Report on Sections No. 9215/M and 9216/M
in the name of T.L. Kitto and others.
North Dundas.

These leases are situated about 3 miles south of the Renison Bell railway station on the Emu Bay Railway Line. From the latter a 2 ft. guage steel tramway extends southerly 1½ miles. From the terminus of the tramway the Government pack track continues on to and through the leases thence about 1½ miles to Confidence Saddle station, North East Dundas Railway.

The physiography and geology of this locality has been fully described by Mr. A. McIntosh Reid in Bulletin No. 36 of the Geological Survey.

At the time of my visit active prospecting work was in progress on the south western portion of lease 9216/M. A small lode formation striking a little to the east of north was being tested by trenches and shallow shafts. A short distance below the Confidence track in the trenches cut in along the course of the formation the lode consisted of iron pyrites. At the surface of the outcrop some rich tin-stone was broken out, at a depth of a few feet below the surface the ore became very poor. The high grade ore near the surface is due to a secondary enrichment which is characteristic of all stanniferous pyrite formations in this district. The average value of tin in samples taken along the lode at the various points where opened up was much below what could be considered payable even in a large orebody which could be cheaply worked. The deepest excavation made in this lode below the track is not more than seven feet, the lode at this depth being not more than a few inches in thickness. Samples here showed decreasing values in tin. Higher up the hill above the track the lode where opened up by means of trenches and shallow shafts along its course the prospects are more favourable. It here consists of soft clayey material stained more or less with iron oxide and carrying a considerable quantity of broken quartz. Dish prospects yield small quantities of tin oxide but not sufficient to be payable excepting perhaps by sluicing methods. Being situated at a high elevation it is not practicable to obtain sufficient water for sluicing purposes. The limited quantity of material suitable for sluicing would not justify any expenditure in this direction.

Going further south up the hill prospect holes sunk to a depth of six to eight feet on the lode again shows an alteration in its character being of hard silicified slate. A sample taken from the deepest point available over a width of four feet assayed 2% tin. Indications along the line of this lode where excavations have been made point conclusively to the fact that a comparatively shallow depth the stone, as showing in its northerly extension, will be pyritic. The work so far carried out proves the lode to be of limited extent and much below payable value.

Further prospecting work has recently been undertaken in the vicinity of the site where the Gormanston tin boulders were found many years ago. The primary object of this work was to endeavour to locate the tin lode from which the large boulders and many smaller ones found in the vicinity associated with the quartz porphyry talus were derived.

In his report on the Pine Hill area, Geological Survey Bulletin No. 36, A. McIntosh Reid deals fully with the occurrence and probable source of the Gormanston tin boulders. Former sluicing workings also extensive trenching and other surface prospecting work and recent work by means of short tunnels and surface excavations conclusively prove the futility of expecting to locate the source of the Gormanston tin boulders in the immediate vicinity of the site on which they were supposed to be found.

There are no indications on the eastern portion of Section 9216/M in the places where rock exposures can be seen that would give encouragement to the hope of locating anything of value.

Section No. 9215/M

This lease lies to the north west of and adjoins 9216/M. It extends approximately 25 chains west from the westerly boundary of the latter. The south boundary of this lease extends through what are known as the Cliff workings where formerly sluicing operations were carried out on the quartz porphyry talus extending southerly up the hillside into Albury's lease adjoining. From here there is a steep declivity extending a few chains northerly to the bed of a small creek flowing north easterly to join the Gormanston Creek. Beyond the creek there does not appear to be any extension of tin bearing ground northerly at this point. This is only to be expected as the occurrence of tin here is limited to the distribution of the quartz porphyry talus which is overlying the basic rocks the latter covering a wide area extending away north easterly.

The only known occurrence of lode tin on this lease is the south westerly extension of the large gossaneous lode formation outcropping on Kerslake's lease 9376/M. This lease was formerly known as Karlson & Rileys and later was acquired by the old Zeehan Montana Co. Several tunnels were driven under the outcrops but the results obtained were not sufficiently encouraging and the lease was subsequently abandoned. Some rich occurrences of tin were found in the ironstone outcrop at various points but apart from the tunnels referred to nothing of a systematic character has been done to determine the extent of the tin bearing of the outcrop. At a point 250 feet from the north east corner of section 9215/M the outcrop of lode crosses the boundary line coursing south westerly, if this course is continued it would strike out a little to the north of section 8725/M known as Coleman's. Where the outcrop crosses the boundary of Kerslake's lease is steep hillside thickly strewn with dead timber which is covered with dense undergrowth making it next to impossible to trace the lode along its course. There are no indications of any work having been done on the lode which is similar in character to the most productive ore bodies at Renison Bell. At one point a sample taken from the outcrop which showed traces of pyrites returned an appreciable amount of tin. Samples broken from along the surface of the outcrop to determine its value are not likely to give even an approximate estimate of the tin contents. Hand bore holes should be put down at regularly spaced distances across the outcrop and the cuttings from the bores tested for tin. Outcrops of this character being practically resistant to weathering. Dish prospects from the earth or gravel taken in the vicinity of the lode are not likely to show any tin. This part of the lease is well worthy of some attention in the way of tracing the gossan outcrop to determine its extent

and approximate value in tin. Limonite (gossan) outcrops of this character are the oxidised product of sulphidic orebodies, in some instances the complete oxidisation may extend to a depth of 20' or more below the surface, usually in this district the capping of free milling ore is much shallower. All gossan cappings in the North Dundas tin district do not contain tin, but where tin is present in these bodies they invariably contain a higher percentage of tin than the underlying pyritic ore.

The higher tin content in the oxidised cappings of the pyritic ore bodies is probably not due to direct secondary enrichment by concentration through erosion of the outcrops but by the gradual elimination of the sulphur leaving a more or less porous mass with a specific gravity of less than half of what it originally was without any diminution in bulk. In a given area of similar cubic contents, sulphide ore may contain as much tin as the overlying gossan capping but owing to the relative difference in the specific gravity the percentage of tin in the gossan would be much higher being governed by the ratio between the specific gravity of the respective ores. Past experience in the treatment by crushing and concentration of oxidised tin ores in the North Dundas district has shown the error of expending capital in the erection plant without making provision at the outset to deal with pyritic as well as the free milling ore.

Although the mining and treatment of the latter was successfully carried on for a number of years the relative quantity of oxidised or free milling ore proved to be very limited and the various deposits on the areas worked were more or less remotely situated making transportation to one centre an expensive item.

The above remarks relative to the treatment of sulphidic ores would apply to porphyritic area at Pine Hill particularly so when boulders of sulphide ore have been found associated with tin oxide boulders in the quartz porphyry talus during sluicing operations.

Owing to other official duties claiming my attention I was only able to make short intermittent visits to this area for the purposes of examination and survey of these sections hence the protracted delay in furnishing this report. During the time of my visits Mr. Kitto had several men actively engaged in carrying on prospecting operations on the small lode in the south western portion of section 9216/M. I am much indebted to Mr. Kitto for his generous assistance and information supplied respecting his workings. During past months he has carried out a lot of useful prospecting work over a large area of ground. The results obtained from prospecting operations on the lode in the south west portion of section 9216/M have on the whole been disappointing, this should not deter the lessees from investigation of the large gossan orebody referred to in this report.

(J. B. Scott)
GOVT. MINING ENGINEER.

31st March, 1926.