

REPORT ON THE AUSTIN COPPER MINE.

To the Directors of the Austin Mining Company,
(Limited) Ottawa, Ontario.

SIR,—Having proceeded to your company's mine at Echo Lake, in the Garden River Indian Reserve, and spent several days there surveying and examining it, I beg herewith to submit my report of the results of the examination.

SITUATION AND COMMUNICATIONS.

These two features can be well understood by reference to Mr. Austin's map of the property and the locality. Sault Ste. Marie is the nearest place of any size, and is distant about 25 miles by water down the Sault River to Lake George (or the mouth of the Echo River could be reached by driving from the Sault), up Echo River about three miles, and about three miles across Echo Lake to the mine dock, from which there is about a mile of well graded road to the mine. This route could be rendered available for craft drawing 6 or 8 feet of water by doing a slight amount of dredging at the mouth of Echo River, and about 100 feet where the lake discharges into the river. Were this done the communications would be excellent and the ore from the mine could be readily and cheaply brought down from Lake George, from whence it could be shipped through to Chicago or any points on the lakes, or to England. A light draft tug makes occasional trips at present up as far as the bar at Echo Lake. In winter communication would also be good. From Sault Ste. Marie to the mouth of Echo River on the Bruce Mines Road, up a winter road which has been cut to Echo Lake, and thence across the ice to the mine dock. There is a mail three times a week, or oftener, to a post-office at the mouth of Echo River, which would, no doubt, be improved were the mines working, and communication could also be made at this point with the C. P. R. telegraph system, were it necessary. The summer route by water is all sheltered, so that shipments need never be delayed by bad weather. A good location could be found for a tramway to the dock at Echo Lake down a gully that runs directly from the mine. By putting in a suitable track the full car descending from the mine could, I think, be made to draw up the empty one. Ore bins could be erected here, from which the barrels could easily be filled, and into which self dumping cars could dump the ore which would reduce the cost of handling and tramping to a minimum.

DEVELOPMENTS.

The vein on which work has been done is a strong and well defined lode, carrying sulphides of copper and iron in a quartz gangue. It is very favourably situated for testing cheaply and also for working. It runs into the side of a hill with an average strike, as far as shown by the present developments, of about N. 35° W., although it varies considerably from this at different points. In dip it also varies much, but averages about S. 55° W. In places it is 8 feet thick and in others it gets much broader, appearing from the surface croppings to widen out to 20 or 25 feet. *The accompanying map and section of the mine will show you the position and relative level of the various openings made on the vein which I now propose to describe more in detail.

THE TUNNEL.

This is a drift on the course of the vein at a point some 250 feet below its highest level on the property. It has been driven for a distance of 85 feet. The lode here is not so productive as at the other openings, and seems much disturbed, but, as the end has only some 25 feet of vein above it, it will most likely improve much as it reaches deeper ground and approaches the better portions of the vein at 1 and 2 shafts. It has, however, yielded occasional good stones of ore as evidenced by the dump and breaking rock right along the level. The vein dips here about 65° and is 8 to 10 feet wide.

NO. 1. SHAFT

is a small exploratory shaft about 6x6 and some 25 feet deep. From this point croppings show for about 100 feet down towards the tunnel. This opening turned out a good quantity of ore. An examination of the dump shows the vein to have been much improved in yield, settled and without the admixture of country rock found in the tunnel.

POINT W

is a small hole showing no ore, but the quartz here is white and opaque and similar to that found on the foot of the vein at opening Z, which, with other evidence, leads me to believe the real vein lies to the west of this spot in a hollow filled with soil.

*The map and section referred to can be seen at the Company's Office, Ottawa.

POINT X.

Here a trench has been excavated across the outcrop of the vein, about 20x5x5 ft. deep. It shows much ferruginous gozzan from atmospheric action on the back of the lode. In the E. half iron pyrites appears to predominate, but the W. half shows the regular copper bearing quartz of the lode. Notwithstanding atmospheric alterations, the trench has turned out some good ore and the vein looks promising.

POINT Y.

A trench about 20x5x8 ft. deep, excavated across the run of the vein. No definite hanging or foot walls shown as vein rock appears to be still standing to east of trench. The lode is about 25 ft. thick here and shows the same ferruginous gozzan as at X. This opening has yielded quite a quantity of good ore and the vein looks well. A band of iron stained croppings extends on a course of S. 15° E. from here towards X for 30 or 40 feet.

NO. 2 SHAFT.

About 10x12x32 feet deep. It is sunk on the foot wall which is here well defined and dips 52° from the horizontal, whilst the strike approaches a more E. and W. direction.

The vein looks well at this point, and there is a good showing of ore on the dump, which occurs in large and stronger masses in the vein matter. There is still vein standing to the hanging of the shaft.

OPENING Z.

A small pit 10x10x6 ft. deep which appears to be in the middle of the vein as neither foot nor hanging wall shows. The width would be about 15 to 20 feet here. Three bands show here: on the foot wall side is white opaque quartz, as in opening W., above which lies some 6 feet of looser rock stained with iron oxide and copper carbonates (from atmospheric action on the other ores of copper and iron) whilst above this the pit is 4 feet in a band of quartz with disseminated ore and occasional large pieces. The vein looks very well also at this point.

SITE FOR FLOORS.

An excellent site could be selected for dressing floors near the mouth of the tunnel where the ground drops away at a good angle to arrange them advantageously, so that the ore would pass through with the minimum of handling, whilst water could be supplied from the little creek running past the place and from the small lake above in which it takes its source.

SUMMARY.

On your property you have a good, large, and well defined vein which is very favourably situated for testing and working. The underground developments are, as far as they have gone, satisfactory in their results and would encourage and justify a further expenditure which, from present appearances, would open up a large quantity of good ore and enable the erection of dressing machinery to be proceeded with with confidence. I would suggest that the tunnel be continued on and that both shafts be sunk to meet it. The sinking of No. 1. would be necessary on account of ventilation, and would be advantageous as giving another point at which to start stoping.

The proposed work would require a force of 30 to 35 men, for whose accommodation very little addition would be required to the present boarding-house. A small steam hoist would be required for the shafts, which, with another steam drill, air compressor and tank for the two, would be the chief additions necessary to the present plant. A couple of teams would also be required, but these could probably be hired from the surrounding farmers.

With this force, at the end of about a year, or little more, you would have a large stock of ore opened up and the ground well proved, and should these developments prove as satisfactory as the vein now promises you would be able to direct all your attention to the erection of dressing machinery, which could be supplied with ore immediately on completion.

A great deal of surface work has been done on the property, such as is always necessary in like districts before one can commence mining work, such as clearing bush, making roads, erection of buildings, &c., &c., so that there need be little delay on that account in starting work again on the mine as advised. The details of these surface improvements are given in the accompanying appendix.

I remain, sir,

Your obedient servant,
(Signed) ELFRIC DREW INGALL,
Associate Royal School of Mines,
London, England.

APPENDIX.

SURFACE IMPROVEMENTS.

The position of the buildings, etc., is shown on the plan. They are all well built and in good order. They are as follows:

No. 2 Shaft House: A small plank building 15 x 10. No. 1 Shaft House: A small log building about 12 x 10.