GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

PRELIMINARY SERIES

SHEET 104F

LEGEND

CENOZOIC

QUATERNARY
PLEISTOCENE AND RECENT
6 — Fluviatile gravel, sand, and silt; glacial outwash; till and alpine moraine

MESOZOIC

TRIASSIC (?) AND LATER
POST LOWER TRIASSIC
COAST INTRUSIONS
5 — 5, undivided; 5a, hornblende-biotite granodiorite, biotite-hornblende quartz diorite; minor leucogranite; 5b, pink biotite quartz monzonite; 5c, light grey leucocratic syenite

TRIASSIC
MIDDLE (?) AND UPPER TRIASSIC
3, 4, 3 — 3. Phyllite; interlaminated dark grey argillite, light grey siltstone, and fine-grained greywacke; light grey impure limestone and calcareous siltstone; basalt (intercalated with 3) andesite, greenstone, and pillow

TRIASSIC AND (?) EARLIER
2 — Quartz-albite-amphibole gneiss; amphibolite, quartz-biotite schist, garnetiferous schist, augen gneiss, and tremolite marble

PALAEOZOIC

CARBONIFEROUS (?) AND PERMIAN
1 — Thick-bedded white and light grey limestone, calcareous shale, argillite, chert, and cherty siltstone

Geological boundary (defined, approximate, assumed)
Bedding (inclined, dip: m, moderate; s, steep) m / s
Anticline
Syncline
Trend of complexly folded beds (direction of plunge known, unknown)
Lineament (from air photographs)
Fossil locality F
Mineral occurrence x5

INDEX TO MINERAL OCCURRENCES

1 Small high-grade pockets of molybdenite near borders of stock

2 Property presently held by American Metals-Climax Co.; pyrite-molybdenite-bearing quartz veinlets in fractured syenite

3 Pyrite, chalcopyrite, and bornite (?) disseminated in sheared phyllite

4 Veins and disseminated rosettes of coarse molybdenite in fine-grained leucogranite (5a)

5 Float from medial moraine on glacier; fine-grained leucogranite with veins and disseminated rosettes of coarse molybdenite

Geology by J.G. Souther, 1958

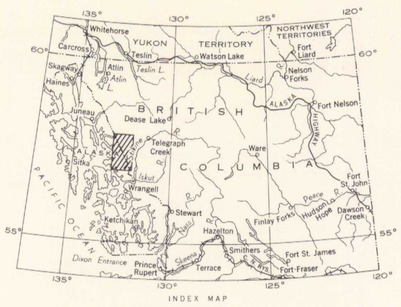
Trail
Suitable landing site for float-equipped aircraft A
International boundary
Glacier Gl
Contours (interval 1000 feet) 5000
Height in feet above mean sea-level 7776

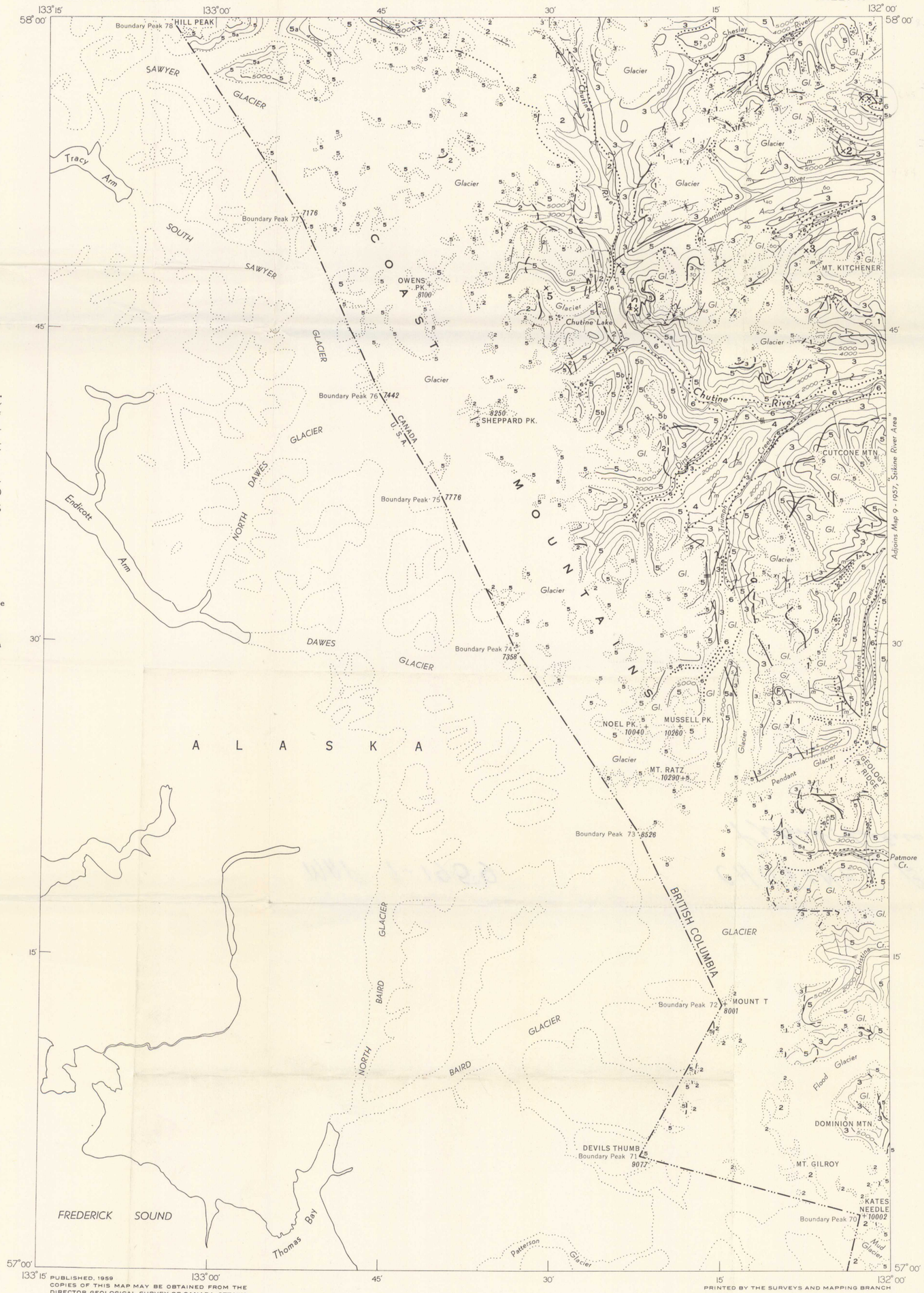
Cartography by Geological Cartography Unit, 1959

Approximate magnetic declination, 29° 50' East

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

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.





DESCRIPTIVE NOTES

Chutine map-area lies entirely within the rugged central ranges of the Coast Mountains. The northeast corner of the area may be reached by a horse trail from Telegraph Creek to a mineral prospect **2** north of Barrington River. Float-equipped aircraft have landed on Chutine Lake and on the small lake northwest of Mt. Kitchener, and small, shallow-draught boats have navigated Chutine River as far west as Chutine Lake. Travel on foot within the area is difficult and slow. Many of the valley glaciers and ice-fields provide relatively easy routes of travel, but only for short distances, as passage is commonly interrupted by crevasses and ice-falls.

Timber-line is about 4,000 feet above sea-level in the eastern part of the map-area but farther west, near the main ice-field its elevation decreases to about 3,000 feet. Above timber-line sharp serrated ridges, steep-walled cirques, and precipitous slopes of the upper mountains afford excellent rock exposures. Bedrock is relatively free of lichen, soil, and felsenmere, and map-units may in many places be recognized by direct observation from low-flying aircraft.

The Palaeozoic rocks (1), particularly the limestones, have undergone intense isoclinal and near-isoclinal folding, resulting in great local thickening and thinning of the strata. Many of the folds are recumbent, with axial planes dipping easterly at 30° or less. A relatively undeformed section on the north side of Pendant Glacier includes at least 4,000 feet of limestone beds that are probably correlatives of fossiliferous Permian limestone east of Stikine River, in Telegraph Creek area (G.S.C. Map 9-1957). The lowermost rocks are thin-bedded siliceous siltstones, argillites, and quartzites. These grade upward into a succession of interbedded shale, siltstone, limestone, and chert. Still higher in the series the shaly rocks disappear and the rock becomes a succession of white and grey, thick-bedded, crystalline limestones with thin beds and irregular nodules of chert.

A great thickness of fine-grained sediments (3) and minor intercalated volcanic rocks (4) overlie the Permian rocks. The contact is obscured by intense deformation, but the two formations appear to be conformable. Poorly preserved fossils, resembling Daonella sp. (Middle Triassic), occur in black calcareous siltstone several hundred feet above the Permian limestone. No fossils were found higher in the sequence but the rocks are lithologically similar to known Upper Triassic strata east of the map-area. Most of the sediments (3) are banded rocks composed of interlaminated dark grey argillite, lighter grey siliceous siltstone, and fine-grained greywacke. Lenses of impure limestone and calcareous shale occur at several stratigraphic levels. Dark green and greenish grey andesite (4) on the northwest side of Triumph Creek, and red-weathering pillow-basalt (4) north of Mt. Kitchener are believed to be intercalated with the sediments (3).

The Triassic rocks in the northwestern part of the map-area grade westerly from unmetamorphosed sediments, through a zone of slates and phyllites, into a western belt of schists and gneisses (2). The contact is placed where feldspar and hornblende appear in significant amounts. This westerly increase in metamorphic grade is apparently independent of stratigraphic level or proximity to granitic contacts. North of Chutine River slightly phyllitic shale, siltstone, and impure limestone on Mt. Kitchener may be traced westward, along strike, through successively higher grades of metamorphism into schists and gneisses (2) at Chutine Lake. There the rocks are predominantly medium-grained quartz-albite-amphibole gneiss interlayed with quartz-biotite schist, amphibolite, and garnet schist. Calcareous rocks have been altered to tremolite marble with bands of garnet and epidote. In the same region granitic bodies with sharp contacts cut rocks of different metamorphic grade without significantly changing the intruded rocks. Large roof pendants of schists and gneisses within the main body of granodiorite resemble those of unit 2 and are included with them although their age is unknown and may be pre-Triassic.

Granitic and dioritic rocks of the Coast Intrusions (5) cut all the other rocks. The contacts are extremely sharp and wall-rock alteration is confined to a narrow zone. Shales, siltstones, and phyllites have been metamorphosed to light grey hornfels, commonly with relict bedding. High-grade metamorphic rocks (2) are relatively enriched in accessory pyrrhotite and pyrite adjacent to granitic contacts but are otherwise unchanged.

Hornblende-biotite granodiorite (5a) forms most of the nunataks along the axis of the Coast Mountains and probably underlies a continuous belt about 10 miles wide paralleling the International Boundary. In the western part of this belt the rock is uniform grey, coarse-grained, biotite granodiorite with only minor amounts of hornblende. Farther east the texture and composition are more varied and dioritic inclusions, which are rare in the main body of granodiorite, become relatively abundant. Hornblende also increases in amount toward the east and in some rocks it is the predominant dark mineral. Some border zones of quartz diorite are remarkably heterogeneous in texture and mafic content. An interesting exception was noted at Chutine Lake where coarse-grained hornblende-biotite granodiorite (5a) appears to grade eastward into a uniform, fine-grained border phase of white leucogranite (5a) with conspicuous round grains of smoky quartz and a few phenocrysts of euhedral biotite.

Quartz monzonite (5b) appears to be the youngest major phase of the Coast Intrusions. Large irregular masses, stocks and dykes (5b) intrude the granodiorite (5a) as well as the older sedimentary and volcanic rocks. It is easily distinguished from the granodiorite by the presence of abundant flesh-coloured potash feldspar which imparts a characterisitic pink colour to the outcrops even when viewed from a distance. Biotite is the chief dark mineral but hornblende is present in some of the contact phases. Inclusions, even in the contact zone, are rare. Unlike the granodiorite (5a), which lacks pegmatite, the quartz monzonite (5b) contains numerous irregular masses of coarse quartz-orthoclase pegmatite and some quartz-lined vugs.

Fine-grained to aphanitic basalt dykes, too small to be shown on the map, cut all rocks in the area. In some places the granodiorite (5a) is cut by swarms of dykes so numerous that basalt comprises 30% to 40% of the rock. One such swarm at the head of Patmore Creek is almost a mile wide and is exposed for over 2 miles along strike. Less abundant, but generally much wider than the basaltic dykes are greenish grey, medium-grained dykes of augite porphyry. These are most conspicuous in the white Permian limestone (1). Several were noted in the Triassic sediments (3) but none was observed cutting the granitic rocks. All those examined are greatly sheared and some appear to have been folded with the enclosing rock. They are believed to predate the Coast Intrusions.

A small body of syenite (5c), just north of Barrington River, is the site of a mineral prospect **2** presently held by the American Metals-Climax Co. The rock is medium to coarse grained and composed almost entirely of light grey potash feldspar with traces of pyrite, epidote, and quartz. The body is apparently tabular and roughly concordant with northerly-dipping Triassic sediments (3). The latter have been metamorphosed to a red-weathering, pyritiferous hornfels for several hundred feet from the contact and both the syenite and hornfels are cut by several wide zones of intense fracturing. Within and adjacent to these zones is a closely spaced boxwork of thin quartz veinlets which carry pyrite and finely disseminated molybdenite.

Other molybdenite occurrences were noted at **1**, 3 miles north of the above property, and at **5**, **4**, and **4** near Chutine Lake. Copper minerals were observed on the north side of Mt. Kitchener at **3**.

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MAP 7 - 1959

CHUTINE

CASSIAR DISTRICT

BRITISH COLUMBIA

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

4 2 0 4 8 12 Miles

7-1959

MAP 7 - 1959
CHUTINE
BRITISH COLUMBIA
SHEET 104F

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