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The Goliath Portland Cement Company, for some years now, have been obtaining relatively small quantities of iron oxide from a deposit situated at no great distance from the works and near the Stoodley Siding. Greater quantities, something like 5,000 tons a year, are now required. A systematic approach to the quarrying of the material has become necessary, partly because of this greater consumption and partly because of the increasing thickness of the over burden, including gravel, which covers the iron oxide in the present pit.

LOCATION AND ACCESS

At 2½ miles from Railton, on the Sheffield Road and 5 chains past the Stoodley turnoff, a private road leads to the north, through a gate and past a house, over a small ridge and at thirty chains from the road reaches the first pit. This is the way the iron is brought out at present. However a reserved road exists, which runs from near the pits over the Whitewater Creek and reaches the Sheffield Road at about half a mile closer to Railton. However this road has not been constructed, nor is a bridge built over the Creek.

TOPOGRAPHY

The district is dominated by the Badger Range, a striking eminence of West Coast Range Conglomerate which rises immediately to the west of the mapped area and courses at about 310° or on the same bearing as the strike of the rock. The area, underlain by the limonite is gently sloping, terrace-like and where the hillside rises steeply from it, that is the limit of the deposit.

Two streams, the Redwater and Whitewater Creeks unite here and flow northward through Railton, to join the Mersey River. The water of the former, as the name suggests is coloured by iron oxide, doubtless derived from basalt soil, and not from the deposits at present under discussion.

GEOLOGY

The country rock in the immediate vicinity of the iron deposit, is the well known West Coast Range Conglomerate Series, with its hard massive, siliceous, often hematitic, conglomerates and quartzites. This forms striking topographical features such as the Badger Range and the smaller ridge between the deposits and the Sheffield Road. These rocks form the eastern leg of a large anticline, striking at 310° and dipping to the north-east at about 30°. Softer rocks, including limestone have been eroded from the top of these massive rocks and, in the Tertiary times, great outpourings of basaltic lava covered the more eroded portions. The main basalt plateau is well weathered and gives rise to the rich red soil from Sunnyside to Sheffield. Small patches of basalt, such as the one fringing Whitewater Creek, close to the limonite, have not weathered to the same extent and large outcrops of the rock persist. Fringing the Creek near and below

the junction of the two branches is a small patch of Recent alluvium. 80

A study of the aerial photographs, in conjunction with an examination of the rock types outcropping, suggests that two major faults, one striking at 50° and the other at 330°, intersect close to the limonite deposit, or about the junction of the two creeks.

ORIGIN OF THE IRON OXIDE

Although on first sight the iron oxide, exposed in the larger pit, suggests an old rock type with a defined bedding dipping both ways from the centre of the pit, closer examination shows that it is a false bedding and the rock is limonite of Recent origin. This limonite has been precipitated from solutions probably under swampy conditions and an examination of a spring in the north of the area shows that this is still going on to a limited extent. Seemingly clear water issues from the edge of a conglomerate hill, but as the water seeps down over the ground, red oxide of iron is precipitated. The iron has been taken in to solution from some hematitic bed in the Conglomerate Series and has come to the surface and been precipitated by oxidation. The great concentration of limonite in this area is probably due to the fault zones providing greater ease of passage for the solutions.

QUALITY AND EXTENT

These bog iron deposits are never very rich or constant in grade over large areas, and it is dangerous to predict any tonnages of a certain grade or material. Remembering their origin, it can quickly be understood that the precipitation of the iron oxide could take place on all sorts of materials, such as sands, clays or gravels, and that, as iron is a cementing agent, all sorts of admixtures with these materials are to be expected. For instance, it is common to see boulders coated with an inch or two of limonite. The iron, was not necessarily precipitated on level ground, as the dips in the beds indicate, so that no constant depths of the deposits can be assumed but, in any case, no great thickness of iron oxide can be expected. Moreover the deposition may only be intermittent with islands of normal material in between deposits of limonite. On the accompanying sketch map are shown areas which may be, but not necessarily are, underlain by iron oxide.

OVERBURDEN

The normal overburden is a red earthy material of varying depths, itself carrying an appreciable percentage of iron. In the face of the pit now being worked, the overburden is up to five feet in thickness and increasing. Near the edge of the steep hills, however, and extending in kinds of spurs across it, the upper foot or so of overburden is a sandy gravel formed of the talus from the conglomerate hills. This is roughly differentiated on the sketch map. As well as an overburden, there will probably be beds of soft material, the original soil and subsoil underlying the deposits of hard consolidated limonite.

TESTING THE DEPOSITS

Because of the great variability in grade and the doubt of the continuity of the deposits, the best way to determine where usable material occurs is by boring. This will also determine the depth of overburden and should be carried in two stages.

Firstly, as indicated on the sketch, a series of scout bores should be put down. Other things being equal, the greater accessibility of the southern portion of the iron favours its exploitation, so boring should commence here. A line of bores, from four to five hundred feet apart should be put down from the vicinity of the pits to the outcrop near Whitewater Creek. Should any of these in the order suggested, prove suitable, that is should the depth of overburden not be excessive and the iron of reasonable grade, then further holes should be patterned round it, at say 50 feet intervals. If a reasonable grade of iron is not found anywhere in these holes, then boring should proceed further north in the areas indicated.

When a likely area has been selected, the second stage of close boring to determine the quarry approach can be commenced.

This may seem like a lot of boring, but if the variable nature of the limonite is understood, it can be realised that it is inevitable. It should be remembered too, that nowhere is the deposit very thick, so only shallow holes need be put down.

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