

Bristol Has Lots of Ore Such as it is--Mining Methods in use There.

A representative of The Diamond Drill spent the afternoon, Tuesday, underground in the Bristol mine. Captain Franquist took us in tow on surface and there was not a nook or crevice in the whole underground workings that we were not shown to and every turn and twist in the formation was pointed out and explained to us as carefully as if we inspecting it for the operators. The Bristol has been working along in a quiet way, not making much fuss and it will be a surprise to our readers to learn that as much exploration has been done in the mine as is the case.

Location of Mine.
To those not acquainted with the exact location of the mine a word of explanation is that the line may not be amiss. The Bristol lies at the west end of the line of mines to the north of the city and adjoins the Youngtown property of the Steel company, it being the west end of the same deposit and the conditions of the one mine controlling in both. The deposit lies in an east and west trend, the east side of the deposit being to the north and the hanging to the south. By a series of big shafts that include the Bryar Hill creek valley on the east. The Bryar Hill deposit as it was formerly known, was one of the first ore deposits explored in the district. The late P. E. Dunn did the first exploring there and proved the existence of a very large deposit of low grade ore. The Bristol end of the deposit was opened by a line of shafts extending from the west end of the property to the extreme east end. There were four shafts in all and a complex of small pits but the west end of the mine didn't prove very good and was practically abandoned. The property was purchased in 1892 by Ferdinand Schlessinger who stripped a large area of the ore near the east line and worked the property but one year, taking out 55,000 tons of ore from the pit that he had stripped. The mine was idle until the year 1899 when Ogilby, Norton & Co. took a lease on it from the owners, the Pilsner Land company, of Milwaukee. The lease is one of the most favorable as regards royalty in the Crystal Falls district. But little explored.
The new operators found a property of which but little was known and they set about the exploration of it in systematic manner. Arvid Bjork was placed in local charge of the prop-

erty and August Franquist received the appointment of mining captain. Their first work was done in the open pit and not so much attention was given to the underground exploration of the property during the first summer. When the mine was unwatered they found the main shaft but 125 feet deep. This may be said to be the depth of the mine at the time. A careful examination of all of the shafts were made and the one just west of the open pit set upon as the one to work the property from.

The Main Shaft.
This is the shaft shown in the picture and is the one through which all of the ore at the property is hoisted. It is sunk in the limestones to the south, or hanging side, and is well protected by large pillars of rock and hard manganese ore. It is surmounted by a shaft house 20 feet high which supports a large Gates crusher through which all of the ore mined at the Bristol is run before being shipped. The old part of the shaft measures 9 x 18 feet inside of the timbers but when the Bristol people started to sink it they tapered it down to the regulation size of the times, 6 x 16. It is a remarkably dry shaft and a person can go from the top to the bottom without getting dampened in the least.

The First Level.
The first level of the present mine was run off at a depth of 148 feet and was opened up the first fall and winter that the Bristol people had the property. The ore, as we have said, lies to the north of the shaft and a cross-cut was run directly north from the shaft 50 feet. The greater portion of this cross-cut was in rock and what is called by the Bristol people, "manganese ore." Only a small line of the better grade ore was met with, near the extreme end of the cross-cut. Work was then turned to drifting on the vein and a great tunnel 500 feet in

length was run to the east under the open pit and another tunnel to the west 200 feet so that the ore deposit on this first level is proved up for a length of nearly 700 feet. At intervals of about 20 feet cross cuts have been run off to the north and to the south. The very surprising thing on this level is the immense amount of exploring that has been done. We were told that 2000 feet of drifts were driven on this level alone and every foot of this drifting was done for the purpose of exploring the property. And of all the ore shown up by this drifting, fully ninety per cent of it stands there yet and will stand until the conditions of the market are such that an ore high in manganese and low in iron can be used. Only a very small amount of merchantable ore was met with. In the west end there was a lens about 40 feet in length and 10 feet in width and in the east end a lens about 100 feet in length and 40 feet in width was cut. This is all of the good ore that was found on the first level.

The Second Level.
The same procedure in regards to sinking and cross-cutting was pursued on the second level as on the first. A cross-cut was run to the north off the shaft at a depth of 225 feet and where they had a fair amount of ore in the cross-cut above there was none at all found on this level. Then attention was turned to drifting on the trend of the vein and for 130 feet east nothing but rock was encountered. Then manganese ore was met with and the same lens of Bristol

ore was met with.
The Third Level.
The third level of the mine is the one from which most of the ore shipped from the mine this year has been taken. The only difference between this level and the one above it, in regard to the lay of the ore deposits is that the west end of the mine which has been opened up and a slope of Bristol ore corresponding to that found in the west end on the first level was found and the mine on this level takes on its original length again, about 1,000 feet.

The Forth Level.
This is a new level that is now being opened up and is corresponds very closely to the third level. But little sloping has been done on this level, the work being confined to opening it up so that when the skips are lowered they will be in shape to send out the ore. The dirt from this level is hoisted to the third level through a raise, a skip being used to carry it. A Lidgerwood hoist, 1 ft. drums, is installed on the third level and pulls the skip. This transfer is made because the skips are run in balance and all of the hoisting must be done from one level at a time.

Mining System.
The system used in winning the ore at the Bristol is very well calculated to get out ore cheaply, as must be done at a property where there is so much exploring for so little good ore.
The one main tunnel is run on the trend of the ore, east and west, in the center of the ore deposit. Off this tunnel, at intervals of 50 feet cross-cuts are run at right angles and continued to the rock. A raise is put up from each cross-cut to the level above, or more truthfully speaking, 25 within twenty feet of the level above. When this height is reached a drift is driven to connect

along drifts back and holes into this raise which thus forms an outlet for two stopes. Thirty foot pillars are left between stopes and this short raise is always in the middle of the pillar.

The workmen use this raise in going to and coming from the stopes and the air and water pipes are conducted through the same raise. When the connection is made with the level above the miners start breaking down around the first raise in the middle of the stop. A chute is put in the bottom of this raise and the dirt milled into the tram cars on the level below. Not a stick of timber is used in the sloping of the ore and some of the stopes are eighty-five feet in height. The back of the stopes is invariably hard and stands like rock.

Economies.
The greatest economy is used in all departments about the mine and close accounting is made with every expense, either of labor or supplies. The management of the explosive material was of particular interest to us. The powder house is located on the first level in one of the old drifts. A coil of steam pipes is used to blow the powder which is held in a press in front of the heaters. About 2000 pounds of powder is kept here and a man is kept in the house to watch it and prepare it for use. This man inserts all of the exploders, cuts the fuse and keeps account of every stick that goes out and where it goes to. The Captain says that they have found that it pays to keep careful account with their explosives. This powder man also prepares the sanding which is the only light used in the mine. He does this by melting a can full of the wax and then pouring the melted wax on a lot of shopped up tallow. This softens the wax so that it can be worked and the stuff is rolled into balls, each ball being just enough to keep a man going a day.

The Ore-Measure.
The ore lies in a long formation, the width of which has never been exactly determined. The trend is east and west and the pitch is to the south east. The good ore lies in small lenses in the lean ore much as a lens of ore might lie in a bed of Jasper. This necessitates a great deal of exploration in order to find the good ore and readers at such that you are liable to run onto a little lens of good ore anywhere.

The Bristol along with the other mines which are the properties of Ogilby-Norton & Co. are under the general supervision of E. W. Hopkins, of Commonwealth, who succeeded Mr. O. C. Davidson when the latter went with the Steel company. The local, or assistant superintendent, under whose immediate management the mine is, is Arvid Bjork, an old employee of the Ogilby-Norton company and one of the most successful miners in the Crystal Falls district. Mr. Bjork has recently done extra work at the Bristol since he took hold of it. Last year this property, with ninety-five men, mined 118,000 tons of ore and during much of that time shipping was practically suspended.

The mining captain is August Franquist, also an old Ogilby-Norton man. To the hard and persistent work of Captain Franquist is, in a great measure, due the successful operation of the mine. He is a progressive miner and there is not a nook or corner in the mine or a twist in the formation that he has not carefully studied. He knows his mine thoroughly. Fred Miller is clerk at the mine, having held the position with credit to himself since the mine started. The night captain is Swan Anderson and the crew of men employed at the Bristol are above the average of the miners in on the Menominee range.

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