Canada
Department of Mines
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LEGEND

Sedimentary and Volcanic Rocks

CENOZOIC

MODERN

RECENT AND PLEISTOCENE

Clay, silt, sand, gravel, boulders

MESOZOIC

TRIASSIC

11 — *Andesite, keratophyre, basalt, tuff, breccia, agglomerate, conglomerate and greywacke; minor amounts of argillite, quartzite, shale and limestone; many small stocks, necks, sills and dykes of rock types mainly allied to the effusives*

PALÆOZOIC

PERMIAN

10 — *Mainly white limestone; minor amounts of chert, quartzite, argillite, slate and schist*

PRE-PERMIAN

9 — *Quartzite, schist, slate, argillite, limestone; schistose tuff; highly altered extrusives, and/or, intrusives*

Intrusive Rocks

MESOZOIC

TRIASSIC TO CRETACEOUS

8 — *Quartz monzonite*

7 — *Biotite-andesine granodiorite and some quartz monzonite*

5 — *Oligoclase granodiorite; rare quartz diorite, diorite and quartz monzonite*

4 — *Hornblende-andesine granodiorite; rare quartz diorite, diorite and quartz monzonite*

3 — *'Orthoclase porphyry'; pulaskite, nordmarkite, nepheline syenite, syenite, and, locally, pyroxenite*

2 — *Diorite*

1 — *Not subdivided: quartz monzonite, granodiorite, quartz diorite, diorite*

Geological boundary

Boat channel, 1929. Parts of the channel, especially where sand bars are extensive change from year to year

River sand and gravel bars and deposits

SOURCES OF INFORMATION

Topography north of Patmore Creek and Scud River by **F. A. Kerr**; *that to the south by the* **International Boundary Commission**, *with additions by* **F. A. Kerr**.

Geology by **F. A. Kerr**, *1926-1929.*

GENERAL GEOLOGY

Bedrock, except where covered by ice and snow, is well exposed above timber line which is at elevations ranging from 3,500 to 4,500 feet. Below timber line bedrock is largely concealed by glacial and slide debris and in the valley bottoms by stream and lake deposits of clay, sand and gravel.

The oldest rocks are recrystallized, chiefly dark grey, Palæozoic sediments accompanied by some contemporaneous volcanic rocks and, in places, capped by white limestone (Permian). The Palæozoic rocks are overlain by strata of volcanic origin accompanied by very limited quantities of sediments that occur irregularly intercalated mainly as discontinuous lenses. These rocks are in the main Triassic but some of later age may be included. All these rocks are intensely deformed and are cut by numerous dykes, stocks and other small bodies of igneous rocks that are largely fine grained and not readily distinguishable from the Mesozoic volcanic rocks.

The Palæozoic and Mesozoic complex is invaded by the granitic rocks of the Coast Range batholith, which was developed by successive intrusions that probably commenced in Triassic and ended in Lower Cretaceous time. Nine groups of granitic rocks have been distinguished in the Stikine district and are believed to represent nine distinct periods of intrusion. Only seven of these groups have been recognized in this map-area. The intrusive rocks believed to be the oldest are diorites (2), orthoclase porphyry (3) and related rocks. Diorite is widespread although few of the masses have been indicated; it is of different ages but much appears to be of one age. The diorite is light to dark grey, coarse to fine grained and is variable in composition. Locally it is gneissic and sheared. The complexity is in part due to the presence of later intrusives. The rocks grouped under orthoclase porphyry (3) are heterogeneous in colour, texture and composition. Most of them hold large, light grey to red crystals of orthoclase but some contain no orthoclase and may be entirely of pyroxene. Hornblende-andesine granodiorite (4) considered to belong to the older of the two groups of this composition found in the Stikine district and believed to be of Triassic age is represented mainly in the mass which extends from Geology ridge and Cone mountain to Mount Robertson. It is medium to dark grey, usually moderately coarse with some large masses of orthoclase and in many places is sheared or gneissic and somewhat altered. What is believed to be a younger hornblende-andesine granodiorite (4) of probably Jurassic age, lies in the area north and east of Cone mountain. It is fairly light grey, fresh, and medium grained except near contacts. Oligoclase-albite granodiorite (5) present is classed in the younger of the two groups of this composition found in Stikine district and, therefore, also believed to be of Jurassic age. It is of variable composition but is usually light grey and moderately coarse. Biotite-andesine granodiorite (7) believed to be probably of Lower Cretaceous age is accompanied by numerous pegmatite dykes and is uniformly fresh, light grey and coarse, except near contacts where, due to differentiation it resembles the quartz monzonite (8). The monzonite is believed to be only slightly younger in age. It is uniformly fresh, light pink and coarse.

ECONOMIC GEOLOGY

Little prospecting has been done in the map-area, few discoveries of lode deposits have been made and no development work has been done, so the possibilities of the area have not been demonstrated. However, because of the geological similarity existing throughout the length of the eastern contact zone of the Coast Range batholith in British Columbia it is reasonable to expect that valuable deposits, such as have been found in other districts will be found here.

Mineral deposits discovered in Stikine district, and to a small extent in the map-area, are mainly of mixed sulphides, such as pyrite, pyrrhotite, galena, sphalerite, chalcopyrite, tetrahedrite and bornite. The most important metal constituents, occurring together or separately, are copper, lead and zinc. Gold and (or) silver values are generally important and in some cases are high. The mineral deposits are chiefly of the replacement type but some fissure veins of economic significance have also been noted. The replacement deposits occur chiefly in limestone, where they are marked by a change of the colour of the rock from white to light green, and in volcanic rocks where the green rock is changed to a light grey rock. The veins may be found in any kind of rock but are most likely to occur in pre-Permian strata and in the intrusives.

Mineralization in the main is related to the Coast Range batholithic intrusives; certain groups of intrusives clearly have associated mineral deposits and those noted with each group show marked similarities. Associated with the orthoclase porphyry in the map-area to the south are large deposits of mixed sulphides, mainly pyrite, which occur generally replacing volcanic rock. In this map-area no deposits have yet been found near the orthoclase porphyry. Along the contact of the younger hornblende-andesine granodiorite many mixed sulphide and oxide deposits replace limestone and, less commonly, volcanic rocks. Most of them lie within 200 feet of the contact. The deposits are characteristically small and irregular. Some evidence of mineralization connected with most of the older groups of the batholithic rocks especially the older hornblende-andesine granodiorite has been noted but little or none appears to be associated with the quartz monzonite or the biotite-andesine granodiorite. Areas of these rocks are considered to be the least favourable prospecting ground. Most of the areas of sedimentary and volcanic rocks present evidence of some mineralization. In the eastern part of the area mapped and beyond there is a large area favourable for mineralization which has been little prospected.

Scale, 1 Inch to 100 Miles

MAP 310 A

Centre Sheet

STIKINE RIVER AREA

CASSIAR DISTRICT

BRITISH COLUMBIA

Scale, $\frac{1}{126,720}$ or 1 Inch to 2 Miles

Miles: 1 ½ 0 1 2 3 4 5 6 7 8

Kilometres: 1 0 1 2 3 4 5 6 7 8 9 10

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RELATED PUBLICATION

SUMMARY REPORT, PART A, 1928: Second Preliminary Report on Stikine River Area, British Columbia; by F. A. Kerr.

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310 A

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