GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

PRELIMINARY SERIES

SHEET 93A (West Half)

LEGEND

CENOZOIC

QUARTERNARY
PLEISTOCENE AND RECENT
12 — Glacial deposits and recent alluvium; till, gravel, sand, and silt

TERTIARY
MIOCENE AND/OR PLIOCENE
11 — Basalt; minor tuff, conglomerate, and sandstone

PALEOCENE AND/OR EOCENE
10 — Brown and buff rusty weathering dacite and rhyolite

PALEOCENE (?) TO PLIOCENE (?)
9 — Sandstone, shale, and tuff

MESOZOIC

JURASSIC AND (?) CRETACEOUS
MIDDLE JURASSIC (?) TO CRETACEOUS (?)
8 — Green andesitic tuff, agglomerate, and flows; minor argillite, chert, and conglomerate

JURASSIC
MIDDLE AND/OR UPPER JURASSIC
7 — Dark green andesitic agglomerate, breccia, and flows; minor tuff; may be equivalent to unit 6

6 — Green andesitic agglomerate, breccia, and flows; minor tuff, argillite, and limestone; may be equivalent to unit 7

LOWER JURASSIC (?)
5 — 5a, purplish brown, brown, and grey pebble and cobble conglomerate and sandstone; minor shale; 5b, soft, friable, black and brown, carbonaceous shale

LOWER JURASSIC
4 — 'Purple' volcanic rocks; purplish brown, dark grey, and rarely green andesitic agglomerate, breccia, and flows; near contact with 3 may contain analcite; minor limestone argillite, and conglomerate

TRIASSIC AND (?) JURASSIC
UPPER TRIASSIC AND (?) LOWER JURASSIC
3 — Pebble and cobble conglomerate, sandstone, limestone, and argillite; minor volcanic rocks

PALAEOZOIC

PERMIAN AND (?) EARLIER
CACHE CREEK GROUP
2 — 2a, dark and light grey, finely crystalline, massive limestone; 2b, chert, argillite, and greenstone; minor limestone

CAMBRIAN AND/OR LATER
CARIBOO GROUP
1 — Argillite, quartzite, slate, and phyllite; minor limy rocks

AGE UNCERTAIN
A — Slate and argillite; minor volcanic rocks and tuff: shows similarities to both units 1 and 8

INTRUSIVE ROCKS

B — B1, granite, granodiorite, and quartz-diorite; B2, syenite and monzonite; B3, diorite

C — C1, trachyte porphyry; may be volcanic; C2, andesite and fine-grained diorite; may all or in part be volcanic

D — Serpentinite; serpentinized ultramafic rocks

Small rock outcrop ..... ×
Geological boundary (defined, approximate) .....
Limit of geological mapping .....
Bedding (inclined; vertical,) .....
Fault (defined, approximate, assumed) .....
Anticlinal axis .....
Synclinal axis .....
Fossil locality ..... (F)

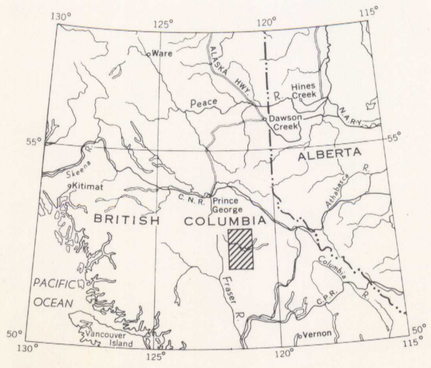
Geology by R. B. Campbell, 1959

Main highway .....
Other roads .....
Trail or portage .....
Railway .....
Intermittent stream .....
Marsh .....
Contours (interval 1000 feet) 5000
Height in feet above mean sea-level 2380

Cartography by the Geological Survey of Canada, 1960

Approximate magnetic declination, 25° 20' East

In response to public demand for earlier publication, Preliminary Series maps are issued in this simplified form and will be clearer to read if all or some of the map-units are hand-coloured



INDEX MAP

5.1.2
A, Geol. Quesnel Lake (W½), B.C.
Map 59-1959.

PUBLISHED, 1960
COPIES OF THIS MAP MAY BE OBTAINED FROM THE DIRECTOR, GEOLOGICAL SURVEY OF CANADA, OTTAWA

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MAP 59-1959
GEOLOGY
QUESNEL LAKE
(WEST HALF)
CARIBOO DISTRICT
BRITISH COLUMBIA

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

Miles
4 2 0 4 8 12

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

DESCRIPTIVE NOTES

The geology of the area bounded by 52°30' and 52°45' north latitude and 121°15' and 121°30' west longitude is taken from an unpublished map by C.H. Crickmay based on 1938 field work. A report by Cockfield and Walker[1] is the basis for the geology of the area west of Quesnel Lake and north of 52°30' north latitude, although the writer has reinvestigated much of this area and has modified the map.

The Cariboo group (1) was once thought to be Precambrian but is now believed to be Cambrian and later. North of Badger Peak and Browntop Mountain and near Mount Brew the rocks are dominantly quartzite. Around Blackbear and Seller Creeks argillite and slate are the most common rock types. The structure involves thrust faults and overturned folds, and the thrust and axial planes of the folds both dip northeast.

Rocks placed in the Cache Creek group (2) are similar to those mapped in the same group in the map-area to the west and to those in the type area. The structure appears to be complex and locally there is small-scale complicated folding. The major structure has not been determined because of the limited exposure.

The Mesozoic rocks, which are dominantly volcanic, were formerly placed in the Quesnel River group and assigned a probable Jurassic age. However, as well as Jurassic, they were found to include Triassic and possibly Cretaceous components, and are subdivided in this report.

Fine-grained Upper Triassic sedimentary rocks (3) are well exposed in the valley of Antoine Creek and in a small canyon on Gravel Creek. They are apparently overlain by a thick conglomerate sequence which may range from Upper Triassic to Lower Jurassic. The pebbles and cobbles in the conglomerate are all composed of volcanic rocks which are green in the lower beds and purple near the top. The contact of the conglomerate and the 'purple' volcanic rocks (4) seems to be conformable and gradational.

The purple colour of the Lower Jurassic volcanic rocks (4) results from abundant accessory hematite. In otherwise-similar green volcanic rocks magnetite is a common accessory mineral. All of the volcanic rocks of units 4, 6, and 7 commonly contain perfect crystals of black pyroxene, some of which exceed 1/8 inch in length. The matrix around the pyroxene phenocrysts is in most cases aphanitic.

The sedimentary rocks of unit 5 seem to be folded in a syncline along the northeasterly limit of exposure of the Cache Creek group rocks (2). The shale (5b) was observed only in road cuts and its relation to the conglomerate (5a) is not known. The conglomerate along the southwest side of Beaver Creek valley rests unconformably upon Cache Creek group rocks and the fragments within it are composed almost exclusively of chert similar to that in the underlying strata. The conglomerate south of the east end of Big Lake contains fragments similar to all the rock types of the Cache Creek group as well as of granitic rocks. This conglomerate may not be equivalent to the rocks along Beaver Creek. The contact of unit 5 with unit 6 is apparently not exposed and it is not known whether the relations are conformable or unconformable.

The volcanic rocks of units 6 and 7 are probably parts of a single unit. Both are characterized by massive, green agglomerate and breccia which give little structural data even when well exposed. Well-bedded tuff is characteristic of unit 8 which seems to lie conformably above the volcanic rocks of unit 7, but it was not observed in association with the similar volcanic rocks farther west (6). This suggests that the rocks of unit 6 are in fault contact with the Upper Triassic sediments (3) and the 'purple' volcanic rocks (4). The relationship of unit 7 to the 'purple' volcanic rocks (4) is not known.

All the Tertiary sedimentary rocks (9) that can be mapped separately are older than the basalts of unit 11. In the small occurrence southwest of 150 Mile House the sediments apparently underlie siliceous volcanic rocks of probable Paleocene or Eocene age. The three exposures near Horsefly have no such relationship and may be any age from Paleocene to Pliocene. There is no evidence of physical connections between any of the patches of these sedimentary rocks and they may be of several different ages. The total thickness of the beds is not known, but in the locality north of Horsefly approximately 200 feet of strata are exposed.

Siliceous volcanic rocks (10) are considered to be Paleocene or Eocene in age on the basis of lithological correlation with rocks in the vicinity of Williams Lake to the west. They are vesicular and amygdaloidal flows found in one small exposure.

The flat-lying, plateau-type basaltic flows (11) in central British Columbia have long been considered to be of Miocene age, though some may be Pliocene and perhaps even Pleistocene. Outcrops of this group are small and scattered and are not shown individually on the map; instead the total probable extent of the lavas is indicated wherever it may reasonably be estimated. The lavas occur mainly between elevations of 2,500 and 3,250 feet and locally reach 3,550 feet. They appear to be less than 500 feet thick in most places, but locally where they have filled old depressions, they may be thicker.

A zone of structural complexity underlies the valley of Spanish Lake and Spanish Creek and extends southeasterly to Quesnel Lake. The rocks in this zone may be an intricately faulted mixture of the rocks of the Cariboo group (1) and unit 8, but may all belong to the latter. For the present they are mapped separately as unit A.

Glacial deposits (12) cover broad areas and seriously limit exposures of bedrock. The flat parts of the area abound in drumlins and crag-and-tail features which give good evidence of the direction of glacial movement. Erratics of granitic and metamorphic rocks show that ice moved into the area from the high Cariboo Mountains to the east and southeast.

Except for the large masses of granite in the northeastern part of the area, the plutonic rocks (B, C, and D) occur in small, isolated exposures. Their relation to other rocks is commonly obscure and their designation as intrusive cannot always be justified.

Considerable gold-placer-mining activity has been carried on in the past. Most of the work was done on the main streams and tributaries of Quesnel and Cariboo Rivers but there were several operations along the Horsefly River. The writer is not aware of any significant base-metal discoveries within the area. Very short cross-fibre asbestos occurs in the serpentinite (D) in several exposures.

[1] Cockfield, W. E., and Walker, J. F.: Geology and Placer Deposits of Quesnel Forks Area, Cariboo District, British Columbia; Geol. Surv., Canada, Sum. Rept. 1932, pt. A1.

MAP 59-1959
QUESNEL LAKE
BRITISH COLUMBIA
SHEET 93A (West Half)