

## Hydrology of the Sorell Rivulet.

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A geological reconnaissance was made of Sorell Rivulet and Pawleena dam at the request of the Rivers and Water Supply Commission. Drought conditions over the past year have greatly reduced water available for irrigation and the Commission requested general information on the availability of bore-water downstream of Pawleena Dam, the behaviour of waterholes and springs along Sorell Rivulet, and any obvious geological difficulties involved in increasing the present capacity of Pawleena dam.

## OBSERVATIONS

*Underground water*

Tertiary basalts and gravels crop out along Sorell Rivulet, and elsewhere in Tasmania these rock types have been found to be reliable sources of underground water. A small number of successful bores have been sited in basalt in the area in question, and drilling in similar favourable locations should also meet with some success. Yields from basalts are variable, and rarely greater than 45,000 l/h. It cannot be predicted with certainty, however, that any site chosen will yield sufficient quantities of water for irrigation purposes since yield depends much on storage capacity, permeability, rate of recharge, etc., of the rock type in question. Geophysical techniques employed by the Department of Mines are of assistance in estimating such factors. The gravels cropping out along Sorell Rivulet can be expected to yield smaller quantities of water than the basalt.

*Waterholes*

The present drought (the most severe since 1914) has reduced Sorell Rivulet to a series of waterholes. Although some of the latter have retained water for extended periods, it has been reported that others (including waterholes from which irrigation supplies are pumped) have dried up completely over short periods.

During periods of normal rainfall, at which time groundwater levels lie above creek level, a not insignificant percentage of a river's water is supplied from underground sources. If drought conditions prevail, however, the water table is gradually reduced and may in fact eventually be lowered below creek level. In such a situation, the river or creek loses water to the underlying sediments. If permeable sands and gravels occupy the creek bed, the process is accelerated.

Such is the situation along Sorell Rivulet. The rivulet is in the process of eroding its own former sand and gravel deposits, and its bed mainly consists of this material. In some waterholes, however, impervious clays crop out at creek level, and prevent downward movement of water. Although the distribution of such clays is not yet known, they appear to underlie more permanent waterholes, giving rise to perched water tables, whereas sand and gravel occur beneath those waterholes which have drained.

*Pawleena Dam*

No obvious geological difficulties are involved in increasing the height of Pawleena dam by some 2-3 m.

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