

ZINC DEPOSITS OF MONTAUBAN TOWNSHIP, QUEBEC*

By J. A. Bancroft.

At Batiscan, about twenty miles below Three Rivers, the Batiscan river enters the St. Lawrence river from the north. On the banks of this tributary and forty-two miles from its mouth, the little village of Notre Dame des Anges is situated in Portneuf county, and on the Canadian Northern railway, 125 miles north of Montreal. In a straight line, this village is 51 miles slightly north of west of the city of Quebec, from which by the C. N. R. via Garneau Junction, it is 106 miles distant, or via Riviere a Pierre Junction, 68 miles.

In the autumn of 1910, Mr. Elzear Gauthier discovered zinc blends and galena on lots 39 and 40, range I., Montauban, about four miles south of the village of Notre Dame des Anges. Since that date the area has attracted the attention of a small group of mining men.

In 1911, Mr. Pierre Tetreault acquired that portion of the mineralized zone crossing lots 322-327, range I., Price, and lots 39-42, range I., S.W. Montauban. In 1912, Mr. Tetreault erected a concentrating mill on lot 40, with the hope of treating the complex ore of this area by the methods that are adopted in concentrating the zinc and lead ores of the Joplin district, Missouri. In 1913 and 1914, about 1,300 tons of high grade ore was shipped from rich pockets that were encountered in shafts 3 and 4, but the mill failed to produce a marketable grade of concentrates.

The mineralized zone was found to extend north-eastward across lots 45, 44, 43 and into Block C, range I., S.W., Montauban, and other deposits of zinc blende were discovered on lots 7 and 8, range IV., S.W., Montauban. In 1914, the Laurentide Mining Co. began prospecting operations on lots 7 and 8, range IV., S.W., and the Montauban Mining Syndicate started work on lot 43, range I., S.W.

In October, 1914, the Weedon Mining Co., who own and operate the large deposit of cupriferous pyrite in the Eastern Townships, P.Q., leased from Mr. Tetreault a portion of the mineralized zone, 900 ft. in length, immediately south of the small lake on lot 40, and including shaft No. 3, which was then about 90 ft. deep. Aably directed by Mr. L. D. Adams, the superintendent of the Weedon Mining Co., development work was vigorously carried on, the concentrating mill was remodelled, and, as a result of numerous experiments, a method was devised whereby the ore can now be economically concentrated. In 1915, a separate company, the Zinc Company, Limited, was incorporated to operate this property. Up to June 1st, 1916, they had shipped 300 tons of high-grade zinc ore, and had passed 6,958 tons of ore through the mill.

The Tetreault Property.

A small lake on lot 40, range I., S.W., Montauban township, southward from the margin of the mineralization is practically confined to a band of metamorphosed magnesian limestone, whose position is plainly marked by a depression. For about 400 ft. from the lake, the altered limestones vary from 35 to 60 ft. in width when, including a band of quartzites up to 15 ft. in width, they fork into two bands which gradually become narrower as they are followed along the strike. Judging from surface exposures, it would appear that

for a distance of about 500 ft. southward from the lake, the altered limestones can be successfully worked for their irregularly distributed content of zinc blende and galena; farther southward only a few widely scattered grains of these minerals have been found.

In the southwestern corner of lot 40, at the hanging wall of the band of altered limestones, Mr. Tetreault sank a shaft (No. 3) to a depth of about 90 feet on a slope of about 60 degrees toward the southeast, on a large pocket of very rich zinc ore carrying a small percentage of lead. At a depth of 33 ft., drifting was extended for about 145 ft. toward the southwest. Seven or eight feet from the shaft a stope was developed, which attained a maximum height of about 20 ft. Fifty-five feet southwest of the shaft a raise was extended to the surface. Between 1,200 and 1,300 tons of high grade zinc ore were shipped by Mr. Tetreault from this shaft.

The Zinc Company, Limited.

In October, 1914, the Zinc Co., Limited, leased shaft No. 3 from Mr. Tetreault and that portion of the mineralized zone extending 100 ft. northward and 800 ft. southward from this shaft. The shaft has been extended to a depth of 175 ft.

At a depth of 85 ft. drifting has been carried about 325 ft. towards the south. For about 160 ft. from the shaft, the drift is crooked and lies toward the hanging wall of the altered limestones where they are almost completely altered to tremolite, diopside, etc., within which the zinc blende and galena are disseminated in an extremely irregular manner; beyond this, the drift followed the footwall where the ore is less irregularly distributed. At a distance of about 160 ft. from the shaft, while raising to the surface, a rich pocket of ore was encountered, from which about 300 tons of an excellent grade of ore were obtained.

At a depth of 170 ft. drifts have been extended toward the north for 100 ft. and toward the south for about 225 ft. In the latter direction, the drift has followed quite close to the foot-wall, where the crystalline limestone is almost completely free from tremolite, diopside, etc., but is heavily mineralized with zinc blende, galena, pyrrhotite and a very few grains of chalcopyrite. Undoubtedly, some pockets of rich ore will be found to be very irregularly distributed within the more tremolite-rich portion towards the hanging wall. Northward from the shaft, the band of altered limestones is narrower and more irregularly mineralized.

In the course of this development work, 6,958 tons of ore, with an average content of 13 per cent. of zinc, 9 per cent. of iron and 3 per cent. of lead have been passed through the remodelled mill that originally had been erected by Mr. Tetreault. This ore yielded 1,225 tons of zinc concentrates carrying 42 per cent. of zinc, 10 per cent. of iron and 4 per cent. of lead; also 270 tons of lead concentrates with an average content of 63 per cent. of lead, 10 per cent. of iron, 8 per cent. of zinc, and carrying 60 oz. of silver, and about \$10 in gold per ton of 2,000 lbs. It would seem to be a conservative estimate that on June 1st, 1916, about 50,000 tons of ore of similar average grade to that milled has been blocked out in the mine.

* Extracts from a report published by the Department of Mines, Quebec.