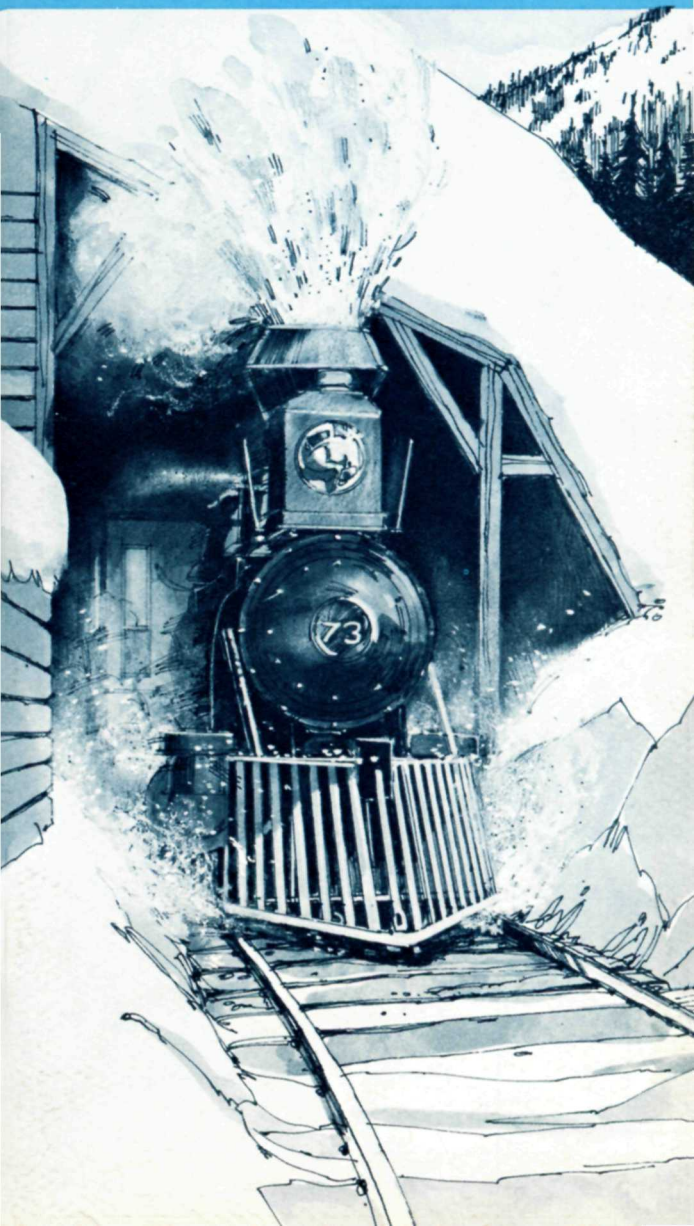


# Snow War

A guide to the history of Rogers Pass

Glacier National Park



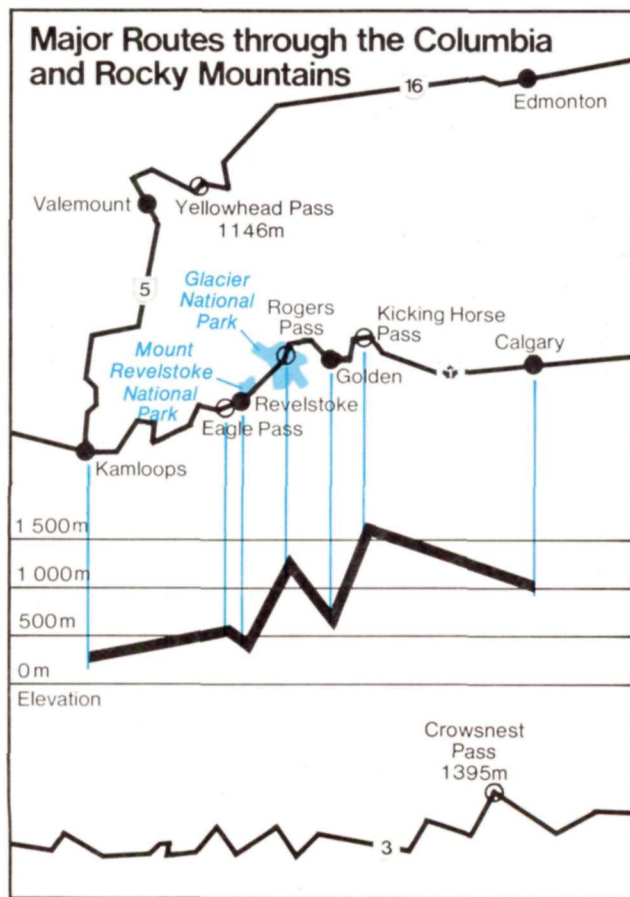
# How to use this Guide

## The Snow War

This is the story of Man's struggle with Nature in Rogers Pass. It is a guide to the history of this vital transportation corridor and may serve as a reminder of your visit.

## Places to Visit in Rogers Pass

The fold-out section in this guide lists places of historical interest in Rogers Pass and tells you how to find them. The best way to enjoy the story is to see Rogers Pass for yourself, accompanied by this guide.



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# THE SNOW WAR



February 1, 1899 was not a unique day in the history of Revelstoke, British Columbia. The Revelstoke Herald featured a front page story on a disaster which had struck Rogers Pass in the nearby Selkirk Mountains the day before:

*“A Terrible Accident — Seven Persons Killed, One Seriously Injured — A Most Shocking Affair — A Snowslide Sweeps Away The Station And Round House At Roger’s Pass and Buries Eight People Alive — All The Bodies Have Been Found Except One . . .”*

This was not the first time human life had been lost in the pass; it would not be the last.

Visitors view the raw wilderness of the Selkirk ranges in the Columbia Mountains with mixed emotions. On one

hand, the sheer mountain walls, snow-fed glaciers and dark rain forests represent some of the most striking mountain terrain in the world. On the other hand, the Selkirks form a nearly invincible barrier to transportation.

In a century of searching, surveyors have located only one likely route across the central Selkirks: Rogers Pass. Without this pass, all railways and highways would have to take a lengthy detour northward around the mountains by following the Big Bend of the Columbia River. Instead, men have accepted the Selkirks’ challenge and have pitched forces against the arsenal of avalanche, forest fire, tangled forest and steep terrain that guard Rogers Pass.

The story of transportation in Rogers Pass is a continuing saga of man against the mountains.

## No Man's Land



Prehistoric people never lived in the central Selkirks. The rugged mountains and harsh climate made agriculture impossible. Deep winter snows restrict populations of game animals so Indians could not rely on them for food. Avalanches were a threat to travellers much of the year. The prehistoric relationship between men and the land was a simple one: it was no man's land.

With the dream of tying Canada together in a confederation and the desire to build a transcontinental railway, a new relationship developed with this land. The mountains the Indians had wisely avoided now stood out as barriers to be conquered by the railway builders.

The 1860s, 70s and early 80s were times of feverish surveying activity in the western mountains. In 1871, British Columbia joined Canada with the understanding that a transcontinental railway would soon be constructed to link it to the east. Heated debate preceded the decision about where to locate the new line. If it was built too far north (perhaps through the Yellowhead Pass 250 km distant as shown on the map on page 1) would the United States dominate our southern boundary? If it was built to the south through the Kicking Horse Pass, how would the Selkirks be crossed? No feasible routes had been found.

The search for a pass which would open up the central Selkirk Mountains had intrigued surveyors for years. Unlike many other areas in the mountains, the Shuswaps and other Indians of the district had little knowledge of the Selkirks and explorers were truly in unknown territory. In 1865, Walter Moberly found a route through the adjacent Monashee Mountains he called Eagle Pass, and probed up the Illecillewaet River in the Selkirks. The next year his assistant, Albert Perry, pushed farther up the Illecillewaet and although optimistic at the possibility of locating a pass at the head of this valley, turned back before its existence could be confirmed.

It is difficult to imagine the hardships these early surveyors had to endure. Nearly two decades later Sir Sandford Fleming would travel this same territory explored by Moberly and Perry. His description of bushwacking in the Illecillewaet Valley holds true to this day:

*"The walking is dreadful, we climb over and creep under fallen trees of great size and the men soon show that they feel the weight of their burdens. Their halts for rest are frequent. It is hot work for us all. The dripping rain from the bush and branches saturates us from above. Tall ferns sometimes reaching to the shoulder and Devil's Clubs through which we had to crush our way make us feel as if dragged through a horse-pond and our perspiration is that of a Turkish bath. We meet with obstacles of every description. The Devil's Clubs may be numbered by millions and they are perpetually wounding us with their spikes against which we strike. We halt frequently for rest. Our advance is varied by ascending rocky slopes and slippery masses, and again descending to a lower level. We wade through Alder swamps and tread down Skunk Cabbage and Prickly Aralias, and so we continue until half-past four, when the tired-out men are able to go no further..."*

## The Railway Pathfinder



The rails had stretched across the prairies and were aimed at the heart of the mountains awaiting a link between Calgary and Vancouver. At great risk the Canadian Pacific Railway made its choice. On the advice of one of their surveyors, a rough-edged character named Rogers, a line was laid out up the Bow River Valley and across the Continental Divide through the

Kicking Horse Pass. Beyond lay the mysterious Selkirks.

Railway surveyor, Major A.B. Rogers, was a determined man. He had studied Moberly's reports and he knew his chances of discovering a pass through the Selkirks were good. If he found the pass the C.P.R. would name it after him and give him a bonus of \$500. The reward of immortality on the map was a great incentive.

In 1881, Rogers's crew struggled up the Illecillewaet Valley past the point where Albert Perry had turned back 15 years before. Above the headwaters of the Illecillewaet River he glimpsed a narrow pass at the summit of the Selkirks. By that time he was out of food and had to retreat quickly back to the Columbia River. But he knew the long-sought pass had been found and the next year completed his explorations from the east.

Thus, by 1882, the battle lines were drawn. The "Railway Pathfinder" had discovered Rogers Pass and within three years steel rails crossed no man's land.

## “The Men Are Frightened”

The construction of Canada's first railway across the Rocky and Columbia mountains was a bold move requiring courageous leaders. William Cornelius Van Horne, who joined the enterprise in 1882 as General Manager of the C.P.R., was a tower of strength during this period. Van Horne had decided that the railway must cross the Selkirks by the shortest route and he was prepared to back up his decision with action.

In 1883, James Ross became the C.P.R.'s Manager of Construction in the West. By the autumn of 1884 the track had crossed the Rockies and he wintered on the doorstep of the Columbias. Early in 1885, ascending the Beaver Valley on the east flank of the Selkirk Mountains, the steel approached Rogers Pass.

Construction of a railway to and across Rogers Pass was a formidable undertaking. Roaring mountain streams had carved deep notches into the side of the Beaver Valley. These streams had to be spanned by major bridges at Mountain, Surprise, Stoney and Cascade creeks. These high bridges became favourites with photographers of the day.

At Mountain Creek, Ross's forces built a trestle which stretched across a gap in the valley wall for 331 metres and stood 50 metres above the mountain torrent. A few kilometres farther up the line, a bridge was constructed which towered 64 metres above its footings. The Stoney Creek Bridge was heralded by the engineers of the day as the highest such structure in the world.

Forest fires plagued work crews as they marched up the slopes of the Beaver Valley. Then, later in the year, the weather became excessively wet, changing mud to quagmire and creeks to torrents that ate away at the newly-placed bridge foundations. Ross's efforts to speed the work became bogged down and several times he despaired.

To compound his problems a new and unfamiliar force struck the work crews. Each year a prodigious quantity of snow falls on the Selkirks. In many places this load rests uneasily on the steep inclines and at intervals becomes unstable and careens down the mountain walls in sudden avalanches. An avalanche or snow slide is an awesome natural force able to snap trees like matchsticks as it speeds down slopes at velocities up to 325 kilometres an hour. The Indians had respected these snow spirits of the Selkirks and stayed clear. James Ross and his men challenged the elements . . . and the “white death” struck his camps!

“The men are frightened”, wrote Ross on February 19, 1885 to Van Horne. “I find the snowslides on the Selkirks are much more serious than I anticipated, and I think are quite beyond your ideas of their magnitude and danger to the line”. Already seven men had been buried in slides and two killed.

Ross gained the summit of Rogers Pass on August 17, 1885 after six months of trial by avalanche, forest fire and rainstorm. But his problems were not over; there still remained the troublesome descent of the west side of the pass to the Columbia River.

Laying out a good line down the Illecillewaet Valley was complicated by avalanche paths and steep grades. The line entered the head of the valley on the north wall but had it continued down the valley on that wall it would have traversed several dangerous avalanche slopes. Crossing to the south wall of the valley was the answer but that crossing involved so steep a descent in so short a distance that the grade itself would be a danger to human life.

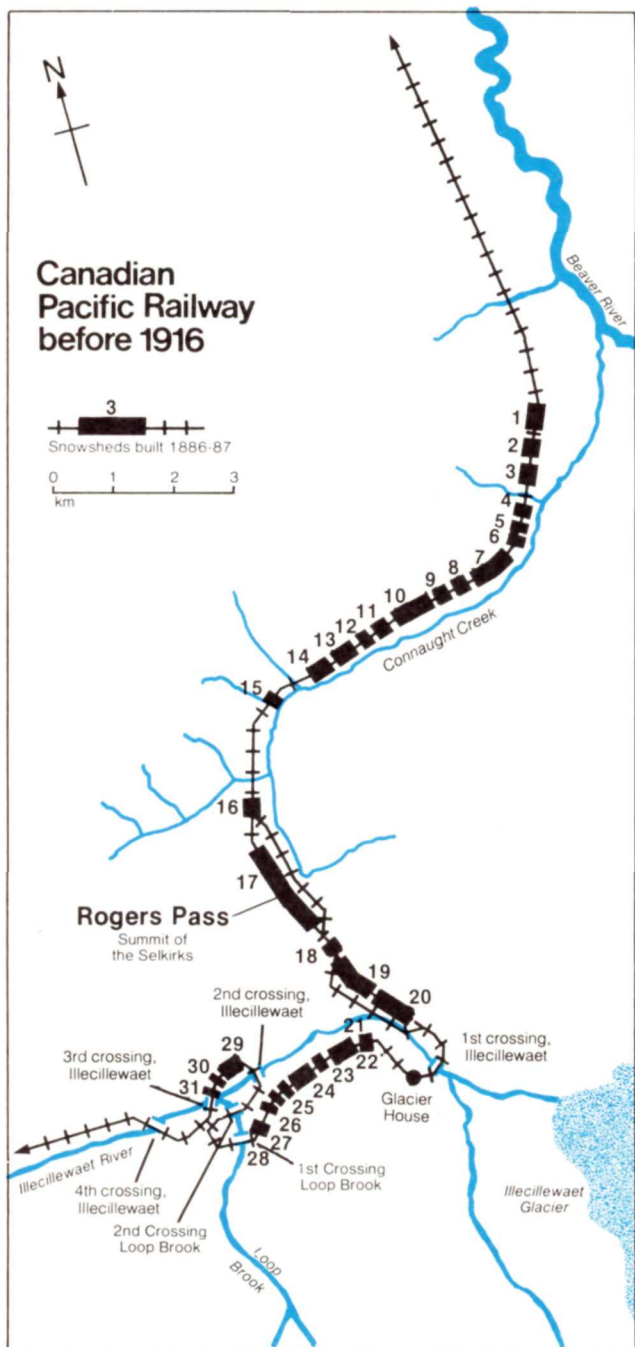
Ross solved the problem by constructing an intricate series of loops in the track, lengthening it by five kilometres and carrying the railway safely down the south side of the valley.

From Rogers Pass, Ross pushed the line to the Columbia River and out of the Selkirks. Crossing the Columbia River at what would become the site of Revelstoke, the line entered Eagle Pass and crossed the Monashee Mountains. On November 7, 1885, Ross's forces met the end of steel from the Pacific. Canada's first transcontinental railway became a reality with the driving of the last spike 48 kilometres west of Revelstoke at Craigellachie. The Selkirks had been crossed and the Rogers Pass subdued — or had it?

No sooner had the railway line been completed than it had to be abandoned to the overpowering forces of winter. Throughout the winter metres of snow buried the line and avalanches tore sections of newly-laid track from the grade. In one place snow 12 metres deep was measured on the track after a slide. An elaborate and costly defence was clearly required to protect the line from snow and its devastating effects.

The next year construction started on 31 snowsheds to protect the line from the worst slide paths known. These sheds were constructed of heavy timbers and the sides were sloped with rocks and earth so that a slide would pass over them without damage to the track. The total length of the sheds was over 6.5 kilometres and they cost the railway a fortune to build and maintain.





### “The Climax Of Mountain Scenery”

The mountains that battled the C.P.R. all winter were tremendous assets in summer. The first scheduled passenger train service started in June, 1886. The magnificently rugged mountain landscape was now open to anyone with enough money for a ticket.

Van Horne was quick to capitalize on the glacier-studded scenery and ordered special track to be constructed outside the dark snowsheds from the summit of the pass to the Illecillewaet River. In summer, when avalanche dangers had passed, the trains could travel outside the sheds and the passengers could enjoy a view featuring the giant tongue of the “Great Glacier” protruding from the skyline.

Below the Great Glacier (later called the Illecillewaet) and on the main line, the C.P.R. constructed Glacier House — a traditional C.P.R. hotel. Originally, the hotel was built to eliminate the need to haul heavy dining cars over the pass. Trains were conveniently scheduled so that passengers could lunch at the hotel. Glacier House quickly became a popular tourist attraction and facilities were eventually expanded to include 90 rooms and related services. The C.P.R. brought mountain climbing guides from Switzerland and the hotel became a focal point for mountaineering in the Selkirks and North America.

In the same year that the first passenger trains ran through the pass, the Canadian Government took steps to preserve the area for all time. Canada’s first national park had been declared around the hot springs at Banff in 1885. In 1886, Yoho National Park in the Rockies and the embryonic Glacier National Park in the Columbias were established — an area Van Horne described as “the climax of mountain scenery”.



Glacier House: 1887 - 1925

## Defeat

The night of March 4, 1910, began like most other nights for the men working in Rogers Pass. The crew was at the summit clearing a big slide that had come down Cheops Mountain on the west side of the pass and had blocked the tracks. A rotary snow plow had cut a path across the piled snow on the line and men were working in the cut shovelling snow and clearing away trees swept down by the avalanche. The events which followed were to change the course of history in Rogers Pass.

A half hour before midnight, some of the men outside the cut heard a deep rumbling, then timbers cracking. An unexpected avalanche swept down Avalanche Mountain on the side of the pass opposite the first slide. Trapped within their snow-walled tomb, most of the men never even heard the slide approach. Sixty-two died.

Huge wing plows, rotary plows, snowsheds and an army of men could not keep safe the railway line through Rogers Pass. Between 1885 and 1911 deaths caused by avalanches totalled over 200. Faced with this kind of peril to employees and passengers, crippling costs and steep grades, the C.P.R. acknowledged defeat and prepared to retreat from the summit of the pass.

If trains could not go safely over the pass then they would run under it through an eight-kilometre tunnel piercing the roots of Mount Macdonald. In 1913 construction started on the longest railway tunnel in Canada. When completed it eliminated 16 kilometres of some of the most hazardous railway line in the world. Operation of the eight-kilometre Connaught Tunnel commenced on December 13, 1916. Rogers Pass was abandoned.



*In 1886, a great snowslide buried this train and stranded the passengers for more than three weeks before the track could be cleared.*

## The Highway Battle

In the 1950s, armed with determination and advanced technology, men again laid plans to cross the Selkirks. The forces which had driven the railway from Rogers Pass in 1916 were now challenged by the highway engineers.

Work started on the construction of the Trans-Canada Highway through Rogers Pass in 1956 and in 1962 the road was opened to the public. Once again avalanches were the major threat and elaborate defence systems were developed to protect motorists on the new road.

Everyone travelling across Rogers Pass must pass through several snowsheds that shield the highway from avalanches at particularly hazardous areas.

In addition, earth dams, dikes, mounds and catch basins placed in avalanche paths contain or regulate snow slides. These static defences are similar to those used by the C.P.R. to guard its original railway.

Unlike the original railway the highway is also guarded by a mobile system of defence. Men are employed year-round studying the climate. In winter they make detailed weather and snowpack observations. Sophisticated remote sensors in special study areas high in the mountains above the pass continually radio weather information to a central forecast headquarters. Avalanche forecasters use this data and their personal experience to predict when avalanches are likely to occur. Under the direction of these forecasters, gate attendants and park wardens warn motorists entering the park of possible avalanche activity on the highway. The forecaster may decide to close the highway and attack the unstable slide areas with artillery.

Circular gun positions along the road shoulders are used to station a 105 mm howitzer manned by the Royal Canadian Horse Artillery. Under the direction of the forecaster the army bombards known trigger zones high up the avalanche paths. The shock waves from exploding shells fired by heavy artillery will trigger avalanches when snow conditions are right. With the highway closed the slides can thunder harmlessly down the slopes.



The days of hand labour in clearing slide debris are over. While the railway had to send scores of men to clear the dangerous tracks, advanced heavy machinery such as highway snow plows, crawler tractors and loaders allows the highway to be cleared by four to six men. Better methods, heavier equipment and more experience in controlling avalanches continually improve safety in highway use and maintenance.

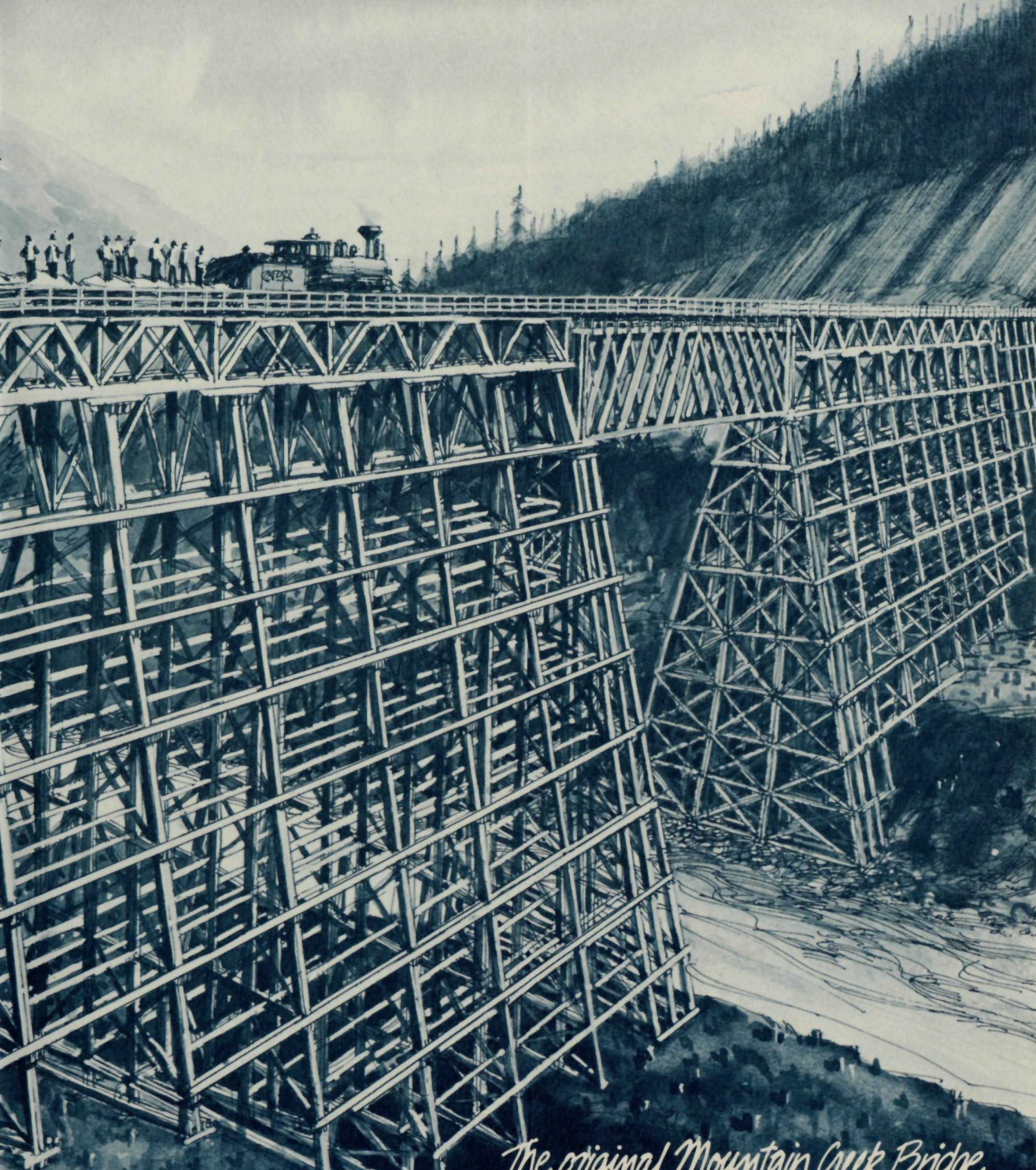
The new Trans-Canada Highway has had a major effect on Glacier National Park. Man is assaulting and modifying the natural environment along the highway. However, millions of people each year have the opportunity to see some of the earth's most rugged mountain wilderness. Glacier House is gone but with the highway came construction of campgrounds, picnic areas, viewpoints and trails now operated by the park's staff. A new hotel at the summit of the pass, the Northlander, provides food and shelter year-round for people travelling through the park.

### **There Can Be No Peace**

It would be a mistake to think that Rogers Pass has been subdued. The battle is not over. Although only two people have been killed in avalanches during the first 15 years of highway operation, the hazard has only been reduced, not eliminated. Each winter men and equipment must be on guard day and night to keep the highway open. Tremendous sums of human energy and money are spent holding the highway's position in the pass; and every winter, the timeless forces of snowfall and avalanche batter away at the defences. Rogers Pass was, and is, hostile territory. There can be no peace. The Snow War goes on.







*The original Mountain Creek Bridge  
- built in 1885. It was the largest  
structure on the C.P.R., measuring  
331 metres long and 50 high.*

# Places to see in Rogers Pass

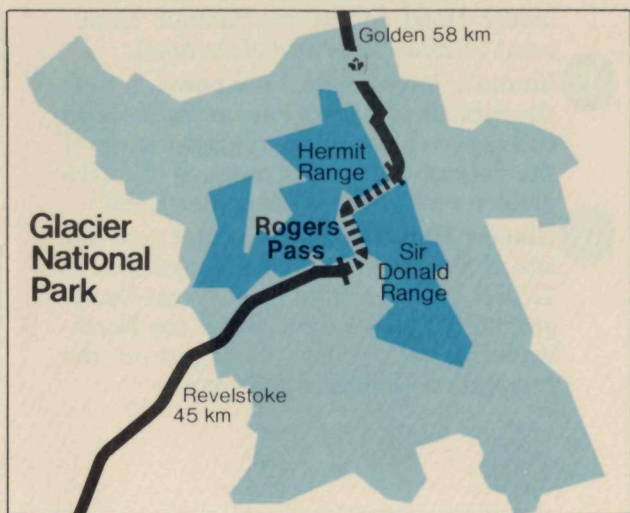
A visit to Rogers Pass is the best way to appreciate its history.

Approaching from the east or west on the Trans-Canada Highway you will pass through concrete snowsheds which protect the highway from avalanches. Along the shoulders of the road you will see circular gun positions and brightly coloured crosses on nearby trees. These are used to position and sight the howitzer for avalanche stabilization. In winter, prominent highway signs indicate no stopping areas where known avalanche tracks cross the highway.

To help you orient yourself in these rugged mountains, the park has erected signs along the highway which read: "Entering Rogers Pass", "Rogers Pass Summit" and "Leaving Rogers Pass".

From late-June to mid-October, you can visit several roadside exhibits and trails that tell the story of railway and highway transportation in Rogers Pass. At these locations you will see remnants of original railway snowsheds, bridges and other features of historical interest. Signs featuring historic photographs and texts may help you recapture the original feeling of these sites.

The map on the next page gives you the locations of historic trails and exhibits which have been developed to date.



**A Trestle Trail** is a pleasant 20-minute walk through valley bottom forest to a viewpoint on the spectacular Mountain Creek railway bridge. The trail is located at the back of Mountain Creek Campground, 20 kilometres east of the Northlander Hotel. Follow trail signs through the campground to the trail head beside the outdoor theatre.

**B Rogers Pass - East Viewpoint** is a good place to photograph the eastern entrance to the pass. Located 7.6 kilometres east of the Northlander Hotel.

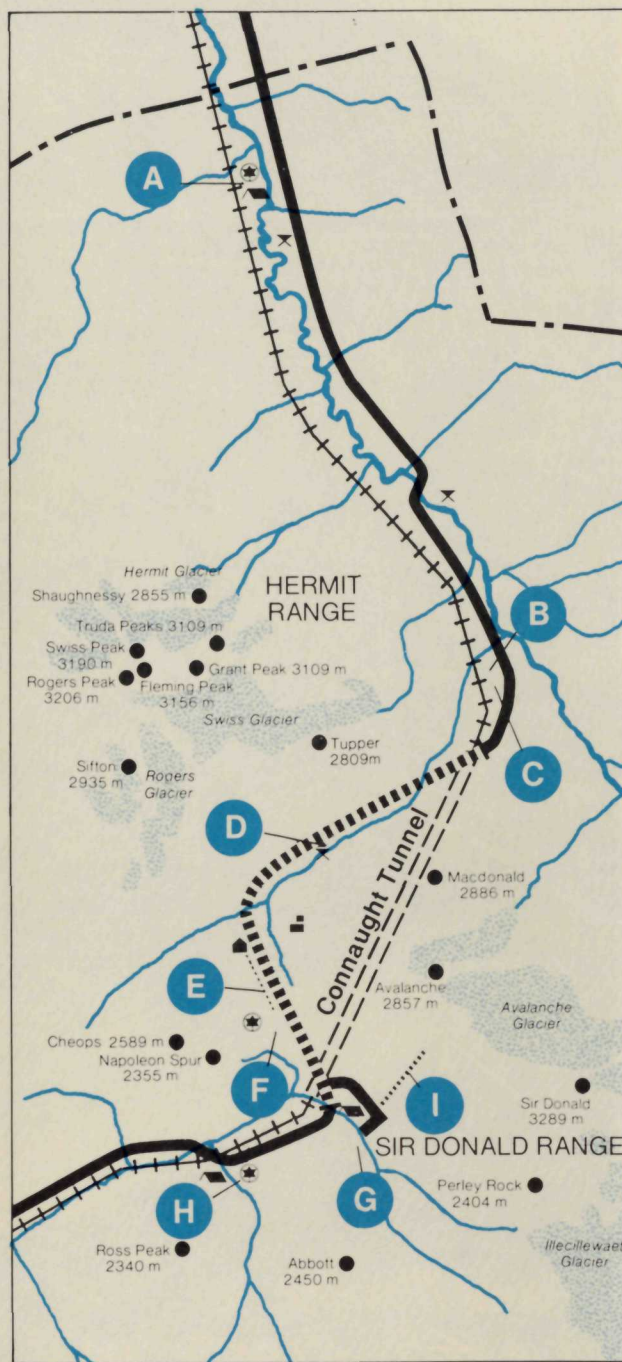
**C Mountain Bridges Viewpoint** is a roadside view of a remarkable stone bridge on the original C.P.R. line. Located 7.2 kilometres east of the Northlander Hotel.

**D Avalanche Defence Viewpoint:** Interpretive exhibits inside a park picnic area here illustrate the story of avalanche control. Views of a gun position, a highway snowshed, the ruins of an old railway snowshed and several active avalanche paths can be seen here. Located 2.4 kilometres east of the Northlander Hotel.

**E Abandoned Rails Trail** is an easy hour-long walk on the original C.P.R. line at the summit of Rogers Pass. It features close views of two snowsheds, associated slide paths, and the original Rogers Pass station area. The two trail heads are beside the service station next to the Northlander Hotel and at the Summit Monument 1.3 kilometres west of the hotel.

**F Summit Monument Viewpoint** is near the summit of Rogers Pass and affords an excellent vantage of the rugged scenery of the Selkirk Mountains. Located 1.3 kilometres west of the Northlander Hotel.

**G Glacier House Site:** An exhibit near the site of a major C.P.R. hotel demolished in 1929 is located behind Illecillewaet Campground 3.9 kilometres west of the Northlander Hotel. Follow the signs in the campground indicating the site.



**H Loop Trail and Viewpoint:** The trail is an easy one-hour hike around the famous loop of the original C.P.R. line. It features excellent viewpoints on top of stone pillars, opportunities for close examination of the impressive Bonney Glacier. Located just east of Loop Brook Campground along the highway, 6.6 kilometres west of the Northlander Hotel.

**I Avalanche Crest Trail:** This is an adventurous 3½-hour uphill hike for the experienced and well-prepared hiker. The end of the trail has excellent views of Rogers Pass, the original C.P.R. line and the Trans-Canada Highway. The trail head is behind Illecillewaet Campground, 3.9 kilometres west of the Northlander Hotel. Follow the signs in the campground to the trail head.

**Bears!** Both grizzly and black bears are common in Rogers Pass. We suggest that you keep alert and make continual noise while you hike. If in doubt, ask us for safe hiking tips in bear country.

**Drive Safely**  
Left turns cannot be made from the highway into some of the locations listed here. Drivers should proceed past these spots until able to turn around safely and return to make right turns into these locations.

● mountain	✕ picnic site
⊙ interpretive trail	■ park operations centre
⌘ campground	++ railway
🏠 Northlander Hotel	▬ highway through Rogers Pass
❄️ glacier	▬ highway approaching Rogers Pass
	- - - park boundary

## Further Exploring

The Trans-Canada Highway and the original C.P.R. line roughly parallel each other across the western mountains. Along this route you will find a number of federal and provincial government roadside signs drawing attention to points of particular historical interest. The famous Kicking Horse Pass through the Rocky Mountains is commemorated by signs featuring the Spiral Tunnels and the old bridge on the "Big Hill" in Yoho National Park. Eagle Pass through the Monashees is commemorated by historical plaques between Revelstoke and Craigellachie.

## Further Sources

We suggest that you start with one of the several excellent books available about Canadian railway history. These will lead you in turn to more detailed references.

For perspective on the importance of the first transcontinental railway to Canada, we suggest Pierre Berton's *The National Dream and Last Spike* (1972).

For a well-illustrated account of the construction of the railway you will enjoy Omer Lavallée's *Van Horne's Road* (1974).

For an exciting account of the discovery of Rogers Pass read Albert Roger's *The Discovery of Rogers Pass* in A.O. Wheeler's book *The Selkirk Range* (1905). It is out of print but should be available in most large public libraries.

"A 16 mm movie called *Snow War* is available from National Film Board offices across Canada. The Film portrays the modern day story of avalanche control in Rogers Pass."

## QUESTIONS??????

If you have any specific questions on the history of Rogers Pass we would be pleased to hear from you. Write:

**The Superintendent,  
Mount Revelstoke and Glacier National Parks,  
P.O. Box 350, Revelstoke, B.C.,  
VOE 2S0**

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*The Canadian Pacific Railway has provided tremendous assistance in the preparation of material for this booklet and the many signs and displays related to railway history throughout Glacier National Park. The stories of the railway and the national park system in the west are closely bound up in each other and Parks Canada thanks the C.P.R. for their willing and generous help with photographs, illustrations and research.*

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*Front Cover: The westbound Pacific Express emerging from 11 Shed in Rogers Pass. The engine is one of two Danforth 2-6-0 type locomotives built for the Canadian Pacific Railway in 1882.*

*Back Cover: Today the Trans-Canada Highway allows man to venture over Rogers Pass once again. Here a semi-trailer enters a modern highway snowshed on the side of Mount Tupper — The Snow War continues.*

