CANADA'S ICE-FIELD HIGHWAY

Scenic beyond adequate description, this spectacular Highway ranks among the great "highroads" of the world. For its entire length of 142 miles it commands some of the most breath-taking and majestic scenery in the Canadian Rockies. A panorama of mountain ranges, unbroken but ever-changing along both sides of this highway keeps the visitor enchanted and enthralled. Arrow signs along the road point to features of special interest, many of which are listed in this publication.

At places the Highway reaches a height of nearly 7,000 feet above sea-level. Many of the mountains visible in the region rise to more than 10,000 feet and are perpetually snow-capped. The road passes within a mile of the Athabasca Glacier—a tongue of the great Columbia Ice-field. A side road takes you to the foot of the glacier where a snowmobile tour on the glacier is available. At other points the motorist may stop and explore deep and awesome canyons, experience the thrill of watching mighty waterfalls pouring out of rocky chasms, or marvel at jewel-like mountain lakes that are ever in colour harmony with the mountain peaks and the skies above them.

Wildlife, including many large animals indigenous to the Rocky Mountains, may often be observed during a trip through this noted big game sanctuary. Bungalow cabins, chalets, lodges, hikers' hostels, and equipped camp-grounds provide convenient accommodation along the route. The return trip reveals new and fascinating scenery all the way. Opportunities for photography and nature study are endless, and the scenic wonders of this region are unforgettable.

The Highway is maintained by the National Parks Branch of the Federal Department of Northern Affairs and National Resources. Information offices are located at Banff townsite, Lake Louise station, Columbia Ice-field, and Jasper townsite.

THE COLUMBIA ICE-FIELD

The Columbia Ice-field, centre of the greatest known accumulation of ice in the Rocky Mountains, is not only one of the most interesting ice-fields in North America, but certainly one of the most accessible. Near the Highway, it lies astride the British Columbia-Alberta boundary and at the dividing line between Banff and Jasper National Parks.

With its outlet glaciers, the Columbia Ice-field covers an area of nearly 130 square miles, of which fully 50 square miles are more than 8,500 feet above sea level in the area of accumulation, usually called the "névé". From the great central ice reservoir, lying between Snow Dome, Mount Castleguard, and Mount Columbia and capping the Continental Divide for a distance of about 20 miles, three valleys radiate outward. Through them flow the Athabasca Glacier to the northeast, the Saskatchewan to the east, and the Columbia to the northwest.

From other points smaller ice tongues flow into the surrounding valleys, and in a number of places ice tumbles over precipices to form reconstructed glaciers such as Dome Glacier at the head of Habel Creek, and the northward flowing glacier between Mounts Columbia and King Edward.

The melting waters of the Columbia Ice-field flow into three great rivers—the 765 mile Athabasca, a sub-tributary of the Mackenzie River, which flows into the Arctic Ocean; the Saskatchewan (1,205 miles) which crosses the Prairies and empties into Lake Winnipeg and, via the Nelson River, into Hudson Bay; and the Columbia (1,210 miles) which cascades its way through scenic gorges, crossing into the U.S.A. before entering the Pacific Ocean.

HOW ARE GLACIERS FORMED?

Glaciers are formed by great depths of snow accumulating in mountain basins at high altitudes. The weight of the snow, assisted by surface melting, causes the lower layers to compact and to form solid ice. Under the pressure exerted, together with gravitational effect, the ice is slowly extruded through the valley outlets of the basin. When the slowly moving mass of ice in the valley reaches lower altitudes melting takes place during the summer months, forming glacial streams.

WHY ARE GLACIERS RECEDING?

The present glaciers are the remnants of the continental ice-cap which once covered a large part of the northern half of this continent. In earlier times glaciers were of much greater extent than at present. The recession of glaciers has been caused by a gradual, long-term cyclic change in climatic conditions, primarily a slight increase in annual mean temperature. Probably there has been also a lower rate of precipitation in the mountains and longer periods of sunshine.

MOVEMENT OF GLACIERS

Remembering that ice is a hard and brittle solid, it is surprising to find that it can flow like a plastic body under the pull of gravity, but this can easily be proved. Metal plates placed in a row at right angles across the glacier gradually get out of line, the central ones moving fastest, similar to floating debris in a river, but the motion is very slow, even in the middle being seldom more than a few inches a day.

Crevasses—As a glacier flows over a rock bed or reaches a space of increased incline, tension is exerted in the upper portion of the ice until it ruptures. Such cracks, but a hairbreadth wide at first, are enlarged by melting and changes of slope until they may become hundreds of feet in length and depth. These are known as crevasses.

Seracs—As the glacier advances, these crevasses are bent out of shape and may be crossed by fresh crevasses, splitting up the ice into wild lumps and pinnacles called seracs.

Ice-falls—Passing over an uneven bed, the body of the glacier is first bent in one direction and then in the other. When the slope increases, great openings are formed across the glacier which are known as transverse crevasses, as they usually occur almost at right angles to the direction of the flow. The ice at this point may form in great steps with crevasses between them. This is known as an ice-fall.

CARRYING POWER

One of the most interesting characteristics of a glacier is its carrying power. Although it is in motion like a plastic substance, it is solid and strong enough to support a tremendous weight. Debris torn from the mountainside obscures its edge, so that often one may walk 50 yards out before the ice can be seen. This fringe of broken rock carried on the edge of the glacier is called a marginal moraine.

Rocks, even as large as cottages, now and then roll down upon the ice and are transported without trouble. Medium-sized rocks, a few feet across, called glacier tables, are left standing on pedestals of ice, as they protect the glacier beneath from the sun, while thawing goes on all around them.

The whole mass of debris is carried steadily onwards until a point is reached where melting is complete and no more burdens can be borne. Then a terminal moraine is built up, a steep and rugged pile of loose rocks.

The shrinkage of the glaciers is illustrated by the number of terminal moraines visible in the valleys in which glaciers descend. The nearest to the present tongue of the ice is almost bare; the next, a few hundred yards away from the tongue, may have bushes growing on it; and others a mile or two away may be covered with forest.

GLACIER OBSERVATIONS

Glacier observations under governmental auspices were undertaken by the Dominion Water and Power Bureau in 1945. Charter and succeeding members of the Alpine Club of Canada, however, made sporadic observations and studies of the variations of a number of glaciers over a long period of years.

ATHABASCA GLACIER

The Athabasca Glacier has been receding rapidly in recent years. Records of the Water Resources Division of the Engineering and Water Resources Branch, Department of Northern Affairs and National Resources, show that the average yearly recession (1945-1949) has been 102 feet. It has well-defined and apparently recently formed terminal and marginal moraines. These moraines indicate that at one time Dome and Athabasca Glaciers were joined.

One of the first published photographs of the glacier, taken in 1908, showed that the Athabasca terminus had receded only about 400 to 500 feet from the terminal moraine. Later pictures indicated a recession of perhaps 300 to 400 feet from 1908 to 1919 and 100 to 200 feet from 1919 to 1922. From 1922 to 1948, net recession was approximately 1,750 feet. For the past five years the recessions have been approximately 100 feet each year.

Evidence of the recession of other glaciers in the national parks in British Columbia and Alberta may be observed by visitors to these parks.

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For additional copies of this publication, or other information on the National Parks of Canada, write to:

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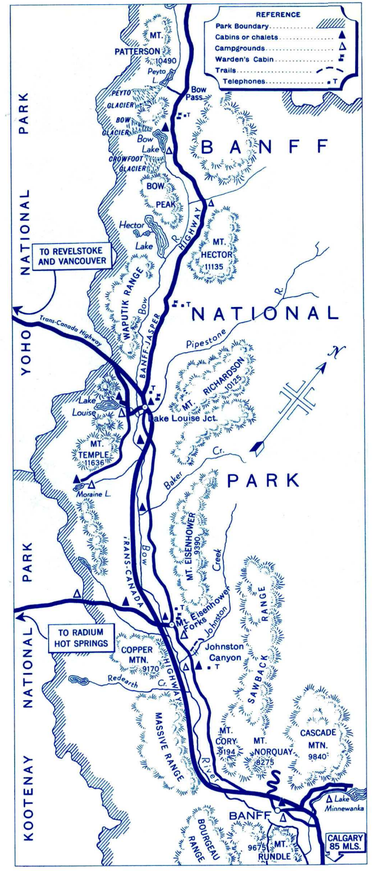
CANADA'S ICE-FIELD HIGHWAY

in BANFF and JASPER NATIONAL PARKS

Issued under the authority of the
Honourable Walter Dinsdale, P.C., M.P., Minister of
Northern Affairs and National Resources

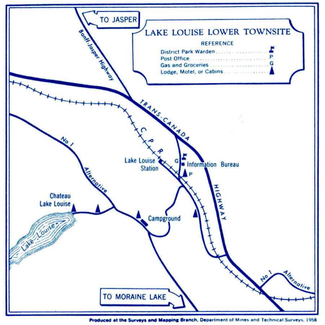


Miles from Junction Trans-Canada Highway and Banff-Jasper Highway (read up)	POINTS OF INTEREST	Miles from Jasper Townsite (read down)
29.9	Mount Patterson. Snowbird Glacier.	111.9
26.8	*VIEWPOINT. Peyto Glacier and Wapta Ice-Field. Parking above road.	115.0
25.1	Summit of Bow Pass (6,785'). Peyto Lookout 3/4 mile to viewpoint of Glacier, Lake and Valley north. Nature trail starts at viewpoint.	116.7
24.1	Mistaya District Warden Headquarters. Emergency telephone.	117.7
22.3	*VIEWPOINT. Bow Glacier and head of Crowfoot (south).	119.5
22.1	Lodge. No gas. 1/2 mile.	119.7
21.0	*VIEWPOINT. Bow Lake. Mount Thompson northwest.	120.8
20.6	Camp-ground, south end of Bow Lake.	121.2
20.1	*VIEWPOINT. Crowfoot Glacier.	121.7
17.6	Helen Creek. Trail to Helen and Katharine Lakes.	124.2
14.3	Camp-ground. Canadian Youth Hostel on south side of Mosquito Creek. Dolomite Peak north.	127.5
10.1	*VIEWPOINT. Hector Lake. Mount Balfour.	131.7
6.0	Emergency telephone, at cabin above road.	135.8
1.7	Herbert Lake. For picnic tables turn off south end.	140.1
0	JUNCTION Banff-Jasper and Trans-Canada Highways.	141.8

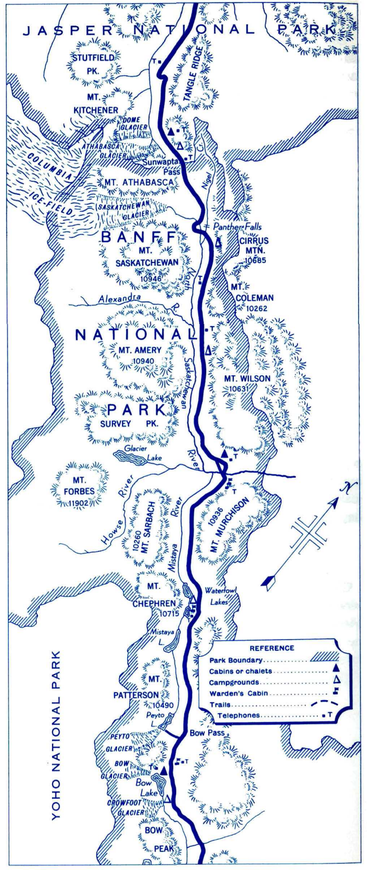
From JUNCTION Banff-Jasper and Trans-Canada Highways to BANFF TOWNSITE—36.5 miles.

BANFF TOWNSITE (4,538'). Headquarters of Banff National Park. Information Bureau. Hotels, bungalows and public camp grounds. Hot mineral springs.

*Photographic Point



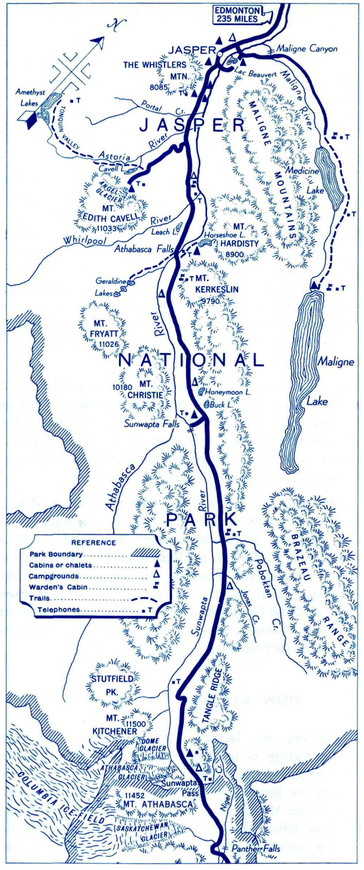
Produced at the Surveys and Mapping Branch, Department of Mines and Technical Surveys, 1958



Miles from Junction Trans-Canada Highway and Banff-Jasper Highway (read up)	POINTS OF INTEREST	Miles from Jasper Townsite (read down)
79.8	*SUMMIT VIEWPOINT. Sunwapta Canyon, Mount Kitchener and Snow Dome.	62.0
76.8	*COLUMBIA ICE-FIELD. View of Athabasca Glacier, Mount Athabasca, Snow Dome. Chalet, dining room, service station. Snow-mobile trips on Athabasca Glacier.	65.0
75.8	INFORMATION BUREAU. Rest rooms. Camp-ground.	66.0
73.8	BANFF-JASPER PARKS BOUNDARY. Sunwapta Summit (6,675').	68.0
71.8	Hilda Creek. Canadian Youth Hostel.	70.0
71.1	*VIEWPOINT. Mount Athabasca and Sunwapta Pass northwest.	70.7
68.2	*VIEWPOINT. North Fork of the Saskatchewan. Cirrus Mountain eastward.	73.6
67.5	Nigel Creek and Canyon.	74.3
66.5	Big Hill Creek.	75.3
63.8	Camp-ground. Cirrus Mountain	78.0
61.7	Park Maintenance Camp. Emergency telephone.	80.1
57.7	*VIEWPOINT. Alexandra River Valley westward. Mount Amery.	84.1
57.4	Graveyard Flats. Emergency telephone at Warden's Cabin. Canadian Youth Hostel. Trail to Sunset Pass.	84.4
56.0	*VIEWPOINT. Mounts Amery and Saskatchewan northwest. Look for moose.	85.8
54.5	Camp-ground. Rampart Creek.	87.3
47.4	Bungalow Camp, gas, meals.	94.4
46.9	*VIEWPOINT. Westward of Howse and Mistaya River Valleys.	94.9
46.3	Saskatchewan River Bridge.	95.5
46.0	Saskatchewan River District Warden Headquarters. Emergency telephone.	95.8
44.0	Mistaya Canyon. Short trail from parking area.	97.8
40.0	*VIEWPOINT. Mount Chephren south, Kauffman Peaks.	101.8
37.6	Totem Creek. Canadian Youth Hostel.	104.2
36.1	*VIEWPOINT. Lower Waterfowl Lake and Mount Chephren.	105.7
35.5	Camp-ground. Beside Waterfowl Lake	106.3
35.1	Park Maintenance Camp. Emergency telephone.	106.7
34.4	*VIEWPOINT. Waterfowl Lake. Look for moose.	107.4
32.2	Mount Barbette and Barbette Glacier, looking southwest.	109.6
31.6	Mount Noyes and Mount Murchison northward.	110.2

*Photographic Point

Compiled in co-operation with the National Parks Branch, Department of Northern Affairs and National Resources



Miles from Junction Trans-Canada Highway and Banff-Jasper Highway (read up)	POINTS OF INTEREST	Miles from Jasper Townsite (read down)
141.8	*JASPER TOWNSITE (3,472'). Headquarters of Jasper National Park. Information Bureau. Outdoor heated swimming pool, tennis courts, hotels, bungalows, camp-grounds. Miette Hot Springs, 38 mi.	0.0
141.2	JUNCTION with road to Athabasca River. Old Fort Point and Lac Beauvert Loop, 2 mi.	0.6
140.8	Bungalows.	1.0
140.7	Miette River. Confluence with Athabasca River.	1.1
140.3	Bungalows.	1.5
139.4	Bungalows.	2.4
137.8	Whistlers Creek. Bungalows.	4.0
135.5	Portal Creek.	6.3
133.6	*Astoria River, drains Amethyst Lakes.	8.2
133.5	JUNCTION, Mount Edith Cavell Road. Angel Glacier, 9 mi. Tea Room and Chalet. 7½ mi. to start of trail to Tonquin Valley. 8 mi. to Canadian Youth Hostel Unit.	8.3
131.7	Camp-ground.	10.1
129.2	Warden's cabin.	12.6
128.5	Confluence Whirlpool and Athabasca Rivers. Brook trout.	13.3
127.9	Valley of Crooked Trees.	13.9
127.2	*Whirlpool River Crossing. Fine view of Mount Kerkeslin to the southeast.	14.6
124.7	Leach Lake. Rainbow trout. Picnic ground.	17.1
122.5	Trail to Geraldine Lakes, 6 mi. Angling, Rainbow trout.	19.3
122.2	*Bungalows and Tea Room, gas. Trail to Horseshoe Lake, 3 mi. Rainbow and Eastern Brook trout.	19.6
122.3	*Athabasca Falls. Picnic ground.	19.5
121.9	Canadian Youth Hostel.	19.9
121.7	Warden's cabin.	20.1
119.4	Mount Kerkeslin. Camp-ground.	22.4
118.4	*Athabasca River Viewpoint. Mounts Christie, Brussels and Fryatt. Rocky Mountain goat.	23.4
109.6	Trail to Honeymoon Lake, 300 yds. Rainbow trout. Camp-ground.	32.2
109.2	Trail to Buck Lake, 200 yds. Angling, Brook trout.	32.6
107.8	*Sunwapta Falls Junction. Bungalows and Tea Room, gas.	34.0
97.1	Poboktan Creek (Stoney Indian for "owl"). Warden's Cabin.	44.7
94.0	Jonas Creek. Camp-ground.	47.8
87.8	Canadian Youth Hostel.	54.0
86.8	Beauty Creek and Falls.	55.0
84.3	*Stutfield Glacier Viewpoint.	57.5
82.8	Tangle Creek, near foot of grade which ascends lower slopes of Wilcox Peak.	60.0
80.8	Sunwapta Canyon.	61.0

*Photographic Point