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## 2. Visit to Warnes Lookout, Jane River area.

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A visit was made to the alluvial gold area of Warnes Lookout, Jane River between 28 April and 3 May 1972, in the company of two option holders and J. Bibby, prospector, miner and agent for the syndicate, who currently hold an option on the area from J. Bennetto, the lease holder.

Access is from the Lyell Highway 1 km west of the Franklin River bridge, 24 km west of Derwent Bridge. A track, constructed on the recommendation of geologist Frank Blake at government expense in 1935-36, extends some 24 km south to the gold field area. The first 14 km of this track have been upgraded for use by tracked vehicles. Beyond this point remnants of the old track serve only as an indication of the correct route through a chaos of fallen timber and regrowth scrub. The Franklin River is crossed at 500 m from the Lyell Highway by ford, or fence-wire suspension bridge, and the Loddon River at 6 km has an ancient timber bridge. The Margaret Pass at 12.5 km has steep gradients on both sides and is the highest point reached whilst the most obstructed part of the route is from the Best's River Pass at 16 km to the Erebus River bridge at 19.5 km. The camp is reached at 24 km; 500 m from the defined track. The ancient wooden bridges at the Loddon River and Erebus Rivulet will stand little traffic by tracked vehicles. Compared with West Coast tracks the overall gradients are easy, requiring a climb from the Franklin River at 400 m, to Margaret Pass at 600 m, descending to Warnes Lookout camp at 400 m. A normally fit party with light packs should complete the journey within 8 hours.

### SITUATION AND OBJECTIVES

Alluvial gold was obtained from Warnes Reward Creek area by Warne and others in the late 1930s but activity on the field soon declined. Recently, largely through the efforts of J. Bibby there has been renewed interest in the area. Good gold prospects are reported up and down the creek and several parties have spent large sums on access development, machinery and new equipment, but no production has resulted. The object of the visit was to assess problems of access, to confirm the potential of the area, and to establish suitability of the equipment and mining techniques.

It was decided that it was in the interest of all concerned to accept the site chosen by J. Bibby, (superficially similar to much of the surrounding ground) to set up the existing equipment and sluice a sample paddock, extract the gold, observe time, water supply, performance of equipment and values obtained, rather than to embark on a reconnaissance geological survey or protracted prospecting programme. However, during the stay small samples were panned from upstream, downstream and on site and colours of gold observed without fail. The programme was as follows:

- Day 1. Hobart to Warnes Lookout camp.
- Day 2. Inspect dam and races, move pump and assemble pipeway.
- Day 3. Excavate site, relocate boxes, form pump well.
- Day 4. Sluice paddock, investigate downstream.
- Day 5. Clean up boxes, investigate water supply and upstream area.
- Day 6. Warnes Lookout camp to Hobart.

### WATER SUPPLY

The economics and water supply situation are completely altered with the introduction to the area of a powerful diesel-driven water pump. Blake (1935-36) observed that local streams have small catchment areas, and that

for much of the year water is a scarce commodity. Under conditions of water supply then prevailing, he concluded that the gravels were rarely rich enough to justify extraction.

Water is supplied to the mine area by means of a race skirting the low hills to the east. The race is cut into loam and gravel and some leakage seems inevitable. It has been cleared out for about 1 km and some water flows permanently from catchments to the east while equal amounts escape. When available and when required the water supply is increased by releasing water from a small dam but this finds its way from the dam into the race along choked stream courses and across country. The delay is considerable and the wastage high. The dam is apparently situated within the western boundary of T.H. and D.A. Watson's lease 77M/69.

The dam, dug without mechanical assistance, is of poor design and feeble construction with overflow pipes set centrally in the dam wall above the controlled outlet. There is no provision for a spillway. The natural catchment of the dam is small and during fine weather replenishment from this source is negligible. Water is spilled into the catchment from race 13W/67 (south) collecting from the headwaters of Algonkian Rivulet.

Water supply can be increased by:

- (1) The collection of all the flow from the headwaters of Algonkian Rivulet with improvement, strengthening and the provision of spillways on race 13W/67 (south) to ensure its safe carrying capacity.
- (2) The cutting of a defined race from 13W/67 (south) to the dam site.
- (3) Increasing the dam capacity by raising the height of the wall, the construction of a permanent outlet control box and the provision of a spillway (an obvious possible site is the low saddle north of the dam). A small creek to the north might profitably be diverted into the dam through the same gap. Race 13W/67 (north) was not recognised on the ground and may be obliterated or never dug.
- (4) The cutting of a race from the dam outlet to the main supply race. At present wastage is high each time the dam is opened or closed.
- (5) The clearing, repair, and extension of the main supply race to the east and the provision of some controlled diversion on the branch of the race upstream of the point of entry of water supplied from the dam.

It was shown that under the prevailing dry weather conditions all water collected over a period of 48 hours was used in 3 hours sluicing. However, below average rainfall was recorded in the area for the year 1971 and also for the first four months of 1972.

#### WATER PUMP

Recently a British made pump has been imported through Melbourne agents. This is a Sykes Univac UVC-6 automatic, self-priming, unchokable pump of some 4500 l/min capacity at a head of 10-15 m, capable of passing solids up to 75 mm diameter and driven by a Lister HR-3, 21 kW diesel motor. Although Mr Bibby and party have been assured that it will operate satisfactorily as a gravel pump (it has a reinforced impeller and replaceable liners) it is

not designed for the purpose, being advertised as 'capable of continuous operation for efficient movement of industrial effluents, mining and dredging slurries and refinery sludges.'

There is negligible clay in the Cainozoic sediments which are derived from a quartzite-dominated Precambrian terrain, so no true slurry is formed on sluicing, but silt, sand and an abundance of large angular quartzite fragments result in an extremely abrasive feed. The absence of a maker's guarantee of the capability of the machine to handle this specific material makes me apprehensive for the life of the pump.

#### GEOLOGY

In the time available it was possible to do little more than confirm that the rocks of the area are extremely poorly exposed with thick soil, quartzite elluvium and vegetation cover. Some shales crop out near Algonkian Rivulet and in the headwaters of Reward Creek and large rounded boulders and solution-sculptured bars of dolomite occur rarely in the bed of Reward Creek.

The hard-rock basement is uneven so that the thickness of the Cainozoic sediments is variable and uncertain although it is apparently more than 6 m locally. The succession consists of intercalated, more or less carbonaceous pyritic medium or dark brown silts (with local abundance of wood fragments up to 20 cm in length) and medium to coarse, angular quartzite gravels. The beds undulate; usually show a pronounced downstream component of dip and the gravel beds frequently lens-out over the distance of a metre or two. The number, thickness and proportion of silt to gravel beds varies markedly from place to place, but there is usually more silt than gravel. At the site sluiced the beds display a pronounced dip into the bank suggesting that at the time of deposition a stream course ran east of the present site.

Late stage reworking of the upper part of the Cainozoic succession has apparently occurred with removal of most of the silt fraction leaving a gravel bed 1-2 m thick with a concentration of gold at the base. This is reputedly the site of Warne's high reward of the 1935-36 period.

#### PREVIOUS WORK

Signs of past alluvial working in Reward Creek are confined to a strip usually extending about 5 m either side of the present water course, but locally extending to 20 m or more adjacent to the creek. This activity extended 500 m upstream and downstream of the present camp. However there is no indication that the gravels were ever worked out, frequently the workings end laterally with a bold cliff of Cainozoic sediments from which good gold prospects can be obtained; in places the creek forms small waterfalls over features of consolidated gravels. Irregularities and buried pot-holes in the dolomite are reputed to preserve excellent gold reward.

#### RESULTS OF SLUICING

About 30 g of gold was obtained by sluicing approximately 15 m<sup>3</sup> of mixed silt and gravel. Little, if any, of the superficial one metre of unconsolidated gravel was included. Bedrock was not reached, and the section taken was from 1-4 m in depth increasing in width downwards over a face 6 m long. Water control was rudimentary. Sluice boxes were undersized for the water flow involved, but the system of riffles and perforated plates seemed efficient. The clean-up was improvised, hurried and inefficient, some sluiced material was left ahead of the box and the difficult separation of gold from a heavy pyrite concentration was attempted under duress in the half-light.

Ultimately a concentrate mainly of pyrite with some 3% gold was carried to Hobart and cleaned-up there by Mr Bibby.

All of these factors suggest that under more controlled conditions better results could be obtained.

About 30 g of gold was extracted by panning from the total concentrate and samples of reject material were inspected and then submitted to the Department of Mines Laboratories in Launceston for investigation. The following conclusions were reached from these studies:

- (1) The wide size range and perfection of crystal structure of the pyrite, and the highly varied, irregular amoeboid, sometimes perforated, shapes of the gold particles suggest an authigenic origin for these minerals.
- (2) Gold occurs only as free metal. Apart from abundant pyrite, the only heavy minerals observed by the Department of Mines Petrologist were occasional grains of picotite spinel and rare short prismatic crystals of titanite.
- (3) Extraction of remnant gold from the whole reject fraction of the concentration would furnish a further 1.6 g. A similar amount could be anticipated from reject concentrate left untreated at the mine.
- (4) In practice mercury amalgamation in a pot at the mine should prove a cheap and efficient method for the extraction of gold from reject concentrate fractions after panning-out coarse material. A relatively small weight of amalgam need then be transported from the mine and the gold recovered by retorting.

#### CONCLUSIONS

Much gold can be obtained at Jane River. There are considerable areas of untested ground which on superficial examination show similar potential to that put through the box. The installation of a powerful water pump (although of dubious value for pumping gravel) will allow rapid extraction of gravels by pressure sluicing and gravity feed to suitable sluice boxes. Currently, scarcity of water imposes a restriction on the style and extent of work but wetter weather conditions and more careful collection, storage and utilisation of water would overcome this. A gravel pump will eventually be needed to exploit the anticipated richer deposits at the uneven bedrock surface, a hydraulic lift would probably be too extravagant with water.

The use of a gravel pump will also allow the boxes to be raised, and this will aid the disposal of tailings.

#### RESULTS OF SLUICING

About 30 g of gold was obtained by sluicing approximately 25 m<sup>3</sup> of mixed silt and gravel. Little, if any, of the superficial one metre of unconsolidated gravel was included. Bedrock was not reached, and the section taken was from 1-4 m in depth increasing in width downwards over a face 6 m long. Water control was rudimentary. Sluice boxes were undrained for the time, but the system of sluices and perforated plates seemed efficient. The clean-up was laborious, but the yield was satisfactory. A heavy pyrite concentration was attempted under stress in the half-light.