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LEGEND

Sedimentary and Volcanic Rocks

CENOZOIC

MODERN

RECENT AND PLEISTOCENE

- *Clay, silt, sand, gravel, boulders*
- 18 — *Olivine basalt*

TERTIARY

EOCENE

- 17 — *UPPER EOCENE: basalt, andesite, latite, rhyolite, tuff, breccia, conglomerate, agglomerate, sandstone, shale*

MESOZOIC

CRETACEOUS (?)

UPPER CRETACEOUS (?)

- 16 — *HELVEKER VOLCANICS: trachyandesite, andesite, basalt, tuff*

CRETACEOUS

UPPER CRETACEOUS

- 15 — 15A, *mainly conglomerate interbedded with other clastic sediments, rhyolite tuff and andesite tuff, and accompanied with lavas or intrusives;* 15B, *mainly coarse sandstone interbedded with conglomerate other clastic sediments and, probably, tuff*

JURASSIC (OR/AND) CRETACEOUS

UPPER JURASSIC (OR/AND) LOWER CRETACEOUS

- 14 — *Andesite, tuff, breccia, greywacke, shale, jasper*

JURASSIC

- 13 — *Conglomerate, arkose, grit, greywacke; dacite tuff, andesite tuff; quartzite, argillite, limestone, shale, sandstone; andesite, dacite*

TRIASSIC

- 12 — *Argillite, shale, limestone, conglomerate, greywacke, andesite tuff, dacite tuff, and, probably, lavas*
- 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

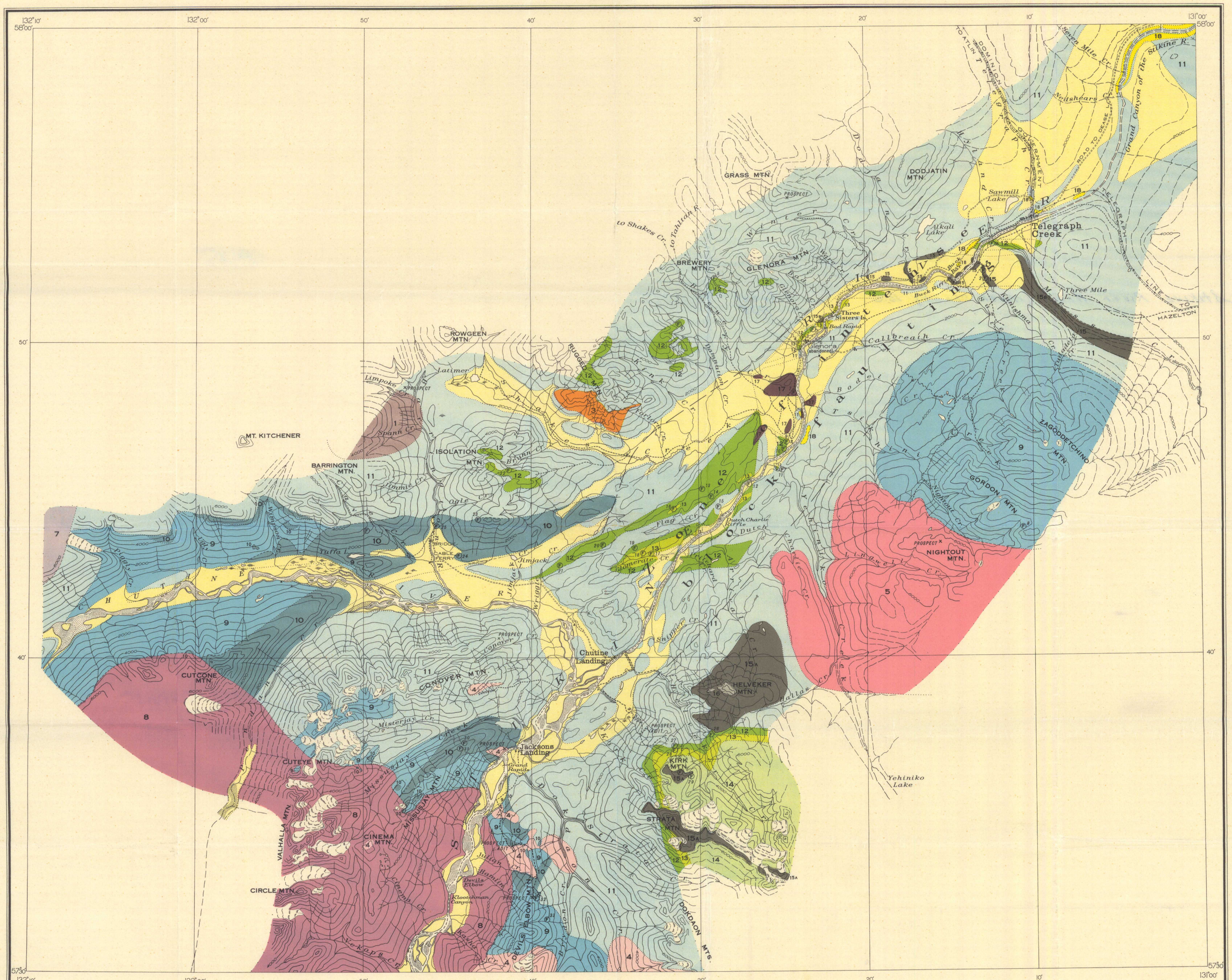
- 8 — *Quartz monzonite*
- 7 — *Biotite-andesine granodiorite and some quartz monzonite*
- 5 — *Oligoclase granodiorite; rare quartz diorite and diorite*
- 4 — *Hornblende-andesine granodiorite; rare quartz diorite, diorite and quartz monzonite*
- 3 — *'Orthoclase porphyry': pulaskite, nordmarkite, nepheline syenite, syenite, and, locally, pyroxenite*
- 1 — *Not subdivided: quartz monzonite, granodiorite, quartz diorite, diorite*

- *Geological boundary*
- Ⓕ29 *Fossil locality*
- Zone — *Zone of intense block-faulting*
- *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*
- *Road and trail*

SOURCES OF INFORMATION

Topography by **F. A. Kerr**; *with portion northeast of Mess and Telegraph Creeks by* **J. Davidson, Department of Lands, British Columbia.**

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



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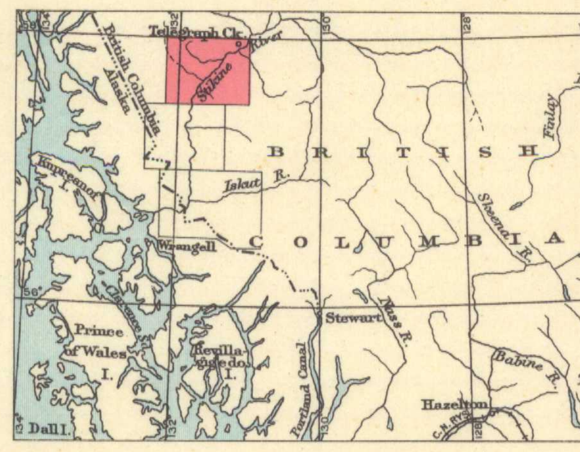

MAP 309A

North 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

GENERAL GEOLOGY

Bedrock is well exposed above timber line which is at about 4,500 feet. Below timber line bedrock is largely concealed by glacial and slide debris and, especially to the northeast and in lower parts, by stream and lake deposits of clay, sand and gravel.

The oldest rocks are recrystallized, chiefly dark grey, pre-Permian sediments accompanied by some contemporaneous volcanic rocks. In places they are capped by white limestone (Permian). Mesozoic rocks are mainly volcanic. Ejected from a great number of vents they show a complex interfingering of different materials. Sediments, mainly in small bodies, occur irregularly intercalated and commonly grade to pyroclastics. The basal part of the Triassic volcanic series (11) locally includes argillites and quartzites and at the top in most places has conglomerate made up mainly of the erosion products of the underlying volcanic rocks and therefore not readily separable from them. This conglomerate constitutes the basal part of the Triassic sedimentary series (12). The Jurassic sedimentary series (13) is distinguishable from this by the presence of more quartzose tuffs and of abundant granodiorite pebbles in the clastic sediments. Overlying is another series (14) mainly of volcanic rocks which though somewhat less deformed and altered are otherwise similar to the Triassic volcanic series. All of these rocks are deformed and invaded by the granitic rocks of the Coast Range batholith.

The Coast Range batholith 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 five of these groups have been recognized in this map-area. The rocks classed as orthoclase porphyry (3) are believed to be the oldest. They 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 pyroxene. The oligoclase granodiorite (5) of this area is classed in the older of the two groups of this composition that occur in the Stikine district. It is believed to be younger than the orthoclase porphyry and is fairly definitely of Triassic age. It is light grey to green, medium grained and usually gneissic or sheared. The hornblende-andesine granodiorite (4) is considered to belong to the younger of the two groups of this composition found in the Stikine district and is thought to be probably of Jurassic age. It is uniformly light grey and medium grained except near contacts. The biotite-andesine granodiorite (7) may be closely related to this hornblende-andesine granodiorite though it is believed to be younger and probably of Lower Cretaceous age. It is uniformly fresh, light grey and coarse and is accompanied in places by numerous pegmatite dykes. Locally near contacts it resembles, as a result of differentiation, the quartz monzonite (8) which is believed to be only slightly younger in age. The quartz monzonite is uniformly fresh, light pink and coarse.

Overlying the complex of older rocks or downfaulted into it are slightly deformed masses of Upper Cretaceous (15 and 16) and Upper Eocene (17) sediments and volcanic rocks. Intruded in all the rocks described are numerous dykes, stocks and other small bodies of igneous rocks of Mesozoic and Tertiary age that are largely fine grained and not readily distinguishable from the extrusive rocks of the map-area. Still younger lavas (18) are apparently undeformed.

Faults cutting all but the youngest rocks (18) occur too abundantly to be adequately shown on the map. The Stikine River valley from Mess creek to Chutine river is a zone of intense block faulting. Major faults occur along the northwest side of the zone; within it faults bound innumerable, irregularly shaped blocks. Beyond the zone small faults are numerous in many places and large faults occur throughout the map-area.

ECONOMIC GEOLOGY

Prospecting in the map-area has resulted in a number of discoveries of lode deposits. Development has not yet indicated any to be of economic worth but is too meagre to demonstrate the possibilities of the area. 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 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 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 (3) are large deposits of mixed sulphides, mainly pyrite, which occur generally replacing volcanic rock. In this map-area, the mapped body of orthoclase porphyry has been so deeply eroded that possibly only lower and leaner parts of the mineralization remain. 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. Their occurrence in roof pendants in places leads to the erroneous suggestion that they are within the intrusive mass. The deposits are characteristically small and irregular. Some evidence of mineralization connected with most of the older groups of the batholithic rocks has been noted but little or none appears to be associated with the quartz monzonite or the biotite-andesine granodiorite. Areas of these rocks and of those (15 to 18) younger than the batholith are considered to be the least favourable prospecting ground. All of the area southwest of a line running northwest across the mouth of Mess creek is favourable for mineralization. The areas east and south of the oligoclase granodiorite (5) have special attraction.

Placer gold deposits have been found along Stikine river from Mess to Arrival creek and below the canyon on Barrington river and others may occur in buried channels as far upstream on this river as Limpoke creek. Valuable placer deposits are most likely to occur only in the part of the range lying northeast of a line through the mouth of Barrington canyon and Helveker mountain. Elsewhere valley glaciation has probably destroyed any placer deposits.

RELATED PUBLICATIONS

SUMMARY REPORT, PART A, 1926: Preliminary Report on Stikine River Area, British Columbia; by F. A. Kerr.

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

SUMMARY REPORT, PART A, 1930: Explorations between Stikine and Taku Rivers, British Columbia; by F. A. Kerr.