GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF ENERGY, MINES AND RESOURCES

BEATTON RIVER (2139)

LEGEND

Erratics — provenance
- Laurentide L
- Rocky Mountain ..... R
- Cordilleran C

Boundary between drifts of different provenance

Glacial grooves & drumlinoids
- in drift
- in rock

Flow direction not locally indicated or inferred

Flow direction locally indicated or inferred

Meltwater channels (flow direction indicated)

Eskers

Ice thrust ridges & ridges of uncertain origin

Ice-dammed lakes & glaciolacustrine sediments

Outwash plains of sand & gravel

Area of parabolic dunes with orientations

C 14 ..... ● 25,940

High level record of glaciation
(erratics, meltwater channel, or glacial groove
– Elevation in feet X 100) ..... (62)

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Base Map, 2nd Edition 1963.

Kilometres 20 0 20 40 60 80 100 120 140 160 180 200 Kilometres
Nautical Miles 10 0 10 20 40 60 80 100 Nautical Miles
Statute Miles 10 0 20 40 60 80 100 120 Statute Miles

Glacial map, Beatton River sheet 1:1,000,000 -- Marginal Notes

A record of the last ice sheets of northeastern British Columbia and of their retreat is preserved in the materials and topography of the present surface. Interpretation of air photographs of the entire area covered in the map and spot sampling of surface materials by the authors in the course of their field work have provided the basis for the present map.

Erratics from known source regions aid in the delimitation of areas glaciated by ice originating in (1) the Cordilleran region west of the Rocky Mountain Trench, (2) the northern Rocky Mountains between latitudes 57° and 59° north, and (3) the Canadian Shield far to the northeast. Only locally is it possible to discern a sharp boundary between these three areas. Commonly detritus from each source region is intermingled over a zone from a few to many miles wide. This mixing can be ascribed to (1) transport by preglacial and interglacial streams of Cordilleran and Rocky Mountain detritus far out into the plains to the east from whence some material may have later been picked up and transported back by Laurentide ice from the Canadian Shield, (2) distribution of erratics derived from the Canadian Shield by berg rafting in lakes which were dammed by Laurentide ice and which extended west to the vicinity of the mountain front from whence these erratics could later be carried eastward by Cordilleran ice, and (3) shifting during time of till deposition of the line of interaction of the various ice sheets. The inferred boundary between the ice sheets, after allowance has been made for possible methods of mixing, is indicated on the map by a broad line.

Glacial grooves and drumlinoid ridges mark the trend of ice motion during the latest active stages of the glaciers at any one site. In some places the land forms do not record the sense of ice motion; elsewhere a distinction between leading and trailing edges of these features reveal the sense as well as the trend of the former ice movement. In the western half of the sheet, wherever sense of motion is considered to be unambiguous on the basis of regional patterns, arrowheads have been utilized to indicate this; in the eastern half arrowheads have been applied only where local land forms are diagnostic of the sense of motion.

Strias of highly irregular terrain are recognizable as eskers; gravelly to sandy deposits of former streams flowing over or within the former ice sheets. The meltingaway of the surrounding ice has led to a reworking of the stream deposits to give rise to the irregular terrain. Closed depressions, partly or completely drained of surface water, are common and indicate relatively high permeability of the underlying materials. Such areas can provide important local sources of construction materials and ground water.

Meltwater channels, some of exceptional size especially considering their present catchment basins, were created by streams draining from, or along, the edges of the former ice sheets during their retreat. Such channels fall into two main categories: (1) those running across the general slope of the land and clearly deflected into these anomalous courses along, or close to, the glacier margins by ice which was still occupying the lower ground, and (2) those running down the regional slope or along the valley bottoms, evidently receiving meltwater temporarily diverted into ice-free drainage ways by the ice. Many of these latter channels evidently drained former ice-dammed lakes. Although the abandoned channels are commonly floored by a veneer of gravel, this does not as a rule provide large quantities of structural materials and is commonly too shallow to serve as a reservoir for ground water.

Areas inundated for a time by ice-dammed lakes are identified by the presence of more or less extensive deposits of lacustrine silts and clays with or without berg-rafted stones. In the mountain many of these deposits are both thick enough and sufficiently dissected to be recognizable in air photos. On the plains a ground examination is generally necessary to demonstrate their presence, but the occurrence of a landslide-prone veneer at the tops of river cutbanks, and the absence of meltwater channels over an extensive area are highly suggestive of a former lake. Where lake deposits are known their limits have been drawn as far as possible parallel to the present contours along the inferred shores of the lakes within which these deposits were formed. Deep lacustrine sediments in this region present problems for foundations of roads etc., because of (1) susceptibility to frost heave and loss of strength of thawing, (2) poor drainage, and (3) tendency to landsliding even on moderately low slopes. Ground water is not generally available in these deposits and they can interefere with recharge of any underlying aquifers.

Crevasse fillings, recognizable as swarms of low straight ridges with two or three dominant directions in any one locality, are locally present in the northeastern corner of the sheet. Their composition is not known.