

ing a greater degree of oxidation, more ferrous oxide will be furnished to slag silica, and at the same time make less matte but of higher grade.

During the last quarter of the year, the first matte, when too low grade, has been re-smelted with siliceous ore and brought up to 20 per cent. to 25 per cent. Even this grade can be considered low as converter mattes go, but with it, the converter department can produce at the rate of three million pounds per month with ease.

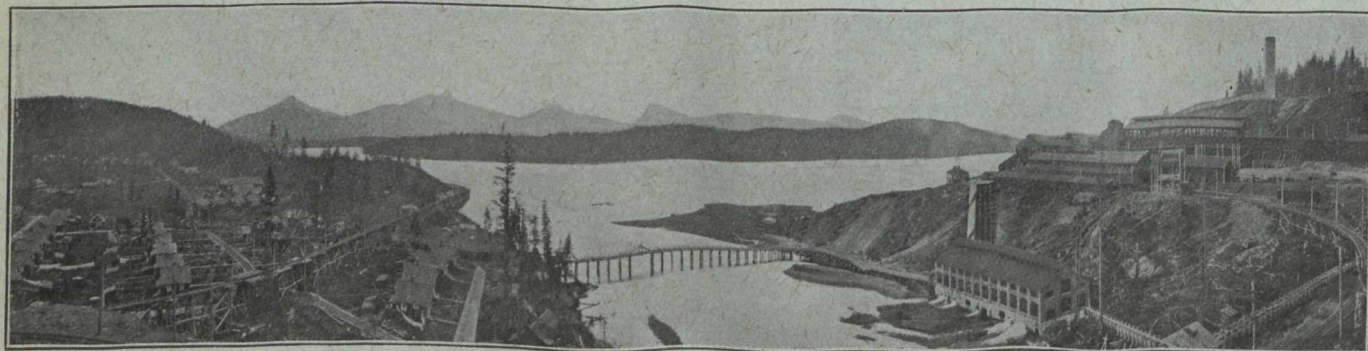
One of our chief concerns is to make matte of suitable converter grade in the first smelting, and, though no permanent success in doing this can yet be recorded, it is not improbable that efforts in this direction will be successful.

Recently the system of feeding the furnaces was improved through the adoption of Anaconda type charge cars. These permit a more favorable placing of the charge, the advantage of which was immediately reflected in a marked decrease in crust formation. Incrustation in the upper part of the furnace shaft has been responsible for terminating fully ninety per cent. of the campaigns. These for the year were very brief,

On account of the high price of copper during the past few months we have shipped about 85,000 tons of ore, from which a recovery of about ten pounds of copper and a correspondingly low amount of gold and silver, has been obtained. This ore was from areas where drill holes had shown the mineral zone to be too low grade to be included in the reserves. It also included sections which had to be mined, but which under ordinary conditions would have been handled as waste. The inclusion of this low grade ore resulted in a reduction in the recovery of total ore shipped from 17 pounds to 16 pounds. On the other hand the ore reserves are increased by this amount. Development work further increased the reserves by 66,872 tons, making a total increase of 151,872 tons. The present condition of the ore reserves is therefore as follows:

	Gold Drop	Ironsides	Total
Ore developed	1,431,000	13,853,240	15,284,240
Mine has produced and shipped	1,369,600	9,682,235	11,051,835
Remaining ore.....	61,400	4,171,005	4,232,405

From this we estimate that a recovery of seventeen pounds can be maintained. In addition to this there



ANYOX, B.C. GRANBY SMELTER AT RIGHT.

averaging only 13.6 days, but with the new cars, longer campaigns are the rule. A saving of labor on the feed-floor was also made possible by the new cars.

The prolific fall of low-grade, corrosive matte imposes a duty on furnace connections and settlers probably without precedent in the practice of copper smelting. Means to cope with this condition have been devised, and the furnaces are no longer subject to the frequent interruptions by purely mechanical mishaps which proved so embarrassing in the past.

In the converter department new steel silica bins were built and so located as to permit feeding silica to the converters without resorting to the use of cranes.

Mr. W. B. Bishop, smelter superintendent at Grand Forks, reports as follows: The Furnace department smelted:

	Tons.
Granby ore	611,007
Foreign ore	6,537
Anyox matte	6,359
Converter slag and matte.....	23,326
Flue dust	1,522

The average percentage of coke used per ton of ore was 13.17. The average smelting cost for the year was \$1.187 per ton as against \$1.217 for 1914 and \$1.214 for 1913. There has been no new construction during the year, but repairs have been kept up and the plant is in first-class operating condition. Our costs are lower this year than any of the years past.

Mr. C. M. Campbell, superintendent of mines at Phoenix, says:

is a considerable amount, perhaps half a million tons, of ore which will average about seven-tenths of one per cent. in copper and forty cents in gold and silver.

While the silver recovery has remained fairly constant the gold recovery has increased about ten cents per ton. This is due to the fact that when the mine was reopened in December the price of copper was low and development was directed towards those areas where better gold values were to be obtained.

With the declaration of war and the resulting low copper prices all operations ceased early in August and the property remained shut down for four months.

During the shut-down the No. 2 crusher, which handles the ore from No. 3 tunnel, was shipped to Anyox. There was little further need for this crusher. Nearly all the virgin ore on this level had been worked out and as the caved ore and pillars remaining could be handled more cheaply and the waste sorted out better by the electric shovel it was decided to wait until No. 2 level had been worked out and then remove the shovel to No. 3 level. Present indications, however, point to the Gold Drop being the first outlet to be worked out and in that case the crusher from there may be the one to be moved.

With the beginning of winter a considerable proportion of the resident population began to show signs of distress and the company were induced to reopen in a small way with a reduced wage scale in force. With the improvement in the copper market more outlets were reopened and more men put on. The loss of No. 3