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WATER SUPPLY FOR TOOTAL-BROADHURST-LEE CO. LIMITED
DEVONPORT

This Company is anxious to obtain a continuous water supply of the order of 10,000 gallons per hour for use in the manufacture of rayon at their new factory at Devonport. Without the installation of an expensive treatment plant, the town water supply is of no use, chiefly because of the staining from button-grass and other vegetation in the Forth water.

They wish to put down one or more bores in the vicinity of the factory to obtain this water and have been advised by a water diviner that there is ample water not far underground at the factory site.

From a geological point of view, this is extremely unlikely. Attached to this report is a plan and section which may show the position clearly. It must be understood that this section is a diagram only and the geological boundaries of the plan are approximate only.

The sediments near Devonport, Permian and below them Early Palaeozoic, have in Jurassic times been intruded by dolerite, which now underlies the whole town area. In Tertiary times lava flowed over much of this area and solidified to form the basalt rock on which the factory is built. There were patches of sand and clay over which this lava flowed and portions of these sand beds underly the basalt.

A little water is obtainable as a rule in the basalt and from the sands - if any - below. The amount varies from place to place but usually is of the order of 200 gallons per hour. This water does not usually contain great quantities of dissolved salts, but often has much suspended matter and sometimes is coloured by iron. If only this amount of water were needed, then I should recommend a shallow bore.

At the factory site, below the basalt is the hard impervious dolerite which is not an aquifer. Small quantities of water occasionally occur in fault and joint planes, but drilling for water in dolerite is never recommended.

Just how far this dolerite extends below the surface at this point is impossible to predict, but it may be of the order of hundreds and possibly thousands of feet. The dolerite has intruded Permian strata in this area. Permian rocks, as a rule, are not good aquifers.

Below the Permian is a very good aquifer, a bed of rounded quartz grains resting on quartzite. This was tapped at 420 feet by a bore at Spreyton (south of the station) and yielded water at a temperature of 69°F. under a pressure of 72 lbs. per sq. inch and flowed at the rate of 360 gallons per minute. An analysis of the water showed a mineral content of 21.84 grns. per gallon of which 2.77 were of NaCl, 11.46 $CaCO_3$, 3.36 $MgCO_3$.

Had the factory been sited at Spreyton, then this would have been an excellent supply, but it is not recommended that boring should try to locate this bed near the factory site as:

1. The dip of the beds to the north would make them much deeper below the town than at Spreyton

2. The beds have probably been completely displaced by the dolerite intrusion.

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10th July, 1956.