

John Smeeth,

LAXEY,

Isle of Man.

6th. June, 1903.

Robert Gardiner, Esq.

CROSSWOOD Estate,

Cardiganshire.

Dear Sir,

In accordance with your request, I visited and made an inspection of the Frongoch Mines on the 21st, 23rd, and 23rd of May, and beg to hand you my Report.

The principal, or main Vaughan Shaft, vertical to the depth of the 90 fathoms level, meets with Taylor's Shaft sunk from surface on the line of lode to the present bottom or 154 fathoms level, but owing to all workings being filled with water under the 90 fathoms level, I am only able to report to this depth.

The principal formation is blue clay slate dipping west, and the lode which runs through the property has a bearing of east and west, with an underlay to the south, cuts across the stratification. In places particularly between Williams Shaft to the west, and Edwards Shaft eastward, the lode is very wide and has proved immensely productive from surface to the bottom of the Mine, yielding on the footwall or north side Blende, and on the hanging wall or south side Lead.

The adjoining property on the same lode west of boundary is West Frongoch or Wemyss Mine, from which point I give particulars of the workings inspected eastward in Frongoch Mine.

The Boundary Shaft has been sunk from surface to the 56 fathoms level but nothing of importance is to be seen.

About 75 fathoms east, Williams Shaft has been sunk to the 86 fathoms level, which is in good repair, with ladder round.

In the 14 fathoms level west, the lode driven on does not show anything of value.

The 24 fathoms level or Adit was driven principally on the south side of the lode, and in several places where broken into old workings in the north shows that ore ground has been worked away by previous Companies.

Near the boundary, a cross-cut has been put out north over 20 fathoms, and a level driven east and west.

The 34 fathoms level has been driven east of Williams Shaft by the present Company 18 fathoms, in a strong lode, showing in places spots of Lead, but not sufficient to pay for stopping.

The 34 fathoms level west is closed, and all ore that would pay has been taken out.

The 44 fathoms level west has been driven on north part of lode about 90 fathoms, and communicated with a rise cut up from the 56 fathoms level under

About 15 fathoms west of Engine Shaft the present Company have driven on a branch west 20 fathoms, which communicated with the main or south level the lode at this point was productive for Lead and Blende, which has been worked away, that there are no reserves of ore standing here, the main level on to Vaughan Shaft is in unproductive ground.

Engine Shaft is sunk to the 117 fathoms level, but no workings to be seen, and the same remark is applicable to Pryse's Shaft which is sunk to the 105 fathoms level. The latter is now being used for taking detris from the surface.

Ore Breaker Shaft, made chiefly through old workings to the 86 fathoms level, in which there is a footway, is rather out of repair.

In the 10 fathoms level west, about 8 fathoms from Shaft, there is a stope in which a little Blende is to be seen, but not rich enough to work at a profit.

The 10 fathoms level east has been driven 25 fathoms, in a large lode about 8 fathoms wide, which has been worked away for Blende, and the little ground left standing is not very rich. The ore ground under this level to the 20 fathoms level has been worked away.

The 24 fathoms level east has been driven by the present Company 2 fathoms, and a stope has been worked up to the 20 fathoms level, which became poor.

In the 24 fathoms level driven west, two cross-cuts have been driven north, showing a wide and strong lode, containing small branches of lead and Blende insufficient to pay for working.

In the 34 fathoms level west, the lode is from 12 to 15 feet wide, in which a little stope has been done but proved not rich enough to pay.

The 34 fathoms level east has been driven by the present Company 7 fathoms, which yielded Blende and has been stored away. The north and south levels are in soft ground unproductive for mineral.

The 44 fathoms level west has been driven by the present Company 18 fathoms, and working has been done on three carts or branches of the lode, the south or hanging cart, and the north cart or footwall being Lead bearing, and the intermediate branch producing Blende, which has been stored away but there is standing between this and the 34 fathoms level a pillar of ground about 3 fathoms long and 10 fathoms high, the lode being large of an average yield of about 4½ tons of Blende per fathom, which would produce probably 150 tons of Blende, but owing to the old workings standing on the hanging side, the ground requires careful timbering for working in safety.

The 44 fathoms level has been driven east of Footway Winze by the present Company 28 fathoms, as a tie level the north side of old workings with a view of communicating with a level driven west of Edwards Shaft, in hopes of meeting with good ore ground there may be between the two ends, from 12 to 15 fathoms of ground this is simply a trial, and it is doubtful if it meets with success, as in the present end a cross-cut has been driven and communicated with the old workings.

from which rise a 44 fathoms level has been driven on the south part of lode, about 25 fathoms in a productive lode, which has been stoped away to the 24 fathoms level above.

A long cross-cut north (over 80 fathoms) has been driven, but nothing of value was intersected.

The 44 fathoms level west of Boundary Shaft has been rather poor in yield of ore, and only one store in low grade ore for Lead and Blende has been worked at.

The 44 fathoms level east on north part of lode is filled up and could not be seen.

The 44 fathoms level east on south part of lode, has been communicated with the north level by a cross-cut, in which nothing of value is to be seen.

The 56 fathoms level west has been driven by the present Company 44 fathoms, to and beyond the boundary into West Froggock, but proved unproductive for some distance before reaching the boundary.

Stooping has been carried on at several points over this level, which were fairly productive for Blende and Lead when commenced, but became less so, as they approached the level above.

Several cross-cuts have been put out to prove the lode, but nothing of value intersected.

The 56 fathoms level east has been driven by the present Company 58 fathoms towards the Engine Shaft in north part of lode, and in examining the roof, the lode is of good size, showing in places a mixture of Lead and Blende but not sufficient to pay for stooping, thus proving the ore ground worked away under the 24 fathoms level did not continue so productive in depth to this level.

About 10 fathoms east of Williams Shaft, a short cross-cut was driven south, and intersected a mass of quartz interspersed with good Lead, which was stoped for a short distance in height, when it fell off in yield, and became too poor for working.

The 66 fathoms level west of Williams Shaft has been driven into West Froggock Mine, at a lower level of some fathoms than the 66 level from that Mine, that an incline road with drum has been cut in or laid, so as to convey the ore-stuff etc. from West Froggock back to Vaughan Shaft, to be raised to the surface, also the water as well to the Electric Pump.

The lode in the 66 fathoms level from Williams Shaft is large, about 12 feet wide, but smaller as it reached the boundary, and throughout the whole length showed very little Lead or Blende, nothing good enough to pay for stooping.

Several rises (eight or nine) have been put up from 2 to 5 fathoms to test the ground, - but only two used as ore masses have gone through to the level above - thus proving this long piece of ground to be poor for mineral.

The 66 fathoms level east towards Engine and Vaughan Shaft is in good repair.

In the 56 fathoms level east of Footway Winze, a stope has been worked nearly to the forebreast. There is a pillar of ground standing between Ore Breaker Shaft and the Footway Winze, also a short length of the east as far as the stope worked in which is to be seen Blende of a low grade, this piece of ground is standing intact to the 66 fathoms level.

Edwards Shaft is sunk from surface to the depth of the 78 fathoms level, 5 fathoms of which were sunk by the present Company, and at present is not in very good condition.

In the Shallon Adit east 7 fathoms, and in the 174 fathoms level east, 4 fathoms has been driven by the present Company, and some stoving in Blende ground has been done.

The 24 fathoms level east has been driven from this Shaft about 150 fathoms partly on north part of lode, being the pioneer level in the Mine. In the present forebreast there is a lode 11 feet wide, composed of blue clay slate veins of quartz and Carbonate of Lime showing a little Blende on the south side. The ground appears to be changing in the last few fathoms driven, and looks more kindly for producing mineral, as it is to be seen along the roof behind the end.

A short cross-cut has been driven south from this level on south part and communicated with the west eastern or Millers Shaft.

About 30 fathoms behind the present end a cross-cut has been driven over 40 fathoms, and intersected the south part of lode which has been driven on eastward about 30 fathoms, of which 12 fathoms was driven by the present Company. The lode in the is about 5 feet wide, showing quartz with small cubes of Blende, and is not so strong and promising as the north level.

Two short cross-cuts have been cut out north to prove the width of the lode.

The 34 fathoms level has been extended on an intermediate branch or part of lode over 50 fathoms, and a cross-cut extended north to intersect the north part of lode, which was driven on by the present Company 4 fathoms in an unproductive lode. This end - according to the plan - is about 25 fathoms behind the 24 fathoms level above.

A cross-cut has been extended from end of middle or intermediate level southward, for the purpose of intersecting the south part of lode (which was expected to have been reached). The present end of cross-cut shows indication of the lode being near, and - in my opinion - should be continued.

The 34 fathoms level west has been driven about 40 fathoms, and by the present Company 8 fathoms, but nothing of value was met with.

The 44 fathoms level west has been driven about 40 fathoms, and by the present Company 10 fathoms, for the purpose of meeting with the 44 fathoms level east of Orebreaker Shaft, (as explained).

In the 44 fathoms level eastward, the lode shows a little Blende, but not sufficient to value.

A cross-cut has been driven, and intersected the lode on which the 24

fathoms level on north part is driven, which is very strong and promising, letting out a good stream of water.

The 56 fathoms level east on north and south parts of lode, could not be examined.

The 56 fathoms level west of Edwards Shaft has been driven by the present Company 20 fathoms, for the purpose of meeting with the level east of Oretreker Shaft, there being still 6 fathoms of ground between the two ends and being off the lode is of no value.

In the sole of the 56 fathoms level, string of Blende has been carried on, and between the present bottom and the 66 fathoms level there is estimated to be standing about 60 fathoms of ore ground that will yield from 4 to 5 tons of Blende per fathom.

In the 66 fathoms level east on north level, the present Company have driven from Vaughan Shaft 70 fathoms, the lode in the present end is turning more northerly and is unproductive.

Vaughan Shaft, the principal shaft for winding and raising, is sunk vertical from surface to the 90 fathoms level, and communicated with Taylor's Shaft

The 78 fathoms level has been driven east, and communicated with the present bottom of Edwards Shaft, 51 fathoms being driven by the present Company.

The workings on the south part of lode have mostly produced lead in rich quantities, taken away by previous Companies, and the north part producing Blende being worked by the present Company. There is still standing over this level stores partly worked estimated to produce about 100 tons of Blende.

About 40 fathoms east of Vaughan Shaft in the roof a store has been worked, and there is yet standing a piece of ground about 3 fathoms long by 10 fathoms high, valued by Mr. Trefois to yield 3 tons of Blende per fathom.

A cross-cut north was driven a few fathoms behind the 78 forebreast, and intersected the north part of lode which produced Blende, and after communicating with Edwards Shaft, a level was driven west, towards the 78 end east from Vaughan Shaft on north part of lode, there being between these two ends about 12 fathoms further to drive to effect a communication, which from the appearance of the lode in the present end west, will open up Blende ground for storing.

About 40 fathoms east, Number 1 Winze has been sunk 34 fathoms, which was full of water, but I am told the lode in the bottom is very good for Blende.

Further East about 50 fathoms, Number 2 Winze has been sunk 44 fathoms the present bottom being all in lode of a hard and strong nature, containing good Blende that will yield 5 tons per fathom.

The 90 fathoms level has been extended eastward over 100 fathoms, of which the present Company has driven about 50 fathoms, and has nearly reached under the 78 end or bottom of Edwards Shaft. The lode in the present end is large and looks promising, letting out water, and contains a good mixture of Blende with Lead.

About 40 fathoms behind the present end a cross-cut has been driven north 20 feet, and intersected the north part of lode which contains a strong mixture of Blende.

Further east still about 23 7 fathoms a second cross-cut has been driven 15 feet, and passed through a small mixture of Blende.

Further east about 12 fathoms from Number 2 cross-cut, a third cross-cut was cut out north several feet beyond the run of Blende intersected by the previous two cross-cuts, proving there was no more lode standing in this direction, when the 20 fathoms level was continued eastward and the present end is 46 feet in advance of Number 3 cross-cut which is now being driven by four men and is opening up a lode of Blende mixed with Lead valued at 1 1/2 tons per fathom.

From Number 3 cross-cut a level has been started westward, in a strong lode showing some Blende a few inches wide on the south side. This end should be driven to reach Number 2 and Number 1 cross-cuts which have intersected the same run of Blende on which Numbers 1 and 2 winzes started under the 78 fathoms level are supposed to be in, and when communicated with this level will open up (as far seen) productive ground for about 60 fathoms long.

About 50 fathoms east of Vaughan Shaft, some ground has been stowed along the roof west under Number 1 winze, started under the 78 level, which shows a large and strong lode yielding some good Blende worth 1 1/2 tons per fathom. At this point a rise was intended to be cut up to meet the winze.

A cross-cut has been driven south a short distance through a strong lode containing some ore, but has not intersected the hanging wall or south part of lode.

The 20 fathoms level west of Vaughan Shaft has been driven by the present Company 58 fathoms principally in country rock north of the lode or workings extended by previous Companies, and wherever broken into by cross-cuts, the workings are found filled with debris.

The present level is a very substantial one and advantageous for driving westward, in the present end of which the lode shows small strings of Blende.

General Remarks.

Having reported in the different points that could be examined underground I beg to state the principal explorations carried on by the present Company since 1898 have been chiefly in the western part, east and west of Williams Shaft at the 56 fathoms level, east and west of Vaughan Shaft at the 66 : 78 and 20 fathoms levels, proving the north part of lode, and, east and west of Orebreaker and Edwards Shafts for short distances, - that comparatively speaking, the trials are only testing the side branches or north part of main lode which in the upper section of the Mine proved rich in Blende, but do not hold so productive in depth as proved by the 20 fathoms level.

Very little work has been done in the eastern part of the Mine in the extreme end of which the 24 fathoms or pioneer level, as well as the 34 and 44 fathoms levels show the lode to be split or divided, and rather cinched by a cross channel of ground to be seen on surface, which if driven through and

extended eastward into the very promising virgin ground from all indication at surface, the lode would again open out and become productive, also it would be advisable to sink a new shaft from surface, and to push forward the driving of the 90 and the other lower levels eastward from Vaughan Shaft.

The lower levels in the western part of the Mine, particularly the 66 fathoms level from West Frongoch, are in excellent order, eastward to Vaughan Shaft, as also the 78 and 90 fathoms levels east and west of Vaughan Shaft, but the upper levels in several places with Footways and Shafts (Orebreaker and Edwards) if to be kept open require sundry repairs.

The Vaughan or main Shaft is well equipped with Gages for hauling up of men and ore-stuff by an electric Plant, and for the pumping of water.

For the future development of the Mine, I consider the eastern ground should be explored by extending the 24 fathoms level east on north part of lode and the sinking of a new Shaft from surface also to drive the 90 fathoms level east of Vaughan Shaft with a deeper level in the same direction in search of further deposits of ore, and further to drive the present cross-cut south in the 56 fathoms level west of Williams Shaft, to intersect the parallel lode about 100 fathoms south of the main lode as seen and opened on surface.

There is at surface, erected by the present Company, an extensive installation of Electric Plant for hauling and running, with extensive Dressing Machinery, capable of treating immense quantities of ore-stuff, of which at present there is but little reserves of ore underground, or lumps left on surface, probably twelve months' work, that it shows plainly, as has been erroneously done before in Cardiganshire, too much of the capital has been applied to the erection of expensive Machinery for treating of ore-stuff etc. instead of first expending sufficient underground to explore and open up reserves of ore, and then erect the necessary Dressing Machinery, so as to maintain regular returns.

In conclusion, I beg to add that, looking at the past history of Frongoch, and its present position, with such good Machinery erected & available for the advantageous future, working with the present prospects at the 90 fathoms level, and the untried ground eastward of the cross measures towards Rhosygenallt and the parallel lode standing south as seen at surface, I consider if a further capital of £20,000. Os. Cd. was judiciously expended, there is every possibility of a profitable Mine being opened up.

I remain, dear Sir,

Yours respectfully,

(Signed).

Thomas Garland.