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"A Closed Book": The Canadian Pacific Railway Survey and North-Central British Columbia

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This paper reviews the publications of the Canadian Pacific Railway Survey (CPRS) concerning north-central British Columbia during the 1870s. Students of the CPR have subordinated the geographical investigations in the reports to an account of the "Battle of the Routes," Pierre Berton's apt, if melodramatic, label for the acrimonious dispute among surveyors and politicians who championed particular routes across the Pacific province.

The reports contain valuable geographical information. They allowed the federal government to discard, quite properly, both the Bute Inlet route and the northern routes for a transcontinental railway. The investigations of the CPRS engineers demonstrated that both these alternatives had higher first costs than the Burrard Inlet route. Their evaluations of local resources and prospective termini also revealed that the traffic potential of the alternative routes could not override the higher costs. Later railway projects for the northern routes drew on both the engineering and traffic investigations of the CPRS.

Introduction

In his 1912 account of the inception and construction of the Grand Trunk Pacific Railway (GTP) as it was building across north-central British Columbia, company publicist F.A. Talbot offers the following evaluation of geographical knowledge about the region before the advent of the railway. "Until the Grand Trunk Pacific surveyors penetrated this country, it was practically a closed book. Scarcely anything was known concerning its topography, natural

resources, or possibilities" (Talbot, 1912: 204). Such a view allowed GTP President Charles M. Hays to defend his company's huge expenditure on what he described as an exhaustive survey to locate the "shortest, most direct and economical line" through the mountains to the coast (National Archives of Canada [NAC], Laurier Papers, 118716-8, Hays to Laurier, 29 Jan. 1907). According to the publicist, "no less than forty possible 'passes' [were] discovered, followed, investigated, and charted on paper, together with a mass of details concerning the advantages and disadvantages of each." This effort was crowned by Hays' "little bit of finesse" in convincing the rival Canadian Northern, as well as the public, that the GTP would traverse the Rocky Mountains via the Pine Pass, while "a highly competent [survey] party was secretly plotting the way through the Yellowhead Pass" (Talbot, 1912: 170-73).

Those unfamiliar with the practice of the GTP have taken Talbot's claims at face value. In the standard account of the development of Canadian surveying, D.W. Thomson accepts the tally of forty passes investigated and praises the GTP decision to traverse the Yellowhead as "an exercise in military-like deception." (Thomson, 1967: 241-42) Though students of the GTP have largely discarded Talbot's sunny view of the enterprise, they have not rejected his claim that the company entered *terra incognita* in the Pacific province. Canadian National Official Historian G.R. Stevens, for example, though a harsh critic of the GTP, follows the publicist on this head.

> Beyond Edmonton the Grand Trunk Pacific entered on a different scene.... As a result unpredictable factors multiplied.... Costs of construction thereafter could be little more than assumptions; the difficulties of transporting supplies, encounters with unexpectedly perverse or obdurate rock structures, variations in the rise and fall of rivers, were among the many factors that might upset the most careful calculations (Stevens, 1962: 185).

A more recent popular study returns to an uncritical acceptance of virtually all the publicist's claims concerning the GTP survey (MacKay, 1986: 76-78).

This paper challenges Talbot's influential conclusion concerning the lack of geographical data on the region before the construction of the GTP. It does so by reviewing the explorations of the Canadian Pacific Railway Survey (CPRS) in north-central British Columbia during the 1870s. It contends that the CPRS produced a wealth of engineering, geological, botanical, and meteorological studies on the region bounded by Bute Inlet and Port Simpson on

the Pacific coast and by the Yellowhead Pass and the Peace River Valley on the Alberta border. The data generated by the CPRS for the prospective Bute Inlet and "northern" routes allowed the federal government to evaluate them properly and discard them. The paper then suggests that the CPRS information was precise and accurate enough for engineering calculations of the day by indicating its incorporation in the proposals, plans, and profiles of later projects.

CPRS Reports: Historiography and Intent

One must first explain why the CPRS data has been largely ignored or discounted. Given the dearth of surviving documents concerning north-central British Columbia's economic development after Confederation, Engineer-in-Chief Sandford Fleming's seven voluminous CPRS reports, published between 1872 and 1880 with additional relevant documents scattered in dominion and provincial sessional papers, represent a rare source that is not only substantial but also accessible.[1] But, as Donald Meinig notes in a recent overview of the development of the continent's railway system, both the route across British Columbia and Pacific terminus of the "original plan" were ultimately discarded (Meinig, 1999: 330). This broad dismissal passes over the CPRS role in locating almost half the route across British Columbia, from Port Moody to Kamloops along the Fraser and Thompson Rivers, on which the Canadian Pacific Railway (CPR) was actually constructed during the 1880s.[2] Moreover, it ignores the prediction of a CPRS engineer that a constructed line to Burrard Inlet would require an extension from a temporary terminus at Port Moody to a permanent terminus at Coal Harbour, which ultimately became the site of Vancouver.[3]

Second, hostile comments about the survey during debates in the House of Commons and in the report and testimony of the Royal Commission on the Canadian Pacific Railway (1882) exaggerated CPRS shortcomings and conflicts. As most accounts of the survey reiterate, north-central British Columbia received extended scrutiny in part because competition between Vancouver Island and mainland interest groups for the projected railway's Pacific terminus made difficult the public declaration of a surveyor's recommendation of any route that eliminated one group's touted harbour. Students of the CPR have consequently subordinated the geographical investigations in the reports to an account of the "Battle of the Routes," Pierre Berton's apt, if melodramatic, label

for the acrimonious dispute among surveyors and politicians who championed particular routes across the Pacific province (Skelton, 1916: 116-20; Gibbon, 1935: 157-64, 184-86; Berton, 1970: 208-18, 266-73; Lamb, 1977: 36-39; Green, 1993: 85-99). Only Harold Innis, the most "geographical" historian of the CPR, foregoes an opportunity to rehearse this intriguing, but ultimately marginal, tale (Innis, 1923: 87, n. 1).

That two dominion governments made four "final" decisions on the Pacific terminus certainly underlines the political import of the survey. After the federal Conservative government designated Esquimalt as the terminus for the second time in April 1879, the Liberal opposition leader charged that the constituency of Victoria had returned Prime Minister J.A. Macdonald the previous year "for the purpose of bringing the route by Bute Inlet to Esquimalt.... No doubt, he accepted the nomination and election with the intention of complying with the request of his constituents." Yet the two most explicit political advocates of property holders on Vancouver Island who entered the route debate offer no new geographical information on the merits of the Bute Inlet line they espoused (Canada, House of Commons, 1877: 1646-51; Tolmie, 1877). Their stale rehearsals of data, frequently lifted from CPRS reports, might have delayed a route decision. They did not distort it.

More significant is the dispute between CPRS engineers. Marcus Smith, chief of the British Columbia section and then acting chief engineer, became the most important advocate of the Bute Inlet route, first to the Yellowhead and then to the Pine Pass. Foregoing an analysis of his work, Berton focuses on Smith's denunciation of the reports of his superior as "an apology for a course predetermined by the [Liberal Prime] Minister [Alexander Mackenzie]" and of his colleagues for conducting "sham surveys" in the north (Berton, 1970: 269-70). Smith's intemperate remarks in private correspondence with political supporters of the Bute Inlet route who might welcome such vituperation have distracted students from his valuable professional work that provided the data for the government to discard his chosen route.

A recent study by a historical geographer escapes this distracting narrative, but offers little illumination on the import of the surveys. As an example of "summarizing the recommendations as to the principal problems facing the location decisions," J.A. Vance, Jr. quotes verbatim portions of the 1874 report concerning prospective routes across the mainland of the Pacific province and the Strait of Georgia. Such an approach may suggest the "wealth of information" the surveys produced; it does not demonstrate their pivotal

role in the government's decision concerning the route (Vance, 1995: 257-62).

The CPRS reports were created to provide information, and justification, for the federal government's selection of a transcontinental railway route. It is only in 1877, faced with a decision on the British Columbia section of the route after six years of surveying, that Fleming attempts to set out the elements that determine selection. He offers two types of factors that play a role. Unfortunately under the first main head of "engineering features," his list of elements besides length (distance) is confusing. He later contends that "the route which will in the highest degree admit of low gradients, easy alignment, and permanently firm road bed, at the least annual capital outlay, is the one most capable of transporting cheaply." Here is Fleming's clearest description of first cost, the expenditure necessary to construct, but not to operate and maintain, a railway. His second main head of "traffic" includes elements such as local resources, through traffic, and terminus (location) that determine returns after completion (Fleming, 1877: 58-9, 63).

Marcus Smith elaborated the relationship between the two groups of factors. In his testimony to the CPR royal commission, he stated "the particular duty of an engineer is to get the physical features of the country, to ascertain them and exhibit them by maps and profiles so as to form an idea from which he can get the quantities to form an estimate of the cost of constructing a railway across the country." He added, however, that "in exploring [the engineer] is expected to get all the information he can as to the soil..., timber, produce." Inspection by "officers of the Government," i.e., specialists, would provide additional information on the geology and botany of a region. "They all have a certain bearing on the location. It sometimes would be advisable to construct a line that would cost a good deal more on account of the country having more resources" (Canada, Royal Commission, 1882: 1599). There is unfortunately no accepted formula for valuing one group of factors against the other. An examination of American practice in locating transcontinentals suggests that the Pacific railway surveys of the 1850s emphasized the engineering features that determined first cost. By the 1870s and 1880s, surveyors for the Northern Pacific and Great Northern increased the importance of factors concerning traffic (Corkran, 1968). The frequent comments in American reports, even in engineering documents, on the economic potential of the countryside, and the inclusion of a series of articles on particular resource inventories suggest that the CPR Survey followed a

continental trend in locating railway routes (Goetzmann, 1959: 275).

Context: Designating Gates and Termini

To understand the importance of the CPRS in route selection, one must first review the decisions of the federal government concerning the British Columbia route. The CPRS commenced work to locate a railway route from the Rocky Mountains to a suitable terminus on the Pacific coast during the summer of 1871 and continued for eight summers. During that period it mounted 78 expeditions in British Columbia, several of which were linked, for an estimated cost of $1,765,326. More than half the expeditions (41) investigated sections or elements of routes north of Burrard Inlet. (Canada, Royal Commission, 1882: 100)

The findings of the first summer's work led Fleming to recommend the Yellowhead Pass, which the government designated as the "gate" to the Pacific province on 2 April 1872. (Fleming, 1872: 11) With the east end of the British Columbia line "fixed," all surveys from prospective termini on the coast were directed toward it for five years.

Though the Burrard Inlet route that was ultimately chosen had been explored in 1871, more surveys during the next four years investigated sections of the "central" Bute Inlet route, from its head at Waddington Harbour via the Hamathko River and then three alternative routes to Tete Jaune Cache. (See Figure 1.) This focus stemmed in part from the government designation of Esquimalt as the Pacific terminus on 7 June 1873. If the western leg of the transcontinental were built north from the island naval base, Bute Inlet offered the shortest ferry crossing to the mainland. Smith even considered bridging the Strait of Georgia with a series of spans, but discarded the notion because of technical difficulty. More important was the omission of this 249-mile extension "west" of Waddington Harbour in comparative cost estimates of the time.

Fleming claims that a canvass of British naval officers in 1876 brought him to the realization that Waddington Harbour was unacceptable even as a mainland forwarding point for a Vancouver Island terminus. This information led him to return to the Burrard Inlet route, which he recommended to the government for its "leading characteristics" early in 1877 (Fleming, 1877: 63). To support this preference, he mounted a complete instrument survey of the route in the summer. The Liberal government did not accept this recommendation, however, and narrowed prospective routes

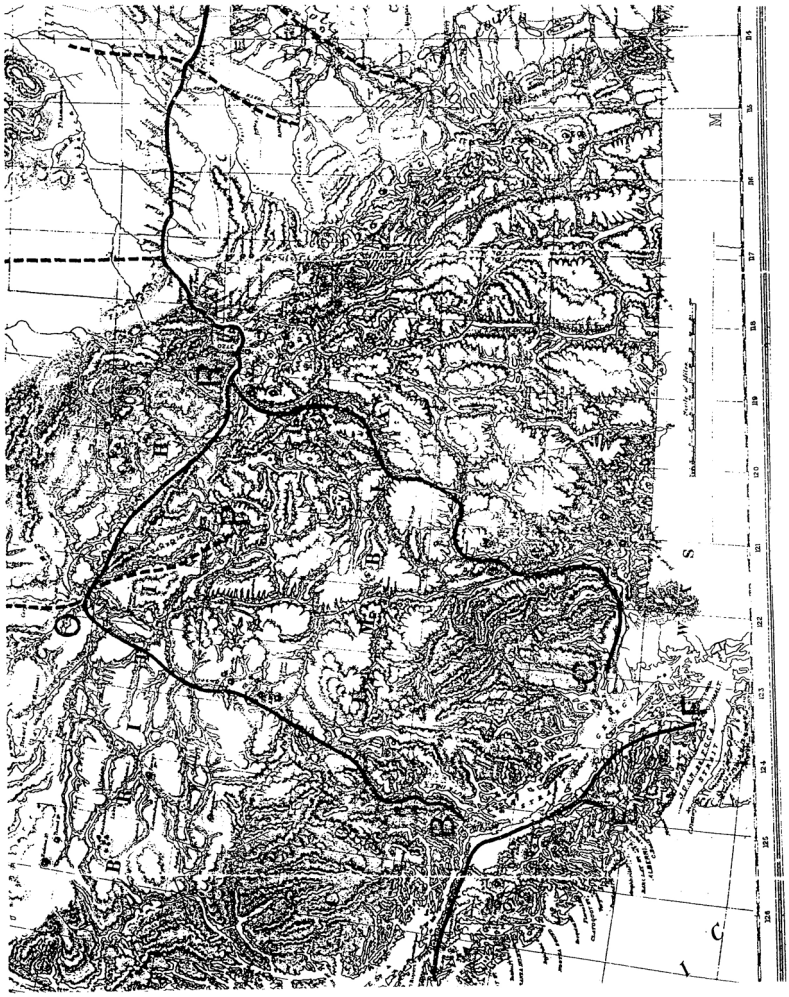

Figure 1 CPRS Plan of Bute Inlet Route (R-O-B) with extension to Esquimalt (F) and Burrard Inlet Route (R-I-C), 1878. Source: "Map, 26 April 1878," in [Fleming, S.] Canadian Pacific Railway Company, and S. Fleming. (1878). *Reports and Documents in reference to the Location of the Line and a Western Terminal Harbour (1878).* Ottawa: MacLean, Roger & Co. facing page 101.

to Bute Inlet and one other which had lower estimated first costs than Fleming's choice. Only when Fleming presented a comparison of instrument surveys of both routes that estimated the cost of the

Burrard Inlet route as less than the Bute Inlet mainland section alone did the government "define" (adopt) in May 1878 the Burrard Inlet route (British Columbia, 1881: 274).

While Macdonald was attacked for catering to Vancouver Island interests by designating Esquimalt as terminus in 1879, he actually only cancelled a Liberal annulment (British Columbia, 1880: 339). It is more significant that he did not tamper with the adoption of the route to Burrard Inlet. This maneuvre allowed the government one more season to investigate the suitability of Port Simpson as a terminus and the resources along a northern route. As soon as surveyors reported the distance of the route and the absence of any unusual resource that might cause traffic potential to override engineering cost, the government confirmed the Burrard Inlet route (4 Oct. 1979) and let construction contracts in the Fraser Canyon early the following year.

Bute Inlet Route

Besides an appointment as chief of all British Columbia operations, Marcus Smith was commissioned in 1872 to take as his "special charge the surveys deemed necessary between Victoria, Bute Inlet and the Fraser River" (Fleming, 1874: 105). His early description of Bute Inlet is poetic.

> It pierces directly ... between walls of granite rocks, bold and rugged in outline, rising into domes 3,000 to 4,000 feet in height and solitary snow capped peaks, 5,000 to 9,000 feet high, connected by broken sierras, altogether forming a scene of gloomy grandeur probably not to be met with in any other part of the world. ... The first view of these [mountains] might well cause one to despair of getting a railway constructed, but a careful study of the plans will shew that this can be achieved (Fleming, 1874: 109).[4]

The spectacular scenery represented the route's most difficult engineering feature, the rapid rise of the Homathko River Canyon to 1650 feet in the first 15 miles "east" from Waddington Harbour. Even with a great number of tunnels totalling more than three miles, Smith acknowledged that the line would still have a heavy gradient of more than 2%. Fleming commented that this gradient would require special pusher engines, presumably more expensive than standard motive power (Fleming, 1874: 197).

By the end of 1875, Smith had shifted the central section of this route northward through the Nazco and Chilako River Valleys to

tie the Homathko to the South Fork of the Fraser (Upper Fraser) near Fort George. The entire Bute Inlet route had been resurveyed (traversed by instrument surveys at least twice). This allowed Smith to reduce tunnels to two miles and the 2% gradient to 13.25 miles. His schedule of quantities (specific amounts of different types of excavation necessary to construct the line) allowed a precise estimate of first cost of $33,000,000, based on the standard value of work on the Intercolonial Railway in the Maritimes (Fleming, 1877: 28, 217, 62). Smith then offered a section by section comparison of the engineering features of the Bute Inlet route with the Burrard Inlet route that favoured the former but did not include comparative cost estimates.

In 1875, the Geological Survey of Canada (GSC) began a series of complementary explorations in the province. The instructions of the secretary of state in 1871 indicate that the purpose of GSC activity was to gather data for the selection of a railway route.

> It is of course desirable and important that you should first ascertain the general geological features and the useful minerals which may be found on and in proximity to the several lines which will be explored by engineering parties, and on one or another of which the future Pacific railroad will be located (Geological Survey of Canada, 1872: 17).

During the 1875 and 1876 seasons, GSC geologist George M. Dawson explored the Chilcotin, Nazko, and Chilako Rivers in tandem with CPRS expeditions. His studies on minerals and agriculture in British Columbia that appeared in the 1877 CPRS *Report* pointedly did not discuss the traffic potential of either along the Bute Inlet route (Fleming: 1877, 218-53). This did not prevent Smith from using some of Dawson's data the following year when he explicitly stated his preference for the Bute Inlet route over the Burrard. "On the whole, this route appears much more favorable than the other. As a colonization line it would bring a large quantity of land in to cultivation and afford much better accommodation to the gold mining district of Cariboo" (Fleming,1878: 46).

That Smith's engineering work was reliable is indicated by its incorporation in the arguments of those who opposed his conclusion. Fellow Engineer H.J. Cambie used it to show that the Bute Inlet first cost exceeded that of the Burrard Inlet route, whose first cost had been reduced by $4 million after the instrument survey. Cambie did not dispute Smith's calculations. (See Figure 2.) He simply pointed to the poor harbour and heavy gradients that Smith had recognized. With the extension to a permanent terminus at

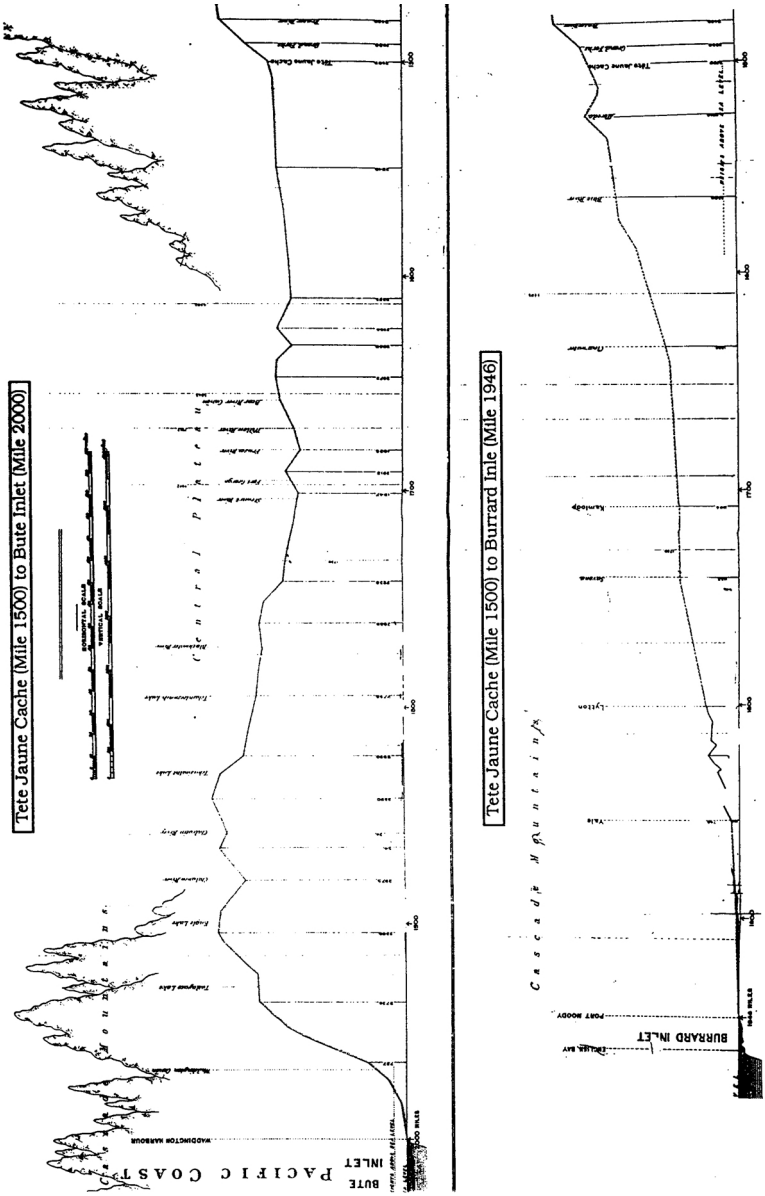

Figure 2 CPRS Comparative Profiles of Bute Inlet Route and Burrard Inlet Route, 1877
Source: S. Fleming, *Report on Surveys and Preliminary Operations of the Canadian Pacific Railway up to January 1877* (Ottawa, 1877), page 89.

Esquimalt factored into the comparison, the Bute Inlet route exceeded the Burrard Inlet one by 287 miles and $20 million (Fleming, 1878: 57).

Later Projects

Though the federal government used Cambie's comparative estimate of first cost to discard the Bute Inlet route in 1878, the information that the CPR surveys produced was used again 17 years later. In 1889, a syndicate calling itself the Canadian Western Central Railway Company obtained a land grant from the British Columbia government of 20,000 acres per completed mile to build a line "from a convenient point near the eastern boundary of the Province to the northernmost terminus of the Esquimalt and Nanaimo Railway" (BC, *Statutes,* 1889, chap 20, p. 117). After several extensions for commencement of construction had produced little activity from the original concern, a more aggressive group sought the land grant by apparently subsidizing a provincial survey of much of the Bute Inlet route in 1895. Besides the "Northwest Colonization Survey," a report for the government on the economic potential of the corridor, the British Pacific Railway Company also produced a detailed plan and profile of its projected line. While a 180-mile section of the line departed from the CPRS route from the Nazko River to the junction of the Goat and Fraser Rivers to traverse Barkerville, as the land grant stipulated, the rest of the 477-mile line followed the earlier survey. A comparison below of the profiles for the common sections suggests that the new concern closely followed, if it did not copy, the CPR Survey. The leader of the 1895 survey for both the government and the British Pacific, H.P. Bell, had worked on the Bute Inlet route for Smith during the 1870s. A GTP vice-president later observed that Bell had acquired a "vast amount of knowledge" concerning northern British Columbia, which his company had spend a great deal of money to acquire by other means (British Columbia Archives [BCA], GR 441, v. 91, f. 475/08, F. Morse to R. McBride, 29 March 1908). That the government did ultimately not accept the British Pacific proposal does not diminish the importance of the CPR Survey in its creation.

It appears that the CPRS plans of the Bute Inlet route were used once more by William Mackenzie and Donald Mann in their attempt to claim the Canadian Western Central land grant in 1902 for a subsidiary of the Canadian Northern Railway. Though plans and profiles of this project have not survived, the company's contract with the government removed the "detour" to Barkerville

from what appears to be the CPR Bute Inlet route (British Columbia, SP 1903, p. 785, Agreement, 1 March 1902). And Edgar Dewdney, who had opposed the Bute Inlet route in the 1870s, suggested that the new line that he now supported simply followed the route of the CPRS. "In '71 [sic] the route now proposed had been surveyed. From that date onwards a number of surveys in that country had been made, and there was no sort of possible doubt as to the route to be taken by the [Canadian Northern]. He knew every mile of the country through which the line would pass" (*Victoria Daily Colonist*, 24 March 1902, p. 3). Though public anger at the province's land grant policy forced the cancellation of the agreement, the demise of the project does not diminish the role of CPRS information in its creation.

"Northern" Routes

In 1872, Fleming instructed Charles Horetzky and John Macoun to make a reconnaissance of the Peace River country and search for passes that would allow the railway to reach the Skeena River (Fleming, 1874: 45). Horetzky explored part of the route connecting Pine Pass to Bute Inlet, but his pamphlet published in 1874 offers little information (Horetzky, 1874: 196-209). Macoun produced the first botanical report on the Peace River country. He located an area of deep fertile soil and claimed that coal was present throughout the Peace River country. Using limited data, Macoun also claimed that temperatures from Dunvegan to Fort St. John were as mild as those in Belleville, Ontario. He did note that surprisingly little wheat farming was carried on by white settlers already in the region (Fleming, 1874: 48, 92-99).

A.C. Selwyn, the director of GSC operations in British Columbia, decided to explore the Peace River country in 1875 on the strength of Macoun's 1873 CPR report. The geologist followed his instructions to "pay attention to the nature of the soil, the vegetation, the quality and kind of timber, the distribution of plants and animals, the character of the climate" (GSC, 1872: 16). Although not an engineer, Selwyn offered the following advice to the railway surveyors concerning the selection of a route:

> Taking Edmonton...and Fort George...as the initial points, it will, I believe, be found that by Pine Pass the line could not only be carried almost the whole distance through a magnificent agricultural and pastoral country, but that it would be actually shorter than the Leather [Yellowhead] Pass route, and that it would probably not present any greater engineering difficulties. (GSC, 1876: 68)

Geologists as well as engineers became proponents of particular routes.

The CPRS also moved northward with the GSC. Having recommended that the Bute Inlet route be discarded, Fleming proposed a detailed exploration of an "extreme northern route" in February 1877, in part to forestall criticism that he had joined the party of lower mainland interests. In a letter to Prime Minister Mackenzie, the engineer set out the merits of this route.

> It lies almost 500 miles nearer the quarter whence through traffic may be looked for....the climate, soil and resources... offer a promising field for industry, and open a prospect for that traffic, which a railway, to be self-supporting, must control.... An examination of the suitability [of northern harbours], together with the necessary surveys on land, may develope [sic] difficulties of a nature to render the route untenable; or on the other hand, they may establish beyond doubt that the northern route is the one which, in imperial as well as dominion interests, ought to be adopted. (Fleming, 1877: 75-76)

While a request for a technical appraisal of northern harbours from the Admiralty elicited a negative evaluation of the mouth of the Skeena River, the naval officer with the greatest experience on the north coast suggested that Port Simpson, some 30 miles north of the Skeena River, offered "the best harbour north of Beaver Harbour, Vancouver Island" (Fleming, 1878: 295). The chief engineer seized on the remark as a rationale to mount six expeditions to examine various aspects of prospective northern routes. Engineer Cambie agreed with the officer on the merits of Port Simpson as a harbour and offered encouraging comments concerning a "new" route inland. While acknowledging that construction work (and cost) for 150 miles from the coast to Hazelton would be heavy, he suggested a line following the Skeena and Bulkley Valleys to the Nechako River and ultimately to Fort George could be had with "easy gradients and a low summit" (Fleming, 1878: 38-40). Two years later George Keefer undertook a trial location that indicated that work on the Skeena proper would not be as arduous as the "extension" to Port Simpson on Wark Inlet (Fleming, 1880: 71-74) (See Figure 3, Route No. 1).

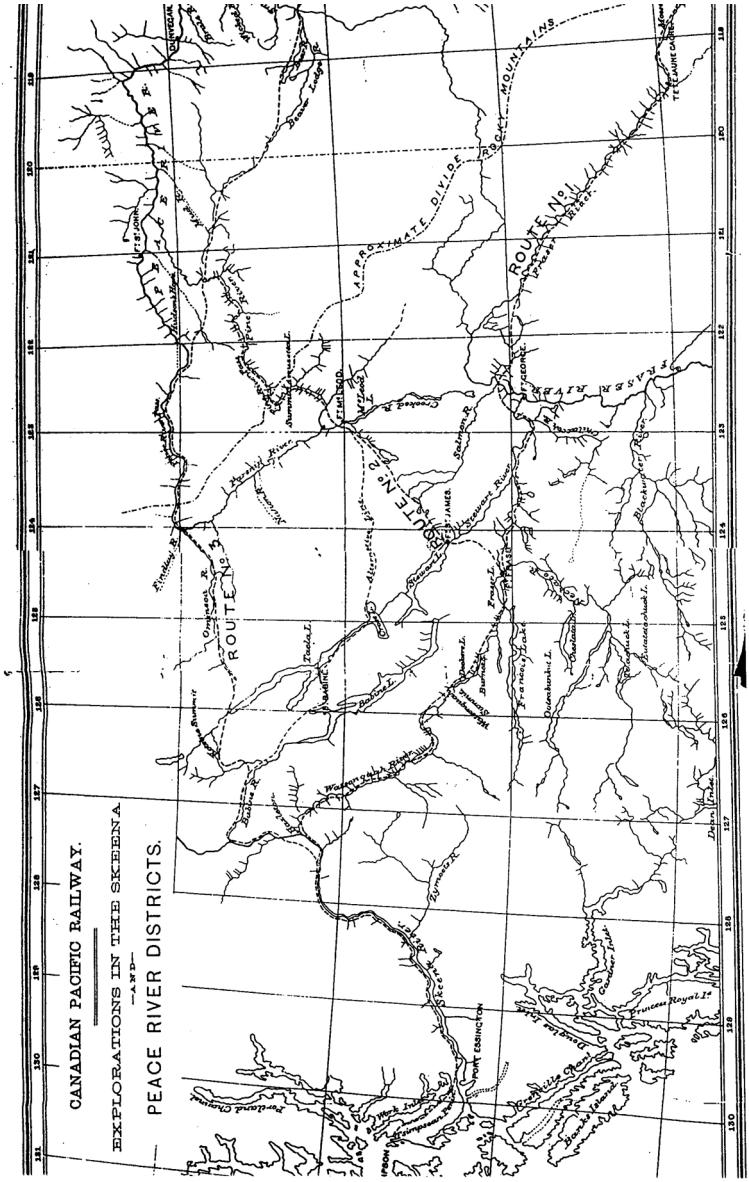

Figure 3 CPRS Plan of Three Northern Routes from Port Simpson, 1880
Source: [Fleming, S.] Canada. Department of Railways and Canals. (1880). *Report and Documents in Reference to the Canadian Pacific Railway, 1880.* Ottawa: n.p. facing page 1.

Eighteen seventy-nine saw the greatest efforts by both the railway survey and the GSC to probe a possible northern route. To crown the activities of the GSC in British Columbia during the 1870s, G.M. Dawson made an enormous seven-month reconnaissance up the Skeena River to Pine Pass and on to Edmonton. His goal was to secure "all possible information as to the physical features and economic importance of the country for the purpose of determining to what extent it offered advantages for the passage of the line of the Canadian Pacific Railway" (GSC, 1880: B1). The GSC expedition was not independent, however. Dawson was a member of a large railway survey whose object was "to obtain definite data to determine if a northern route can be found by Peace River and the River Skeena or any of their tributaries to Port Simpson" (Fleming, 1880: 35).

Dawson's assessment of the economic potential of the northern route represents the most significant result of CPRS and GSC cooperation. Published in the 1880 CPR *Report,* Dawson's "Report on the Climate and Agricultural Value, General Geological Features and Minerals of economic importance of part of the northern portion of British Columbia..." formed the base for both his detailed GSC report (1880) and the section concerning the north in the *Mineral Wealth of British Columbia* (1889).

Dawson's conclusions concerning agriculture are not surprising. He found the Skeena area unsuitable for any significant agriculture because of its poor soil, excessive rainfall, and cloudy weather. He advocated experiments in wheat-growing at Hazelton but thought that summer frost made success unlikely. Summer frost also prevented large-scale agriculture in the fertile Bulkley Valley. The Fort Macleod area had poor soil. Only when he reached the Peace River Valley did he become optimistic about prospects for farming. Here, "the luxuriance of natural vegetation [was] truly wonderful," and farming was assured (Fleming, 1880: 111-15).

He also observed that significant deposits of coal would be located in both the coastal area and the Peace River Valley. It might be possible to work these deposits if the railway ran through the region. More surprising was his claim that silver would be located in significant deposits in the Omineca mining district (Fleming, 1880: 123-27).

A comparison of Dawson's conclusions with the *Atlas of British Columbia* (1979) indicates that the early report was generally accurate. Long-range meteorological observations confirm that those areas where Dawson mentioned the inhibiting role of summer frost enjoy less than 60 days of frost-free weather. The other parts of the

central interior and the Peace River Valley have less than 100 frost-free days. Most of the region fits the bio-geoclimatic classification of sub-boreal spruce: severe winters, frozen soil, and short, warm summers. Dawson overlooked the timber possibilities on the north Fraser, but he did not travel through that area. Coal still represents the most significant mineral deposit in northern British Columbia. There are no large deposits of silver in the Omineca mining district (Farley, 1979: 44-49, 72-77). If Dawson's report is representative, then, the geologists produced much accurate information about the region.

By combining Dawson's findings with those of his railway engineers, Fleming argued in April 1880 that three practicable routes could be located from Port Simpson to Edmonton. These were Fort George–Yellowhead Pass, Fort St. James–Pine River Pass, and Omineca River–Peace River Pass. His citation of Dawson's praise for the Peace River Valley and his figures indicating that the Peace River route was the lowest (in elevation) might suggest that Fleming favoured the possibilities of a northern route at that time. (Fleming, 1880: 6-11). The inclusion of route profiles, however, made clear for a government intent on minimizing first cost the greater length (and, therefore, cost) of all northern routes than the Burrard Inlet route. (See Figure 4.) It remained for R.C. Moody, acting as consulting engineer, to dismiss its traffic potential. "For the development of ... revenue," he concluded, "there can scarcely be a doubt that this route...would be found inferior to [a more southerly route.]" (Fleming, 1880: 144)

Later Projects

Though the Trans-Canada Railway was incorporated in 1895 to build a line from Quebec City to Port Simpson, it commenced surveying in the winter of 1902-3, probably in hope of being bought out by Mackenzie and Mann or the yet to be incorporated Grand Trunk Pacific. In April 1903, Chief Engineer A.E. Doucet announced that engineer A.E. Hill had laid out a plan for the terminus at Port Simpson and connected his survey "with Mr. Keefer's location at the southern end of Work Inlet and will make use of this location which extends for a distance of about ninety miles up the Skeena River. The work on this portion of the line will be heavy in places but not excessively so, and no areas will exceed 1 p.c. compensated for curvature." Doucet comments indicate not only that Hill relied on the plans that the CPRS engineer had produced in 1879; they also reveal that the Trans-Canada manager borrowed

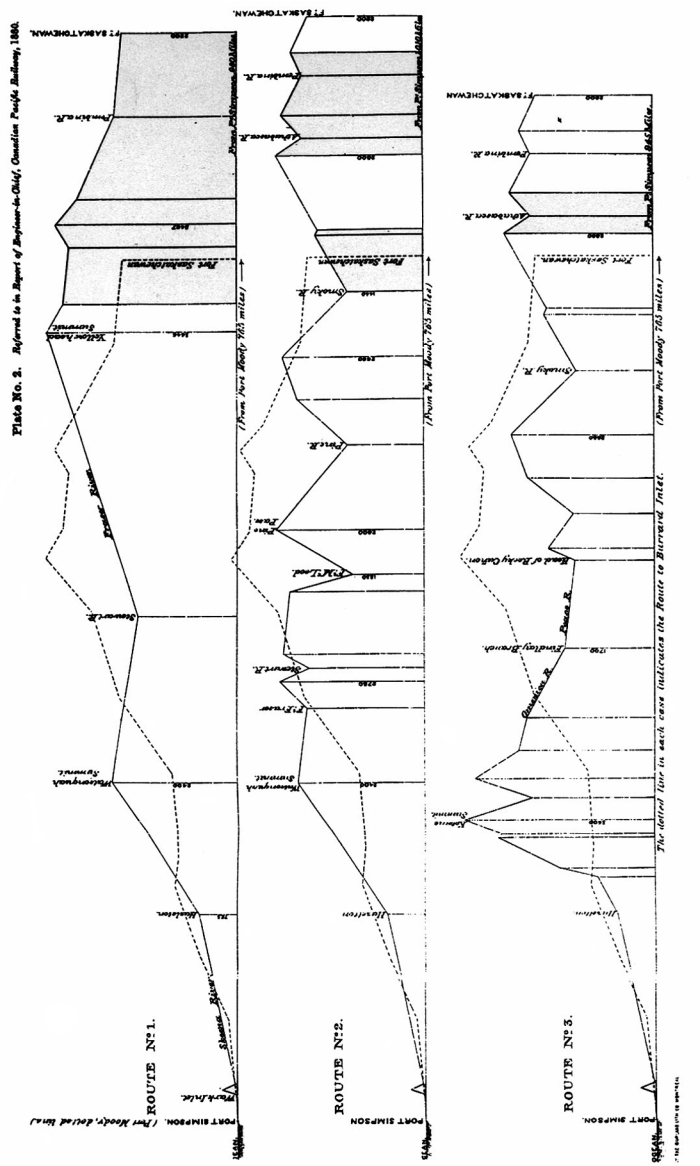

Figure 4 CPRS Comparative Profiles of Three Northern Routes from Port Simpson, 1880
Source: [Fleming, S.] Canada. Department of Railways and Canals. (1880). *Report and Documents in Reference to the Canadian Pacific Railway, 1880.* Ottawa: n.p. facing page 7.

phrases from the original report to indicate Hill's progress. Doucet also contended that the Trans-Canada route "by way of the Pine River Pass has been explored at different times by various parties sent out by the Government" (NAC, RG 43, v. 225, f. 1022, Trans-Canada Railway, A.E. Doucet, Report of Progress, 25 April 1903). Here, he appears to refer to Cambie's 1879 report. Though work on the Trans-Canada was not continued, its reliance on the CPRS is clear.

Long before company publicist Talbot, President Hays had contended that the Grand Trunk Pacific had spent hundreds of thousands of dollars on an exhaustive survey of all possible routes to the Pacific coast before settling on the Yellowhead Pass. (NAC, Laurier Papers, Hays to Laurier, 29 Jan. 1907) The surviving sources suggest that the company relied heavily on the CPRS reports.

After receiving a contract in 1903 to build a transcontinental line, company engineers passed over the Yellowhead Pass, apparently on the strength of an unfavourable early report by a company agent who was not an engineer. A reconnaissance map, dated March 1905, indicates that GTP survey parties had not yet explored the Yellowhead route to Fort George. In the same month, Hays lamented that little progress had been made on surveys on the western side of the Rockies (NAC Federal Records Centre, Winnipeg, GTP-CN Drawings, GTP, "Map of Part of British Columbia... showing survey and reconnaissance lines from Edmonton to the Pacific Coast" [15 March 1905]; NAC, Hays Papers, Kelliher to Hays, 16 July 1909, Hays to C. Rivers Wilson, 25 March 1905). Only after his appointment as GTP chief engineer in July 1905, did B.B. Kelliher make a remarkable discovery.

> Since the first surveys of the Canadian Pacific, the existence and availability of the Yellowhead Pass route were well known; and on looking over their old profiles, it was evident though they had make their location on a maximum grade [gradient] of 1% that we could very easily get a 0.4 [%] grade from Edmonton via Yellowhead Pass to the Coast except a short distance on the west side. (NAC, Hays Papers, Kelliher to E.J.Chamberlin, 16 July 1909)

Kelliher thus confirmed a boast that Hays had made a year earlier to British shareholders.

> We are going into territory which was originally selected as the route of the Canadian Pacific. The surveys were made by the Canadian government which spent $3,000,000 in determining

> and selecting what was the most easy and direct route for a transcontinental line.... We are simply confirming the judgment of fifteen or twenty years ago as to the desirableness of the route, and the character of the country we are going through. (Lovett, 1924: 154-55.)

Conclusion

The reports of the CPRS concerning north-central British Columbia contain a wealth of geographical information as Vance maintains (Vance, 1995: 257). They allowed the federal government to discard, quite properly, both the Bute Inlet route and the northern routes for a transcontinental railway. The investigations of the CPRS engineers demonstrated that both these alternatives had higher first costs than the Burrard route. Their evaluations of local resources and prospective termini also revealed that the traffic potential of the alternative routes could not override the higher costs. Later projects for both routes drew on both the engineering and traffic investigations of the CPRS. Rather than serving as a metaphor for the lack of geographical information concerning north-central British Columbia before the twentieth century, Talbot's notion of a "closed book" better describes the Grand Trunk Pacific management's ultimately disastrous disinclination to reflect on the conclusions, as well as the route profiles, of the CPRS.[5]

Notes

1. The title pages of the volumes published in 1878 and 1880 display other names above or in place of Fleming's, "Canadian Pacific Railway Company," and "Canada. Department of Railways and Canals," respectively. To make clear that Fleming wrote large parts of and edited these two volumes as well as the other five, I have tied them to his name in the references though they do not appear so in the National Library of Canada Catalogue.
2. For explanations of the CPR's controversial decision in 1881 to shift its line west of the Manitoba border from the fertile crescent to the southern prairie , see Berton (1971): 11-22; and Waiser (1985): 6 5-81. The new alignment entailed the relocation of the British Columbia line from Yellowhead Pass-Kamloops to Kicking Horse Pass-Kamloops.
3. For CPRS Engineer Henry Cambie's discussion of the location of a permanent terminus at Coal Harbour, see Fleming (1878): 56. It was the federal minister of railways, Charles Tupper, who decreed

the location of the Pacific terminus to be Port Moody. See Canada, House of Commons (1882): 1097. 21 April 1882.

4. This passage in a technical report illustrates why George Grant quoted another of Smith's lyrical descriptions of the inlet in his influential account of Fleming's 1872 exploration to the Pacific Coast. See Grant, 1873: 332.

5. The GTP management's flawed review of the CPRS reports led in part to the acceptance of faulty assumptions concerning traffic potential, which, in turn, permitted the construction of an extravagant railway across north-central British Columbia. See Leonard (1996): 19-21, 51-91.

References

Berton, P. (1970). *The National Dream: The Great Railway, 1871-1881.* Toronto: McClelland and Stewart.

Berton, P. (1971). *The Last Spike: The Great Railway, 1881-1885.* Toronto: McClelland and Stewart.

British Columbia. Legislative Assembly. (1880). *Sessional Papers.* 335-41. "Correspondence relating to the Construction of the Canadian Pacific Railway." Victoria: R. Wolfenden.

———— (1881). *Sessional Papers.* 139-310. "Papers in Connection with the Construction of the Canadian Pacific Railway between the Dominion, Imperial and Provincial Governments." Victoria: R. Wolfenden.

———— (1896). *Sessional Papers.* 837-56. "Return of Correspondence concerning British Pacific Railway." 837-56. Victoria: R. Wolfenden.

———— (1896). *Sessional Papers.* 741-810. "North West Colonization Survey." Victoria: R. Wolfenden.

Canada. House of Commons. (1877-1882) *Debates.*

Canada. Royal Commission. (1882). *Report of the Canadian Pacific Royal Commission.* 3 vols. 0ttawa: S. Stephenson.

Corkran, R.S. (1968). "Rail Route Selection in the Northern Rocky Mountains, 1853-1890." M.A. thesis, Geography, University of Chicago.

Farley, A.L., ed. (1979). *Atlas of British Columbia: People, Environment, and Resource Use.* Vancouver: University of British Columbia Press.

Fleming, S. (1872). *Progress Report in Reference on the Canadian Pacific Railway Exploratory Survey.* 0ttawa: n.p.

———— (1874). *Report of Progress on the Exploration and Surveys up to January 1874.* Ottawa, MacLean, 1874.

———— (1877). *Report on Surveys and Preliminary Operations of the Canadian Pacific Railway up to January 1877.* Ottawa: MacLean, Roger & Co.

[Fleming, S.] Canadian Pacific Railway Company, and S. Fleming. (1878). *Reports and Documents in reference to the Location of the Line and a Western Terminal Harbour (1878).* Ottawa: MacLean, Roger & Co.

[Fleming, S.] Canada. Department of Railways and Canals. (1880). *Report and Documents in Reference to the Canadian Pacific Railway, 1880.* Ottawa: n.p.

Geological Survey of Canada [GSC]. (1872). *Report of Progress for 1871-1872.* Montreal: Geological Survey of Canada.

———— (1880). *Report of Progress for 1879-80.* Montreal: Geological Survey of Canada,

Gibbon, J.M. (1935). *The Romantic History of the Canadian Pacific: The Northwest Passage of Today.* Toronto: McClelland.

Goetzmann, W.H. (1959). *Army Exploration in the American West. 1803-1863.* New Haven, CT: Yale University Press.

Grant, G.M. (1873). *Ocean to Ocean. Sanford Fleming's Expedition through Canada in 1872.* Toronto: J. Campbell.

Green, L. (1993). *Chief Engineer: Life of A Nation Builder—Sandford Fleming.* Toronto: Dundurn Press.

Horetzky, C. (1874). *Canada on the Pacific...Remarks on the Physical Features of the Pacific Railway Route....* Montreal.

Horetzky, C. (1880). *Some Startling Facts relating to the Canadian Pacific Railway and the North-West Lands. Also a Brief Discussion regarding the Route, the Western Terminus....* 0ttawa.

Innis, H.A. (1923) *A History of the Canadian Pacific Railway.* Toronto: McClelland and Stewart, Ltd.

Lamb, W.K. (1977) *History of the Canadian Pacific Railway.* New York: Macmillan.

Leonard, F. (1996). *A Thousand Blunders: The Grand Trunk Pacific Railway and Northern British Columbia.* Vancouver: UBC Press.

Lovett, H.A. (1924). *Canada and the Grand Trunk, 1829-1924.* Montreal: H.A.Lovett.

MacKay, D. (1986). *The Asian Dream: The Pacific Rim and Canada's National Railway.* Vancouver: Douglas & McIntyre.

Meinig, D.W. (1999). *The Shaping of America: A Geographical Perspective on 500 Years of History, Vol. 3: Transcontinental America,1850-1915.* New Haven, CT: Yale Unviesity Press.

Skelton, O.D. (1916). *The Railway Builders: A Chronicle of Overland Highways.* Toronto: Glasgow, Brooke.

Stevens, G.R. (1962). *Canadian National Railways, 2, Towards the Inevitable, 1896-1922.* Toronto: Clarke Irwin.

Talbot, F.A. (1912). *The Making of a Great Canadian Railway:...Grand Trunk Pacific Railway....* London: Seeley, Service & Co.

Thomson, D.W. (1967). *Men and Meridians: A History of Surveying and Mapping in Canada, 2, 1867 to 1917.* Ottawa: R. Duhamel.

Tolmie, W. (1877). *Canadian Pacific Railway Routes.* Victoria: Colonist Steam Presss.

Waiser, W.A. (1985). "A Willing Scapegoat: John Macoun and the Route of the CPR." *Prairie Forum* 31,1.

Vance, Jr., J.E. (1995). *The North American Railroad: Its Origin, Evolution, and Geography.* Baltimore: Johns Hopkins University Press.