RESOURCES OF THE ISLAND.

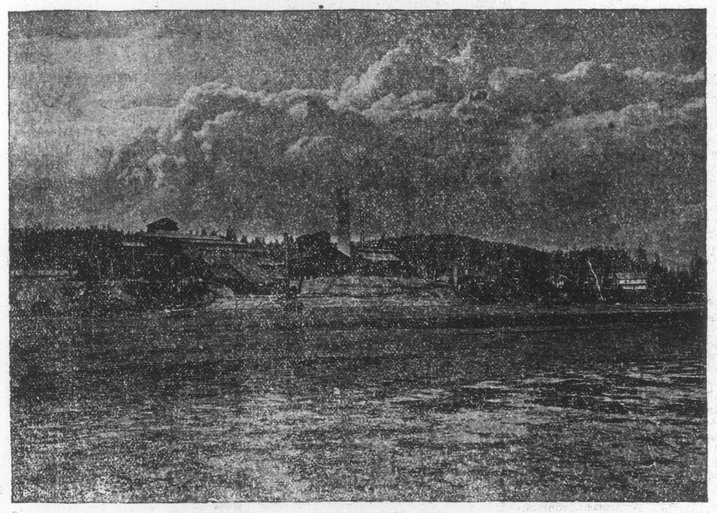
VICTORIA has never lacked a rich territory from which to derive her sustenance and on which to base her development. Half a century ago when population was sparse her aggregate trade was derived from an exceedingly wide territory. To her warehouses came the sealskins of Behring Sea, the heaviest of lumber, and trappers as far north as the Arctic, and to her traders were forwarded the precious mineral rocked out of the sands of the streams of Cariboo. The only city of consequence in the province, she was the commercial entrepot, as well as the political capital of the country.

The growth of other cities on the coast, and in the interior of the province circumscribed somewhat the limits which had previously marked the boundaries of trade. The wealthy merchant, who depended upon the winter visit of the northern miner to fill a year's order for the inland camps, found that he must pay more attention to that gentleman, who had now a nearer source of supply, and that even with added attention, his custom was hard to retain. The marvellous growth of southern British Columbia deprived the Victoria merchant of still another market, and gradually he found himself driven back by competition to those fields which lay nearer home. The discovery of gold in the Klondike and the rush of population there, for a time revived the old times and the old customs, but better means and the agricultural belt already referred to, nourish orchards where everything from the hardy apple to the exotic peach and prune flourishes in abundance. On Goldstream mountain, on Mount Baker, Mount Brenton, Mount Richards, Cowichan lake and Alberni canal—all within a short distance of Victoria—are springing up camps which seem as full of potentiality as those of Rossland or of Boundary. At Nanaimo, at Wellington and Extension enormous coal mines furnish the means of support to a large and desirable population.

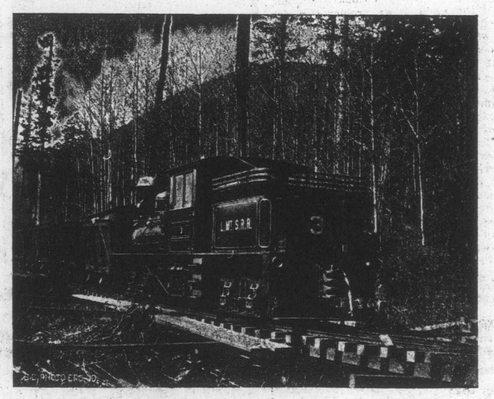
In addition to the industries mentioned there are two others which from present indications will find their seat in the immediate vicinity of the capital. One of these is the salmon fishing trade which has hitherto flourished on the Fraser and on northern streams. The sharp competition of the American trap fishermen, however, is working such a hardship on the salmon canners of British Columbia who have been forbidden the use of traps that the advisability of licensing this form of fishing has recently been made the subject of a commission by the Dominion authorities. Should trap fishing be legalized the shores of Vancouver Island in the immediate neighborhood of the city will become the site of the canning industry of the province, the run of salmon for trap fishing purposes being along this coast prior to the schools crossing the Straits to the United States side.

The second, namely, the smelting industry, is already practically established within a few miles of the city. At Crofton, three hours' travelling from town, the Northwestern Smelting and Refining Company have erected a six hundred ton smelter, which competent experts pronounce the finest equipped of its kind on the continent. Further up the coast, at Ladysmith, a smaller smeltter has already been commenced for the Tyee Company at Mount Sicker. The blowing-in of the first named, minimizing as it does the cost of treatment for the ores of the Island, is such an important event that the Times has considered it an occasion worth signalizing by the issue of a supplement in which this and auxiliary industries will be pictorially described.

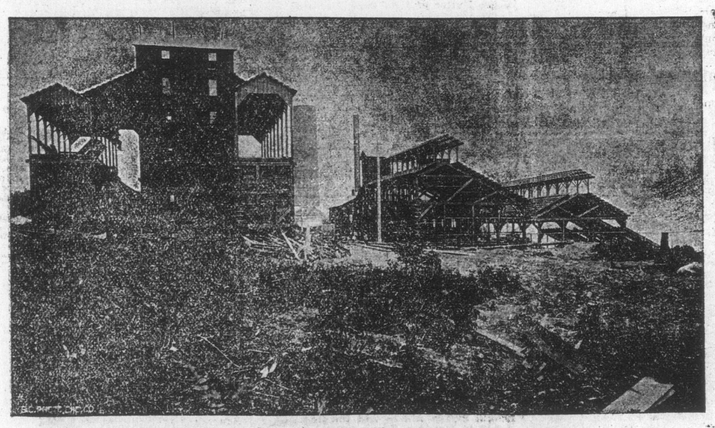
The existence of all these within a short distance of the city would, however, benefit it little were not good transportation facilities provided for bringing this territory into immediate touch with the city. For years the Esquimalt & Nanaimo railway has furnished an avenue of traffic to and from the Cowichan valley, and the timber and coal belts above mentioned. But the opening of the mines on Mount Sicker, and the establishment of a smelter and town at Crofton have brought in their wake improved shipping and railway media. The Victoria Terminal railway has now a daily railway and steamboat service to Crofton, Chemainus, Nanaimo and the Islands, while at Crofton connection is made with the narrow gauge railway built by Mr. Croft to the mines. All of these are described in detail in the succeeding pages.



CROFTON SMELTER FROM BAY, SHOWING HOTELS OSBORNE AND CROFTON TO RIGHT.



ORE TRAIN ON SWITCHBACK RAILWAY.



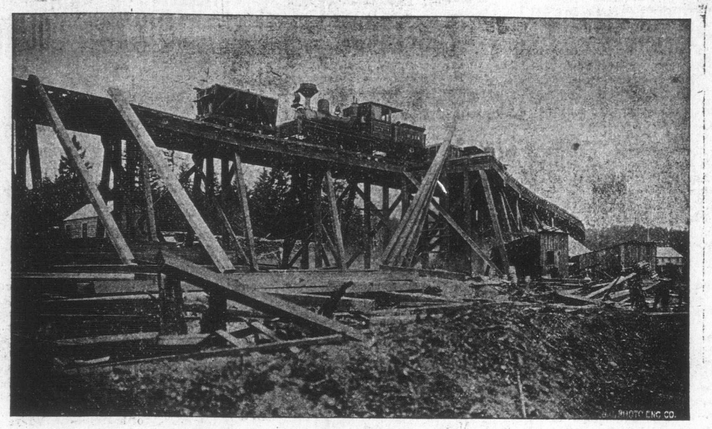
VIEW FROM REAR OF SMELTER LOOKING SEAWARD.

THE CROFTON SMELTER.

DESCRIPTION OF THE FINE ESTABLISHMENT WHICH WILL BE BLOWN-IN IN A WEEK OR TWO.

In about a week's time an event will take place at Crofton, situated about 40 miles from the city, which is pregnant with promise for the Island, and an event of the greatest significance to the whole province. This is the blowing-in of the new smelter, just completing for the Northwestern Smelting & Refining Company The erection of these works is the first serious attempt made towards treating Island ores on the Island, the products of the mines hitherto having been transported by rail and steamboat to similar smelters on the American side of the line.

With the phenomenal development of the mines on Mount Sicker, the attention of mining men was naturally attracted to Vancouver Island as a site for smelting and converting works. Among those whose attention was thus enlisted was Messrs. James Breen and H. C. Bellinger. The first named gentleman has a continental reputation acquired in connection with his successful work on the Northport, Trail and Butte smelters. Among mining men, his action in investing in Vancouver Island is a sufficient indication of the wealth of the country, for he is properly



ORE TRAIN ON TRESTLE LEADI NG TO BINS.

linger is the assistant manager and metallurgist in charge.

These gentlemen having selected a site for their works at Crofton on Osborne Bay, immediately started work on the buildings, and so rapidly have they rushed construction work, that in the course of a week or fortnight, in spite of vexatious delays owing to strikes, lock-outs, etc., in the States, they will be ready to blow-in their smelter An event so auspicious has been deemed an appropriate one for the Times to signalize by the present issue, describing not only the smelter works themselves, but the mines which will supply them, and the riches of contiguous districts

It was on the 10th of February of the present year that the first sod was broken for the smelter, which is illustrated in this number. Almost immediately a town began to spring up about the site, until to-day, little more than six months later, a pretty little settlement clusters along the shores of Osborne Bay in the shadow of the smelter buildings.

To-day, too, the smelter is practically complete, and Vancouver Island can boast of a seven-hundred ton smelter, one of the most thoroughly equipped and up-to-date in the country!

From the sea, as the steamer approaches Crofton, the buildings present a most imposing sight. But it is when the visitor passes through them and examines the massive frames, the ponderous machinery, and the complete plant which is being installed, that some estimate is formed of the importance of the work undertaken. It is estimated that the machinery alone will cost $250,000, not to speak of the building itself, and accessories.

Ore coming either by rail or steamer will be landed at a wharf 750 feet in length, with sufficient depth alongside for an ocean liner to dock, and with wide and ample access from the sea, while at the same time protected from storms. It is then conveyed in cars to the top of the receiving bins into which it is dumped.

There are six of these bins, each with a capacity of 300 tons Each is fitted with two doors or gates at the bottom, operated by a lever from the outside. Through these gates the ore is fed to the large Blake crusher, from which it is carried by a bucket elevator 85 feet to the top of the mill, and fed to the first sampler

The sampler cuts out about a fifth of the stream of ore falling on it, and feeds to the secondary Blake crusher; the product from this is again sampled, and the sample goes to the rolls, where it is crushed still finer and passes once more through the sampling process

This last sample is then ground to pass an 80 mesh screen, and from it the assayer's samples are taken, and upon his report the value of the ore is based. The ore discarded by the sampler each time is carried by a second elevator to the top of the mill, and there distributed by chutes to the storage bins, which are somewhat greater in capacity and number than the receiving ones. The sampling mill has its own independent engine and can handle 50 tons of ore per hour.

The furnace building, 120 feet by 50 feet, is covered with corrugated iron It is here that the ore from the storage bins is brought to be smelted. There are three furnaces—two large water-jacketed furnaces of 350 tons capacity and one 50-ton concentration cupola furnace, thus giving a total smelting of 750 tons per 24 hours.

The ore, with the necessary coke and fluxes, is fed into the furnaces, and these smelted by means of an air blast forced in through the tuyeres close to the bottom of the furnace. This air is furnished by two Connersville blowers supplying 150,000 cubic feet of air per minute, driven by an 18x42 inch Corliss engine, so fitted that at any time it can be compounded if more power is required. From the blowers the air passes through a 5 inch main to the furnaces.

The smoke and waste gases from the furnaces pass through the down takes to the dust flue, a brick tunnel 100 feet long, 12 ft wide, and 10 feet high, so fitted with doors that any fine ore or flue dust which settles in it can be taken out in cars, and resmelted. Further provision for the recovery of flue dust is made by an expansion chamber 40x20x20 feet similarly fitted with doors. This chamber communicates with the large brick stack 120 feet high, and 45 feet in circumference at the base. This by the way is one of the largest and best constructed stacks in British Columbia.

To return to the furnaces. The ore in the form of slag and matte flows out of the furnace into the water jacketed receiver, where the matte is settled out, the slag while still molten flows into a running stream of water, and is granulated and carried away like sand.

This matte contains about 50 per cent. copper, with the gold and silver of the ore together with iron, sulphur and other impurities. This is the product which most of the smelters ship to the East, but the N. S. & R. Co. are installing a converter plant and will treat their own and other mattes.

Immediately below the furnace building, and nearer the bay is another corrugated building. This is the converting department and is 120 feet by 40 feet. Here are the converters—immense barrel-shaped affairs into which the white hot matte is tapped and there "blown" by means of compressed air furnished by a large blowing engine. This results in burning out the iron, sulphur and other impurities of the matte, leaving a product known as black copper, or "blister," containing 98 or 99 per cent. copper, together with the precious metals. This is cast into moulds and when cold is loaded on the cars right at the door and shipped direct by ferry to the Mainland and thence to New York.

The handling of the converters and mould carriages is accomplished by hydraulic gear. The large platform hoist from the converters to the feed floor is also hydraulic.

The hydraulic power is furnished by a large Smith-Vaile pump and accumulator located in the engine room, which is 75x40 feet. Here also is the compressor furnishing air for the converters, the Connersville blowers, and the main and electric light engines. Steam for these is brought from the boiler house to the north, a building 60x40 feet, in which are three 200 horse-power return tubular boilers built in Victoria.

The smelter has its own water supply. A flume over a mile long discharges into two 100,000 gallon tanks on a rise 180 feet above the smelter, whence it is piped through an eight-inch main, giving ample pressure for fire protection and general uses.

The buildings throughout are of wood, covered with corrugated iron, and are built as solidly as wood, iron and money can make them.

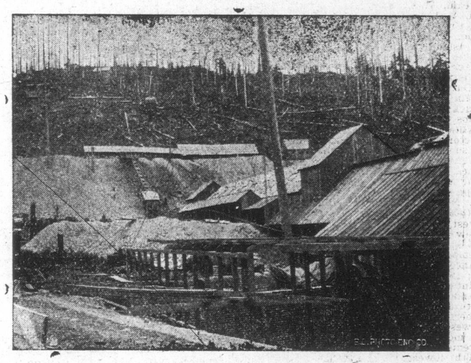
The plant has been designed especially with a view to enlargment at any time, and can be doubled in capacity with very little trouble.

Complete blacksmith, carpenter and machine shops are being erected.

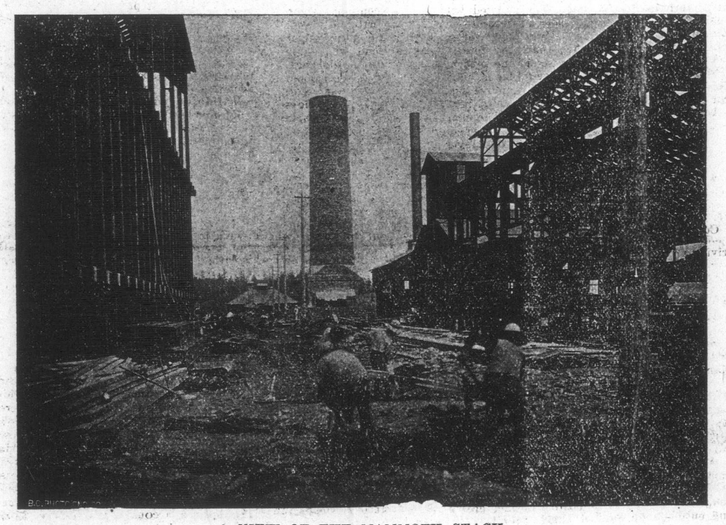
The assay office is one of the most complete in the West.

The sampling mill is already in operation, having been started over a month ago, while 4,000 tons of Lenora ore is being roasted as an experiment.

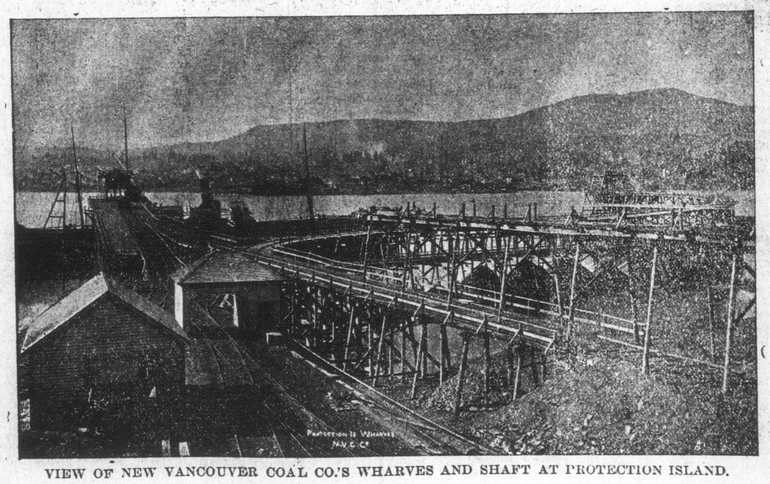
The whole output of the Lenora mine is contracted for, but the company expect to treat ores from British Columbia, Alaska, and from South America as well.



DUMP OF LENORA MINE, MT. SICKER.



A VIEW OF THE MAMMOTH STACK.



VIEW OF NEW VANCOUVER COAL CO.'S WHARVES AND SHAFT AT PROTECTION ISLAND.

PROF. DEWAR'S SPEECH

At the Opening of British Association Meetings—Carnegie's Gifts.

Belfast, Sept. 10.—The 72nd annual meeting of the British Association for the advancement of science commenced here to-night. The attendance was larger than at any former gathering of the association, with the exception of that of 1901, at Glasgow.

In his address, Prof. Jos. Dewar, president-elect of the association, referred to the recent munificent benefactions to science and education, and especially to the gifts of Andrew Carnegie, and the late Cecil Rhodes. He said he thought the schemes chosen by Mr. Rhodes were not the most effective which could have been selected, but that it must be remembered that Mr. Rhodes's aims were political as much as educational.

Referring to Mr. Carnegie's endowment of Scotch universities, and the foundation of an educational institution at Washington as a more direct benefit to higher education than the bequests of Mr. Rhodes, Prof. Dewar marked that the establishment of the institution at Washington meant a scouring of the old world, as well as the new one, for the best men in every department. In fact, he said, the assiduous colleging of brains for the benefit of the United States is similar to the collection of rare books and works of art which Americans are now carrying on so lavishly. Reviewing the meagre contributions to the Royal institution of Great Britain during the past century, Prof. Dewar reached the conclusion that without such endowments as Mr. Carnegie's the outlook for disinterested research was rather dark.