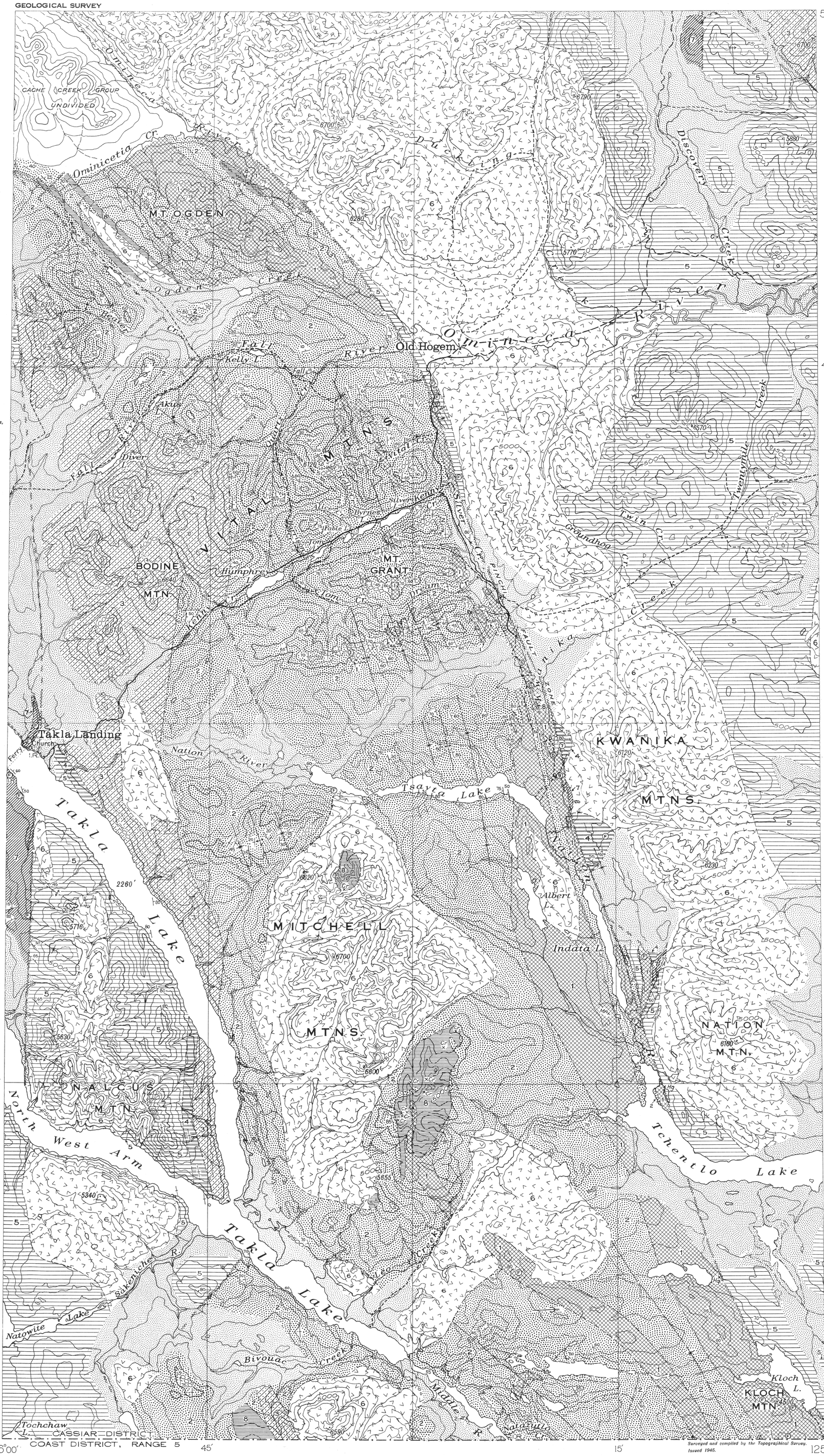
CANADA
DEPARTMENT OF MINES AND RESOURCES
MINES AND GEOLOGY BRANCH
BUREAU OF GEOLOGY AND TOPOGRAPHY
GEOLOGICAL SURVEY



LEGEND

MESOZOIC

CRETACEOUS
UPPER CRETACEOUS
SUSTUT GROUP
7 — *Conglomerate, shale, greywacke, tuff*

JURASSIC OR CRETACEOUS
UPPER JURASSIC OR LOWER CRETACEOUS
OMINECA INTRUSIONS
6 — *Granodiorite, quartz diorite, diorite; minor granite, syenite, gabbro, pyroxenite*

TRIASSIC AND JURASSIC
UPPER TRIASSIC AND LATER
TAKLA GROUP
4, 5 — *4, Upper Triassic: shale, greywacke, conglomerate, tuff, and limestone*
5, Upper Triassic and Jurassic: andesitic and basaltic flows; tuffs, breccias, and agglomerates; interbedded conglomerate, shale, greywacke, limestone, and coal

PALAEOZOIC

PERMIAN AND (?) EARLIER
CACHE CREEK GROUP
3 — *Greenstone (andesitic flows, tuffs, and breccias with minor basic intrusive rocks), chlorite and hornblende schists; minor argillite and chert. May include some Takla group (5)*
2 — *Argillaceous quartzite, chert, argillite, slate, greywacke, conglomerate; minor greenstone and limestone; related schists. In part older than 1*
1 — *Massive limestone; minor argillaceous and cherty sedimentary rocks, and greenstone*

8 — *Peridotite, pyroxenite, dunite, serpentine, gabbro, and carbonatized alteration products. Age uncertain, may be pre-Jurassic*

Heavily drift covered area
Bedding (inclined, vertical, horizontal,)
Glacial striae
Anticlinal axis
Synclinal axis
Fault or fault zone
Fossil locality (F)
Mineral occurrence ×

MERCURY MINES AND PROSPECTS

1. *Bralorne BB and related groups*
2. *Snell Group*
3. *Lil Group*
4. *Bralorne Takla Mercury Mine*
5. *Bron Group*
6. *Don Group*
7. *Kwanika Group*
8. *Bowleg Group*
9. *Victory Group*
10. *Indata Lake Mercury Showing*
11. *Indata Group*
12. *Tchentlo Group*

PLACER GOLD CREEKS

Vital
Silver
Quartz
Tom
Harrison
Kenny
Dream
Kwanika
Twentymile

MINERAL OCCURRENCES

Mercury	Hg
Manganese	Mn
Copper	Cu
Chromium	Cr
Coal	C

NOTE. For detailed descriptions of mercury deposits see Geological Survey Papers 42-11 and 44-5.

Geology by J. E. Armstrong, 1940, 1941, 1943, and 1944.

Road, well travelled
Road, not well travelled
Trail
Contours, interval 500 feet

DESCRIPTIVE NOTES

Motor launches tow 20-ton scows to Takla Landing from Fort St. James at the foot of Stuart Lake, a distance of 110 miles. Fort St. James is reached by motor road, 41 miles long, from Vanderhoof on the Canadian National Railway.

Above timberline, at an elevation of about 5,000 feet, much of the bedrock is exposed, but elsewhere rock outcrops occupy less than 5 per cent of the map-area. Drift deposits, chiefly of glacial origin, mantle the timbered slopes and spread out widely and deeply over most of the lowland areas.

The Cache Creek group (1, 2, 3) appears to represent a conformable succession, not less than 10,000 feet thick, of interbedded sedimentary and volcanic rocks and their derived schists. The constituent formations are closely folded in a general northwesterly direction. Limestone strata (1) pinch and swell along their strike and at depth, and are discontinuous; maximum thicknesses probably reach 5,000 feet. The limestones carry the diagnostic fossils Neoschwagerina, Cancellina, Parafusulina, Verbeekina, and Misellina, of Middle Permian age. Non-calcareous strata (2) appear to be much more closely folded than the limestones; their aggregate thicknesses are difficult to estimate, but represent a minimum total of 5,000 feet. Chert forms in beds one half inch to 5 inches thick, commonly minutely crumpled and separated by thin partings of black, lustrous argillite. Other argillaceous members include grey to black, carbonaceous rocks, in beds that are rarely more than 6 inches thick. The greenstone assemblage (3) consists largely of andesitic lavas, tuffs, and breccias, with minor related basic intrusive rocks.

Formations of the Takla group (4, 5) comprise more than 5,000 feet of interbedded volcanic and sedimentary rocks, ranging in age from Upper Triassic to Upper Jurassic. A sedimentary division (4) of Upper Triassic age and 1,000 feet or more thick, has been mapped separately in places, but elsewhere in the area lithologically similar beds are included with formations of Jurassic age (5). Exposures along the first creek northeast of Indata Lake contain the diagnostic Upper Triassic fossil Halobia. Beds on the west side of Takla Lake supplied no fossils, but are lithologically similar to known Upper Triassic strata and lie between Permian and Jurassic formations. About 4 miles south of the mouth of Duckling Creek, a lens of Upper Triassic limestone 2,200 feet long and 400 feet thick is interbedded with lavas and tuffs. No limestones of Jurassic age have been recognized. The Takla rocks exposed along Silver Creek comprise at least 200 feet of, presumably, Upper Triassic limestone and shale overlain conformably by 1,000 feet or more of Jurassic tuffs and lavas with intercalated sandstone, shale, and conglomerate. A conglomerate bed that outcrops along the west shore of Takla Lake contains the marine fossil Trigonia, and is probably of lower Jurassic age. Conglomerate also occurs at other horizons in the Takla group. Beds outcropping along Discovery Creek comprise more than 2,000 feet of interbedded tuff, andesite, shale, greywacke, conglomerate, and coal. An exposure of the shale provided fossil specimens of the upper Lower Jurassic ammonite, Harpoceras. The rocks of the Takla group exposed in the mountains west of Takla Lake and in the mountains east of Discovery and Silver Creeks are mainly of volcanic origin. Marine fossils of Middle and Upper Jurassic age have been collected from rocks of this group in the McConnell Creek area to the northwest.

The larger bodies of Omineca intrusions (6) are composed chiefly of granodiorite and quartz diorite. These grade into diorite, gabbro, and, in a few places pyroxenite, along their margins. In addition to the intrusive rocks mapped there are many acid to basic dykes and sills up to 100 feet wide. The Omineca intrusions cut Jurassic strata and, apparently, are overlain by Upper Cretaceous beds.

The Sustut group (7) consists mainly of greywacke, shale, and conglomerate, and contains fossil plants of Upper Cretaceous age. The conglomerate holds many granitic pebbles similar in composition to the Omineca intrusions. Conglomerate beds outcropping along Roddacker and Kwanika Creeks and in the northeast corner of the map-area have been correlated with the Sustut group. Those on Kwanika Creek rest unconformably on the adjacent batholith.

Bodies of peridotite, pyroxenite, and dunite (8) have been partly to completely serpentinized, and in many places have been further altered along shear zones to carbonate and talc or to greenish buff carbonate-quartz-mariposite rocks. The basic intrusions cut Permian strata, and are cut by the Omineca intrusive rocks.

The Pinchi fault zone varies in width from 200 feet, near the mouth of Vital Creek, to 5,000 feet, east of Indata Lake, but in most places does not exceed 1,000 feet. Its eastern margin represents the contact between rocks of the Cache Creek group on the west and of the Takla group and Omineca intrusions on the east. Although the fault contact between Permian and Mesozoic strata was nowhere observed, it seems probable that the Pinchi fault zone marks the site of major thrust faulting from the west, and that the Permian rocks have moved up with respect to the Mesozoic formations. Intense faulting was observed, however, in the Permian rocks within the fault zone. There the more important faults trend northerly, dip steeply to the west, and may join a major, low-angle thrust fault at depth. In most places it is difficult to trace them because of numerous minor intersecting cross faults. Along most of the faults, major and minor, the wall-rocks are brecciated across widths varying from a few inches to 30 feet, and, in places where the faults are closely spaced, brecciation may be continuous across several hundred feet. Many of the crushed and sheared rocks in the Pinchi fault zone have been altered hydrothermally: grey limestones have been partly to completely changed to buff dolomites, argillaceous quartzites and ribbon cherts to quartz-carbonate schists, greenstones to chlorite-carbonate schists, and serpentines to quartz-carbonate-mariposite rocks.

Cinnabar has been found at a number of places within crushed rocks of, or related to, the Pinchi fault zone, but the only known deposits of workable size and grade are those of the Bralorne Takla mercury mine. This property was operated from December 1, 1943, to September 9, 1944, when it closed due to a drop in the price of mercury. These and the other principal deposits are found in brecciated fault zones in Permian limestone. The cinnabar occurs as veinlets, blebs, and individual grains filling pre-existing openings such as fissures, solution cavities, and interstices between grains and breccia fragments. The common gangue minerals are quartz and calcite, but the amount of quartz varies greatly from one deposit to another, and is a minor constituent at the Bralorne Takla mercury mine. Limestone has been replaced by cinnabar to some extent especially along minute fractures in the rock, but this process is not an important factor in the grade of the ore, the best ore having formed in the most fractured or porous limestone.

Cinnabar deposits are also found along the contacts of small, sill-like bodies of serpentine where zones of shearing and brecciation provided channelways for hydrothermal solutions, resulting in carbonatization of the fractured rocks and the formation of cinnabar-chalcedony veinlets.

Several small deposits of chromite occur in a body of serpentinized peridotite (8) at the south end of Mitchell Mountains. The largest deposit, 33 feet long and 9 feet wide, is 38 per cent chromite, with a chrome-iron ratio of 2.6 to 1.

A vein of braunite and psilomelane occurs in Permian limestone about a mile west of the south end of Indata Lake. It varies from a few inches to 2 feet wide and has been traced for 60 feet.

A copper deposit occurs in granodiorite at the head of Duckling Creek. The rocks are stained with malachite, and contain specks of chalcopyrite and bornite throughout an area of about 800 by 2,000 feet.

At no time has the recovery of placer gold from the many creeks in the area been large, but it has been sufficient to sustain interest since 1868. On Twentymile Creek the gold occurs in gravels overlying boulder clay, whereas on most of the other creeks the gold is in old stream gravels beneath boulder clay.

Coal occurs in the sedimentary rocks of the Takla group on Discovery Creek, the largest seam observed being 30 inches thick.

Surveyed and compiled by the Topographical Survey. Issued 1945.

PRELIMINARY MAP 45-6

TAKLA

CASSIAR DISTRICT

BRITISH COLUMBIA

Scale: 1 inch to 2 miles

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