

with a consequent considerable decrease in the output of dry silver ores; the net result being that the silver output from these districts will be about 600,000 oz. less than in 1902.

In the Similkameen river country, on the eastern slopes of the Cascades, and near Hedley City, the Nickel Plate mine, belonging to the representatives of the late Marcus Daly, has about finished a 40-stamp mill with concentrating and cyanide plants. The ore is quartz carrying arsenical pyrite and, in gold tenor, is said to be much above the average milling ores of the country. This property may be looked to for a large output during the coming year.

Aside from the gold-milling center about Cambourne, in the upper Lardeau and Fish river, the only other district which has attracted much notice during the year is what is now known as Poplar. This camp is situated on the Lardeau river northwest of Kootenay lake, and, although it has not yet reached the stage of commercial production, it has caused much local excitement because of the extraordinary richness of the large quantity of specimens sent out. Development is being prosecuted on several of the more prominent claims, and the coming year doubtless will have added much to our knowledge of this district, which bears the promise of becoming important.

An interesting feature of progress during 1903 has been the construction of a 20-stamp chloridizing mill for the treatment of concentrator tailings from the ore of the Silver Cup mine in Lardeau district. The outcome of this return to an old process will be watched keenly.

Another important undertaking is the preparation for work on an extensive scale of the Hunter V. property near Ymir, 20 miles south of Nelson. This mine carries a belt of limestone about 200 ft. wide, which at many points is impregnated with silver minerals to such an extent as to yield about 15 to 20 oz. silver per ton, with small amounts of gold. The rock itself has a large excess of lime and is thus desirable to the local smelters. A tramway of 25 miles length has been built to the Great Northern railway and shipments will begin early in 1904.

Copper.—The production of copper in southeastern British Columbia for 1903 has amounted to 12,965 tons (2,000 lb.), of which 8,245 tons is the result of smelting about 684,000 tons from the mines of the Boundary district near Phoenix and Greenwood, whilst about 4,525 was derived from 406,000 tons produced from the mines of Rossland and its vicinity.

Most of the Boundary ores are smelted at the three local plants of the Granby Company, the British Columbia Copper Company, and the Montreal & Boston Company, none of which are more than 25 miles from the mines. These three plants now have in operation ten large furnaces, whose joint daily capacity may be put at 3,000 tons. Concentration to matte proceeds in the ratio of about 40 tons into one, and the resulting matte averages about 45 per cent copper. All of the matte is converted to blister copper at the works of the Granby Company at Grand Forks, and the products are shipped to New York for refining.

The British Columbia Copper Company is now installing two stands of converters, and it is said to be preparing to double its smelting capacity. These works are being equipped for operation by electric power derived from the plant of the Cascade Water, Power & Light Company, at Cascade, on the Kettle river.

The essentially low grade character of these Boundary mines renders operation on a large scale necessary to success, and as the mines become further developed, the extension of mining and smelting equipment seem certain of justification. The latest announcement of important development work is of that to be undertaken by the Granby Company; this involves the driving of a two-mile adit intended to tap the Phoenix mines at about 1,700 ft. depth. The company also contemplates the erection of another smelting plant near the mouth of

this adit, with the ultimate object of doubling the present output.

Two or more properties in this district have been added to the list of shippers during the year, namely, the Oro Denoro and the Athelstane, but the supply of ores sufficiently high in sulphur still seems to be insufficient to permit other than the high ratio of ore to matte above mentioned.

In 1902 the Boundary produced about 520,000 tons of ore and 7,480 tons of copper. The development and advancement of this region is therefore evident. The Granby Company has been placed upon the dividend list.

At Rossland, beside an increase of tonnage amounting to 75,000 tons as compared with 1902, an important and interesting phase of the progress of the district has been the successful application of the Elmore process to the concentration of the lower grade of ores. A 50-ton plant at the Le Roi No. 2 property was finished about the middle of September, and it is stated that its success has already resulted in arrangements for two other plants. Near the smelting town of Trail a concentration plant is being erected, essentially for the benefit of the Centre Star and War Eagle mines. The tailings will be re-treated by a process, the details of which have, I believe, not yet been made public, and also, in part, by the application of the Elmore process.

About 60 per cent. of the Rossland output is smelted at Northport, Wash., and the remainder chiefly at Trail, although latterly a small part has been sent to Greenwood, where the Rossland ore is desirable on account of its greater content of sulphur. The haul of 140 miles and the heavy grade of railway, however, prevent any great part of Rossland ores being smelted at points so far away. At Trail much of the low grade Rossland ore has been smelted with lead ores.

The general reduction of costs at Rossland, with lower freight and treatment rates, has afforded this district an opportunity of regaining its former strength, and now that concentration has become an efficient factor there appears to be an excellent future for the town.

In 1902 Rossland and the Boundary produced 92 per cent. of all British Columbia copper. The balance came from the mines of Vancouver Island, for which the Tyee and Northwestern companies both built well-equipped smelting plants. I regret to say that I have not received figures of output for the year 1903.

No new copper districts have been discovered during 1903, but more or less quiet development is proceeding in the Similkameen, Nicola and Kamloops districts. Kamloops has shipped small quantities, and it is reported that arrangements are being made for the establishment of a smelting plant at that point. As far as development has proceeded in the Similkameen and upper Upper Nicola camps, the several important properties have proved to be remarkable, both on account of their size and high copper contents. This country is still waiting for the advent of the railway, when that takes place there will be greater stimulus to production.

Lead.—Until recently, and for two years past, the conditions surrounding the lead-silver mining industry in British Columbia have been distinctly unsatisfactory. The only available market within easy reach has been in the United States, but free access to it has been precluded by the tariff. The low prices obtainable by the miner for his lead (at present, \$1.40 per 100 lb.), and the low value of silver, brought the British Columbia lead mines a year ago to a point at which profits vanished and the industry was fast expiring, this was evidenced by a decrease from about 36,600 tons in 1900 to 11,000 tons in 1902. An appeal for assistance was made to the Dominion government last spring; a radical change in the Canadian tariff was asked; but instead of this, the miner had to be content with a bounty of \$15 per ton for five years and limited to \$500,000 in any one year, on ore mined and smelted in Canada. The decision was reached by the government in