

9-10 EDWARD VII.

SESSIONAL PAPER No. 26

A. 1910

SUMMARY REPORT
OF THE
GEOLOGICAL SURVEY BRANCH
OF THE
DEPARTMENT OF MINES
FOR THE CALENDAR YEAR
1909

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OTTAWA

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EXCELLENT MAJESTY

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quartz veins east of Whitehorse, and some copper deposits recently found on Williams and Merritt creeks near Yukon Crossing.

Mr. V. S. Stefansson, who is on the *Arctic* near the mouth of the Mackenzie river, is continuing his researches, and will again winter in the north.

British Columbia.

Mr. W. W. Leach was engaged along the Grand Trunk Pacific near Hazelton. Mr. Leach reports that the most important developments of the year are the opening up of several very promising silver-lead veins.

Mr. R. G. McConnell completed his geological survey of Texada island, and made a brief reconnaissance survey of the principal mineral districts of Moresby island, Queen Charlotte group. The ore bodies so far discovered on the latter warrant further and more energetic development.

Mr. F. H. MacLaren completed the topographical map of Texada island, and several large scale maps of the chief mining camps.

Mr. C. H. Clapp continued his geological reconnaissance in the southern part of Vancouver island. The season was spent on the southwest end between Point Nopoint and Alberni canal.

Mr. J. A. Allan, under Mr. Clapp's supervision, spent the season studying the metamorphic rocks between Cowichan harbour and Ladysmith, on Vancouver island.

Mr. R. H. Chapman was in charge of several parties engaged in topographic mapping on the south end of Vancouver island.

Mr. John Macoun and Mr. C. H. Young were again on Vancouver island completing their collection of its flora and fauna for the Museum. Mr. Wm. Spreadborough acted as assistant.

Mr. Chas. Camsell continued his geological survey of the Tulameen district. This little known district is remarkable for the variety of economic minerals found within its borders. Platinum, gold, silver, copper, lead, iron, chromite, molybdenite, asbestos, and coal are reported.

Mr. R. L. Reinecke completed the topographic map of the Tulameen district, and commenced a topographical and geological survey of the Beavertell district, West Fork of the Kettle river, which, since 1899, has been an important prospective mining camp. Although unprovided with transportation facilities, considerable ore shipments have been made.

Mr. G. Malloch was engaged in reconnaissance work along the line of the Grand Trunk Pacific railway between Tête Jaune Cache and Fort George.

Mr. W. H. Boyd was in charge of a topographical party, mapping the Slocan district on a large scale.

Mr. O. E. Leroy was engaged in detailed economic geological work in the Slocan. This work, it is hoped, will have some influence in bringing about the reopening of properties, now idle, that should be producing, and in reviving interest in what was, a few years ago, the most important silver and lead district in Canada.

Mr. S. J. Schofield was engaged in topographic and geological work in East Kootenay, principally north of the Crows Nest Pass railway, and on the St. Mary

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TEXADA ISLAND AND MORESBY ISLAND, B.C.

(R. G. McConnell.)

The work of the season consisted in completing the geological mapping and examination of the mines and prospects on Texada island, and in a hurried visit of seventeen days to some of the principal mineral districts on Moresby island, in the Queen Charlotte group. I was assisted in the Texada Island work by Mr. A. O. Hayes.

TEXADA ISLAND.

The rocks and the principal mines and prospects occurring in the northern part of Texada island were examined in 1908, and briefly described in the Summary Report of the Geological Survey for that year. During the present season the work in the northern part of the island was completed, and the examination extended to the southern portion.

Topography.

The southern part of Texada island consists of a steep-sided rocky ridge rising directly from the sea, surmounted by occasional peaks, some of which reach an elevation of nearly 3,000 feet. North and west of Pocohontas mountain the general elevation decreases rapidly, and the surface, while still broken by occasional rounded eminences, such as Comet and Surprise mountains, becomes more even and in places assumes a plain-like character.

The island nowhere exceeds 6 miles in width, and the streams draining it are necessarily short and small. Many of them are intermittent, and only a few of the larger ones flow steadily throughout the year. Lakes, varying in size up to half a mile in length, occur at a number of points, mainly in the lowlands at the northern end of the island, but also occasionally in depressions on the slopes and near the summits of the higher elevations.

The greater part of the island is still well wooded, although a portion of the original luxuriant forest has been destroyed by forest fires or cut for commercial purposes. The principal tree is the useful Douglas fir. Other trees found with it include species of hemlock, pine, spruce, and cedar. The broad-leaved varieties are represented by the maple, arbutus, and alder.

Summary of Geology.

The rock formations of Texada island are not numerous, are mostly of igneous origin, and range in age from upper Palæozoic to middle Cretaceous. They have been classified as follows:—

1. Pleistocene.. . . . Boulder clays, stratified sands and gravels.
2. Cretaceous.. . . . Soft sandstones, sands, clays, and shales.
3. Lower Cretaceous or Upper Jurassic.. . . Diorites and diorite porphyrites, dikes and small stocks.
4. Upper Jurassic ?.. . . . Quartz diorites; referred to period of Coast Range batholith.
5. Triassic ?.. . . . Porphyrites, Texada formation, Texada group of Leroy (in part).
6. Upper Palæozoic.. . . . Limestones, Marble Bay formation.
7. Upper Palæozoic.. . . . Schists, tuffs, agglomerates, marbles, etc. Anderson Bay formation, Texada group of Leroy (in part).

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Anderson Bay Formation.—The rocks of this group occupy a small area at the southern end of the island, and a narrow band extends northward for some distance along the east coast. They consist mainly of dark, light-greyish, and greenish schists and shales probably mostly of tufaceous origin, interbanded with agglomerates and occasional narrow lenses of crystalline limestone. They were nowhere found in contact with the limestones of the Marble Bay formation, and have been placed below them principally on account of their greater alteration.

Marble Bay Formation.—The Marble Bay formation occurs mostly in the northern end of the island, and was described in the Summary Report for 1908. It consists altogether of limestone usually whitened and crystallized near contacts with igneous masses. It originally extended southward over the greater portion of the island, but has been largely destroyed by the various intrusions of igneous rocks which followed its deposition.

Texada Formation.—The rocks referred to the Texada formation are widely distributed over the island from Crescent bay southward to Mount Dick, and form all the higher peaks and ridges. They consist altogether of porphyrites showing considerable diversity both in appearance and in the proportions of the constituent minerals. Normally the porphyrites are brownish weathering, medium to fine-grained, greenish or greyish rocks, made up of a ground-mass of plagioclase and varying quantities of augite, hornblende, and chlorite, sprinkled more or less plentifully with plagioclase phenocrysts which on the surface usually present a faded appearance. The ferro-magnesian minerals seldom occur conspicuously as phenocrysts. The normal type passes in places into a fine-grained, compact, greenish rock, and more frequently into a medium-grained granular rock showing macroscopically only traces of the ordinary porphyritic texture.

Amygdular rounded and elongated cavities filled with quartz, calcite, and epidote, and lined with a dark chloritic mineral, occur sparingly in certain areas.

The porphyrites in many sections have a conspicuous nodular structure, and in places closely resemble, and were at first mistaken for, a volcanic agglomerate. The nodules are usually finer grained and harder than the enclosing matrix, and project on weathered surfaces. In shape, they vary from spheroids usually from 6 inches to 1 foot in diameter, to elongated, flattened, nodular masses 10 to 15 feet or more in length. The nodular porphyrite occurs in small and large irregular areas, separated by the normal uniform variety.

The nodules are similar in mineral composition to the enclosing matrix and the massive variety, and they probably represent the first centres of crystallization in the cooling magma.

Quartz Diorites.—The rocks referred to the quartz diorites occur mostly in small areas fringing the northeast coast along the central portion of the island. One area also occurs on the west coast at the Iron range, and one inland. The quartz diorites are mostly greyish granular rocks resembling granites, and were classed as granites in previous reports. The present classification is due to a study of a number of thin sections by Dr. Young, who described them as consisting essentially of plagioclase with varying and much smaller amounts of quartz and biotite accompanied by hornblende, or pyroxene, or both. A small quantity of orthoclase is also usually present, and magnetite is a constant accessory.

The quartz diorites are regarded as an extension westward across the Malaspina straits of the Coast Range batholith rocks of the neighbouring mainland.

Diorites and Diorite Porphyrites.—The rocks of this group occur in small stocks and in dikes distributed mostly over the northern part of the island. The stocks intrude the porphyrites and the limestones of the Marble Bay formation, but have not been found in contact with the quartz diorites. Some of the diorite stocks are younger

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than the typical quartz diorites, as inclusions of the latter were found in one area; and dikes which occur as apophyses from the diorite areas are indistinguishable from dikes cutting the quartz diorites. The two groups are, however, closely related, and some of the stocks cannot be referred with certainty to either.

The diorite and quartz diorite stocks are important economically, as most of the valuable mineral deposits of the island occur either at or near their boundaries.

Cretaceous.—Cretaceous rocks occur on the west coast of Texada island in small isolated areas extending from Gillies bay southward to Cook bay. The areas were probably connected originally, and have been separated by erosion. The rocks consist of clays, shales, soft sandstones, and conglomerates. No coal or lignite beds were seen, and it is unlikely that any exist, as the series is well exposed in the valleys of the streams cutting the areas.

The porphyrite floor on which the Cretaceous beds rest is more or less decomposed, to a depth, in one instance, of 100 feet or more. The decomposed material occurs both in an unstratified condition filled with cores of the original rock, and sorted by water into beds of soft red clay and loose reddish conglomerate. The red clay beds are reported to contain about 13 per cent of iron, and may be of some economic value.

The Cretaceous beds show only slight disturbance, if any, are not cut by dikes or other intrusive bodies, and are not mineralized. They were evidently deposited after vulcanism on the island had ceased.

Glacial Deposits.—Texada island was probably entirely covered with ice during the Glacial Period, and deposits of this age consisting of boulder clays, stratified sands, silts, clays, and gravels on the lower lands, and scattered erratics on the higher, are present everywhere. The boulder clays and associated beds are not evenly distributed, and occur mostly in irregular areas extending inland from the west coast. Over the greater part of the island the covering is thin, and ridges and hummocks of the older rocks project through it.

Mines and Minerals.

The principal mineral deposits of Texada are situated in the northern part of the island, and were briefly described in the Summary Report for 1908. In the vicinity of Van Anda, work was steadily prosecuted during the season on the Marble Bay, Cornell, and Little Billy mines; and in addition the Copper Queen was unwatered and some exploratory work done.

The principal work carried out on the Marble Bay mine during the past year consisted in exploring the new ore body first encountered in the 10th level at a depth of 863 feet. It has proved to be an exceedingly important one. At a depth of 960 feet, the present working level, this ore body, shaped like a flattened ∇ with the apex to the west, has a proved length of 180 feet and an average width of about 15 feet. The grade of the ore is somewhat higher than usual, the first-class ores carrying about 11 per cent copper, \$10 in gold, and from 5 to 6 ounces of silver per ton. Among the more important changes noted in depth, in this mine, are the increasing proportion of bornite compared to chalcopyrite, the better definition of the ore body, the copper sulphides around the greater part of the periphery ceasing abruptly against a lime wall in place of diminishing gradually through a bordering zone of secondary minerals, and the introduction between the 10th and 11th levels of native silver in small, thin leaves, scales, and grains. The silver occurs mostly with the bornite, occasionally in the calcite gangue, and never, so far as noted, with the chalcopyrite. The addition of native silver to the ordinary minerals of the ores is marked by an increase in the silver tenor from 3 or 4 ounces to 5 or 6 ounces per ton.

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At the Cornell mine the extension of the 360 ft. level has resulted in the discovery of several fair sized ore bodies, all, with one exception, carrying high grade ore. The shipments from these average at present about 1,000 tons per month. Development work is now in progress to ascertain if the ore bodies extend down to the 460 ft. level. No ore has so far been found in this level. The ore bodies of the Cornell, while more numerous, are smaller and more uncertain than those of the Marble Bay mine.

Development work on the Little Billy during the season consisted in running a drift from the old workings to undercut a surface showing in the limestone. An ore body enclosed in limestone was encountered, the full dimensions of which have not yet been determined, although it has been proved to contain a considerable tonnage of good ore.

Some development work was also done on the promising Loyal Lease claims, near Blubber bay, but no ore bodies of value were found. The important iron range on the west coast briefly described in last year's Summary was idle during the season.

South of Raven bay a mining enterprise of some magnitude has been commenced, viz., to drive a tunnel, starting near sea-level on the coast, inland under Comet mountain. The tunnel as projected will have a length of 3,000 feet or more, and—except near the mouth where it skirts a quartz-diorite-porphyrity contact—will pierce porphyrites holding occasional small inclusions of lime all the way. A number of small and medium sized magnetite lenses usually associated with lime inclusions, and some quartz veins, outcrop on Comet mountain and in its vicinity. The development work on these consists of a few open-cuts, and shafts sunk to varying depths, up to 70 feet. The magnetite lenses usually contain chalcopyrite, but no large body of shipping ore has so far been uncovered, and the purpose of the tunnel seems to be largely exploratory.

The southern part of Texada island is not mineralized to the same extent as the northern portion. Most of the important mineral deposits of the island occur in connexion with the limestone of the Marble Bay formation, and this stops, going south, a short distance south of Davies bay. The rocks south of this point consist of porphyrites cut by a few quartz-diorite stocks, mostly distributed along the east coast, and of the schists, tuffs, etc., of the Anderson Bay formation. Small lenses of crystalline limestone occur in the latter, but these, unlike the Marble Bay limestone, which is bordered everywhere by intrusive contacts with various igneous masses, are considered to be contemporaneous with the enclosing beds and form part of a regular series.

A few quartz veins, none of which, if a famous lost mine of fabulous richness supposed to exist in the vicinity of Anderson bay is excepted, are noteworthy for size or richness, constitute the discoveries up to the present. The veins carry, in places, chalcopyrite and more rarely bornite, and some good gold assays are reported. None of the veins have been mined and very little development work has been done on them.

MORESBY ISLAND.

Moresby island was visited in August. The trip occupied nearly a month, although only seventeen days were spent on the island. As hotels are somewhat scarce, my thanks are due to Mr. Ikeda, Mr. Parsons, and Mr. Morgan for accommodation and other courtesies, and to Mr. Sandilands, Mining Recorder, Mr. Nestelle, and others for information and assistance.

General Description.

The Queen Charlotte islands, of which Moresby island forms the central member, are situated in the Pacific ocean, about 450 miles northwest of Vancouver. They are separated from the islands fringing the mainland by Hecate strait, an open body of

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quodoboit, Halifax county, N.S.; clay, Diogenes brook, Denys river, Inverness county, N.S.; clay, West river, Antigonish county, N.S.; clay, from above coal seam, McLellan brook, Inverness county, N.S.; clay, from Coal Measures at Hussey Drift, Inverness county, N.S.; clay shale, Port Hood, Inverness county, N.S.; clay, Shaw's brickyard, Middleton, Antigonish county, N.S.; clay, with sandy partings, Shaw's brickyard, Antigonish county, N.S.; clay, Annapolis brickyard, Annapolis county, N.S.; clay, Joggins main seam, Joggins Mines, Cumberland county, N.S.; shale, Pugwash, Cumberland county, N.S.; clay, Moncton, Westmorland county, N.S.; shales overlying oil-shales, south branch of Frederic brook, Albert Mines, Albert county, N.B.; red shales, Weldon brook, Albert Mines, Albert county, N.B.; clay, Lee's brickyard, St. John, N.B.; clay, Mooney's brickyard, St. John, N.B.; shale overlying coal, Grand Lake coal basin, Queens county, N.B.; shale, Pipe-line trench, National Transcontinental railway at Chipman station, Queens county, N.B.; clay, Miller's brickyard, Elmsdale, Hants county, N.S.; clay, Enfield Pottery, Enfield, Hants county, N.S.; ornamental tile, Hornby brickyard, Charlottetown, P.E.I.; firebrick, from clay at Shubenacadie, Hants county, N.S.; firebrick, from underclay at Shubenacadie, N.S.; silica-brick, made by the International Coal Mining Company at Westville, Pictou county, N.S.; stiff mud brick, Maritime Clay Works, Pugwash, Cumberland county, N.S.; stiff mud brick, Miller's brickyard, Shubenacadie, Hants county, N.S.; soft mud brick, Middleton Clay Working Company, Middleton, Annapolis county, N.S.; soft mud brick, underburned, Shaw's brickyard, Avonport, Kings county, N.S.; soft mud brick, well burned, Shaw's brickyard, Avonport, Kings county, N.S.; green brick, underburned, Shaw's brickyard, Avonport, Kings county, N.S.; stiff mud brick, The Buckler Brick Company, Annapolis, N.S.; stiff mud brick, John Lee & Company's brickyard, St. John, N.B.; stiff mud brick, re-pressed, John Lee & Company's brickyard, St. John, N.B.; soft mud brick, Mira Brick Company, Mira river, Cape Breton county, N.S.; brick, M. Ryan & Son, Fredericton, N.B.

Mr. W. W. Leach:—

Three samples of coal, from points near the head of the Skeena river, British Columbia; a series of gold and silver ores, from the Skeena River Mining division, Cassiar district, British Columbia.

Mr. O. E. Le Roy:—

Crystals of calcite, from the Granby mines, Phœnix, B.C.

Mr. R. G. McConnell:—

Nugget of native copper, Burwash creek, Yukon; limestone, from Texada island, B.C.

Mr. A. T. McKinnon:—

Tetrahedrite in fluorite, from lot 1, concession IV, township of Madoc, Hastings county, Ont.; fluorite with incrustation of barite, from the same locality; celestite, from lot 2, concession VIII, township of Lansdowne, Leeds county, Ont.; agate, from Partridge island, Cumberland county, N.S.; calcite, from Five Islands, Cumberland county, N.S.; marble, from the township of Faraday, Hastings county, Ont.; quartz, muscovite, and uraninite, from the Villeneuve mine, township of Villeneuve, Labelle county, Que.; albertite, from Albert Mines, Albert county,

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The Canadian Mineral Section occupied an area of 18,000 square feet; 10,000 square feet of which was devoted to the exhibits from British Columbia. With the exception of the structural materials, everything was shown under glass: a method by which the specimens were kept uniformly bright and clean during the whole course of the Exposition.

The extensive and varied exhibits of ores and minerals from British Columbia, together with those of smelter products made by the Tyee, Granby, B.C., and Trail Smelting Companies, naturally attracted a great deal of attention. The display made in connexion with the latter Company's exhibit was very attractive, and included specimens of the ore as taken from the mine; the concentrates made therefrom; as well as different products obtained in successive smelting operations up to and including pig-metal, bullion, etc. Large specimens of ore from the Centre Star, War Eagle, and other mines of the Boundary district, also from the St. Eugene mine, Moyie, East Kootenay, were shown by this Company. The exhibit from the last mentioned locality embraced two specimens of silver-lead ore, weighing over a ton each.

The Marble Bay mines, Texada island, were represented by a very interesting series: which embraced some fine examples of bornite with native silver taken from the 960 ft. level—910 feet below sea-level.

A fine collection of the auriferous ores and associated rocks and minerals of the Nickel Plate mine, Hedley, B.C., together with a plan showing a section of the ore-body, and a plan of the Reduction mill, was furnished by Mr. M. K. Rodgers of Seattle, who has since presented it to the Museum.

In addition to the foregoing, the following mines in British Columbia were also represented: Bluebell, Arlington, Ruth, and Emerald claims in the Kootenay district—by large specimens of silver-lead ores; the Mollie Hughes, Krao, Elkhorn, Prince Henry, and Jewel claims of the Boundary district—by ores carrying native silver; the Ikeda Bay mines, Queen Charlotte islands, and the Hidden Creek mine, Observatory inlet, Portland canal—also by ores containing native silver; and a number of claims in the Queen Charlotte, Atlin, and Skeena River Mining divisions—by copper-gold and silver-lead ores.

Amongst the exhibits of metalliferous ores and their products, there was an extensive collection from the districts about Cobalt and Sudbury, in the Province of Ontario: this included rich silver ores from the former district, and copper and nickel ores from the latter; while displays of the metallurgical products of these ores—complete in every detail—as prepared by the Canadian Copper Company, and the Mond Nickel Company, added further interest to the exhibit.

Over \$10,000 worth of native gold was shown in four table cases. This exhibit included a very fine collection of British Columbia gold nuggets, secured by the Dominion Assay Office at Vancouver; gold dust and nuggets from Yukon; and gold-bearing quartz from Nova Scotia.

The asbestos industries of the Eastern townships of the Province of Quebec were represented by an extensive display, which attracted particular attention from the general public. The modes of occurrence of this mineral were clearly shown in a number of large blocks, which were the subject of frequent inquiry on the part of visitors.

The mica industries were well represented by a series of specimens from Ontario and Quebec, together with a fine collection of finished products made from like materials.

The display of British Columbia marbles in this section indicated a marked advance in this industry in the Province, and included some very handsome polished specimens from Nootka Marble quarries, Nootka sound, west coast of Vancouver island, and from the Marblehead quarries, Marblehead and Gillett's quarry, Kootenay lake, West Kootenay.

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EXHIBIT OF THE GRANBY CONSOLIDATED MINING, SMELTING, AND POWER COMPANY,
GRAND FORKS, B.C.

Gold-copper ores from Phoenix, and blister copper from the Smelter, Grand Forks.

Gold-copper ore—Le Roi mine, Rossland, B.C., from the 600 and 1,650 ft. levels;
two specimens. Le Roi Mining Company, Limited, Rossland.

Gold-copper ore—Hamilton vein, Josie mine, Rossland, 500 ft. level; East Hamilton vein, 300 ft. level; West Hamilton vein, 500 ft. level. Le Roi No. 2 Mining Company, Limited.

ORES FROM BEAR RIVER, PORTLAND CANAL, SKEENA RIVER MINING DIVISION, CASSIAR, STEWART MINING AND DEVELOPMENT COMPANY, VICTORIA, B.C.

1. Pyrite with galena and native silver—Lucky Seven and Little Joe claims, Glacier creek. Portland Canal Mining Company, Duncans, B.C.
2. Pyrite with galena—Geo. E. and Ben Hur claims, Glacier creek, Bear river.
3. Galena and blende—Glacier creek, Bear river.
4. Galena and blende—Main reef, Glacier creek, Bear river.
5. Galena, blende, and chalcopryrite—Rainier claim, Bear river.
6. Galena—Maybee claim, American creek.
7. Chalcopryrite, blende, and bornite—Bandolier claim, American creek.
8. Chalcopryrite—London group.
9. Molybdenite—Observatory inlet.

Pyrite and galena (auriferous and argentiferous)—Gipsy claim. Portland Canal Mining Company, Duncans, B.C.

Pyrite and galena with native silver—Lucky Seven and Little Joe claims, Glacier creek. Portland Canal Mining Company, Duncans, B.C.

Ores of gold and silver from the O.K. and Little Wonder claims. Pereault and Chapman, Stewart, B.C.

Chalcopryrite and pyrite—Hidden creek, Goose bay, Observatory inlet, B.C. M. K. Rodgers, Seattle.

Gold-copper ore—Maple Bay mine, Portland canal, B.C. Wm. Noble, Vancouver.

EXHIBIT OF THE TYEE COPPER COMPANY, LIMITED, VICTORIA, B.C.

1. Ore from the Britannia mine—Howe sound.
2. Ore from the Cornell mine—Texada island.
3. Ore from Valdez island.
4. Ore from Sydney inlet (Indian Chief mine).
5. Ore from Prince of Wales island.
6. Specimen of copper matte made from the above ores by the Tyee Copper Company. Forty per cent copper.
7. Ore from the Arctic Chief, Whitehorse, Y.T.
8. Ore from Ikeda Bay mines, Queen Charlotte islands.
9. Ore from the Pueblo mine, Whitehorse, Y.T.
10. Three copper ingots made from ore smelted at the Tyee smelter, Ladysmith.
11. Photos of smelter and shipping pier, Ladysmith, B.C.

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Chalcopyrite and pyrite—from the Jane mine, Britannia Beach, Howe sound.
Britannia Mining and Smelting Company, Limited, Britannia Beach, B.C.

Iron pyrites—Ecstall inlet, Skeena river, B.C. B.C. Pyrites Company, Victoria,
B.C.

Arsenopyrite—Bonanza mine, Hope, Yale Mining division. Victor George, Hope.

ORES FROM TEXADA ISLAND.

Bornite—Little Billy claim, Texada island. J. T. Taylor, Van Anda.
Pyrite and chalcopyrite—Florence Case, Texada island. J. T. Taylor, Van Anda.
Chalcopyrite—Loyal lease, Texada island. James Raper, Van Anda.
Chalcopyrite and bornite—Loyal lease, Texada island. James Raper, Van Anda.
Bornite—Rose and Bell claim, Texada island. James Raper, Van Anda.
Iron ochre—Iron Crown claim, Texada island. P. A. Staaf, Van Anda.
Bornite, chalcopyrite, and native silver—Marble Bay mine, Texada island, B.C.,
960 ft. level. Tacoma Steel Company, Van Anda, B.C.
Bornite and chalcopyrite—Cornell mine, Van Anda, Texada island, 360 ft. level.
Northern Texada Mines, Limited, Vancouver.

ORES FROM VANCOUVER ISLAND, V.I. DEVELOPMENT LEAGUE, VICTORIA, B.C.

Clay ironstone—No locality.
Bog iron ore—Quatsino.
Copper ore—Koksilah, Cowichan.
Copper ore—New shaft, Copper Cañon claim, Mount Sicker.
Copper ore—Mounts Sicker and Breton mines, Copper cañon.
Azurite—No locality.
Magnetite—Hesquot.
Magnetite—Sarita river, above Banfield creek.
Antimony—Gordon river, Renfrew district.
Copper ore—Patchena claim, Gordon river.
Cinnabar—West coast, Vancouver island. F. H. Mayhew, Victoria.
Native arsenic—Koksilah.
Copper ore—Virginius claim, Maxwells Peak, Saltspring island. A. F. Gwin.
Zinc blende—Vancouver island.
Graphite—Renfrew district.
Copper ore—Monitor claim, Alberni canal.
Copper ore—Yreka claim, Comstock mountain, Quatsino sound.
Copper ore—Lenora mine, Mount Sicker.
Copper ore—King Solomon mine, Cowichan station.
Auriferous quartz—Elk river, Kennedy lake.
Copper ore—Cascade mountain, Alberni.
Copper ore—Quatsino sound.
Copper ore—Sicker mine, Mount Sicker.
Copper ore—Johns claim, Mount Sicker.
Copper ore—Saltspring island, B.C. Neave Saunders.
Copper ore—Belle mine, Mount Sicker.
Copper ore—Southern Cross mine, Uchucklesit.
Copper ore—Cowichan lake.
Copper ore—Happy John mine, Alberni.
Copper ore—Little May claim, Hettie Green group, Clayoquot, Tofino.

STEAM VESSELS Inspected for the Year ended March 31st, 1908.

BRITISH COLUMBIA DIVISION.

BOILERS AND MACHINERY.

Name of Vessel	Number of Passengers allowed	Date Certificate Expires	Gross Tons	Class of Vessel and where employed
1908				
Shamrock	40	Aug. 1..	23.83	Pass., inland waters, B. C.
Dominion		Aug. 3..	17.58	Tug, coasting, B. C.
M. S. Dollar		Aug. 9..	4,216.13	Freight, B. C. and China Ports.
Joan	500	Aug. 14..	821.21	Freight and pass., coasting, B. C.
Tasmanian	20	Aug. 19..	21.10	Freight and pass., inland waters, B. C.
Ptarmigan	20	July 1..	246.45	Freight and pass., Upper Columbia River.
Forager		Aug. 26..	89.57	Freight, coasting, B. C.
Salvor		Aug. 27..	886.89	Salvage vessel, coasting, B. C.
Canpac		Aug. 20..	56.49	Tug, coasting, B. C.
Tees	175	Aug. 9..	679.15	Pass. and freight, coasting, B. C.
Spray	10	Aug. 30..	118.10	Tug, coasting, B. C.
Queen City	150	Sept. 10..	391.21	Freight and pass., coasting, B. C.
Takara Maru		Sept. 12..	30.22	Tug, coasting, B. C.
Coutli		Sept. 13..	99.36	Tug, coasting, B. C.
Cassiar	300	Sept. 13..	597.18	Freight and pass., coasting B. C.
Dola	18	Sept. 13..	175.99	Tug, " "
Czar	30	Sept. 14..	152.18	Tug, " "
Canadian		Sept. 19..	63.98	Tug, " "
Chieftain	25	Sept. 26..	64.80	Tug, " "
Hope	12	Sept. 7..	78.49	Tug, " "
Lyackson		Oct. 9..	21.93	Tug, " "
Princess Beatrice	350	Nov. 7..	1,289.51	Freight and pass., " "
Orion		Nov. 19..	108.79	Whaler, " "
Blanch	10	Nov. 26..	2.50	Oil motor, pass., Inland waters.
Ranger		Nov. 23..	53.20	Freight, coasting, B. C.
Charmier	500	Dec. 19..	1,044.41	Freight and pass., coasting, B. C.
Maude		Dec. 5..	174.99	Freight, coasting, B. C.
Bessie Dollar		Nov. 20..	4,329.19	Freight, B. C. and China ports.
1909				
Sadie	12	Jan. 7..	49.30	Tug, coasting, B. C.
Venture	305	Jan. 8..	812.45	Freight and pass., coasting B. C.
Otter	70	Jan. 20..	365.97	Freight and pass., " "
Princess Ena		Feb. 3..	1,368.10	Freight, " "
Queen		Jan. 8..	67.31	Tug, " "
Albion	Not issued.		88.11	Tug, " "
Alert	35	Feb. 8..	43.81	Pass., ferry, Nanaimo Harbour.
Lorne	20	Feb. 13..	287.96	Tug, and pass., coasting, B. C.
Fern		Feb. 1..	23.60	Tug, coasting, B. C.
Tulalip		Mar. 2..	11.61	Yacht, Powell Lake, B.C.
J. L. Card		Mar. 1..	141.06	Freight, coasting, B. C.
Bute		Mar. 1..	48.86	Tug, coasting, B. C.
Cascade		Mar. 23..	118.76	Freight, coasting, B. C.
Oscar		Mar. 24..	95.42	Freight, coasting, B. C.
Pilot	22	Mar. 15..	279.05	Tug, coasting, B. C.
Florence		Mar. 27..	30.41	Tug, Skeena River.
Total			42,322.30	

J. A. THOMSON,

Steamboat Inspector.