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REPORT ON THE POSSIBILITY OF OBTAINING UNDERGROUND WATER ON THE PROPERTY OF MR. H. D. REED, PLENTY

Location

This property is situated on the south side of the River Derwent immediately to the west of the railway station of Plenty, 31½ miles from Hobart on the Derwent Valley line.

Topography

The river Derwent forms the northern boundary of the property which is drained by numerous small creeks flowing in a general northerly direction into the River Derwent or a major tributary - the Plenty River. The land along the banks of the River Derwent is only 40 to 50 feet above the sea level, but the hills to the immediate north and south thereof rise to heights of over 1,000 feet.

Geology.

Sandstones of the Trias-Jura system are the oldest rocks outcropping on the property. They are the typical felspathic sandstones which form the middle series of this system. As in other parts of Tasmania they contain seams of coal, one or more seams being known to occur in the vicinity of Plenty. These rocks occur in two separated areas on the property. One is along the banks of the River Derwent, where at some places the beds dip to the south at angles ranging up to 40. The other area is on the southern part of the "Front" run, where 100 to 200 feet of these beds overlie a flat topped body of diabase, the beds dipping to the south or south-west at low angles.

The typical Tasmanian diabase of Upper Mesozoic age occupies a considerable extent of the property. Practically the whole of the "Back" run is occupied by diabase which rises in the range of hills to the south. This body is transgressive with respect to the felspathic sandstones. Another area of diabase occupies the northern part of the front run and occurs as a flat topped body with, in places, 100 to 200 feet of felspathic sandstones resting on it. This body represents a flat-topped trangressive one connected with that which forms the hills to the south. A third outcrop is situated near the road bridge over the River Derwent.

Tertiary sediments occupy the surface between the Glenora Road and the River Derwent. On the southern portion these consist of gravels and sands compacted at the surface at some localities into conglomerates and quartzites. The northern portion near the river consists of sands with only an occasional pebble. Whether these deposits are exactly the same or several ages could not be determined. These gravels and sands were formed along the Tertiary River Derwent at one or more periods when its course was slightly different to the present one. The maximum thickness is about 200 feet.

To the north of the River near the road bridge basalt of Tertiary age occurs, but does not appear on the south bank.

Terraces of river alluvial deposits have been formed at various points along the present streams.

Underground Water

It is desired to obtain, if possible, supplies of underground water at several localities on the property. Two of these occur on the "Back" run. This run is occupied almost wholly by diabase so that it is impossible to obtain water at depth. Several small creeks, however, traverse the run and the shallow alluvial deposits in these valleys should contain small amounts of underground water. One such locality is on Whalers Gully where it crosses the eastern boundary of the property. A small alluvial flat has been formed here and small amounts of water should be obtained by a well or bore hole. Fullest advantage could be taken of this supply by sinking to the bedrock of diabase which exists at a depth of probably 10 to 20 feet.

The same conditions exist at the water-hole on the main creek running northerly through the back run. At this locality, however, the alluvial material is not so wide or deep but all the water moving underground along the creek bed could be obtained by deepening the hole to bedrock.

Another locality where it was desired to obtain water, if possible, is on the southern portion of the "front" run. This portion is occupied by felspathic sandstones. Towards the eastern boundary about 120 feet of these rocks overlie a flat-topped body of diabase. Under ordinary circumstances, and without any intrusive diabase, these rock should yield supplies of water (four bore-holes have been sunk into these rocks this year and have yielded supplies ranging from 1,500 to 15,000 gallons per day.). The intrusive diabase has altered these rocks to some distance from the contact, but the extent of the alteration and also to what degree later superficial weathering has counteracted this alteration cannot be stated.

The presence of the diabase therefore considerably reduces the possibility of obtaining underground water. The position is not absolutely hopeless, and if supplies are urgently needed the only procedure is to take the risk involved and attempt to obtain a supply. The best site would be towards the central part of the area of felspathic sandstones and near the small creek.

Another locality where supplies are desired is on the Ivanhoe run between the road and the railway. The surface here is occupied by Tertiary gravels and sands representing deposits along a former course of the River Derwent. These beds should be porous at depth and therefore yield supplies of water. The best sites would be near the cottage on this run or at any other places centrally situated between the road and the river. Near the cottage the gravels would be about 100 feet thick and the supplies might be obtained at any horizon in them.

The quantity and quality of the possible supplies to be obtained in the above places cannot be definitely stated, but they should in all cases be suitable for providing supplies for live stock.

P. B. Nye.
GOVERNMENT GEOLOGIST.

Hobart.

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