

fidest that this proportion is not above the average produce which will be obtained on the large scale. It is equal to 330 lbs. of galena or 280.5 lbs. of lead, per ton of 2000 lbs. At the same rate, each cubic foot of the vein contains 25.7 lbs. of galena; each cubic fathom, 2.77 tons; and each square fathom of the vein, estimated at 10 feet thick, which is below the average width, 4.62 tons. At the rate of \$70 per ton of galena, each cubic fathom of the vein is worth \$193.90.

Taking the actually proved portion of the vein at 600 feet in length, and supposing this portion to be worked by means of the shaft already in progress, and by levels at 60 feet apart, the space between two such levels or between the floor of the present adit and the first level, would afford 4,400 tons of galena, worth \$308,000, without, as far as present appearances show, a yard of unproductive working. It is probable that the depth to which such working could be carried would be limited merely by the mechanical difficulties of deep mining; and no account is taken of the almost certain productive continuation of the vein to the east and west of the limits above mentioned.

With reference to the value and productiveness of the mine, the following conclusions may safely be drawn from the facts above stated:—

1. The Frontenac Lead Mine, as now opened on vein No. 1, has exposed a deposit of remarkable richness and extent, warranting the erection of all necessary machinery for crushing, washing and smelting, with a certainty of very large profits, under management ordinarily skilful.

2. The further extension of this and its companion vein, on the property of the Company, is of undoubted value, and points to an almost indefinite future development of the mine.

3. The gangue of the vein is of such a character as to be easily mined, crushed, and washed from the ore, being free from hard substances, such as quartz, which would damage mining tools, or render the crushing more difficult, and from heavy minerals, such as barytes, which would interfere with the washing. The ore is also remarkably free from those other metallic minerals, as blende, pyrites, &c., which often occur with galena, and impede its reduction, or affect the quality of the lead. For these reasons no difficulties need be apprehended in the treatment of the ore, and the whole working of the deposit should be of a simple and inexpensive character.

4. Calculations of the probable profits of the mine may be safely based on the above estimate of 330 lbs. of galena per ton of veinstone; or 4.62 tons per running fathom.

#### V.—GENERAL REMARKS AND RECOMMENDATIONS.

The estimates made by Dr. Hunt and myself, as to the proportion of lead present, are intermediate between those of Prof. Chapman and Mr. Robb; and I fully agree with both of these gentlemen as to the great value of the property, and also in advising that advantage should be