entered into with European smelters, and bulk shipments to Antwerp are being made at a freight rate of $13 per ton. In the course of the ensuing year it is expected, while the capacity of the works will be increased and costs reduced, a still higher grade of zinc will be produced. London price of spelter, which has remained steady for some time at £22 per ton is favourable, and generally speaking, the future for zinc is most encouraging. The earning power of the mine has been materially increased by the production of this valuable by-product.

In connection with the zinc plant an iron by-product is obtained from the magnetic separating machine, for which a market has been found with local lead smelters. This product has all the qualities of an excellent flux. It contains about 7 ounces of silver, beside 50 per cent. of combined iron and manganese. It is being produced at the rate of about two tons per day and nets approximately $3 per ton.

The bounty granted for five years to the lead miners by the Dominion Government, which at your present rate of production equals a yearly bonus of $12,000—will offset the low prices of lead. It is, however, to be hoped that the Government will grant still further assistance to the miners by a bonus on the production of zinc in a similar manner, to offset the high cost of transportation of zinc ores to the markets in foreign countries.

With the present prospects for opening up valuable ore bodies in tunnel No. 8 at the Payne mine together with the means now available for handling and treating all silver-lead and zinc ores mined, the outlook for the property is decidedly favourable.

## A YEAR'S DEVELOPMENT AT THE TYEE MINE.

MR. E. C. MUSGRAVE, the mine superintendent, in his annual report to the directors, states that work during the past year was confined to winning ore from the stopes at the 100-ft. and 165-ft. levels, and to exploration work on the 100-ft., 165-ft. and 300-ft. levels, while a small amount was done on the 400-ft. level.

Development Work.—While the development work at the 300-ft. level has not given as satisfactory results as was hoped for, at both the 100 and 165-ft. levels valuable discoveries of ore have been made, and it is expected that during the coming year the work that has been started at the 400-ft. level, and work which will soon be begun below that level, will result in finding further ore-bodies. The work done during this year has proved that instead of having a series of detached lenses, as was always supposed to be the case, the mine has in the upper levels one huge ore-body branching out in different directions through the schists, from the 165-ft. level. This ore-body appears to be distinct from the Lenora body (a portion of which runs into the Tyee ground), and it has now been proved over a length of 1,000 feet for a depth of 160 feet, and widths varying from 5 to 40 feet. Having proved this to be the case is a very encouraging sign, as the chances for such a large ore-body repeating in depth are much more favourable than if there were a series of detached lenses.

100-ft. Level.—The main drift at this level has been continued for a distance of 259 feet, and 149 feet of cross-cutting has been done from it. The only discovery of ore made on this level was that part of the ore-body on which No. 6 stope has been worked.

165-ft. Level.—The drift was continued for a distance of 337 feet, and 603 feet of cross-cutting was done from it. Early in the year the drift ran into ore, and on a cross-cut being made, thirty feet of ore was passed through, and from this cross-cut No. 4 stope (165-ft. level) was broken out. Later in the year a cross-cut was started from the sill floor of this stope and driven for a distance of 350 feet, which brought its face 380 feet from the main south wall. At 140 feet from the wall the north ore-body was met with, and after passing through this, the cross-cut passed through the ordinary schists of the lode, with two small intrusions of diabase; when at 300 feet from the wall it passed into diabase, in which it remained to the end. A small amount of work was done on the north ore-body, but although there were small pockets of rich ore in it, the bulk of it, at this point, was found to be too low grade to be of commercial value, so work on it was stopped. Another cross-cut was started 150 feet further east, and although it was carried far beyond the point at which the north ore-body should have been met with, had it lived to the east at this level, no sign of it was met with. This north ore body, besides having been struck in several places in the Tyee ground, has been worked to the western boundary of the Tyee in the Lenora mine, and to the eastern boundary of the Tyee in the Richard III., and as rich pockets have been found in it, large enough to yield a large tonnage of ore, both in the Lenora and Richard III., they doubtless occur in the Tyee and will be found in future workings.

300-ft. Level.—The drift at this level was run for a distance of 972 feet, and 440 feet of cross-cutting was done from it. With the exception of small stringers, no ore was found at this level. The probable reason for this was that the schists throughout were broken and twisted in every direction, by a movement subsequent to the formation of the ore-body, and it will be necessary to get below this line of movement before finding any large body of ore.

As the drift passed below the large ore-body of the upper levels, and showed no evidences of ore (the stringers having been found in the cross-cuts) a raise was put through to the 165-ft. level.

This raise, after having been carried up to a height of 85 feet, encountered ore, and remained in it, till it holed through.

A drift was run from the raise, eastward, from the point at which the ore was first met with, for a distance of 125 feet. This was in ore for the entire distance, and there is 12 feet of ore in the present breast.

400-ft. Level.—Work was started on this level near the end of the year. Stations were cut on the north and south sides of the shaft, and a drift was run for a short distance to the east, along the main south wall. So little work has been done to date that it is impossible to form a definite opinion as to whether this level is below the line of shattering found at the 300-ft. level or not; but so far the ground does not seem nearly so broken, and the schists are more like those in the upper levels, that is to say they are softer and less silicious than those in the 300-ft. level. The main south wall is as strong and well defined as ever, and retains much the same strike and dip as it had at the upper levels.

Raises.—During the year 364 feet of this work has been done, but as it has been principally for purposes of ventilation it presents no special features of interest.

Stopes 100-ft. Level.—Six stopes have been worked on this level, and from them a total of 15,026½ tons of ore has been won.

Stopes 165-ft. Level.—From these stopes, and from the drift from the raise between the 300 and 165-ft. levels, 33,597 tons of ore have been won.

Intermediate Level (300-165).—This level was run from the raise between the 300 and 165-ft. levels. It is 40 feet below the stopes at the 165-ft. level, and shows a good width of ore throughout its length. As the ore on the sill floor of the stope immediately above this level has been very wide, a large tonnage of ore may be expected between the levels.

Ore Reserves.—The difficulty of giving an estimate of the ore reserves is even greater than it was last year. The ore-body makes and pinches so quickly that, under the present conditions, any estimate of tonnage in sight would be guess work. The only thing that can be said is that from experience in the past, and the general appearance of the stopes, it is safe to calculate on having enough ore left in the mine, in the known body, to continue regular shipments for another year, with the probability of there being a great deal more than this.

Cost of Work.—The cost of winning the ore, and transporting it to the Esquimalt and Nanaimo Railway Company have been $2.21 per ton, which is divided as follows:—