

GARFIELD TIN MINE, GLADSTONE.

The following is a summary of the data and particulars obtained by the writer from the surveying and levelling work carried out last week and portion of the present week.

Main head race. A traversed survey of this was made the length being about a mile, the route will be added to existing plan of the mine. This race was also levelled, the fall from the pipe line at the intake end to the delivery end above No.1 Race workings is 25.97 feet. Allowing for a fall of 5 feet to the mile which is ample for the class of country passed through, there is a loss of 20 feet head pressure. The excessive fall in the race level occurs from the northern end of the second section of flume in the direction of flow onward.

The drop along the route of race was unavoidable owing to the general fall of the ridge along which it is constructed. The loss in head pressure of 20 feet is a serious matter when only 60 feet is left.

Under the circumstances unless the drift at No.1 face was considerably above the average value of that available on other portions of the property it would have been advisable to have commenced work on areas where the fullest natural pressure of the water from the race could have been utilised.

No.1 Face The pressure head available at the south eastern portion of this face from the terminus of the race is 61.5 feet. As the work proceeds easterly the pressure will diminish. The granite bottom is here rising at the rate of 1 in 30.

This is one of the disadvantages attendant to hydraulic sluicing by gravitation methods under a low head pressure. Under any conditions the requisite fall must be given for the effective discharge of drift from the face, as the work proceeds a relative loss in pressure occurs.

The distance from the face recently being worked to the head of the sluice box is 432 feet, that is, measured along the course of the tailings discharge channel. The fall between these points is 19.44 feet or at the rate of 2.97 feet per chain.

From the level of the head of the box to a point 69 feet along the channel the rise is 4.68 feet. Allowing for a fall of 2 feet per chain the depth of cut to that point will be 2.59 feet.

Approximately a distance of 25 feet along this section is completed.

The next section of 66 feet gives a total rise of 7.48 feet involving a cut on a grade of 2 feet per chain of 3.39 feet.

The next of similar length gives a total rise of 11.59 feet carrying an even grade through the depth of cutting at the top end of this section will be 5.5 feet.

giving an average depth of 4.4 feet.

From the last point the next section of 75 feet carries the cutting through the hard to the soft granite bottom. The top end of this section is 15.47 feet above the head of box level, after making provision for the fall of 2 feet per chain the depth of cutting needed at the end of this section to keep an even grade is 8.36 feet equal to an average depth of 6.93 feet for the section.

The varying lengths of the sections is due to the sinuous course of the channel.

The length of the channel to cut from the point where the hard granite terminates to bottom of face where sluicing was last in progress is 156 feet. Providing the same grade is maintained the depth of channel at face will be 6.36 feet or an average depth of cutting through the soft granite of 7.36 feet.

In carrying out this work any lesser grade given will involve deeper cutting, on the other hand steeper grade means less cutting.

The lower portion of the tailings channel now being cut is already cut out to a depth of 6 to 8 feet gradually diminishing to the normal level of the granite bottom at the junction of the hard and soft rock.

The total length of sluice box is 204 feet the fall in this length is 5.36 feet equivalent to 1.73 feet per chain.

From the lower end of the sluice box the tailings discharge channel has been cut a total distance of 1393 feet the total fall between these points is 57.18 feet or 2.7 feet per chain. This rate of fall gives an effective discharge of the tailings.

A full traverse of the No. 1 Face including the tailings channel together with the respective heights of the various points of the traverse have been made. These will be added to the plan of the mine workings.

Hardens Ravine. A traverse of this channel from No. 8 face to a point in the direction of the Ringarooma River a total distance of 4200 feet from the former was made and levels taken at each 100 feet along the route. The fall was fairly even throughout and totalled 89.48 feet equal to a fall of 1.4 feet per chain. In carrying out this work a line was taken to avoid the New Esk Company's dam area.

Saw Pit Gully A survey of this channel was made commencing from the south west corner peg of section 9670/M. The peg is in the centre of the race but is not shown so in the plan.

A total distance of 1945 feet was traversed and levelled along this channel being taken 500 feet south east of the corner peg the remainder above to the end of the old face.

The fall in the channel from the corner peg referred to in the direction of the Ringarooma River is 2.9 feet per chain for the distance levelled. As the valley of the River is approached the inclination becomes gradually steeper.

From the peg on the up grade the channel has a fall of 3.4 feet per chain. The ground at the upper portion of the channel would have very little pressure from the race. At the corner peg the fall from the head race is 112 feet.

A small area of ground known as the "Clay Face" has been worked a short distance to the northeast of the corner peg referred to in the channel. The pressure available in the bottom of this face from the head race is 80.27 feet.

No.9 Face Tailings from this face by gravitation would be discharged into Hardens Ravine. Although this channel is rather flat the drift material of this area consists of light sand and would carry away well with a moderate fall. With the present equipment this face could not be worked without an excessive length of pipe line from the main race. To operate this face to the best advantage a branch race from the main race would be necessary. A line of race to the most suitable point to serve this face has been marked out and levelled by the Company. The bottom of the face is 64.7 feet below the race level at the terminal point most suitable to connect with a pipe line. The total length of pipe line required is 597 feet.

When the boring work now in progress at No.1 Face is completed I would recommend that the ground to the south east of No.9 face be tested by boring. No.9 face is wrongly marked "No.8" on the plan.

A comparatively short distance to the south west of No.9 face two shafts have been sunk, these are due south of section 9025/M. No.1 shaft carried good values throughout its full depth. The tin is much coarser than the usual grade found on the mine. The quality of the wash is very favorable, being of fine granular quartz gravel with a small admixture of clay. The area in this vicinity could with advantage be given some attention in the way of testing the extent of the drift located by the shaft referred to. No.2 shaft did not reach tin bearing drift, sinking was discontinued owing to an influx of water.

Boring results

A number of bores have been put down in the vicinity of No.1 Face that is in the direction of the lead being followed easterly on the most southerly portion of the face. The results so far obtained have proved that there is a very small area of what may be termed payable ground in the direction in which work has been recently proceeding.

The area has been closely bored that is most of the holes put down across the lead have not been more than one chain apart.

The boring has proved that every narrow run of payable ground extends easterly from the face referred.

Bores have been put down to the south of the face also to the north west and north east so that if a lead does extend there was very little chance of missing it. The narrow lead extending easterly does not appear to continue more than a couple of chains beyond the present face.

Taking the face as a whole judging from the results obtained from the bores it is far below payable grade under the conditions of working.

Old Bore Holes

A number of lines of these have been located. In some cases bush fires have completely burnt the pegs marking the sites. In most cases where the best results are shown from the old records the bores are situated on the higher ground of the property.

In order to make a comparison of the relative height of the bores and the main race the reduced level of the latter at the intake is 631 feet, so that in order to ascertain what pressure is available at any of the old bore sites a comparison of the respective reduced levels will give the necessary information.

From general observations made and data obtained it appears to the writer that to successfully operate the greater portion of the alluvial areas of this mine some system to elevate the drift will be necessary for efficient work. On the higher elevated areas it is obvious that the necessary pressure for nozzle work must be obtained by mechanical means.

A further report will be furnished when the results of the boring at No.1 Face when the holes being put down to complete the work here are available.

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