very little side hill construction for tote road purposes will be necessary on the entire route and clearing is comparatively light. On the "Central A" route tote road construction will be slower and more costly. Climatic conditions are also more favourable for winter hauling of supplies than on the "A" route. Consequently if there is any advantage in so far as accessibility of construction is concerned it would seem to rest with the "B" route.

In so far as agricultural development is concerned the natural restriction north of latitude 56 is common to all routes.

Disadvantages that apply particularly to "B" route might be summarized as follows:

- (a) It is too far to the east to offer any opportunity of road connections with existing coastal settlements in British Columbia or in the Alaskan panhandle.

- (b) There is a serious local disadvantage in that it will not directly serve the Atlin and Whitehorse districts, both of which show considerable mining promise.
- (c) With the exception of trading posts at Finlay Forks, Fort Graham and Fort Ware, there is practically no white population on the route north of Prince George until the headwaters of the Felly River are reached in Yukon Territory.
- (d) There is little or no commercial timber along the route.

The advantages of "Central A" route are listed as follows:

- (a) It is nearer to the geographical centre of the Province and will give more convenient access to central areas than the "B" route.
- (b) It will serve a promising mineral area and open to the public an excellent tourist route from the scenic and recreational standpoint.
- (c) Its forest resources from the commercial standpoint are superior to those on the "B" route.
- (d) Revenues accruing to the Province as a result of its construction are potentially greater than from the Eastern or "B" route.
- (e) It will pass through Atlin and Whitehorse and directly serve the Dease Lake area.
- (f) It has the advantage of construction facilities afforded through the possibility of water transportation.
- (g) It will benefit more existing settlements in British Columbia than the "B" route.
- (h) It is nearer to the Pacific Coast areas than the "B" route. (See ahead).

Chief disadvantages of the "Central A" route appear to be as follows:

- (a) It is longer and more costly than the "B" route on either location that might be selected through the Yukon Territory and a longer construction period would likely be required.
- (b) Climatic conditions are not as favourable as on the "B" route either from the construction or maintenance standpoint, there being higher precipitation.⁽¹⁾
- (c) Elevations in British Columbia are higher than on the "B" route, the highest elevation being approximately 4,650 feet as compared with 3,273 feet on the "B" route.
- (d) Elevation and climatic factors tend to result in a shorter season.
- (e) It is not as favourable from a standpoint of air transportation as the "B" route and is further removed from the air route between Edmonton and Alaska.
- (f) The character of the country traversed will not permit grades or alignment of the same standard as the "B" route.
- (g) The alternative route in the Yukon Territory via Kluane Lake sidetracks Dawson.

The comparative proximity to the Pacific Coast of the "Central A" route as compared to the "B" route, has been listed as an advantage in the consideration of coastal connections, and in view of the interest of the United States Commission in lateral road connections between the route chosen and the panhandle of Alaska, and in view of the similar interest of Canadian coastal settlements, the Commission has given some consideration to this matter.

Connections to the west coast from the "Central A"

(1) See P.M. Menckton's 1941 report on depths of snow on this route.

route are only possible through river valleys. Apart from a highway down the Nass River Valley and which would yield precedence to a connection from Prince Rupert to Hazelton via the Skeena River, the only river valleys that merit any consideration are those of Bear River leading to Stewart, B.C., the Unuk River, the Iskut River, the Stikine River and the Taku River. A summary of the best information available to date on the possible routes leading from the "Central A" route along these rivers is given as follows:

Route via Upper Reaches Nass River, Meziadin Lake and Bear River to Stewart, B.C. on Portland Canal.

From Cabin 6 the north side of the Nass offers the best possibility by staying some distance back from the River and crossing the Taylor River well up. The Nass Valley is narrow with steep sides for some distance above the mouth of the Bell Irving. Also a steep rise from the Nass to the Meziadin Lake level. The trail from Meziadin Lake to Stewart skirts the hillside above a glacier for about two miles at the head of Bear River. This part of the trail is practically all blasted out of solid rock on a very steep hillside and it is understood slides make it difficult to keep open. This seems the only North Pacific Coast connection that has any promise of being feasible.

Unuk River Route

Local sources report that the Unuk River, from the standpoint of roads or trails, is as bad or worse than the other North Coast rivers. There is a trail from the Coast in Alaskan territory to the boundary. An officer of the Department of Mines and Resources, who has been along the headwaters of the Unuk River, states that even if the road could be carried past the boundary, it would lead nowhere, as the passes are all ice-filled, and can be travelled only on foot.

The high ranges which lie to the west of Bowser and Meziadin Lake are all to the east of the Unuk River.

Iskut River to International Boundary

This is an extremely difficult country. The upper part of the Iskut River has numerous canyons and is inaccessible to horses. Dominion officers who have been in the district state it is not a favourable route for a road.

Stikine River from Telegraph Creek to the International Boundary.

The river is navigable from salt water to Telegraph Creek from about the middle of May to the 1st of October each year.

Along the lower 60 miles of the river all the valleys on the West side and even some of the larger ones on the East side are occupied by glaciers that extend down nearly to the level of the River. The valley of the river at Telegraph Creek has been cut down to an elevation of 500 feet above sea level. In the wet belt below Little Canyon the river flats are a veritable jungle. The lower slopes wherever conditions are favourable are heavily clothed with a mature forest of spruce, balsam, and hemlock. In many places where the slopes are steep, the rock is entirely bare. Timber line in the wet belt averages 3,500 feet.

Above Little Canyon vegetation somewhat resembles that of the dry belt. The valley flats are slightly more open in the lower part of the river. Timber line in general is about 4,500 feet.

The slopes on either side of the river rise very rapidly to the mountain peaks, which are in many cases higher than 5,000 feet.

From Telegraph Creek south to Shakes Creek it is possible to use horses to some extent since there are few trails on the lower wooded slopes, and above timber line the surface over large areas is too rugged to permit of travel by this means.

Taku Route

The upper portion of the Taku River, called the

Nakina, is inside the coast range and it would probably be possible to build a road even as far down the Taku as King Salmon Creek. From there on it would be practically impossible. Any flats along the river are flooded when the Taku goes on the rampage as it does at times of high water. The walls of the valley are very precipitous in some places rising directly from the water to heights of over a thousand feet. Survey parties in this area were strongly advised by the people in the country not to attempt any work in the lower valley until late in the season due to the danger from avalanches and snow-slides. They report these were very frequent.

In the lower reaches of the Taku River and up to the mouth to the Tulsequah River the river-bed is featured by a very gradual gradient, there being a rise of only 70 feet from sea-level in this distance of 26 miles. At normal water the river in this stretch is consequently not excessively swift and can be easily navigated by small river-boats equipped with 6-horsepower outboard motors.

Above the Tulsequah River the course of the stream rises more steeply and the flow is consequently swifter. It is said to be navigable by small 16-foot outboard-motor powered boats, with the aid of poling and lining in the more rapid stretches, as far as the confluence of the Nakina and Sloko Rivers, 31 miles above the mouth of the Tulsequah River.

From the above information it is apparent that lateral connections from the "Central A" route to the Pacific Coast are not favourable from the standpoint of reasonable construction or maintenance costs. Even if expensive surveys revealed locations on which a road might be built, the cost of construction and maintenance, combined with a short season, would in no way be justified by the advantages that might be gained.

Settlements on the Pacific Coast, both in Canada and Alaska, now have the benefit of first-class water

transportation over the entire year, and there seems no good reason for the construction of costly connection to the Alaska Highway route that would not improve present transportation facilities.

The advantage of the "Central A" route through being nearer the Pacific Coast than the "B" route is not established when the facts are known.

YUKON TERRITORY

In the preliminary report of the Commission submitted in April, 1940, brief reference was made to routes of the highway through the Yukon Territory. As mentioned at that time a large amount of information on possible routes through this area was already available from Federal sources. This was supplemented by reconnaissance work undertaken in the 1939 season from Whitehorse to the Alaska boundary via Kluane Lake and River and by extensive reconnaissance survey work undertaken in the Yukon Territory in the 1940 season by Engineer J.H. Mitchell. (See Appendix for Mr. Mitchell's report on reconnaissance surveys from the Alaska Boundary to Dawson and Carmacks, Y.T. and on routes from Carmacks to the Yukon boundary on Atlin Lake.)

The information now available indicates clearly the routes that will likely be followed.

On the eastern or "B" route the location through the Yukon would, as previously mentioned, traverse the valley of the Frances River and Frances Lake to the Behring Divide north of Finlayson Lake and thence down the Pelly River to the vicinity of Pelly Crossing. From that point, while several alternative routes offer themselves, the general course of the highway would be northerly via Reid Lakes to McQuesten and then to Dawson via either Flat Creek and the Klondike River, or by promising routes via Radford and Bonanza or via Caribou and Hunker.

Mr. Mitchell's reconnaissance report favours a route designated as "B" and "B-1" between the Pelly River and Dawson. This route approximates the location of the existing trail from Pelly Crossing to the vicinity of Stewart River and then turns westerly to Reid Lakes. Lake Creek valley is then followed to McQuesten and from that point the route follows successively the valleys of Slough Creek, Flat Creek, and the Klondike River to Dawson.

From Dawson northwesterly to the Alaska boundary a good deal of reconnaissance work was undertaken. Several routes were investigated including those via Fortymile Creek valley, via the existing Glacier Creek road, via Swede Creek valley and via Bell and Sixtymile Creeks. The most satisfactory route appears to be that from Dawson via Bell Creek and over the divide to the Sixtymile valley and following the latter to the Alaska boundary. The estimated distance on this route is 68 miles. This route, and other routes, is described in detail in the reconnaissance report.

On the "Central A" route the entrance into the Yukon Territory would be made on the east bank of Atlin Lake. From that point a route following the east side of Little Atlin Lake and of Marsh Lake and down the Lewes River to Whitehorse, is the shortest and most direct. While it by-passes Carcross it is less costly because of lower mileage. A location via Carcross would shorten road connection between Atlin and the Yukon-Whitepass railway by 22 miles, but this local advantage does not justify abandoning the shorter and cheaper Marsh Lake route.

From Whitehorse the main highway towards Dawson would follow generally that of the existing winter road or trail to Carmacks. No difficulties in construction are indicated. North of Carmacks at Five Finger Rapids, the highway would cross the Lewes River continuing along the east bank to Minto. From this point the favoured route would swing northeasterly to the Pelly River.

A suitable bridge site is available down river from Pelly Crossing just above the confluence of Grayling Creek and Pelly River and from here the route to Dawson and the Alaska boundary would follow that already described as part of the "B" route.

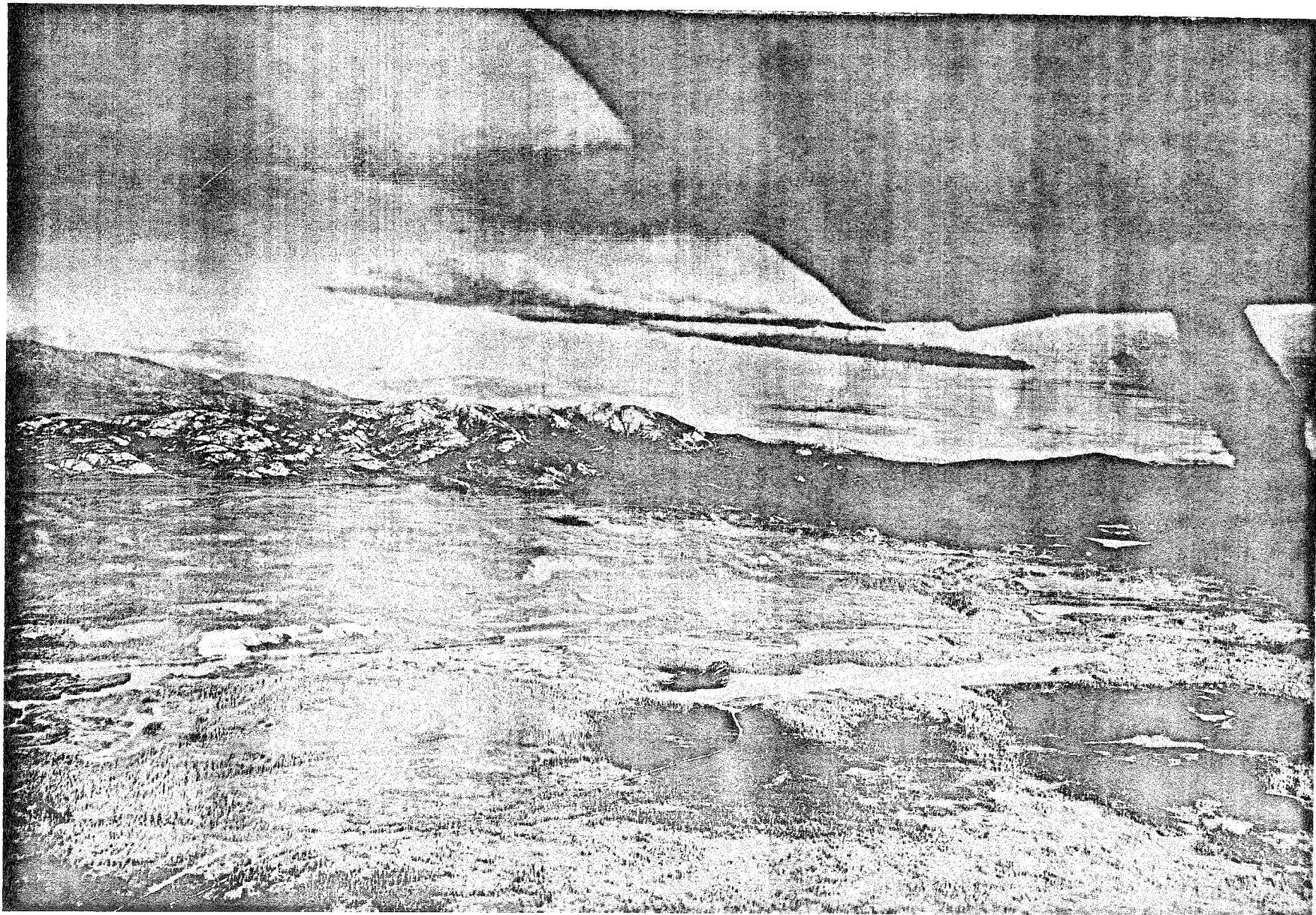
An alternative location is possible from Five Finger Rapids via Tatchun Lake, Tatlmaln Lake, and Mica Creek to Granite Canyon on the Pelly River, some 16 miles above Pelly Crossing, and which is a first-class bridge site. However, this route is 22 miles longer than the route from Five Finger Rapids bridge site via the Lewes River and Minto, and the latter is consequently considered the better location.

Whitehorse-Kluane Lake Route

The "Central A" route through the Yukon Territory offers an important alternative from Whitehorse via Kluane Lake and River to the Alaska boundary and which has already been referred to. (See also appendix report of R.M. Martin, 1939).

Reconnaissance surveys show that this is the shortest route through the Yukon Territory itself to the Alaska boundary. It cuts across the southwest corner of the Yukon Territory and the mileage is much less than that of the route through Dawson, the estimated cost being proportionately lower. It does not, however, compensate for the much greater mileage of the "A" route in British Columbia as compared with that of the "B" route. As previously mentioned the Kluane Lake route required careful consideration because it is favoured by the United States Alaska Highway Commission. On this route the Alaska boundary is reached in the vicinity of Mirror Creek and which, members of the latter Commission state, is a very favourable point for connection with the Alaska section of the road coming up the Tanana River valley from the Richardson Highway. From Whitehorse to the Alaska boundary via Kluane Lake the estimated distance is 307 miles. From Whitehorse to the Alaska boundary via Dawson the estimated mileage is 450. On the Kluane Lake route, elevations are

White Horse, Y.T., from
2000' up (from southwest).



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moderate and from the information obtained by reconnaissance surveys are slightly below a maximum of 3,000 feet.

On the route via Dawson, elevations are also comparatively low, the only section where they might be a factor being between Dawson and the Alaska boundary. However, the maximum elevation on the route favoured is on the divide between the headwaters of Bell Creek and the headwaters of a tributary creek of the Sixtymile River, and Mr. J.H. Mitchell in his reconnaissance report considers this elevation is below 3,000 feet. Consequently there seems no advantage to either route in so far as elevations are concerned.

In regard to mileages in territorial Alaska the estimated length from the Alaska-Yukon boundary at Mirror Creek on the Kluane Lake route to Fairbanks is given by the United States Commission as 330 miles, of which 100 miles (along the Richardson Highway) is already built. On the Sixtymile Creek route west of Dawson a rough estimate of the Alaska mileage (by scale) is 320 miles, of which 100 miles (along the Richardson Highway) is already built. A member of the United States Alaska Highway Commission has supplied an estimated cost for the 230 miles of new road required in Alaska from Fairbanks to the Yukon-Alaska boundary at Mirror Creek of \$2,760,000. The United States Commission has not yet supplied any estimated cost for the route from the Alaska boundary at Sixtymile Creek to the Richardson Highway.

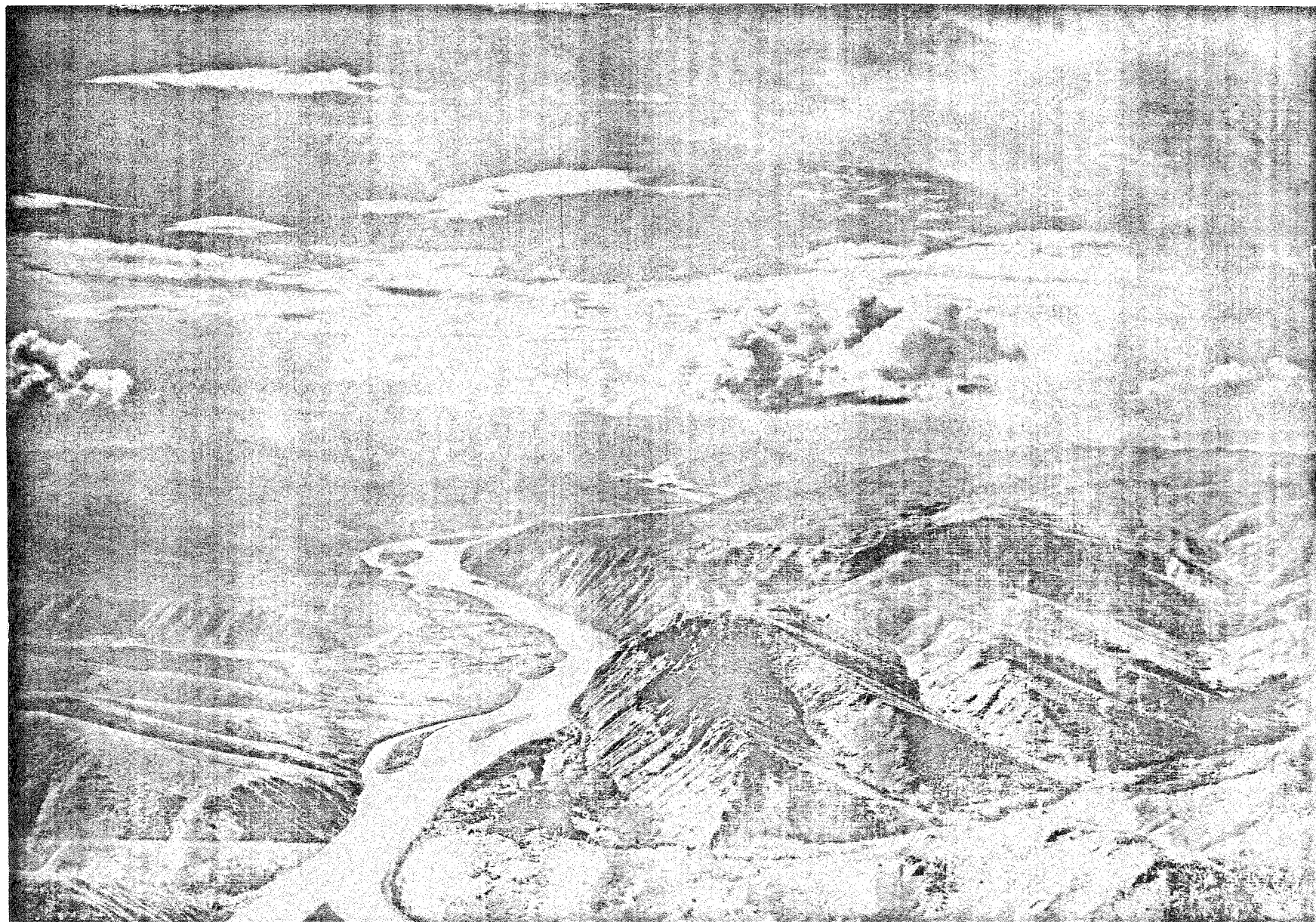
The Whitehorse-Kluane Lake-White River route crosses the southwestern corner of the Yukon and if adopted, the latter territory, which is under Dominion control, would have comparatively little benefit from the Alaska Highway except through the construction of secondary roads. Construction on this route would mean that Dawson and all the productive mining areas in the Dawson, Mayo, and other districts, would have no convenient connection with the International Highway. These areas would still have to depend on summer navigation on the Yukon River or

Five Finger Rapids, Lewes
River, from point one mile
south.



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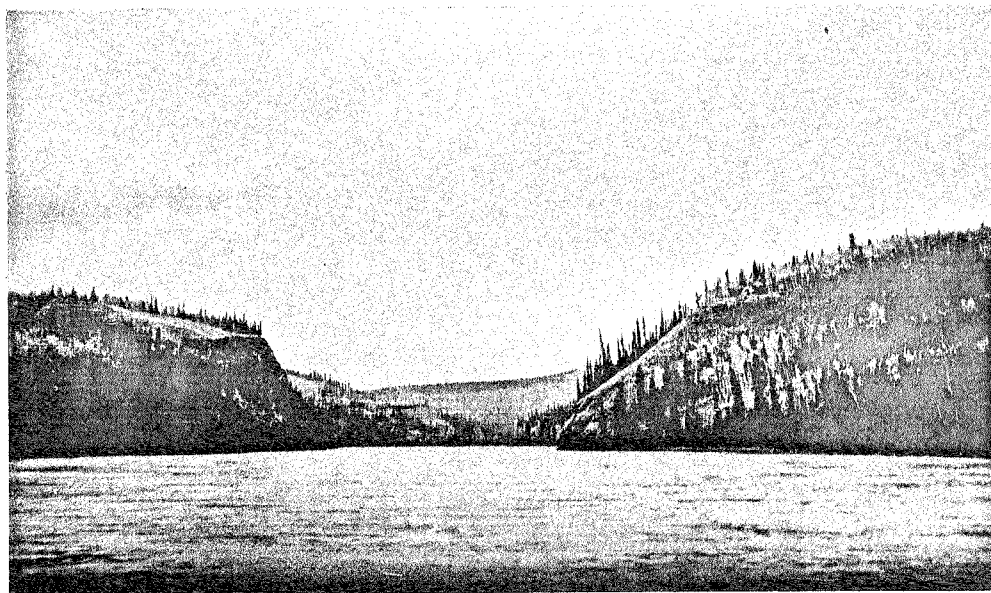
Looking down Yukon River
41 miles south of Stewart
River and showing bluffs
on north bank.



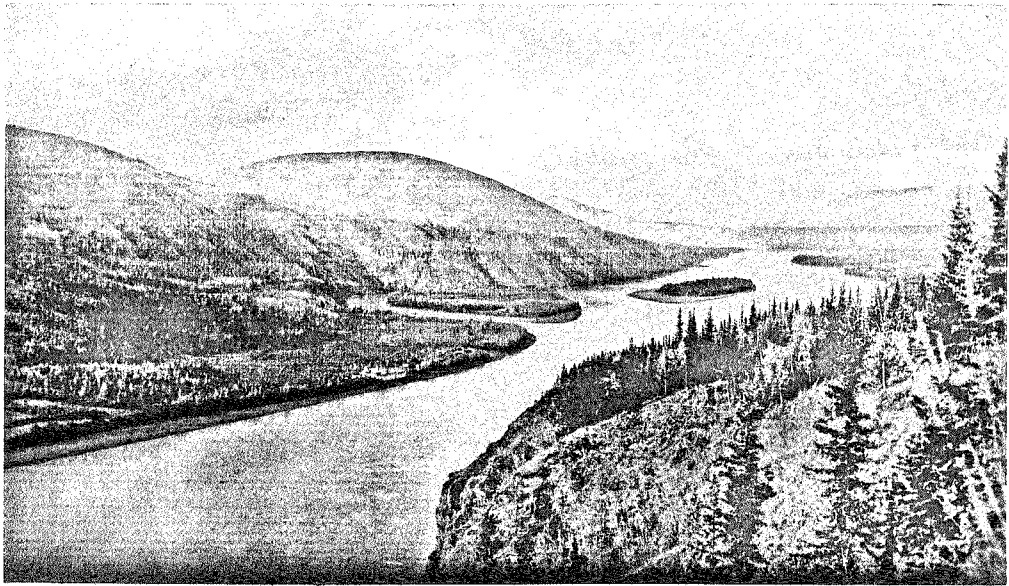
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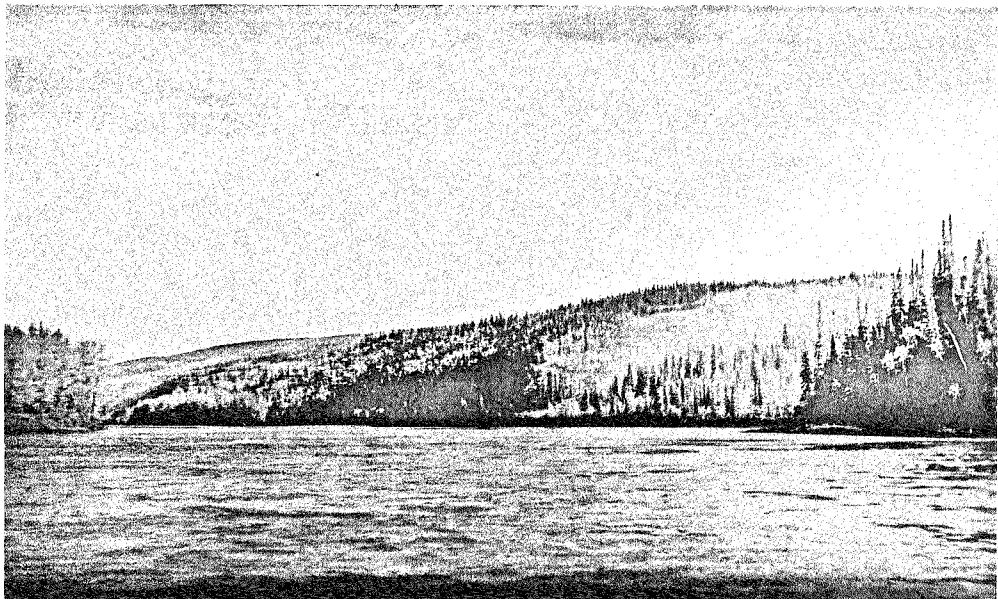
Panoramic view of Reid Lakes and Lake Valley
Watercourse looking southwest.



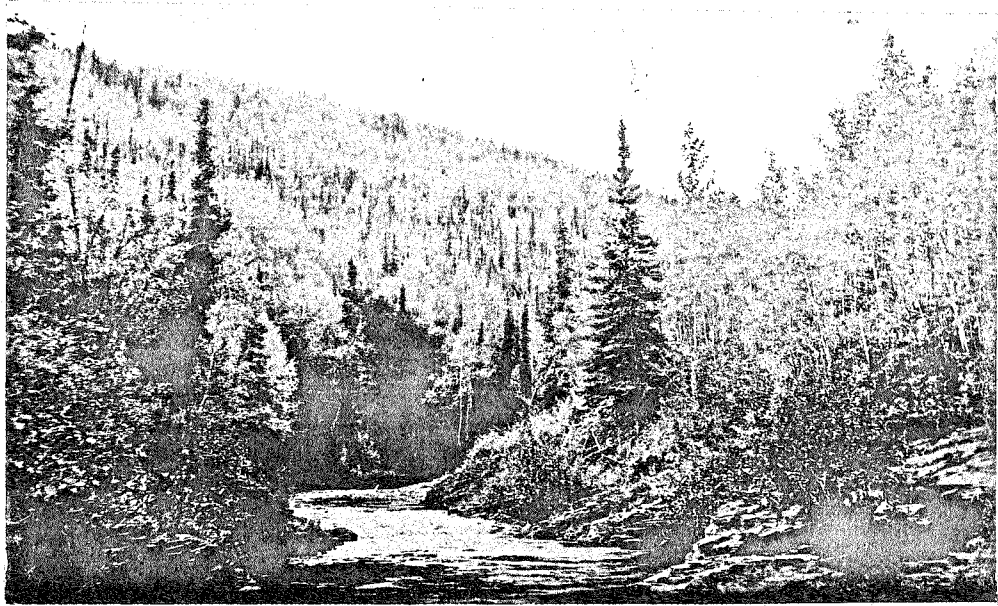
Looking up the Pelly River to Granite Canyon
from a point off the mouth of Needlerock Creek.



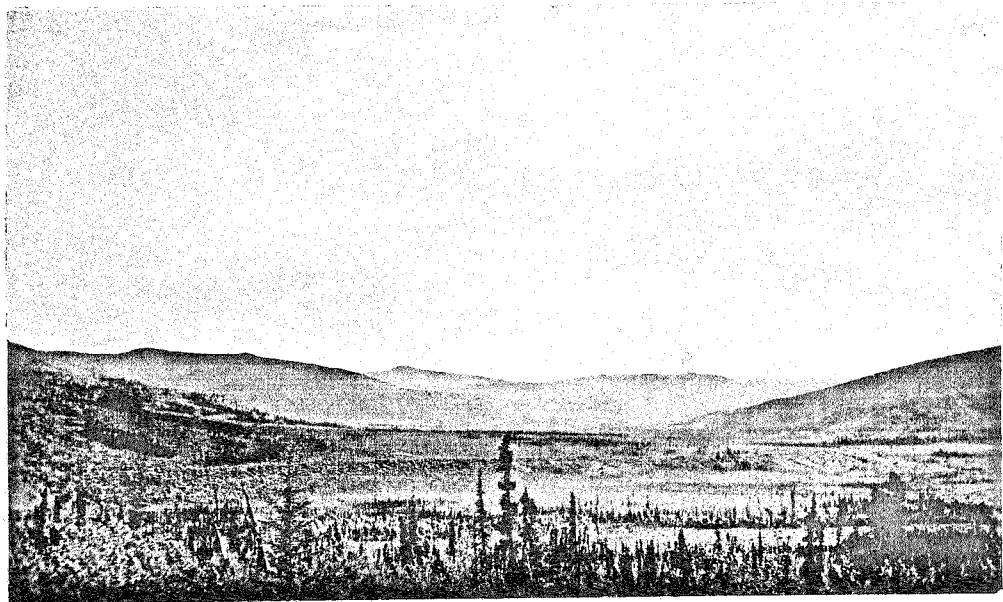
Panoramic view of the West bank of the Yukon River from a point on slide above the City of Dawson.



Looking up the Stewart River, 4 miles above the mouth of Lake Creek. Ice Box Rapids. Proposed Bridge Site.



Looking up Swede Creek.
Possible bridge site 1,000 feet up Swede Creek
from the mouth of the Middle Fork.



Looking east down 60-mile River from a point on
60-mile trail, above the mouth of Glacier Creek.

on the eventual construction of secondary roads to connect with the main highway.

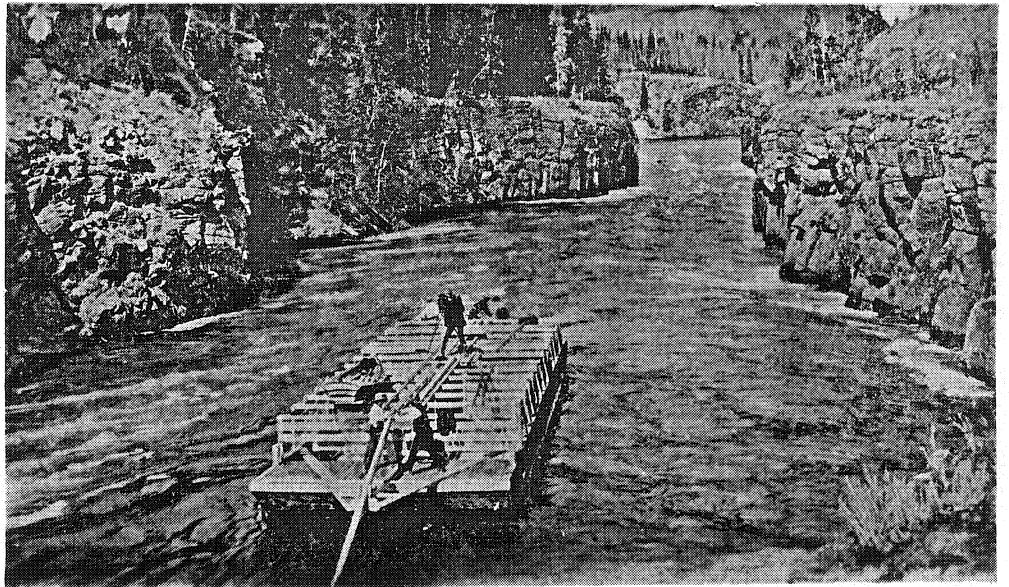
Dawson, Bear Creek, Hunker Creek, and the Klondike River are all names that represent world famous placer-mining areas. Dawson particularly is intensely interesting from the tourist standpoint and for this reason alone has a strong claim for the international route. At the same time if the Dawson route is selected the main highway can pass through the more settled sections of the Yukon Territory without any increased mileage or loss of alignment advantages. The route through Dawson is further a natural location if the "B" route, and which follows the Pelly River, is adopted.

Regardless of what arrangements may be arrived at for the financing of the Alaska Highway some 85 per cent of the distance will be in Canadian territory and the responsibility of its maintenance will largely rest with Canada. At the same time Canadian interests require that where the highway can be routed to better advantage for the development of natural resources, this should be done provided the route as a whole will not suffer through inferior grades and alignment or by increased mileage and cost.

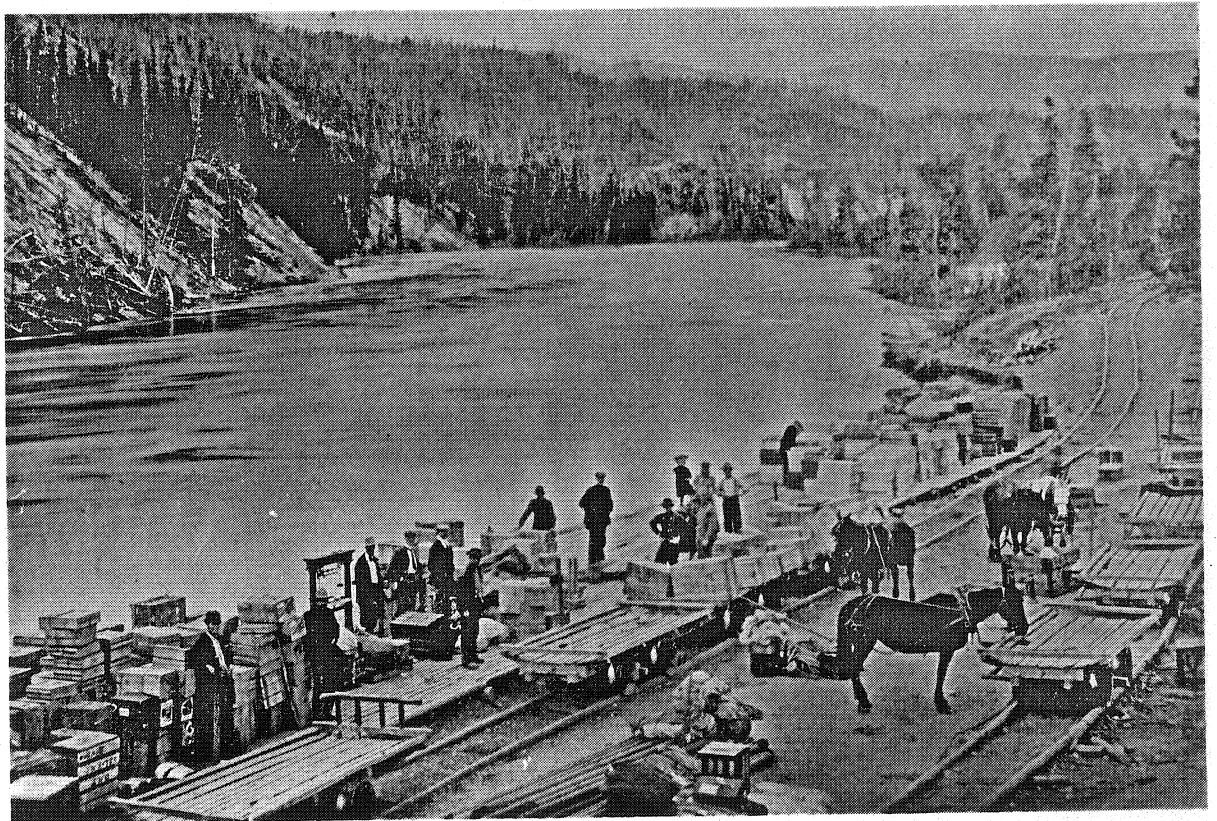
In so far as the Yukon Territory is concerned there seems no doubt that the Kluane Lake alternative, which is available on the "Central A" route, would benefit the Yukon as a whole to only a small degree unless extensive secondary roads were built. The cost of these to Canada would be far greater than the expected saving to the United States through the adoption of the Kluane Lake location.

In view of the short length of the highway in Alaska there can be no serious disadvantage to that territory if Canada selects a route that will make connection with the Alaska section of the road at a point west of Dawson.

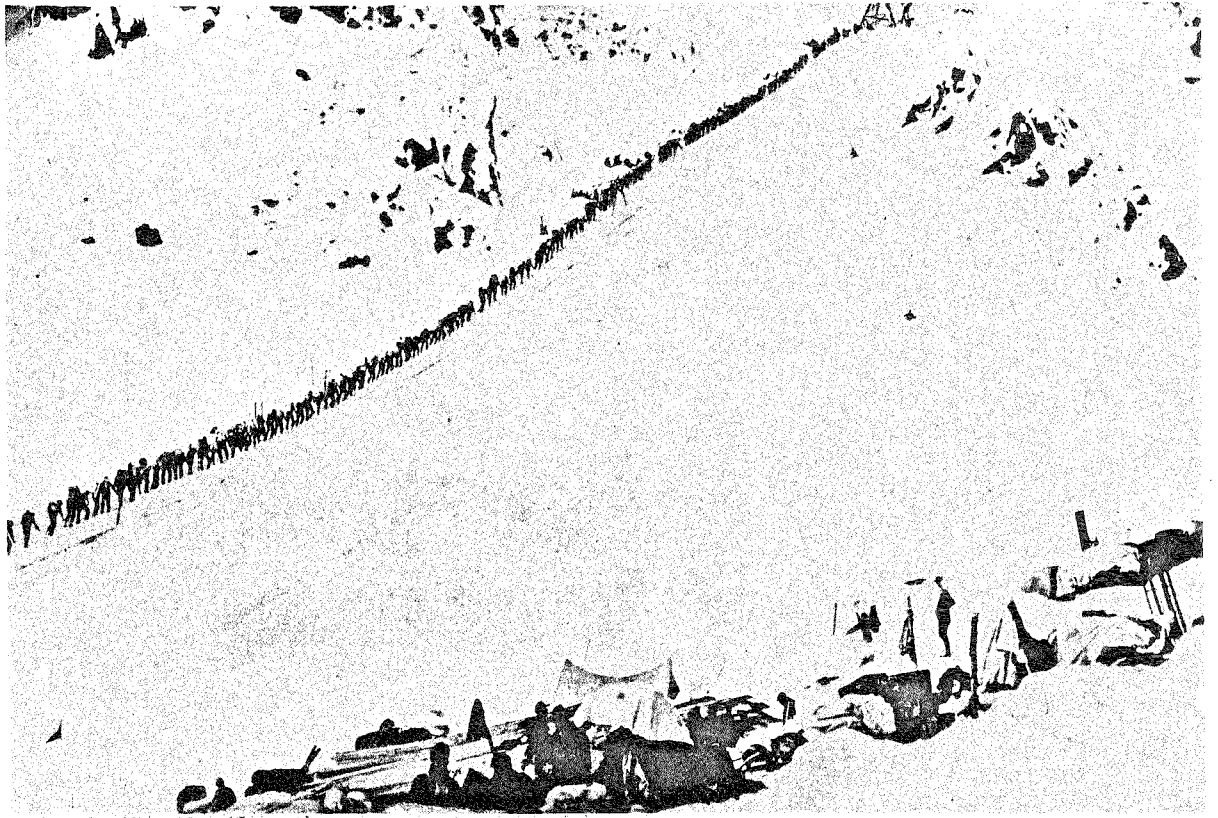
These points were discussed at the joint meeting of the two Commissions in Washington in March, 1941, and the



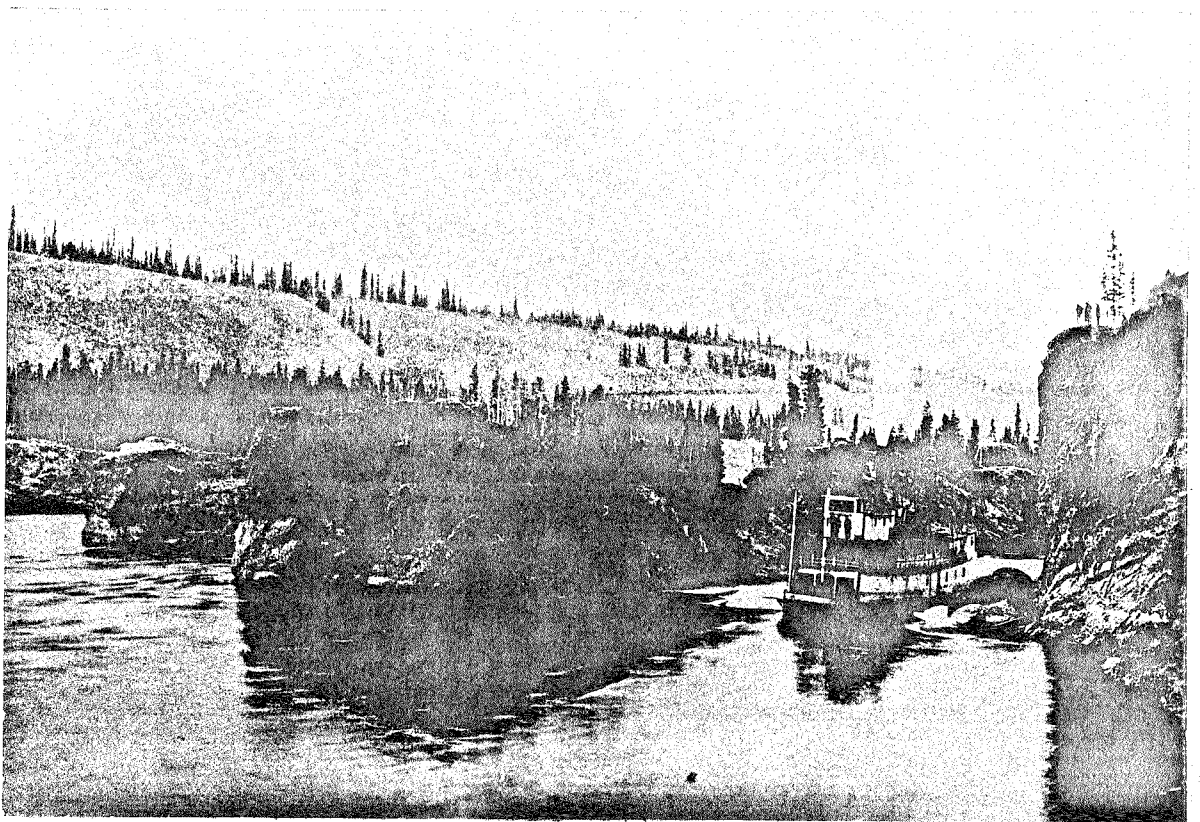
Miles Canyon, Lewes River - 1898.



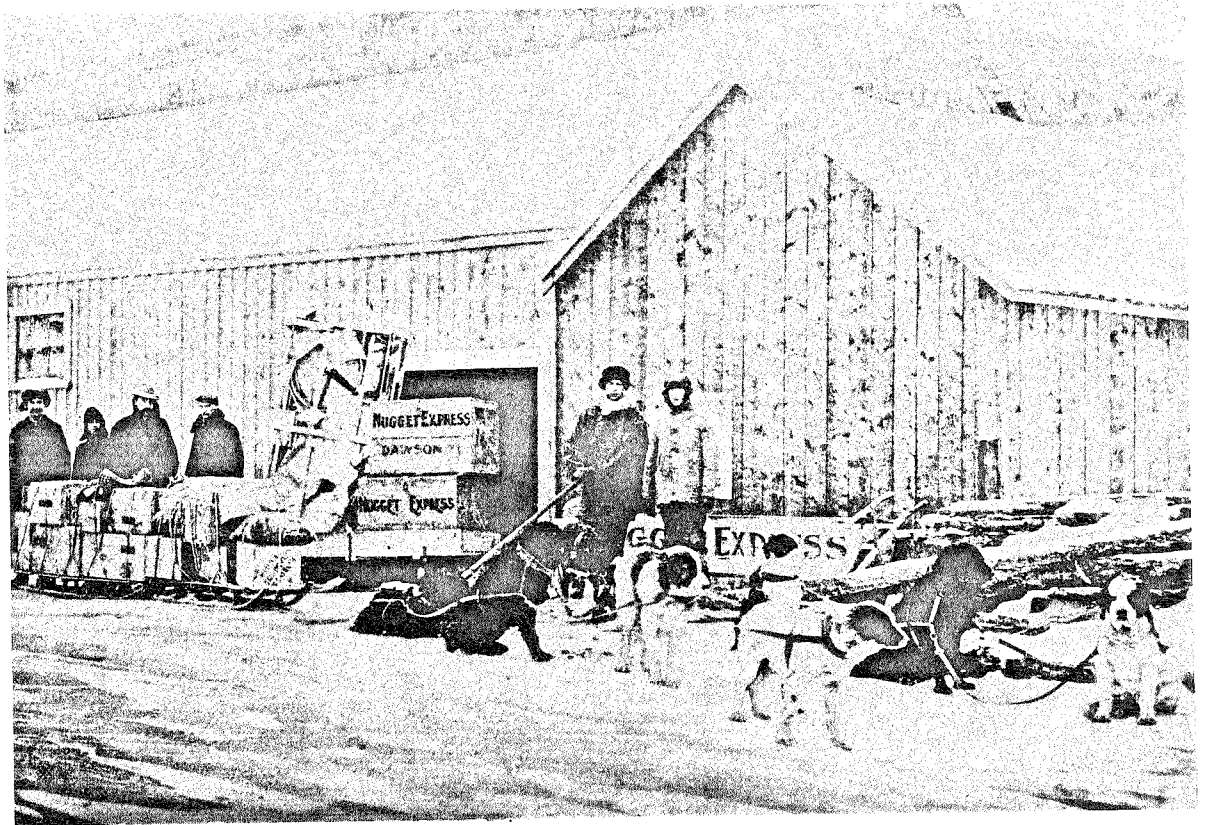
Freighting around Whitehorse from Miles Canyon - 1898.



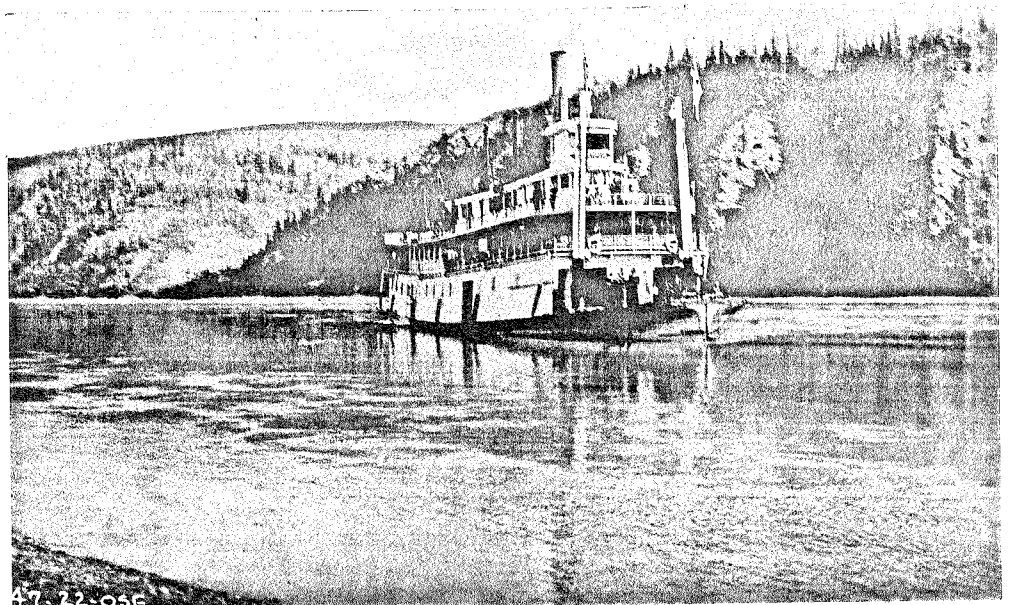
Ascending Chilcoot Pass in May 1898.



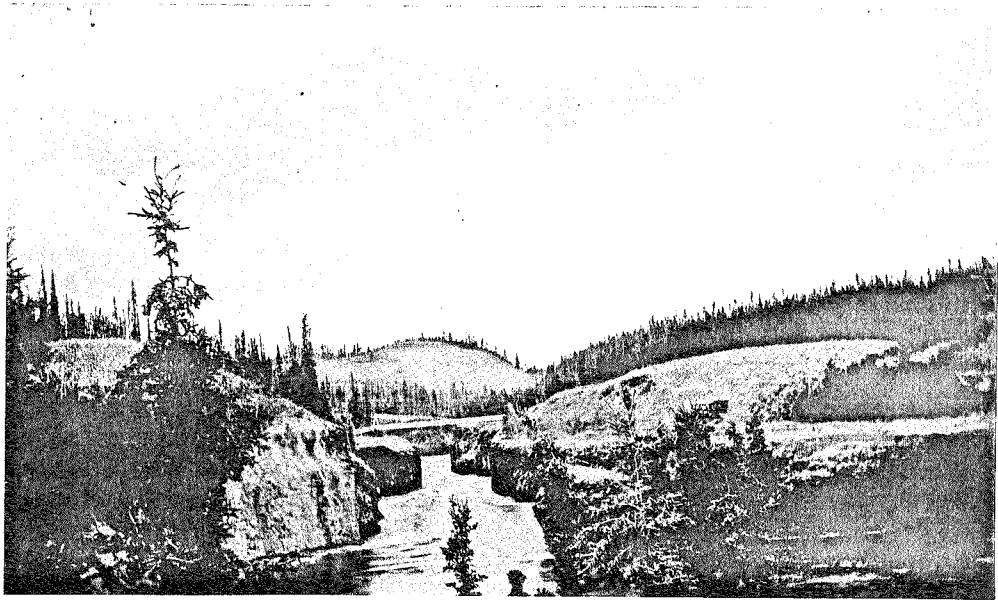
Five Fingers Rapids on Lewes River - 1899.



The old Nugget Express arriving in Dawson - 1899;
Rates 4 cents a pound in or out of Dawson.



Steamer "Whitehorse" on Lewes River near
Carmacks - 1922.



Footbridge and Canyon on Lewes River near
Whitehorse.



Tailings on Klondike - Mouth of Bonanza Creek, 1922.

members of the United States Commission expressed full appreciation of the Canadian viewpoint. At the same time they asked that, in making its 1941 report, the Commission set down the facts in regard to the Kluane Lake route and mention the preference of the United States Commissioners for it. This has been done. However, under all the circumstances, the Canadian Commission has decided that Canadian interests would be much better served by routing the Highway through Dawson if the "Central A" route should be adopted.

A general statement on highway construction in northern areas is appropriate at this point. While the information collected shows that there is no difficulty in construction through the Yukon Territory and that ample construction facilities are afforded by existing waggon roads or trails, construction in the northern section of the Yukon will follow a somewhat different procedure than in southern areas because of frost conditions. It is considered in the Yukon Territory that from the construction standpoint the perpetual frost line runs east and west through Yukon crossing and that north of this line construction methods must be modified to suit frost conditions. These circumstances have been given due consideration in estimates of costs through the territory, which are comparatively high in view of the moderate amount of grading that will be required per mile of road.

GENERAL

In reviewing available routes of the British Columbia-Yukon-Alaska Highway the Canadian Commissioners have given consideration to the general problem of servicing an area or a country by highways. The Alaska Highway opens the broadest fields in so far as this feature is concerned. A route through the approximate geographical centre of Canadian territory is possible and, by some diversions and meanderings, a large amount of territory can be directly tapped in which

the natural resources show considerable promise. On the other hand a direct route is possible which will afford low mileage and result in low cost. Areas not served by this route can be connected with it by secondary lateral roads.

The type of route first mentioned involves some sacrifice of the road standard, as regards grades and alignment. It also requires the investment of a large sum of money per mile to service areas where potential resources have not yet been proven. On the other hand a direct route involves no assumption of profitable development of any area, and areas that prove themselves later on can always be connected to the main route by secondary roads.

These factors indicate that from the engineering viewpoint and from the standpoint of an International Highway, the best route is that which is the shortest and most direct, and which at the same time affords reasonable access to adjacent territory. This view is strengthened when the direct route is also the least costly. On this basis the Eastern or "B" route has the most advantages.

As shown on the table of estimates this route involves 1180 miles of new construction at an estimated cost of \$18,090,000, and a total cost, including necessary improvements to existing roads, of \$22,800,000 from Vancouver to the Alaska boundary, with a total distance of some 1705.5 miles.

The addition of ten percent for engineering and contingencies brings the total estimated cost to \$25,000,000.

ECONOMIC ASPECT

The Order in Council of December 22, 1938, appointing the Canadian Commission provided that the latter "Inquire into the engineering, economic, financial, and other aspects of the proposal to construct the said highway to Alaska".

Supporters of the project have stated that the highway is justified from both the standpoint of military defence and from the standpoint of economic development.

The Commission does not intend nor is it authorized to dwell on the matter of the Highway from the military standpoint. This question is one that will no doubt be dealt with from time to time, as necessary, by the Joint Defence Board of Canada and the United States.

In regard to the economic aspects this is a wide question that possibly could not be definitely answered until the Highway was built and in use.

Information given in the Appendix of this report indicates the natural resources of the areas in northern British Columbia and the Yukon that will be traversed by the Highway. The extent to which the development of these natural resources will be encouraged by the construction of the Highway depends upon their own potential value. Certainly the building of the road will stimulate to a great degree investigation of forest, mineral, and water-power wealth in the Pacific northwest. At the same time since the Highway will connect territorial Alaska with the main area of the United States it will prove a tremendous factor in encouraging and developing tourist traffic from the Pacific States, not only through British Columbia and the Yukon but throughout all the western provinces. The new highway will make available unlimited recreational areas that will attract tourists of all classes and ages. New hunting and fishing areas will be made easily accessible and new scenic areas will come within range of all motorists in North America.

In its excellent report of 1938 the Inter-departmental Committee at Ottawa came to the conclusion that the construction of the Highway at that time was not justified from the economic standpoint. This considered opinion has been carefully weighed by the Canadian Commission. The latter agree with the findings of the Government departmental committee to the extent that it may not be possible to prove now in so many figures that the construction of the Highway is justified from the economic

standpoint. The Canadian Commission points out, however, that experience in the past has shown how difficult it is to estimate in dollars and cents the economic advantages that may accrue from the construction of a new highway. The Queen Elizabeth Highway in Ontario, the Banff-Jasper Highway in Alberta, and the Kingsgate-Kootenay Park Highway in British Columbia are striking examples of recent investments that are far exceeding in benefits the results anticipated. Such transportation channels, by their very availability, attract new business and create their own advantages.

The estimates show that the cost of the highway completed to the standard decided upon, but exclusive of paving, will range from \$25,000,000 to \$30,000,000. It might assist in getting a true perspective of the cost of this project by giving some figures of highway expenditure in Canada. For example the Province of Ontario in the past four years has made the following expenditures on provincial roads. The figures given include provincial subsidies to county and township roads:

1937-38.....	\$43,703,000
1938-39.....	42,000,000
1939-40.....	31,900,000
1940-41.....	26,300,000

In addition there have been substantial expenditures each year by the counties and townships.

The Province of British Columbia which has a large road mileage, much of which is in fairly mountainous country, has made the following expenditures on main roads only:

1936-37.....	\$2,200,000
1937-38.....	3,900,000
1938-39.....	3,900,000
1939-40.....	5,220,000.

Proponents of the project consider that it is on a sound economic basis and that it would be more favourably situated in this respect than other more costly projects that have been developed in Canada. They point out that main highways once built are never abandoned, although they may be relocated or improved.

Period of Construction

Under normal conditions the economic time to be allotted for construction purposes is usually arrived at by setting an approximate balance between cost of equipment necessary for quick construction and the extra overhead costs involved over a long construction period, all being subject to any urgent need of the project. In the case of the Alaska Highway, five or six years would be reasonable from the construction standpoint and would also ensure fairly prompt completion of the road. If an emergency condition arose the construction period could be greatly shortened. In the latter case the "B" route has considerable advantage over the "Central A" route since it is not only shorter but its topographical features lend themselves more readily to quick construction of a preliminary nature.

CONCLUSIONS

After careful consideration of the information obtained on the ground by members of the Commission and its engineers, as well as of the facts and opinions brought out in public hearings and in briefs filed on behalf of various interests, all of which are embodied, in whole or in summary, in this Report, the Commission has agreed upon the following conclusions:

From the towns of Prince George, Fort St. James and Hazelton, B.C.. all at present connected with Vancouver and the international boundary through the provincial highway system, three main routes suggest themselves for the extension of that system north through British Columbia and the Yukon Territory to Alaska. The characteristics, advantages and disadvantages of these three main routes, known as the "Coast" Route, the "A" Route and "B" Route, as well as of various alternatives of parts of these routes, have been investigated by the Commission as carefully as circumstances would permit. They have been described in some detail in the earlier parts of this report.

Briefly stated, the Coast Route would run from Hazelton or Kitwanga by way of the Nass and Bell-Irving Rivers

to the Upper Iskut River, and via Kinaskan and Eddontenajon Lakes to the Stikine Valley. Thence by either the Tahltan and Sheslay Rivers or by the Tuya River to Nahlin, Nakina and Atlin. From the Telegraph Creek-Dease Lake area to Atlin and the Yukon Boundary and beyond, the Coast Route and "A" Route would be the same. It is the conclusion of the Canadian Commission - and we are informed that the United States Commission has reached the same conclusion - that the Coast Route would, because of topographical and climatic difficulties, be impracticable for the purposes of the Alaska Highway.

The "A" Route, if starting at Hazelton, would follow the Skeena, Klappan and Stikine Rivers to the Tanzilla River Valley. An alternative would start from the vicinity of Burns Lake and follow the Babine River Valley to the Skeena. Another alternative would start from Stuart Lake, at Fort St. James, and following Trembleur and Takla Lakes continue north to the Skeena River Valley. All these alternative routes meet west of Dease Lake, and from there again alternative routes would be available to Atlin. Similarly, from Atlin to Whitehorse and beyond, while the general route as far as Whitehorse presents no particular problem, beyond there alternative routes must be considered to Dawson, or an entirely different route is practicable from Whitehorse to Alaska via Kluane Lake.

The "B" route starts from Prince George, and by way of McLeod Lake, Finlay Forks, Sifton Pass, the Liard River and Frances Lake, runs north to the height of land and then down the Pelly River to the vicinity of Pelly Crossing, from which point it runs northerly and then westerly to Dawson. Continuing westerly from Dawson it strikes the Alaska Boundary some 220 miles from the Richardson Highway. Several alternatives of this route have been described in the earlier part of this Report.

Generally speaking it appears from the information before the Commission that the "B" Route would present

few engineering difficulties, would not be expensive either to build or to maintain, would give convenient access to feeder highways from Alberta through the various mountain passes, would tap valuable natural resources, and would lead directly to Dawson and by an easy engineering route to the Alaskan boundary. It would have the additional advantage of offering practicable connections with the Air Routes now under construction from middle-western airfields through Edmonton to Fort St. John on the Peace River, and from the Pacific Coast through Prince George and Fort McLeod to Fort St. John, and thence to Fort Nelson, Whitehorse, Dawson, and Fairbanks in Alaska.

The "A" Route, in any of its alternatives, would be interesting and attractive to tourists from a scenic point of view. It would offer unusual possibilities for big game hunters and fishermen, would give even more convenient access to valuable natural resources than the "B" Route, and would serve in varying degrees the interests of existing communities such as Hazelton, Telegraph Creek, Atlin, Carcross and Whitehorse and, through the medium of the White Pass and Yukon Railway, similar communities in southern Alaska.

It should be particularly noted that both the "A" Route and the "B" Route would be entirely practicable from an engineering point of view.

The Commission finds that the cost of a highway completed to the required standard, but exclusive of paving, would range from \$25,000,000 to \$30,000,000. The Commission thinks it important to emphasize the fact that all estimates of costs given in this Report are based on reconnaissance surveys, and are therefore necessarily only approximate. Before construction could begin location surveys would be necessary to decide on the final location of the road where certain alternative routes are available and to confirm and enlarge information already obtained.

As proposed in the Commission's Preliminary Report,

field work was carried out in the season of 1940 by both Dominion and British Columbia engineers, whose Reports will be found in the Appendix. These Reports substantially confirm the Commission's expectations as to the characteristics of the various "A" Routes in British Columbia, and of practicable routes in the Yukon.

While, as stated above, the Commission finds that, with the exception of the Coast Route, all routes mentioned in this Report are entirely practicable from an engineering point of view, and each has important advantages as a highway through British Columbia and the Yukon to Alaska, a careful balancing of advantages and disadvantages leads the Commission to the conclusion that the "B" Route would best fulfil the purposes of such a highway.

The Commission desires to record its appreciation of the willing cooperation of all interested parties in bringing together the available material bearing upon practicable routes for the proposed highway. Particularly the Commission wishes to express its gratitude to the Government of British Columbia for placing the maps and engineering data in its possession at the disposal of the Commission and for authorizing, at considerable expense, additional field surveys by its engineers. The Commission also wishes to express its thanks to the Department of Mines and Resources, Surveys and Engineering Branch, for the reconnaissance survey work of its construction engineers, and for undertaking the great task of checking reports, estimates of cost and mileage, and preparing the maps that accompany this report. All this work has been of the greatest

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assistance in the preparation of the Commission's own report
to the Canadian Government.

Dated at Ottawa this 18th day of October 1941.

W. A. Stewart

(Chairman).

H. J. Tomblay

J. W. ...

Robert ...

J. W. Spencer
