

DESCRIPTIVE NOTES

Quaternary gravels cover much of the bedrock below approximately 4500' (1215 m). The bedrock was deformed and metamorphosed (up to sillimanite grade) from the Jurassic to Eocene. Syntectonic granitoids intrude parts of the area. Three terranes are distinguished by their stratigraphy. The Barkerville Terrane (Snowshoe Group) is overthrust from the northeast by the Cariboo Terrane (Cariboo and Kaza groups) and from the southwest by the Quesnel Terrane (unnamed Triassic and Jurassic volcaniclastics). From youngest to oldest a partial sequence of rocks and events is:

- deposition of Quaternary gravel and basalt
- post-metamorphic faulting (Eocene?)
- intrusion of granite and pegmatite (Cretaceous) folding and metamorphism
- intrusion of granodiorite and quartzmonzonite (Jura-Cretaceous)
- westerly directed folding (local easterly directed) - thrusting, metamorphism and westerly directed folding
- deposition of volcaniclastics of the Quesnel Terrane (Upper Triassic and Lower Jurassic)
- intrusion of granite and granodiorite into the Barkerville Terrane (lower Paleozoic)

- deposition of sediments in the Cariboo and Barkerville terranes (Hadrynian to Cambrian) Bedrock is well exposed above treeline (5,500', 1700 m), on

steep slopes and along some creeks and rivers. At high elevations it is partly covered by glacial ice and gravel (Rm), talus (Rt), landslide rubble (Rr), and a few debris flows (Rd). Below treeline bedrock is covered by Recent and Quaternary alluvium (Ra,Qa,QRa) and locally by Quaternary basalt and related pyroclastics (Qv). The basalt is considered to be Quaternary because it is deposited horizontially along the shore of Quesnel Lake; a condition assumed to be from ponding against a glacier that filled the lake.

Two fault systems offset metamorphic isograds. The first, northwest trending Matthew Fault, places chlorite grade Kaza Group against kyanite grade Cariboo Group. The second, northeast trending moderate to shallow south-dipping faults, consistently downdrop the southwest side. The Little River Fault (Klepacki, 1981; Getsinger, 1982) although mainly east to southeast-dipping is considered to be part of this system. Late northeast trending tight folds may have developed with the second fault

Muscovite-potassium feldspar-quartz pegmatite and granite intrude country rock where it is generally of kyanite or higher grade. It forms mainly sills and less commonly dykes. The pegmatite appears at the higher structural levels and the granite at the lower. The granite is thought to be generated at the same time as the high grade metamorphism although the structurally higher intrusive phases are considered somewhat younger than the freezing of the host rock metamorphic minerals. Along the East Arm of Quesnel Lake pegmatite is involved in small isoclinal folds. The age from Rb/Sr isotope data is approximately Upper Cretaceous (J.S. Getsinger, Ph.D. thesis in prep.U.B.C.) and is thought to be the minimum age of high grade metamorphism

Granodiorite and quartzmonzonite of the Little River Stock (JKg) intrude chlorite to garnet grade rock of the Cariboo Terrane north of the North Arm of Quesnel Lake. The age is assigned from comparison with other post metamorphic granites of the Omineca Belt.

Metamorphism varies from chlorite grade confined to north of Quesnel Lake and northeast of the Pleasant Valley and Little River faults to sillimanite grade near Niagara Peak. Sillimanite, kyanite, staurolite and garnet may have grown at the same time as northwest trending open folding and overgrow a pervasive cleavage of biotite and muscovite. The pervasive cleavage is an axial surface to westerly asymmetric folds near the head of Roaring Creek and wraps around garnets presumably formed sometime earlier. In the same place and northeast to the head of Penfold Creek there are several stages of refolding directed to the southwest. East-verging isoclinal folds of Cariboo Terrane stratigraphy on Mount Watt fold layer-parallel cleavage and the Pleasant Valley Thrust.

over Barkerville Terrane. The thrust intersects layering at shallow angles and is folded isoclinally. As the final generation of metamorphic minerals formed after the last pervasive cleavage it is reasonable to assume that the fault was there prior to the freezing of those minerals. All the metamorphic minerals with the possible exception of sillimanite are found on both sides of the thrust.

The Pleasant Valley Thrust system emplaces Cariboo Terrane westward

Pyroclastic andesite and basalt of the Quesnel Terrane occupies a small area in the southwest corner of the map. They were deposited during the Late Triassic or Early Jurassic as described by Campbell (1978, Quesnel River Group, ukJa).

Sills and plutonic masses of orthogneiss intrude the Barkerville Terrane along the East Arm of Quesnel Lake. They are collectively known as the Quesnel Lake Gneiss (Pg) and consist primarily of mica granite and granodiorite with minor hornblende granodiorite. There are two main phases; pink and grey, with a lesser amount of a crosscutting leucocratic variety. Sills of the grey phase are volumetrically more important to the west near Mount Stevenson in Spanish Lake map area (93A/11). Struik (1983) referred to them as foliated granodiorite. Isotopic ages from the gneiss are predominantly Lower Paleozoic (A.V. Okulitch, pers. comm. 1983; J.S. Getsinger, ibid)

Rock of the Cariboo Terrane (Cariboo and Kaza groups) is described elsewhere (Struik, 1979, 1983), but as low grade metamorphics. The Isaac and Cunningham formations are in high grades throughout much of the map area. The Cunningham consists mainly of pure calcite marble and on the Mount Watt ridge partly as buff weathering dolomite marble. The Isaac Formation is primarily light brown weathering impure calcite marble and calcareous schist. At the top of the unit are several beds of pure calcite marble. Schist and gneiss sequences from 10 to 100 m thick occupy lower parts of the Isaac Formation.

Rock of the Barkerville Terrane (Snowshoe Group) is described by Struik (1982, 1983). The highest unit of the Snowshoe Group, the Bralco marble, is here enlarged to encompase a higher marble (PB2) separated from the lower Bralco marble (PB) by schist and gneiss (PBs). The upper marble is in turn overlain by more schist and gneiss (Ps). The Downey succession retains characteristics displayed in the Spanish Lake (93A/11) area (Struik, 1983), varying from biotite grade on the east shore of the North Arm of Quesnel Lake to kyanite grade eastward to the head of Frank Creek. The low grade Downey near Isaiah Creek resembles very much the Downey of the Barkerville gold belt.

References

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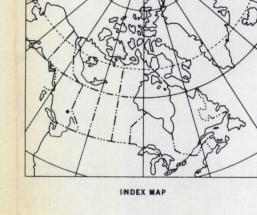
and Cariboo River (93A/14) map areas; Geological Survey of Canada, Open File No. 858. 1983: Spanish Lake (93A/11) and adjoining map areas; Geological

1982a: Wells (93H/4), Spectacle Lakes (93H/3), Swift River (93A/13)

Survey of Canada, Open File No. 920.

Tipper, H.W., Woodsworth, G.J. and Gabrielse, H. 1981: Tectonic Assemblage map of the Canadian Cordillera; Geological Survey of Canada, Map 1505A.

Geology by L.C. Struik 1982, 1983 Geological contacts around Maeford Lake and Little River Fault in part from D.W. Klepacki, 1979, units re-intepreted by Struik. Location of metamorphic minerals occurrences and some contacts near Three Ladies Mountain provided by J.S. Getsinger 1982 Field assistance 1983 by M. Dubord J.L. Mansy mapped in the northeast of the map in conjunction



QUESNEL LAKE and part of MITCHELL LAKE

CARIBOO LAND DISTRICT BRITISH COLUMBIA Scale 1:50,000 Échelle Miles 1 Yards 1000 0 1000 2000 3000 4000 Verges

Fault (defined, approximate, assumed, inclined attitude) ---Bedding attitudes (unknown top, inclined, vertical) — (known top, inclined, overturned) Anticline (upright, overturned) ——— Syncline (upright, overturned) — Cleavage attitudes (phase n, inclined, vertical) (phase n + 1 ($n = 1 \rightarrow \infty$), inclined, vertical)

Antiform (upright, overturned)

with the crew; August 1983