The Year Book of British Columbia RE Gosnell 1903

THE YEAR BOOK

- OF -

BRITISH COLUMBIA

- AND -

Manual of Provincial Information

- BY -

R. E. GOSNELL,

Secretary Bureau Provincial Information.

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THE GOVERNMENT OF
THE PROVINCE OF BRITISH COLUMBIA

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NANAIMO MINING DIVISION.

This district covers a larger area than any other on Vancouver Island, as it includes within its boundaries the islands in the Straits of Georgia, as well as an extensive territory on the Mainland.

The Vancouver Island collieries being located within this district, places it as the most important from points of development and production of any of the Island districts, though the actual operations are carried on over a comparatively small area, being confined to the neighbourhood of the following towns on the east coast of the Island: Ladysmith, at Oyster Bay; Nanaimo, at Nanaimo Harbour; Wellington, six miles northwesterly from Nanaimo; Comox, Union and Cumberland, near Union Harbour.

The collieries are operated by the following companies: Western Fuel Company, operating the Nanaimo colliery, consisting of the No. 1 shaft, Esplanade, in the City of Nanaimo; Protection Island shaft, Southfield, near Nanaimo River. The Union Colliery Company of British Columbia, Limited, operating the Union colliery, consisting of No. 4 slope and Nos. 5 and 6 shafts, in the Comox district; Wellington colliery, in Douglas district, known as the Extension mine, consisting of Nos. 1, 2 and 3 slopes, and Tunnel mine; the Alexandria colliery, in the Cranberry district, at Union Bay, where coke, fire and ordinary brick are manufactured by the same company.

The output from these collieries last year was divided as follows: New Vancouver Coal Company (Nanaimo), 490,000 tons; Wellington Colliery Co., 800,000 tons of coal and 15,800 tons of coke. The most important occurrences in connection with the coal mining industry on Vancouver Island during the year were the sale of the New Vancouver Coal Company's property to the Western Fuel Company, of San Francisco; and the discovery of a four-foot seam of high-grade anthracite coal near Brown's River, in the Comox district.

TEXADA ISLAND.

On Texada Island the Van Anda mines have passed under the control of an English syndicate. The Cornell mine has been satisfactorily developed by means of a shaft which was continued down to the 360-foot level. The Marble Bay mines have been steadily operated, a gravity tramway having been built from the mine to wharf, and the ore which has been accumulating since the property was first opened, shipped. Development operations were continued on the Golden Slipper claim — a gold-bearing quartz ore — and on the Volunteer group. The iron mines of Texada Island were in continuous operation during the year, and the ore shipped to the Irondale furnace, near Port Townsend, Washington. The pig iron here produced has found a ready market in San Francisco and other manufacturing centres on the Pacific Coast.

MINING ON THE MAINLAND COAST.

THE mineral belt of the Coast may be said to commence about ten miles north from Vancouver on Seymour Creek, where for the past two or three years parties of prospectors have been engaged in developing mineral claims, on which occur copper-gold ores. These are said to be quite extensive in body and of a fairly good grade, so far as work has progressed. The locations are reached by a waggon road from North Vancouver.

Pitt Lake may also be considered to belong to the Coast District. This is located at the head of Pitt River, which empties into the Fraser. Mineral claims

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"A NEW MINING CENTRE.

"Conditions on the Pacific Coast of America afford one of the most interesting studies now open in the economies of industry. Immediately at hand are vast stores of fuel and iron — the prime elements of all manufacture. Across the Pacific are the enormous new markets of the East, which water transport is bringing nearer every week. Wherever such conditions exist, foci of industry have been created. The dawning century seems likely to witness the birth of new Clevelands, Pittsburgs, Manchesters, in the neighbourhood of Puget Sound. Mr. Lamb's article is essentially a review of some of the material of this new world of wealth."

SOURCES OF SUPPLY.

Although discoveries of large bodies of iron-bearing ores have been made in various localities of the province at intervals since 1872, no annual production has much exceeded 2,000 tons, and on only one or two occasions has the aggregate output of one year reached that figure. The productive sources have been practically limited to three, or, more properly speaking, two mines — one, the Glen Iron mine, on the line of the Canadian Pacific Railway at Cherry Bluff, near Kamloops, and the other the Puget Sound Iron Company's properties at Texada Island. In the case of the former the product has been exclusively used for fluxing purposes by the smelters at Tacoma, Revelstoke and Nelson; while the Texada ore has been shipped to Irondale, Washington, and there smelted with a mixture of from one-ninth to three-tenths of bog ore, making an excellent foundry pig, which was subsequently marketed in San Francisco and utilised by the Union Iron Works in the construction of the United States warships Olympia, Monterey, Charleston and Oregon. In addition to the two mines mentioned, more or less extensive bodies of iron-bearing ores have been discovered at Sooke, Chemainus and Barkley Sound, on Vancouver Island; at Rivers and Knight Inlets, on the Mainland coast; on the Queen Charlotte Islands, and also in several localities of the inland districts of Similkameen and Cariboo.

TEXADA ISLAND.

The Puget Sound Iron Company's property of 2,700 acres is situated on the southwest side of Texada Island. The ore-mass, which on the surface varies in width from 20 to 25 feet, is an irregular contact deposit between limestone and granite, traceable northward for nearly four miles along a ridge following the coastline, and distant from it a quarter to three-quarters of a mile. Sufficient development work has been done to expose an ore-body estimated by experts as representing 5,000,000 tons of commercially valuable iron in sight. In the course of development, at one point, copper in the form of solid pyrites was found in irregular bunches and stringers in the magnetite, but with increased depth this disappeared. Analyses of the ore have been made on several occasions in the laboratory of the Canadian Geological Survey, one result showing 68.40 per cent. of iron, with only .003 per cent. of phosphorus; but a more detailed test gave :

Iron	69.85
Manganese	trace
Siliceous matter	2.75
Sulphur	.6
Phosphoric acid	trace
Moisture	trace

INDUSTRIAL CONDITIONS.

The formation containing the iron ore of Texada Island is believed to be the same as that constituting the greater part of Vancouver and adjacent islands.

The profitable local manufacture on a large scale of iron from these ores is not altogether a remote contingency, for, as I have previously stated, in a limited way the ore has been already turned to commercial uses on the Pacific Coast. Labour

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provided, an abundant supply of excellent fuel is available in the immediate vicinity, and a permanent market for the product would be assured in the industrial centres of the Pacific seaboard. A further incentive is the bounty granted by the Dominion Government on pig iron manufactured in the country from Canadian ores. On the other hand, supposing that local manufacture is not at present practicable, the coast iron deposits being, without exception, situated within easy access of deep water, transportation costs on the shipment of the crude ore to Puget Sound points would be very light, not exceeding 50 or 60 cents per ton. In addition to this charge, however, the duty of 40 cents per ton on ore imported into the United States must be considered.

QUEEN CHARLOTTE ISLANDS.

On Queen Charlotte Islands, clay iron-stones, the nodules varying in weight from a pound to many tons, are of frequent occurrence in the coal rocks, and might be profitably worked in conjunction with the coal seams. Magnetic iron ores of excellent grade also occur in considerable mass on these islands, to the east side of the entrance to Harriet Harbour; while remarkably pure specimens of magnetite, containing 71.57 per cent. of metallic iron, have been brought from an island in the Walker group.

THE COAST DEPOSITS.

On the Mainland, at Rivers Inlet, near the mouth of the Kildella River, an extensive deposit of ore is found outcropping on a contact of granite and limestone, the average of several analyses being 69.5 per cent. of metallic iron and .01 of phosphorus. A deposit, described as a vein 25 feet wide, also occurs on the north shore of West Redonda Island, in the Gulf of Georgia. The ore is a highly magnetic, somewhat finely crystalline granular, massive magnetite, an analysis affording the following results: Metallic iron, 65.896; phosphorus, none; sulphur, .015. A small shipment of ore was made from this island some years ago, the iron being smelted in the neighbouring state of Washington and converted into car wheels. Much attention has meanwhile been directed to the iron deposits of Vancouver Island. Of these the most important are the deposits at Barkley Sound, in the Alberni Division, on the west coast; and the deposits in the hills to the east of Sooke Harbour, on the south coast, in the Victoria Mining Division.

BARKLEY SOUND.

The first exposure of iron-bearing ore in the Barkley Sound locality is met with on the mainland about a mile up the Sarita River. Here there is a considerable showing of magnetite in a contact of coarsely crystalline limestone and diabase. The ore body, which is said to be 80 feet wide, extends back in an easterly direction a considerable distance, the exposure having been prospected by the sinking of shallow pits and with crosscuts along its length for 800 feet. The deposit has also been partially explored by means of a tunnel, and solid ore has been encountered at a depth of about 90 feet, 60 feet from the mouth of the tunnel. In a direct line northwest by west a continuation apparently of the same deposit is exposed both on Copper Island, some two and a half miles distant, and again at Sechart, on the mainland eight miles to the northwest. Mr. Carlyle, formerly provincial mineralogist of British Columbia, examined these deposits in 1897, and described them in his annual report of that year as a ledge of magnetite lying in what appeared to be diorite, and next to a very extensive area of limestone, which at the point of contact with the eruptive rock is completely crystallised into large, coarse crystals. Both on Copper Island and at Sechart the ore body, which has the appearance of being a primary deposit, has been traced for a distance of several thousand yards, the exposures in some places having been scraped clear, giving a width of over 100

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IRON DEPOSITS OF THE COAST.

MR. W. M. BREWER, M. E., in June, 1902, at the request of the Bureau of Provincial Information, submitted the following description of iron ore deposits on Texada and Vancouver Islands :

Extensive deposits of iron ore occur on Texada and Vancouver Islands. The character of the ore is magnetite, and although the grade is somewhat variable, nearly every deposit produces ore which carries from 60 to 70 per cent. iron, from .01 to .05 per cent. phosphorus, from 3 to 10 per cent. silica, with no traces of titanium, and the sulphur contents variable, but seldom exceeding 3 per cent. So far as exploration has gone at present, the locations of the known deposits are on the west coast of Texada Island, near Gillis Bay; on the eastern side of the same island, on a portion of the Van Anda Mining Company's crown grant; on the eastern side of Vancouver Island, near Chemainus; on the west coast of Vancouver Island, on the Gordon River; on the Sarita River; Copper Island; near Sechart; and some deposits of much more limited extent near the head of Tofino Inlet.

So far as development on these various deposits is concerned, such was neglected until within the past two or three years, except on the deposits on the west coast of Texada Island. From that place iron ore was mined some eighteen years ago by quarrying from the surface, and the product was shipped to Irondale, near Port Townsend, where it was manufactured into pig iron in a charcoal furnace by the Puget Sound Iron Company, the stockholders of which are also stockholders in the Union Iron Works in San Francisco. This pig iron was shipped to San Francisco, and is reported by the Union Iron Works to have been of fine grade; in fact, some of the plates on the United States battleship Oregon were rolled from this pig. A low percentage of copper which was associated with the iron ore proved sufficiently detrimental to compel the miners to sort the ore carefully. Partly for this reason and partly because during the depressed state of the iron market for several years it was possible to ship pig iron from Alabama at a lower cost than it could be manufactured in the local charcoal furnace, which only had a capacity of thirty tons per day, the plant was closed down and remained idle until 1901, when the iron market improved. The prices went up in 1898 so that No. 1 foundry iron in Alabama was selling for $18.50 per ton, f. o. b., instead of $7.50 per ton, f. o. b., as had been the case during the years of depression. The owners of the deposits near Gillis Bay commenced a systematic development at depth. By sinking and cross-cutting the deposit was proven to a depth of about 400 feet below the outcrop, and at that depth no copper was found associated with the iron ore, and the ore itself was shown by analysis to be within the Bessemer limit.

During 1899 a good deal of attention was directed towards the iron ore deposits on the west coast of Vancouver Island, and all the known occurrences of extent were acquired, either by purchase or bond, by a syndicate from the United States. Since then this syndicate has been working a force of men at the deposits at the Sarita River, at Copper Island, and near Sechart, in order to thoroughly exploit the ground and determine the approximate tonnage in each of these deposits. This work is still being carried on at the present time, but no shipments have been made, although regular shipments are being made from the ore deposit on the west coast of Texada Island to the same furnace in which the pig iron was manufactured some years back. This furnace during 1901 was purchased from the Puget Sound Iron Mining Company by the syndicate which had bonded the iron ore deposits on the west coast of Vancouver Island, and which leased the deposits near Gillis Bay, on Texada Island, for a term of years, on a royalty basis.

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In addition to the three occurrences of iron ore mentioned on the west coast of Vancouver Island, some of the deposits on Gordon River are being exploited by an English syndicate, and others are at present under bond, and it is expected that very shortly prospecting work will be commenced upon them.

All the occurrences of iron ore referred to in the foregoing occur either at the contact of basic igneous rocks and crystalline limestone or occupy fissures in the igneous rocks. The contact deposits are very much more extensive than the others, and, roughly speaking, there is usually sufficient showing to warrant the statement that any of these contact deposits will produce a remarkably large tonnage of ore. Some have been estimated to probably yield from 2,000,000 to 6,000,000 tons; but in no case has there been sufficient development work done to date to warrant other than approximate measurements.

The deposits of non-cupreous iron ore occur in a zone on Vancouver Island which lies westerly and southerly from the zone of copper-gold-bearing ore, and is apparently the extreme southwesterly mineralised belt on Vancouver Island; but in the latter there are several occurrences of magnetite outcroppings of considerable extent which, were it not for the fact that the chalcopyrite and pyrrhotite associated with the magnetite is of such grade as to make the entire ore body valuable for its copper-gold contents, would possess value as iron ore mines, but because of these contents the iron ore itself is rendered practically useless for the manufacture of pig iron.

As a matter of fact, attention has only been drawn to the iron ore deposits on the Island for such a short time, so far as concerns their value for the manufacture of pig iron, and incidentally steel, that prospectors who are searching for metalliferous lode mines have given very little attention to locating occurrences of iron ore unless such holds sufficient copper and gold value to make the ore important in their eyes.

BUGABOO CREEK IRON DEPOSITS.

The following information is extracted from the report of I. B. Atkinson, M. E., on the Conqueror group of claims, situate on Bugaboo Creek, a tributary of the Gordon River, which empties into San Juan Harbour, Renfrew District, Vancouver Island: The ore is a contact vein or deposit of magnetite, and where it shows clearly in the creek it is 230 feet in width and practically clean ore. The outcrop of magnetite has been proved by test pits and open cuts to extend throughout the main portion of the Conqueror claim, and rich float is found on two other claims. Mr. Atkinson examined several large outcrops of ore in seven extension claims lying east of the Conqueror group, practically proving a continuation of the ore body for nearly three miles. It is a contact deposit lying between a wide belt of highly crystalline limestone on the hanging wall side, and altered igneous rocks on the footwall. Since Mr. Atkinson's inspection the owners report that work on the David claim has proved high-grade ore to a width of 522 feet, and the footwall not yet reached. Samples of ore taken from the sides, roof, sole and forebreast of the tunnel, assayed by J. O'Sullivan, F. C. S., gave an average assay as follows:

	Per Cent.
*Ferric oxide	81.42
*Ferrous oxide	15.68
Silica	1.40
Sulphur	.30
Phosphorus	.06
Titanium	nil
Lime	trace
Alumina	trace
Water, very little Chromium and loss	1.14
	100.00

*69.06 per cent. Metallic Iron.