

diamond-drill holes had shown the mineral zone to be of too low a grade to be included in the ore 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 from total ore shipped from 17 to 16 lb. of copper a ton. On the other hand, the ore reserves are increased by this amount. Development-work further increased the reserves by 60,782 tons, making a total increase of 151,872 tons. The present condition of the ore reserves is, therefore, as follows: Ore remaining in *Gold Drop* mine, 61,400 tons; in *Iron-sides* mine, 4,171,005 tons; total ore in reserves (at July 1st, 1915), 4,232,405 tons. We estimate that from this ore a recovery of 17 lb. of copper a ton can be maintained. There is in addition a considerable quantity, perhaps 500,000 tons, of ore which will average 0.7 per cent. in copper and 40 cents a ton in gold and silver."

From the annual report it is also learned that for the last fiscal year, in which 610,998 tons of ore was shipped from the company's mines at Phoenix, the average cost per ton of ore, crushed, on railway-cars, including all mine development, was 85.1 cents. This included as well the cost of disposal of 77,329 tons of waste. The general manager made the following comment: "The cost of 85 cents per ton of ore shipped is about 5 cents a ton higher than the average for the previous five years. This is due partly to the shut-down in the fall of 1914, and subsequent starting of operations in the winter, but it also reflects the increasing expense of extraction attending decreasing ore reserves, and wherever possible this tendency is being offset by improving and cheapening the methods of extraction."

The first two blast-furnaces at the company's smelting-works near Grand Forks were blown in on August 21st, 1900; other furnaces were added from time to time, until in 1905 there were eight in all at these works. The general manager says: "At Grand Forks the smelting operation is a simple one, all of the difficulties of treatment and handling of the Phoenix ores having been solved years ago; this, with practically no expense for new construction, makes possible costs very substantially under those of recent years at this plant." The smelter superintendent reported: "The average smelting cost for the year was \$1.187 a 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 of any of the previous years." The average of coke used per ton of ore was 13.17 per cent. There was smelted: Granby ore, 611,007 tons; foreign ore, 6,537 tons; Anyox matte, 6,359 tons; converter slag and matte, 23,826 tons; and fire-dust, 1,522 tons.

British Columbia Copper Co..—This company operated only during the second half of 1915. With that for the months of November and December estimated, the approximate quantity of ore from British Columbia mines smelted at the smelting-works at Greenwood during the period July 26th to December 31st, inclusive, was 113,135 tons, as follows: Ore from *Mother Lode* mine, 100,620 tons; Boundary Falls smelter clean-up, 2,194 tons; *Sunset*, 429 tons; *Queen Victoria* (Nelson Division), 830 tons; *Tipperary*, 62 tons. Metals recovered from these ores were: Copper, 1,527,917 lb.; silver, 14,732 oz.; gold, 3,946 oz. There was also ore from the United States smelted, but the quantity was not ascertained. There was little of interest outside of matters incidental to ordinary operations happened at the company's mines and smelting-works during the year, except that on November 25th the upper or custom ore-bins at the smelter were destroyed by fire, and that reconstruction was in progress at the end of the year.

Other Properties..—There was not much productive mining done at other properties in the central part of the district. At the *Jewel* gold-mine and stamp-mill development was continued during the greater part of the year on the 500-foot level. The only information obtained was to the effect that the approximate value of the gold bullion recovered in 1915 was \$50,000, and that the mill was closed and the mine leased. Small gold-silver mines that shipped ore included: *Skylark*, 225 tons; *E.P.U.*, 100 tons; and *Strathmore*, 27 tons.