CANADA
DEPARTMENT
OF
MINES AND TECHNICAL SURVEYS

GEOLOGICAL SURVEY OF CANADA

PRELIMINARY SERIES

SHEET 93 C

Joins Preliminary Map 54-11, "Nechako River"

LEGEND

CENOZOIC

QUATERNARY
PLEISTOCENE AND RECENT

8	Till, gravel, sand, silt, clay

TERTIARY
OLIGOCENE(?), MIOCENE AND (?) LATER

7	Vesicular and amygdaloidal andesite and basalt, fine-grained to porphyritic black, brown, and grey andesite and basalt; breccia, tuff, shale, conglomerate, and greywacke

CRETACEOUS(?) AND TERTIARY
UPPER CRETACEOUS(?), PALEOCENE, AND (?) LATER

6	Rhyolite, dacite, and associated tuff and breccia; minor andesite, basalt, conglomerate, greywacke, and tuffaceous shale

MESOZOIC

JURASSIC AND/OR CRETACEOUS
UPPER JURASSIC AND/OR CRETACEOUS

5	Biotite granite; quartz diorite, quartz monzonite, and granodiorite
4	Granodiorite; diorite, quartz diorite, granite; in part strongly to slightly gneissic
3	3a, granite-gneiss, amphibolite, schist, migmatite, all highly metamorphosed and granitized equivalents of 1; dykes of granite, diorite, and basalt; 3b, quartz-biotite gneiss, migmatite, amphibolite, actinolite schist, chlorite schist, phyllite

TRIASSIC(?) AND JURASSIC
MIDDLE JURASSIC AND (?) EARLIER

2	Andesite, related tuffs and breccias, chert pebble conglomerate, shale and sandstone

PRE-MIDDLE JURASSIC

1	Andesite, basalt, related tuffs and breccias; greenstone, chlorite schist, phyllite; tuffaceous argillite, argillite, limy argillite; minor greywacke and argillaceous limestone

Geological boundary (defined, approximate, assumed)
Bedding (inclined, vertical)
Fault (defined, approximate, assumed)
Glacial striae
Fossil locality
Mineral occurrence × Cu

Geology by H. W. Tipper, 1954

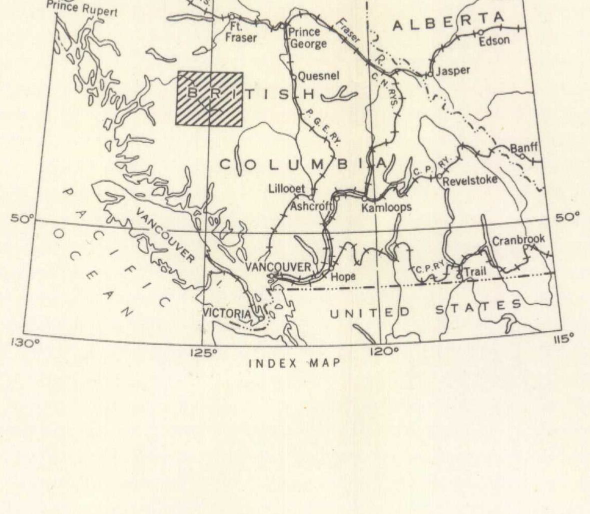
Road
Wagon road
Trail
Park boundary
Indian Reserve boundary
Intermittent lake and stream
Marsh
Glacier
Contours (interval 1000 feet)
Height in feet above mean sea-level + 7630

Approximate magnetic declination, 25° 44' East

Cartography by the Geological Cartography Unit, 1957

In response to public demand for earlier publication, Preliminary Series maps are now being issued in this simplified form, thereby effecting a substantial saving in time. There is no loss of information, but the maps will be clearer to read if all or some of the map-units are hand-coloured.

Air photographs covering this area may be obtained through the National Air Photographic Library, Topographical Survey, Ottawa, Ontario



MAP 10-1957

ANAHIM LAKE

COAST DISTRICT

BRITISH COLUMBIA

Scale: One Inch to Four Miles = 1/253,440

Miles 4 2 0 4 8 12

DESCRIPTIVE NOTES

Anahim Lake map-area is crossed by a good motor road that connects Williams Lake, on the Pacific Great Eastern Railway, and Bella Coola, on the Pacific Coast. It is 105 miles from Williams Lake and 35 miles from Bella Coola. Numerous wagon roads, many passable to motor vehicles, and good trails reach into most parts of the area.

Bedrock is well exposed above tree-line, but only in river and creek canyons and on the tops of prominent hills below tree-line. Areas of low relief are covered by glacial drift, commonly 10 to 15 feet deep but in places as much as 300 feet deep. Less than 10 per cent of the area as a whole is rock outcrop although in the Coast Mountains the ratio is much higher.

The oldest rocks in the area (1) are lithologically similar to Upper Triassic or Lower Jurassic rocks north and south of the map-area. This group is mainly structureless volcanic flows and breccias and little is known of the thickness and stratigraphy of the group. The only significant sedimentary section lies northwest of Hotnarko Lake, where there is over 1,500 feet of argillite and greywacke containing indeterminate marine shells. This group forms the eastern contact of the Coast Mountain granites as well as several areas within the granite complex.

The Middle Jurassic rocks (2) are on strike with rocks to the north of similar age and lithology. They occur as discontinuous areas in the central and eastern part of the map-area surrounded by Tertiary volcanic rocks. This discontinuity prevents the determination of their extent, thickness, and detailed stratigraphy. The only collection of fossils made comprises marine shells of Middle Jurassic age. The relation of this group with the presumably older rocks (1) is not known.

A great variety of metamorphic and granitic rocks of uncertain origin is included in unit 3. These rocks may have formed at different times and in different ways but all are probably derived by metamorphism and granitization from the older groups (1, 2). Part of this group (3a), in the Coast Mountains, is made up of rocks in various stages of granitization and metamorphism between the parent rock and the granodioritic and dioritic rocks (4) into which they grade. Included also are rocks forming metamorphic aureoles around younger granite bodies (5). With the exception of a few dykes no rocks of clearly intrusive origin are included here. The other part of this group (3b), occurring east of the Coast Mountains, apparently results from the metamorphism of Middle Jurassic sedimentary and volcanic rocks. No intrusive bodies are associated.

Granodiorite or diorite masses (4), with irregular outlines, underlie much of the Coast Mountains. Within any one mass the rock has a fairly uniform composition and variations are gradual. Rocks of unit 3a grade gradually or abruptly into those of unit 4 and the division is arbitrarily made so that the fairly uniform, massive or only slightly gneissic rocks comprise the latter and other types the former. In a few places the granodiorite when emplaced was apparently sufficiently mobile to intrude the older volcanic rocks (1). The relation between this unit 4 and units 2 and 3b is not known; unit 4 is presumed to be younger.

Coarse-grained biotite granite (5) with good jointing, massive equigranular texture, low mafic mineral content, and no inclusions intrudes all the older rocks of the Coast Mountains. This unit is easily recognized by its coarseness, uniform composition, and white weathering. All contacts seen are sharp, well defined and nowhere gradational. Quartz diorite, quartz monzonite, and granodiorite occur in minor amounts. Associated with this granite are coarse quartz-feldspar pegmatites. The relation of the granite (5) with units 2 and 3b is not known but the former is presumed to be younger. Boulders of granite (5) occur in Paleocene conglomerate.

A thick, nonmarine assemblage of rhyolitic to dacitic flows (6), outcropping mainly in the eastern half of the area, rests with angular discordance on all older rocks. As this group is considered to be early Tertiary, a Paleocene succession of greywacke and conglomerate along McClinchy Creek tentatively is included here. The flows are varicoloured, red, mauve, buff, white, grey, or yellow, with minor amounts of green to black andesitic and basaltic varieties. They have a maximum thickness of 1,500 feet. The whole assemblage is flat-lying or gently warped into broad open folds.

The late Tertiary, nonmarine basaltic and andesitic flows (7) can be divided into three groups: 1, three early central eruptions, 2, Miocene plateau lavas, and 3, late scoriaceous cinder cores. For the purposes of this map, however, they are combined into a single unit and included with them are several sedimentary sections. Although the areal extent is large, the thickness is rarely over 2,000 feet. Dykes and necks of basalt are everywhere abundant, except within the Coast Mountains. A thick sedimentary sequence underlies the basalt flows along the Hotnarko River and contains flora, according to W. L. Fry, of Upper Oligocene or Lower Miocene age.

The map-area was overridden by ice in the Pleistocene which, at its maximum, moved off the Coast Mountains and across the Interior Plateau in a direction varying from east to north 25 degrees east. In a later stage of glaciation, as the ice thinned, the underlying topography exerted greater control on ice-movement so that some ice escaped westward through the Bella Coola valley and southeastward through the Anahim Lake valley. The resulting accumulation of glacial material (8) occurs as ground moraine, drumlins, eskers, kettles, lake clays, kame terraces, and outwash.

The great extent of flat-lying Tertiary rocks obscures the structural pattern of the pre-Tertiary rocks. The Mesozoic volcanic and sedimentary rocks are undoubtedly folded but as the rocks rarely outcrop little is known of the nature of these folds; presumably the structures trend northwesterly as in the Nechako River area to the north. A prominent feature of the Coast Mountains is the abundance of steeply dipping faults, commonly with a northwesterly strike but mainly northeasterly. In the Tertiary rocks faults with almost vertical dip are common, even in late Tertiary lavas (7), and several faults have disrupted the Rainbow Range and Itcha Range cones.

Prospecting has been intermittent and unrewarding. The late Tertiary rocks (7) underlie a large area and are not considered favourably as mineral-bearing rocks, although a small amount of copper carbonate occurs in a fault breccia in the Rainbow Range. The early Tertiary volcanic rocks (6) may contain industrial rocks and minerals such as pumice and perlite as these were noted in the overburden. Copper carbonate occurs at several places as fracture fillings in a brecciated rhyolite (6) along the lower Chilcotin River valley, the site of a major fault. The Mesozoic volcanic and sedimentary rocks (1, 2) although poorly exposed probably are more favourable rocks for prospecting and do contain several very small mineral occurrences, chiefly copper minerals with traces of gold and silver and sphalerite. Unfortunately, the eastern contact of the Coast Mountain granite complex is covered by glacial drift from Clearwater Lake to Kappan Lake and by late Tertiary lavas from Kappan Lake northwestward, thus concealing a belt which, in areas to the north and south, has been worthy of careful prospecting. Within the Coast Mountain granite complex, some quartz veins and small shear zones around the contacts of the biotite granite (5) contain very small amounts of chalcopyrite and gold.

MAP 10-1957
ANAHIM LAKE
BRITISH COLUMBIA

SHEET 93 C