Vancouver Id. (Southern)
5.1.2
A, Geol.

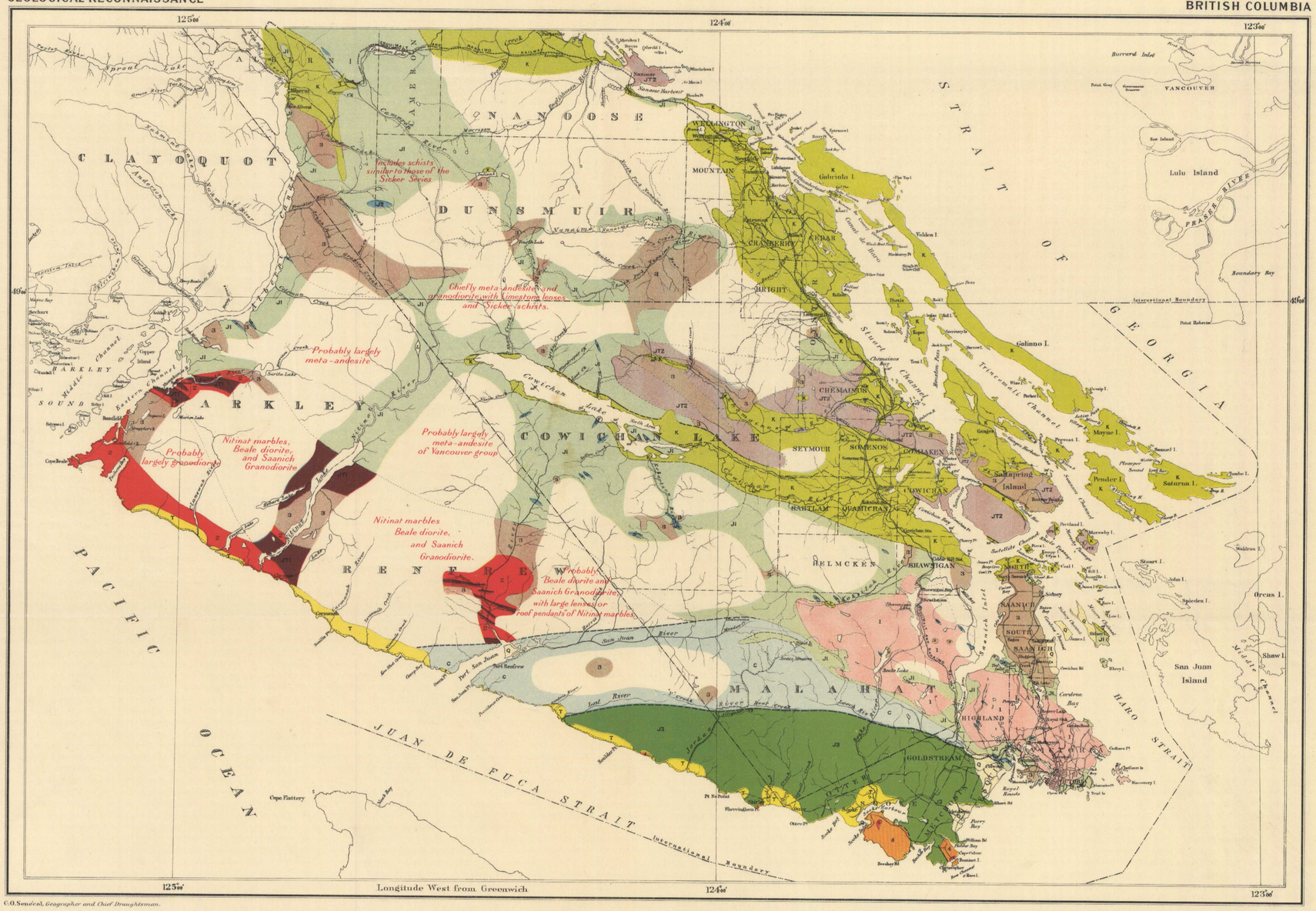
Canada
Department of Mines
GEOLOGICAL SURVEY

HON. W. TEMPLEMAN, MINISTER; A. P. LOW, DEPUTY MINISTER;
R. W. BROCK, DIRECTOR.

1911

GEOLOGICAL RECONNAISSANCE

BRITISH COLUMBIA



C.O. Senécal, Geographer and Chief Draughtsman.

1123

LEGEND

QUATERNARY		Q	Superficial deposits
TERTIARY	OLIGOCENE-MIOCENE	T	Sooke and Carmanah formations (conglomerate, sandstone)
MESOZOIC	UPPER CRETACEOUS (IN PART)	K	Cowichan group (conglomerate, sandstone, shale, with coal.)
	UPPER JURASSIC AND POSSIBLY LOWER CRETACEOUS	5	Anorthosite and Olivine Anorthosite (SOOKE GABBRO GROUP (LATE INTRUSIVE))
		4	Gabbro and Amphibole Gabbro, etc. (SOOKE GABBRO GROUP (LATE INTRUSIVE))
		3	Saanich Granodiorite
		2	Beale Diorite
		1	Wark Gneiss
	JURASSIC(?)	J3	Metchosin Volcanics (basalt, tuff etc.) (VANCOUVER GROUP)
	JURASSIC OR TRIASSIC	JT2	Sicker series (andesitic flows, tuffs etc.) (VANCOUVER GROUP)
	LOWER JURASSIC	J2	Sutton formation (crystalline limestone) (VANCOUVER GROUP)
	LOWER MESOZOIC POSSIBLY IN PART, PALAEOZOIC	J1	Vancouver Volcanics (andesite, amygdaloid, porphyries, tuff, etc.) (VANCOUVER GROUP)
	JURASSIC OR TRIASSIC(?)	JT1	Nitinat formation (crystalline limestone) (VANCOUVER GROUP)
PALAEOZOIC	CARBONIFEROUS(?)	C	Leech River formation (slate, schist, quartzite.)

LEGEND
Symbols

- Geological boundary (position determined)
- Geological boundary (probable error of location, less than half a mile)
- Geological boundary (probable error of location, greater than half a mile)
- Geological boundary (position assumed)
- Fault (position determined)
- Fault (?) (probable error of location, less than half a mile)
- Fault (?) (probable error of location, greater than half a mile)
- Dip and strike
- Vertical strata
- Fossil locality

Geological Notes

SUPERFICIAL DEPOSITS. (Pleistocene and Recent). Glacial till, in large part restricted to the uplands; and stratified gravel, sand, and clay of estuarine, lake, and river origin, on the coast lowlands and in the large valleys.

SOOKE AND CARMANAH FORMATIONS. (Oligocene-Miocene). Chiefly coarse sandstone and conglomerate with thin beds of sandy shale and marl, and thin seams and small lenses of lignite; not much disturbed but dipping at low angles to the southwest; normal faults of small displacement are common; thickness in any one basin probably not more than 500 feet.

COWICHAN GROUP, in part Nanaimo. (Upper Cretaceous and possibly in part, Triassic, Jurassic, Lower Cretaceous and Eocene). Unmetamorphosed conglomerate, sandstone and arenaceous shale, with coal seams in the lower part of the Nanaimo formation. The strata are rather extensively folded and faulted and, in general, occur in synclinal basins in some cases bounded by faults. Different rock varieties are replaced by or rapidly grade into one another in both vertical and lateral directions. The total thickness is probably over 10,000 feet. Near Mt. Prevost, in Somenos district, shales, similar to those of the Nanaimo formation, unconformably underlie the Nanaimo and grade into the metamorphosed sediments of the Sicker Series.

The various batholiths and dike intrusives mentioned below, are correlated with the Coast Range batholith and are of Upper Jurassic and in part, possibly Lower Cretaceous age. Dikes and many minor intrusive bodies have not been mapped; these include andesite and granodiorite porphyries chiefly confined to the contact zones of the granodiorite batholiths and stocks, and also may include members of the Sicker Series and of the Wark gneiss.

SOOKE GABBRO GROUP. Various types of gabbro and anorthosite with metamorphic hornblendites cut by pegmatite, aplite and other dikes, and forming intrusive stocks in the Metchosin Volcanics.

SAANICH GRANODIORITE. Batholiths of granodiorite and quartz diorite with contact phases.

BEALE DIORITE. Quartz-bearing diorite and diorite associated with the Saanich granodiorite possibly as peripheral facies.

WARK GNEISS. Batholiths of diorite gneiss and intrusive quartz diorite gneiss; with metamorphic quartz-feldspar, and hornblendite facies, and minor intrusions of gabbro.

The Vancouver Group includes all the following members except the Leech River formation, and is composed of deformed, metamorphic volcanic and sedimentary rocks of Lower Mesozoic age which have been intruded by the batholithic rocks and which form the greater part of the crystalline axis of Vancouver Island.

METCHOSIN VOLCANICS. (Jurassic?). Ophitic basalt flows, tuffs and agglomerates with intrusive diabase dikes; less metamorphosed than the Vancouver Volcanics and not intruded by batholithic bodies except of the Sooke Gabbro Group.

SICKER SERIES. (Jurassic or Triassic but the intrusive porphyrites may be Lower Cretaceous). Andesitic volcanic flows and tuffs with interbedded tuffaceous, slaty and quartzose sediments metamorphosed into schists and intruded by quartz-feldspar and gabbro-diorite porphyrite. Conformable with the Vancouver Volcanics and distinguished from them chiefly by their schistose character, greater mineralization and by the presence of sedimentary members.

SUTTON FORMATION. (Lower Jurassic). Lentils of crystalline limestone intercalated with the Vancouver Volcanics; near the granite rocks the limestones have been metamorphosed into diopside-epidote, and garnetiferous rocks, amphibolites, etc., and are considerably metamorphosed.

VANCOUVER VOLCANICS. (Largely Lower Jurassic but probably including Middle Jurassic, Triassic and possibly Palaeozoic members). Metamorphic andesite, augite andesite, amygaloids, porphyries, tuffs and breccias with dacite tuffs and intrusive dikes and sills of andesite and basalt porphyrites.

NITINAT FORMATION. (Jurassic or Triassic?) Marbles and metamorphic varieties; these become garnet-diopside rocks and amphibolites near large intrusive masses of Beale diorite and Saanich granodiorite where large masses of magnetite are also developed.

LEECH RIVER FORMATION. (Carboniferous?) Slate, schist and greywackes, closely folded and possibly extensively faulted; with intrusive granitic rocks and many gold-bearing quartz veins of very low grade.

MAP 17A

SOUTHERN VANCOUVER ISLAND
BRITISH COLUMBIA

Scale, $\frac{1}{380,160}$

Miles: 5 0 5 10 15 20

Kilometres: 10 0 10 20

6 MILES TO 1 INCH

GEOLOGY

C.H. CLAPP, (IN CHARGE)	1908, 1909, 1910.
J.A. ALLAN,	1909.

TOPOGRAPHY

GEOLOGICAL SURVEY,	PUBLISHED AND UNPUBLISHED MAPS.
BRITISH ADMIRALTY,	" CHARTS.
HIBBEN & CO. VICTORIA	" MAP.
E.&N. RY. CO.	" "
J.O. FORTIN	COMPILER

GEOGRAPHICAL BASE
RATED GRADE 3

To accompany Memoir No. 13

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5.1.2
A, Geol.
17A
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