

MINING CUPRIFEROUS PYRITES IN QUEBEC*

By J. Austen Bancroft.

In the history of copper mining in the Eastern Townships, the year, 1909, should always be prominent because of the discovery of the [McDonald or Weedon mine in Weedon township, Wolfe County. The rusty appearance of quite extensive outcrops of sericite schist had attracted the attention of prospectors for several years, but no work had been done, because of the prevalent belief that only disseminated particles of pyrite were present in the schists. In the autumn of 1908, Mr. John McDonald of Sherbrooke, purchased the property, and during the following winter and spring, sank several pits in the rusty schists. It was not until the latter part of August, 1909, when, abandoning the rock outcrops, he began to excavate in the bottom of a grass-covered depression, elongated in a direction identical with the strike of the schists, that a body of cupriferous pyrite was discovered. Here, a shaft, 8' by 8', penetrated solid ore to a depth of about 25 feet. The property was leased under option to Dr. Pierre de Pierre Ricketts of New York, who later transferred it to the East Canada Smelting Company. According to the agreement of option, this Company paid Mr. McDonald \$100,000 for the property.

The first shipment was made from the Weedon mine on August 2nd, 1910, and during the balance of the year 6,112 tons of ore were sent to market. Since that time the shipments (in tons of 2000 lbs.) from this mine, as compared with the total shipments of cupriferous pyrite from this district have been as follows:—

Year	Total shipments from Eastern Townships	Shipments from Weedon mine
1910.....	24,040	6,112
1911.....	38,554	23,700
1912.....	62,107	33,130
1913.....	87,550	52,000
1914.....	117,778	59,058
	330,029	174,000

Thus during the past five years, the Weedon mine has produced 174,000 tons of the total of 330,029 tons of cupriferous pyrite that have been shipped from the Eastern Townships.

At intervals, from 1911 to 1914, about 1800 tons of copper ore have been shipped from the Ives mine, near Eastman. In 1914, 1600 tons of pyrite, carrying only a trace of copper, were shipped from the deposit near Stratford, six to seven miles from St. Gerard station on the Quebec Central railway. The Eustis mine was the only other property from which ore was exported during this period, so that the amount shipped from the Eustis for the years 1910 to 1914, inclusive, has been about 154,249 tons.

The main ore-body of the Weedon mine is a lenticular mass of cupriferous pyrite with which very small amounts of galena and zinc blende are associated; it has proved to be 570 feet in length with a maximum thickness of 40 to 45 feet, and striking N 37° E, dips 40° to 45° to the southeast. On the average the north-eastern portion of the lens has been found to carry somewhat higher values in copper than the south-western. Three shafts have been successively sunk on the vein to depths of 96, 350, and 470 feet. At first, the ore was taken by teams from the mine to the railway, a distance of 5 miles, at a cost of about 80 cents per ton. In 1912, a Bleichert aerial tramway, 19,500 feet in length, was constructed from the mine to the railway, at a cost of \$1.75 per foot, and the cost of transporting the ore

to the railroad thus has been reduced to 6.7 cents per ton. From January 1st to September 1st, 1914, 50,000 tons of ore was shipped, the maximum monthly shipments being those of June and July of 7050 and 7220 tons, respectively. Up to date, the ore has averaged 3.62 per cent. of copper, 40.74 per cent of sulphur, 0.77 per cent. of zinc, a trace of lead, and 0.46 oz. of silver and .01 oz. of gold per ton. The ore shipped has been sold for about \$9.00 a ton, payment being made on the sulphur and copper contents.

At present, the Eustis mine is working at a depth of about 3,900 feet on an average incline of 38°. In 1912, at a depth of 3,450 feet the ore bodies comprised four parallel lenticular veins known as the footwall, the main, the shaft and No. 1 veins. The footwall and shaft veins then carried somewhat better values in copper than the others; but in 1913, the average product of the mine contained slightly less than 2 per cent. of copper. At present, work is progressing at the bottom of the mine, upon two lenticular bodies of ore that average 2 per cent. in copper. The Maximum capacity of the mine equipment is about 200 tons per shift. The concentrating mill, which had a capacity of from about ten to twelve tons of mill feed per hour, and in which an Elmore oil concentrator was installed in 1913, was burned in August 1915. A new mill is in course of construction.

During 1909 to 1914, development work on a small scale, but more or less continuously, progressed at the Suffield mine on lot 3, range XI, Ascot, one of the properties of Mr. A. O. Norton. No ore was shipped during this period and upon the outbreak of war, work was suspended, although they were continuing to keep the water out of the mine. In 1910 and 1911, Mr. Norton also removed the water from the old workings of the Marrington mine on lot 6, range IX, of Ascot, but during this time only three tons of ore were sent to market.

In 1910, the Ascot mine had the water removed from it and some sampling was done for the East Canada Smelting Company, but no ore was shipped. In 1913, this mine was again reopened but soon was again permitted to fill with water.

In 1910, as a result of the interest aroused by the discovery of the Weedon mine, a lenticular deposit of pyrite was discovered on lot 8, range VI, S.W. of Stratford township, where in the years 1910 and 1911, an inclined shaft was sunk to a depth of 45 feet in the north-eastern end of the ore body. Four diamond drill holes were also put down and although several feet in thickness of pyrite were penetrated, the copper content of the ore was disappointing to those holding the property in lease at the time. In the summer and autumn of 1914, this property was leased by P. E. Beaudoin of Thetford Mines. The shaft was extended to a depth of 75 feet and in September, at a depth of about 50 feet, they were commencing to drift towards the southwest. About 1600 tons of pyrite carrying on the average from 45 to 48 per cent of sulphur and a mere trace of copper were shipped to the Grasselli Chemical Company's works at Hamilton, Ontario.

The Galt shaft of the old Ives mine, near Eastman, that had been closed since 1876, was reopened in May, 1911, by Messrs. Cromwell and Parker of Eastman. Since then prospecting work has been carried on more or less continuously. The shaft has been sunk from 100 to 180 feet and at this depth a drift extended for 72 feet to the southwest, along a zone of chlorite schists that for a width of four to five feet are traversed, parallel to their schistosity by veins of chalcopyrite and quartz. Operations ceased a

*From report on Copper Deposits of Eastern Townships, Mines Branch, Quebec, 1915.