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THERMAL SPRINGS, HASTINGS

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by T. D. Hughes.

In conjunction with the dolomite caves at Hastings, the thermal spring which has been converted into a small pool is a great tourist attraction. As well it provides a warm swimming pool for local residents. The pool is small, 40 feet by 16 feet, and the Esperance Council has requested the Tourist Department to provide a bigger pool. This may be done in two ways, either by enlarging the present pool or by damming a small warm creek a few hundred yards from the present site. The Tourist Department has requested an examination to determine which of these alternatives is better as regards rate of flow and retention of temperature.

Thermal springs are not common in Tasmania; the Hastings spring is the warmest and best known. At Kimberley, a spring of 74°F containing 20 grains per gallon of solids is associated with underlying limestone; at Smithton several warm springs of varying mineral content occur in areas underlain by dolomite.

Hastings is in the extreme south, sixty miles south of Hobart. The springs are located on the caves road about two miles from the main south road to Catamaran. At this locality the road runs along the base of a hill formed of Jurassic dolerite trending in a north-westerly direction. To the south-west of the road is a flat plain covered with recent alluvium, but underlain by a Pre-Cambrian series composed of dolomite and quartzite, which is in faulted relationship to the dolerite.

The temperature of thermal springs may be due to three different causes. It may be due to the underground water (either meteoric or juvenile) coming in contact with hot underground intrusive rock of recent origin, it may be due to volcanic activity, where the water is hot rather than warm, or it may be due simply to the temperature gradient of water coming from great depths where it has been estimated that the temperature rises 1°F for each 66 feet of depth. It is considered that the cause here is due to the depth from which the water comes; that it is contained in dolomite beds, ascends the major fault zone and then seeps through the alluvial cover. If the above temperature gradient is maintained then the water ascends from a depth of about 2000 feet. The water probably enters the dolomite in the caves area at a higher elevation than the springs area, descends to 2000 feet in a continuous stream in the synclinal dolomite beds, passes beneath the quartzite beds and has sufficient hydraulic gradient to be forced up to the surface. The springs occur in several spots over an area of about half an acre in the vicinity of the pool. In the bed of the pool, which is covered with coarse beach sand, several springs bubble up. The temperature of the water is 86°F and remains remarkably constant from day to day. Water flows out an over-flow pipe at the rate of 600 gallons per hour and runs down a small creek bed to the main cold creek. During this passage, it is augmented by further springs and the water in this small creek averages 82°F until near the cold creek the rate of flow is 2400 gallons per hour. On the other side of the main creek is another spring with a temperature of 84°F and a flow of 2400 gallons per hour.

A few hundred yards further down the main creek it is joined by another warm creek which near its entrance has a temperature of 72°F. This creek must be fed by several springs along its course as the water is said to remain warm for at least half a mile. Near its junction with the main creek, the rate of flow of this warm creek is quite considerable.

The water forming the warm creek evidently has the same source as that at the thermal pool as a comparative analysis of the two samples shows:—

	Thermal Pool	*Warm Creek*
	Parts per million	Parts per million
Free Ammonia	Nil	....
Nitrogen in Nitrates	0.08	....
Chlorine	31	30
Total Solids	320	288.5
CaO	74	49.5
MgO	7	27.1
Sulphate	....	6.6

It would appear that the enlargement of the present pool would be more practical than the damming of the warm creek for the following reasons:—

1. The water resulting would be warmer.
2. The retention of existing facilities for dressing, &c.
3. The saving of extra clearing and track cutting to the new site and the further distance of the creek from the chalet.

On the other hand, the rate of flow of the springs to fill a larger pool must be considered.

However, four times as much water as at present used in the pool could be harnessed within a short distance and would appear quite adequate for a larger pool.