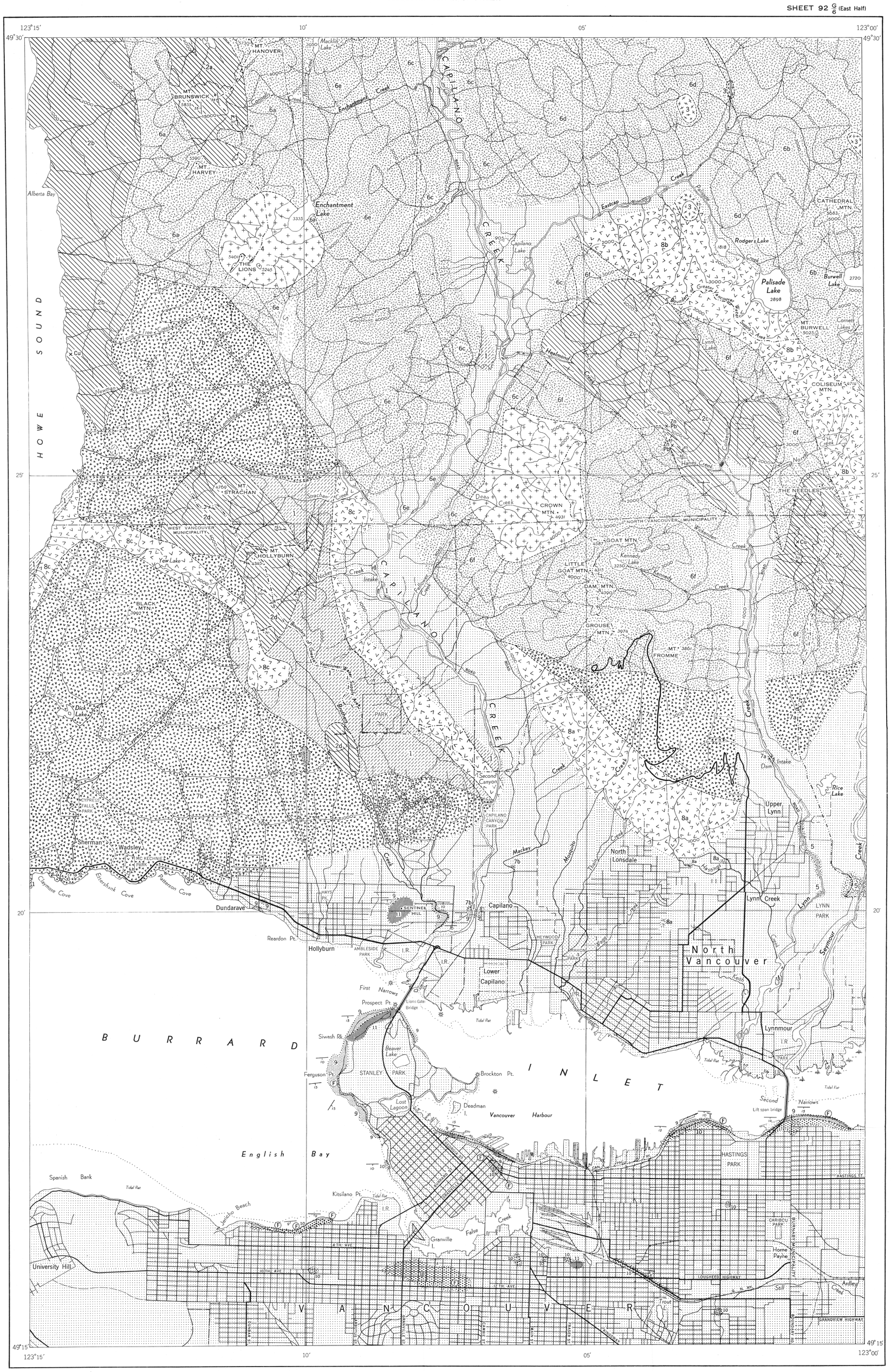
CANADA
DEPARTMENT
OF
MINES AND TECHNICAL SURVEYS

GEOLOGICAL SURVEY OF CANADA

SHEET 92 G/6 (East Half)



LEGEND

CENOZOIC

TERTIARY

MIOCENE OR LATER

11 — *Basaltic flows, dykes, and sills; minor tuffs*

OLIGOCENE OR MIOCENE

KITSILANO FORMATION: conglomerate, sandstone, and shale

EOCENE

9 — *BURRARD FORMATION: conglomerate, sandstone, and shale*

MESOZOIC (MAINLY OR ENTIRELY)

JURASSIC (?) OR LATER

UPPER JURASSIC (?) OR LATER

COAST INTRUSIONS (3-8)

8a-8c — **8a,** *medium-grained, pink, hornblende granite, grading to granodiorite (7a);* **8b,** *medium-grained, grey to pink biotite granite, grading to granodiorite;* **8c,** *coarse-grained, pink, pegmatitic granite; minor granodiorite*

7a,7b — **7a,** *medium-grained pinkish grey, hornblende granodiorite grading to quartz diorite (6f).* **7b,** *medium-grained, white to pinkish brown, biotite granodiorite, grading to grey quartz diorite*

6a-6f — **6a,** *fine- to medium-grained, greenish grey quartz diorite and diorite;* **6b,** *medium- to coarse-grained, grey, hornblende quartz diorite and medium-grained, pinkish grey granodiorite;* **6c,** *medium-grained, black and white, foliated, biotite quartz diorite;* **6d,** *medium- to coarse-grained, grey quartz diorite;* **6e,** *medium-grained, grey to dark grey, hornblende-biotite quartz diorite, grading to diorite;* **6f,** *medium- to coarse-grained grey to dark grey, hornblende quartz diorite, grading to diorite*

5 — *Medium-grained, green, hornblende diorite; minor quartz diorite*

4 — *Coarse-grained, dark green gabbro, grading to diorite*

3 — *Coarse-grained, dark quartz gabbro and gabbro*

TRIASSIC (?)

TEXADA GROUP

2a-2d — **2a,** *andesitic lavas; pyroclastic rocks; slate, quartzite, and arkose;* **2b,** *non-porphyritic and porphyritic andesite and basalt; agglomerate, breccia, and tuff; greywacke;* **2c,** *meta-andesite; cherty lime-silicate rock, argillaceous quartzite, hornfels, recrystallized limestone, and skarn;* **2d,** *meta-andesite, hornfels, hornblende-feldspar gneiss, recrystallized tuff*

CAULFEILD GROUP

1 — *Banded hornblende-feldspar gneiss, hornblende-biotite gneiss; minor diorite and granite, dioritic gneiss, and granitoid gneiss. Probably represents highly metamorphosed and partly granitized Texada group.*

Heavily drift-covered area

Bedding (inclined, vertical)

Schistosity (inclined, vertical)

Fossil locality ..... F

Mineral occurrence ..... Cu×

MINERAL SYMBOLS

Copper ..... Cu

Zinc ..... Zn

Lead ..... Pb

NOTE. The succession of Coast intrusions (3-8) has been arranged in order of increasing acidity, and is not necessarily an age sequence.

Geology by J. E. Armstrong, 1948, 1949

Main highway

Other roads

Municipality boundary

Indian reserve boundary

Boundary of Greater Vancouver Water Supply Area

Non-perennial stream

Marsh

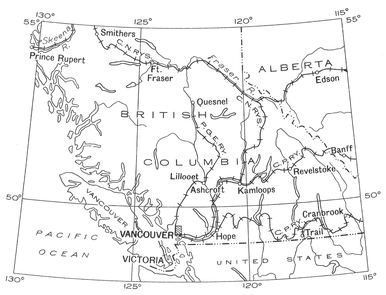
Tidal flat boundary

Contours (interval 1000 feet) 1000

Lighthouse or lighted beacon

Height in feet 5683

Approximate magnetic declination, 24° 55′ East



DESCRIPTIVE NOTES

The map-area occupies part of the Coast Mountains, north of Burrard Inlet, and part of the Georgia Depression, which includes the Fraser River Lowlands and the Gulf of Georgia. Much of the mountainous part is difficult to explore, as the slopes are either covered with dense forest growth or are interrupted by precipitous rock faces.

The Texada group (2) consists of a great variety and thickness of volcanic rocks, with lesser interbedded sedimentary strata. The section exposed on Mount Brunswick is at least 6,000 feet thick, including 2,000 feet of slate, quartzite, and arkose. With the exception of the tuffs, the volcanic rocks are generally massive. Much of the Texada group has undergone an early regional metamorphism. Principal changes in the rocks along Howe Sound (2b) and in the Mount Brunswick area (2a) have been due to induration, some recrystallization, chloritization, and epidotization. In the Lynn Creek (2c) and Mount Strachan (2d) areas the same processes have resulted in a further obliteration of most of the original textures, but only rarely have produced any gneisses. The skarns in the Lynn Creek area consist of a great variety of lime and magnesium silicate rocks. The most highly altered phases of the Texada group are probably represented by the Caulfeild group (1).

Primary structures are generally preserved, and the Texada strata appear in most places to occupy compressed folds striking about north 65 degrees west, except in the Mount Brunswick area where the average strike is about north 30 degrees west.

The only fossil yet found in the Texada group of the map-area is a deformed *Spirifer ?* obtained from a recrystallized limestone in the Lynn Creek area. The rocks are considered to be of early Mesozoic age, mainly on the basis of their lithological similarity to the Texada group at its type locality on Texada Island.

The Texada group is cut by pre-granitic, post-early metamorphic dykes of quartz porphyry, dacite, and granulite. These dykes, most of which strike about 10 degrees west of north or 20 degrees east of north, are found in many places as relict dykes in the Coast intrusions, partly or wholly preserved and maintaining their original trends. There is little doubt that they are older than the intrusions, as many of them were seen to be cut by the granitic rocks.

The Coast intrusions (3-8) comprise a great variety of plutonic rock types, the commonest being quartz diorite (6) and granodiorite (7). A general northwest trend to the masses of different types may be noted. Except for a few bodies of pegmatitic granite (8c), which have intrusive contacts, all lithological units are gradational into adjoining masses; they do not appear to represent separate intrusions, and, indeed, may not be of igneous or magmatic origin. Most of the diorites and gabbros and many of the quartz diorites vary greatly in composition and texture, and as a result have a hybrid appearance.

Included rock, derived from Texada group formations and pre-granitic dykes, may form as much as 50 per cent of the plutonic masses, but generally does not exceed 2 to 3 per cent, and in places, particularly in the more acidic bodies, may be lacking. These inclusions are commonly round or ovoid, but may be elongate. They vary from a fraction of an inch to 25 feet or more in diameter, averaging from 3 inches to 3 feet. Although these inclusions show all stages of conversion from schist, gneiss, meta-andesite, and pre-granitic dyke to plutonic rock, they are dominantly dark grey-green, fine-grained rocks of dioritic appearance, containing large porphyroblasts of plagioclase feldspar. These feldspars are similar in all respects to those found in the enveloping plutonic rock.

The Coast intrusions are cut by pre-Tertiary andesitic and trachytic dykes, which follow prominent joint planes in the igneous rocks.

Along Burrard Inlet the gently dipping Burrard formation (9) rests on the eroded surface of the Coast intrusions. The beds have a thickness of at least 2,000 feet, and are predominantly, if not wholly, of continental origin. Fossil leaves indicate that this formation is probably of mid-Eocene age.

The Kitsilano formation (10) rests on the eroded surface of the Burrard formation, but conforms with the latter in attitude, having a gentle dip to the south. The formation in the vicinity of Vancouver is probably 2,000 feet thick, and is also largely of continental origin. On the basis of fossil plants the beds are believed to be of late Oligocene or early Miocene age.

South of the map-area, both the Burrard and Kitsilano formations are probably much thicker, and may have a combined thickness of at least 10,000 feet. Around Burrard Inlet, they form a gentle monocline dipping about 15 degrees to the south. Due to the scarcity of outcrops, it is not known if the southerly dip continues south of the map-area.

Basaltic dykes (11) cut the Kitsilano and Burrard formations and the Coast intrusions; the largest exposure is at Prospect Point. A laccolith-like body of basalt outcrops at Ambleside (Sentinel) Hill, and volcanic tuff on the south side of False Creek is intruded by dykes.

Most of the area south of the Coast Mountains is covered with a mantle of superficial deposits as much as 500 feet or more thick. It consists largely of river deposits, glacial drift, interglacial sediments and a little peat.

North of Newman Creek, along the east side of Howe Sound, a prospect adit has been driven on a sparsely mineralized, easterly striking shear zone in greenish porphyritic andesite and breccia of the Texada group. The shear zone is mineralized with specks of chalcopyrite partly altered to malachite.

Mineral showings occur at two places, about 1,500 feet apart horizontally and 1,200 feet vertically, on the claims of Lynn Creek Zinc Mines Limited. In both places the deposit, consisting largely of sphalerite, with smaller amounts of pyrrhotite, galena, chalcopyrite, pyrite, cubanite, marcasite, and hematite, occurs as a replacement in fractured and metamorphosed thin limestone beds interbedded with meta-andesite, argillaceous quartzite, and skarn of the Texada group, near their contact with quartz diorite. Mineralization appears to have been most effective where the limestone beds are intersected by shear zones. Two northerly trending mineral zones, 80 feet apart, are exposed at the lower workings; the western zone is 1 foot to 5 feet wide and has been uncovered for 400 feet, and the eastern zone is 12 to 15 feet wide and is exposed for 90 feet. These mineral zones contain ore shoots up to 100 feet long and 4 feet wide assaying as much as 30 per cent zinc. Two or more northeasterly trending mineral zones, 5 to 20 feet wide, have been exposed intermittently at the upper workings by a series of trenches. The reported assays indicate from 10 to 35 per cent zinc across widths of 4 to 14 feet.

Several small copper deposits were observed on the ridge east of Lynn Creek and south of the Needles, and probably include those of the Swayne Copper and Mountain Lion groups. They consist of chalcopyrite and pyrite disseminated along northeasterly trending shear zones in narrow bands of silicified limestone of the Texada group. None of the zones observed is more than 8 feet wide, and they have been exposed for only a few feet.

PRELIMINARY MAP 50-26

VANCOUVER NORTH

(EAST HALF)

BRITISH COLUMBIA

Scale: 1 Inch to ½ Mile = $\frac{1}{31,680}$

1 ¾ ½ ¼ 0 Miles 1 2

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