GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

PRELIMINARY SERIES

82 M W

LEGEND

CENOZOIC

PLEISTOCENE AND RECENT

11 — Glacial deposits and recent alluvium; till, gravel, sand, silt, and clay; few if any bedrock exposures

PLEISTOCENE AND/OR EARLIER

10 — Olivine basalt; cinder cones, blocky flows, breccia, and agglomerate

TERTIARY
MIOCENE OR PLIOCENE

9 — Flat-lying olivine basalt flows; minor breccia and gravel

TERTIARY (?)

8 — Conglomerate

MESOZOIC

JURASSIC AND/OR CRETACEOUS AND (?) EARLIER

7 — 7a, biotite granodiorite and granite; 7b, hornblende diorite; 7c, muscovite granite; 7d, biotite-hornblende syenite, biotite granodiorite, hornblende diorite, and felsite; includes septa and inclusions of intruded rocks

6 — Serpentinite

PALAEOZOIC OR EARLIER

PERMIAN OR EARLIER

5 — Greenstone, greenschist, chlorite schist, phyllite, limestone, quartz-sericite schist, quartzite, volcanic agglomerate

4 — 4a, dark grey and brown phyllite (commonly limy), limestone, sericitic quartzite; minor greenstone, quartz-feldspar-chlorite gneiss, and meta-conglomerate; 4b, trachytic tuff and breccia

3 — Grey and buff weathering, white, grey, and buff marble and limestone; minor greenstone and phyllite

2 — Undivided; includes rock types common to 4a and 5; minor quartz-mica schist and amphibolite

AGE UNCERTAIN

1 — SHUSWAP METAMORPHIC COMPLEX
1a, characterized by well foliated granitic gneiss; quartz-feldspar-biotite gneiss, quartz-feldspar-hornblende gneiss, amphibolite; minor quartz-mica schist, quartzite, marble, and skarn; abundant and locally dominant pegmatite, muscovite granite, and biotite granodiorite; 1b, exclusively or dominantly biotite granodiorite; 1c, characterized by quartz-mica schistose gneiss (commonly garnetiferous), amphibolite, quartzite, marble, and skarn; pegmatite, muscovite granite, biotite granodiorite; minor granitic gneiss; 1d, similar to unit 1c with abundant and locally dominant dykes and sills of pegmatite, muscovite granite, and biotite granodiorite; 1e, undivided, may include all rock types found in units 1a and 1c. The granitic rocks may be equivalent to those of 7

Small rock outcrop . . . . . ×

Geological boundary (defined, approximate, and assumed) . . . . . ~

Foliation including rock cleavage, schistosity, gneissosity, and bedding (inclined, vertical, and horizontal) . . . . . ⫽ ⊥ +

Lineation including fold axes, crenulations, mineral lineations, and bedding-cleavage intersections (plunging, horizontal) . . . . . ⤢ →

Fossil locality . . . . . Ⓕ

Mineral prospect . . . . . Ag ×

Minerals

Copper	Cu	Silver	Ag
Gold	Au	Uranium	U
Lead	Pb	Zinc	Zn

Geology by R. B. Campbell, 1962 and 1963

Geological cartography by the Geological Survey of Canada, 1964

Roads, all weather . . . . .

Other roads . . . . .

Cart track . . . . .

Trail . . . . .

Railway . . . . .

Post office . . . . . P

Township boundary . . . . .

Indian Reserve boundary . . . . . I. R. 13

Intermittent stream . . . . .

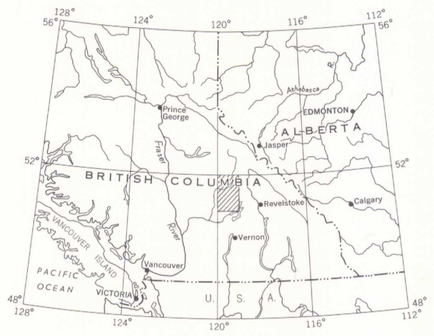
Marsh . . . . .

Contours (interval 500 feet) . . . . .

Height in feet above mean sea-level . . . . . 6850 +

Base-map cartography by the Geological Survey of Canada, 1964, from a map compiled by the Surveys and Mapping Branch, 1963, with revisions by the Geological Survey of Canada, 1964

Mean magnetic declination, 23° 41' East, decreasing 3.4' annually. Readings vary from 23° 19' E in the SE corner to 24° 16' E in the NW corner of the map-area



INDEX MAP

MAP 48 1963
GEOLOGY
ADAMS LAKE
(SEYMOUR ARM. WEST HALF)
BRITISH COLUMBIA

Scale 1:253,440
(1 inch to 4 miles)

Miles 4 0 4 8 12 Miles
Kilometres 6 0 6 12 18 Kilometres

DESCRIPTIVE NOTES

The main public roads in the map-area lie in the valleys of North Thompson and Barriere Rivers and of Sinmax Creek. Logging and Forest Service roads provide access to the valleys of Raft, Mad, and Adams Rivers, to both branches of Scotch Creek, to several smaller valleys, and onto many hillsides. Much of the map-area is covered by heavy timber and dense underbrush and in general travel is difficult and bedrock exposures are meagre. Forest growth extends to an elevation of about 6,500 feet.

The Shuswap Metamorphic Complex (1) is equivalent to the Monashee Group of Vernon map-area[1]. The complex has been divided into sub-units as indicated on the map, but clearly definable boundaries between them are lacking and none is shown on the map. In zones between sub-unit symbols on the map the rock assemblages change gradationally from that of one sub-unit to that of another.

No direct evidence regarding the age of the rocks or of the metamorphism of the complex was found. The rocks seem certainly to be older than Carboniferous and they may be at least partly equivalent to the Proterozoic Kaza Group and lower Palaeozoic Cariboo Group, which trend toward the map-area from the northwest[2]. The rocks of the complex may have been deformed and possibly metamorphosed prior to the deposition of those of units 2 to 5 but probably the most intense deformation and metamorphism took place in post-Permian time[3].

The rocks of the Shuswap Metamorphic Complex (1) are a strongly foliated and lineated assemblage of metasedimentary gneisses and schists intruded by an enormous number of dykes, sills, and small irregular bodies of granitic rocks. Granitic rocks included in unit 1 are not grouped with those of unit 7, with which they may be equivalent, because they cannot be mapped separately and shown independently at the present scale. Pegmatite comprises more than 70 per cent of the exposed rocks in some places, for example on the slopes of Adams River valley south of Tumtum Lake. Muscovite granite and aplite appear to be closely related to pegmatite in origin and occurrence. Unfoliated or weakly foliated, mainly medium-grained biotite granodiorite forms large masses, as directly east of Trophy Mountain, and a multitude of dykes and sills, mainly in the northern part of the map-area.

Granitic rocks, including pegmatite, can be seen to be intrusive into dilational openings in many places. Where the sequence of intrusion could be determined it was found that pegmatite clearly intrudes all other granitic rocks.

The rocks of units 2 to 5 are equivalent to the Eagle Bay Formation of the Mount Ida Group[1] and to the Adams Lake and Nisconlith Series of Dawson[4]. The map-units cannot be regarded as distinct stratigraphic units nor are their relative ages necessarily indicated by their position in the legend. The limestone bands of unit 3 are not likely to represent a single stratigraphic unit and it may be that no one band is in the same stratigraphic position as any other.

Fossils from a limestone of unit 3 are presumably of Carboniferous or Permian age, and that, in the writer's opinion, may be the age of all the rocks included in units 2 to 5.

The contact of the rocks of units 2 to 5 with those of the Shuswap Metamorphic Complex was not directly observed. In the southern part of the map-area the contact appears to lie along a system of north-south and east-west trending faults whereas in the northern part it may be a combination of faults and an unconformity, though evidence of the latter is lacking.

In the southern part of the map-area the rocks of unit 4a are mainly well-foliated and strongly crenulated argillaceous phyllites with associated thin beds of limestone. To the north quartzose rocks are more prevalent. Quartz-feldspar-chlorite gneiss is exposed on the west side of Scotch Creek south of the forks and is believed to be the metamorphic derivative of quartz-pebble conglomerate.

Metavolcanic rocks are characteristic of, but not necessarily dominant in, the rocks of unit 5. Much of the unit is composed of green phyllite and chlorite schist which may be all or partly of sedimentary origin. Other rocks of the unit are distinctly metasedimentary. Foliation is strongly developed in these rocks but lineations are confined to the phyllite and schist and are apparently lacking in greenstone.

Unit 2 cannot be easily characterized by any particular rock type; rather it includes types typical of both units 4a and 5, though they are dominantly metasedimentary. It may be that unit 2 represents the rocks of units 4a and 5 folded together in a distinctive pattern. With better exposure it might be possible to divide these rocks into lithologic units equivalent to units 4a and 5.

Serpentinite (6) associated with greenstone (5) was found to contain very short and sparse asbestos fibre in one place.

Many dykes of granodiorite, granite, and rhyolite, too small to show on the map, are found on Adams Plateau and are evidently related to the nearby small granitic intrusions.

The assorted rocks of unit 7d are intruded in a long narrow belt which may be the locus of a zone of fracturing. The intrusions are evidently in the form of dykes between which are septa of the invaded rocks.

All the metamorphic rocks of the map-area are cut by basaltic dykes from a few inches to several feet wide. These dykes characteristically trend north or a few degrees east of north. They are, perhaps, most common in the eastern part of the map-area.

Well-consolidated conglomerate (8) evidently formed sometime during the Tertiary from granitic detritus derived from hills to the west of Adams Lake valley.

The basaltic flows of unit 9 are equivalent to valley flows along Clearwater River west of the map-area, where they underlie lava and agglomerate of unit 10. The latter are associated with cinder cones, and though these deposits have been glaciated, similar cones and flows of post-glacial age were noted nearby in Quesnel Lake map-area[2].

All the metamorphic rocks are intensely deformed and those of the Shuswap Metamorphic Complex (1) have been found by Wheeler[5] to have suffered at least two periods of folding; first into recumbent, attenuated folds on axes trending a little north of east, and second into more open and upright folds on northwesterly axes. Evidence of two periods of folding is found only locally in the rocks of units 2 to 5. In the writer's opinion these rocks are isoclinally folded, and the axial planes of the folds are roughly parallel with the foliation. The axes of such folds apparently trended somewhat north of west. Subsequently the strata may have been redeformed into broad warps and local minor folds.

The majority of mineral deposits in the map-area are confined to the rocks of units 2 to 5. Not all the known deposits are shown on the map but those that are indicate the general areas where the known deposits are concentrated. No deposit in the area has, as yet, proved to be of economic value, with the possible exception of placer gold on Scotch Creek. The concentration of mineral deposits in the area extending northwesterly from Adams Plateau plus the limited bedrock exposure is a combination that suggests that further prospecting, using modern techniques of geochemistry, may be warranted.

[1] Jones, A. G.: Vernon Map-area, British Columbia; Geol. Surv. Can., Mem. 296.
[2] Campbell, R. B.: Quesnel Lake, East Half, British Columbia; Geol. Surv. Can., Map 1-1963.
[3] Lowdon, J. A., et al.: Age determinations and geological studies; Geol. Surv. Can., Paper 62-17, p. 7.
[4] Dawson, G. M.: Shuswap Sheet, British Columbia; Geol. Surv. Can., Map 604.
[5] Wheeler, J. O.: Big Bend, British Columbia; Geol. Surv. Can., Preliminary Report in preparation.

MAP 48 1963
ADAMS LAKE
BRITISH COLUMBIA
82 M W