REPORT ON

THE KING RIVER GOLD MINE, LYNCHFORD.

Location and Access.

The King River Mine is located on Section 1781/G in the name of B.G. Smith. The section is situated on Lynch Creek and lies about one mile to the north east of Lynchford station. A track following Lynch Creek connects the mine workings with the Queenstown-Lynchford road, the distance from the road to the mine being approximately half a mile.

Previous Reports.

The following list comprises all the departmental publications in which reference is made to the mine.

(1) "King River and Mt. Lyell gold fields" W.H. Glover 1885.

(2) "Report on the State of the mining industry of the West Coast" A. Montgomery, 1890.

(3) "Notes on the Queen River and Mt. Lyell Mining districts", A. Montgomery, 1894.

(4) "On the mineral districts of Mts. Huxley, Jukes and Darwin" W.H. Twelvetrees, 1900.

(5) "Mineral Industry of Tasmania" W.H. Twelvetrees, 1901, 2 & 3.

(6) "Mount Lyell Mining field" J.W. Gregory, 1905.

History.

The history of the King River mine dates from the close of the year 1881 when Conrad Lynch and Thomas Currie commenced prospecting operations in the district on behalf of a syndicate of Hobart professional and business men afterwards known as the "King River Prospecting and Gold Mining Association". Payable gold was discovered in a small creek, a tributary of the Queen River, which has since been called after Lynch. Lynch returned to Hobart to report the discovery, but in 1883 he returned to the scene of his find. Early in that year he unearthed a pocket of quartz weighing 112 lbs. which yielded gold to the nett value of £830.17.9. Unfortunately the gold in the quartz proved patchy and the nett result of the operations was that the King River Prospecting Association spent nearly £20,000 for a return of £3,345 worth of gold. It is uncertain as to whether the whole of the £20,000 was expended on the King River Mine, but considerable sums of money were absorbed in the transport and erection of batteries and probably also in carrying out preliminary development.

Active operations on the mine appear to have ceased a few years after its discovery, as, in 1890, Montgomery states that no work was in progress, and that there appeared to be no one in charge of the mine. In 1894 the mine was let on tribute. The tributors worked on somewhat different lines from those followed by former miners and devoted their attention more to some soft material lying on the footwall of the quartz body than to the latter itself. They made an open cut on the top of the hill and took out a crushing of decomposed country rock full of veins of quartz and oxides

of iron and manganese; this was found gold bearing for as much as 12 feet in width. Some stoping was also done on similar material lying on the footwall of the reef immediately under the quartz but the workings could not be kept open. Some success appears to have attended this work and the tributors proved that at the top of the hill and in one or two places at the adit level the footwall material was worth crushing.

Russel and party held a tribute on the mine in 1900. The main tunnel was the only one open. This had been put in by the side of a large quartz reef of which the maximum width was 10 feet. The tunnel went in at an angle and came back on the reef which crossed the drive as a flat vein dipping N.W. The vein contained no gold. The tunnel was 400 to 500 feet long but only 125 feet was accessible. At this point (i.e. 125 feet from the mouth) a crosscut to the N.E. was begun and a rise was going up from the crosscut. This was expected to cut the flat reef at 30 to 40 feet. As far as can be judged the object of this work was to test the footwall country of the reef above the drive and possibly also to test the reef itself. The final results of this work are not recorded.

In 1901 the mine was let on tribute to a small Queenstown syndicate who decided to cut a race and sluice the soft ground on either side of the lode, as dish prospects of the decomposed rock were reported to be good. A start was made and the race showed favourable prospects of coarse ragged gold. The first clean up yielded only 4 ozs. of reef gold. Sluicing operations were continued during 1902 but no clean up was attempted until after June when a small portion of the race yielded 5 ozs. of coarse ragged gold. The sluicing was continued but met with little success. The final clean up, which took place early in 1903, yielded 5½ ozs. of coarse, rough, reef gold. Underground prospecting was then talked of but it is not definitely known whether any further work was undertaken.

The King River Prospecting and Mining Association finally abandoned their leases in 1912. From 1912 to 1929 the main sections were held alternately by W. Smith and E. Hawson. The present section was taken up by B.G. Smith, in November, 1929. The extent of the prospecting and development work carried out since 1903 is not on record.

Geology.

The whole of the mine workings are located in a decomposed syenite porphyry or porphyrite. The unweathered rock, which outcrops lower down Lynch Creek, is of a dark green colour and consist of phenocrysts of quartz, felspar, and augite (?) set in a dense chloritic groundmass. This greenish porphyrite decomposes to the soft reddish or yellowish rock which is so much in evidence in the immediate vicinity of the mine. So far as could be judged there appears to have been but little shearing along the course of the vein, most of the weathered porphyrite having a somewhat massive appearance.

Auriferous gravels of recent origin occur in Lynch Creek.

The Vein.

The mine workings are shown on the accompanying sketch plan. The principal portion of them now appears like a large open cut extending through the hill. Two crosscutting tunnels, which penetrate the open cut workings, occur on the eastern side of the hill and another short tunnel is open near the crest. The latter is more or less parallel

to the open cut. In addition to these there are two old shafts on the lease; one is located on the crest of the hill and the other lies on the eastern fall at a point about 70 feet west of Lynch Creek. Portion of an old tunnel may be seen near the southern boundary of the section but this has been mullocked up a few feet from the entrance; it is uncertain whether this was actually driven on the reef.

Nothing can be seen of the vein itself. The sluicing operations described above have removed all traces of it in the upper workings and it could not be located in the lower ground. At the northern end of the section the old workings have been sluiced to within ten or fifteen feet of the level of Lynch Creek, but although large loose pieces of reef quartz were fairly abundant it was not possible to locate the reef itself. In and near the short tunnel at the crest of the hill there are occasional limonitic and manganiferous veins an inch or two in thickness which penetrate the decomposed country rock. These are probably similar to the limonitic veins described by Montgomery though such as were crushed and panned off yielded no trace of gold. Towards the southern end of the workings a few small quartz stringers were seen in the walls. One of these was tested for gold, but yielded only a little pyrite and some black oxide of iron.

Neither Montgomery nor Twelvetrees have given a detailed description of the reef, probably because most of the workings were inaccessible at the time of their respective visits. W.H. Glover described the reef as having been proved over a length of 500 feet. The maximum width is given as 7 feet and the average as 3 feet. Thirty feet out of the five hundred was described by Glover as yielding prospects up to 20 ozs. per ton. These were taken, unpicked, from a face six inches wide. Glover also states that the reef was driven on at the 33' level for a length of 40 feet the average width being 10 inches, and at the 70' level for a distance of 245' the average width in this case being 2 feet. The main tunnel was located 200 feet below the summit of the hill. The total length of driving is given as 700 feet of which, as stated above, 500 was on the reef. An old plan of the mine also shows a level between the 70 and 200 feet levels.

Glover states in his report that the bulk of the reef had been pronounced payable (probably by those working the mine at the time of his visit). On the other hand Montgomery described the general average value of the quartz from the mine as being very low.

The principal features with regard to the reef may by summarised briefly as follows. The total length was in the vicinity of 500 feet and the width ranged from 6 inches up to 7 feet or more, the average being in the vicinity of 3 feet. It is fairly certain that it contained some rich patches as two cases are on record in one of which 112 lbs. of quartz is stated to have yielded gold to the value of £830.17.9 and in the other 34 lbs. of quartz is reported as having yielded 250 ozs. of gold. It is fairly certain however that the bulk of the reef was poor.

Montgomery's report states that the gold won by tributors from the footwall country was contained "in decomposed country rock full of veins of quartz and oxides of iron and manganese". Similarly, Twelvetrees states "here and there some flat ferruginous clinker lies on the footwall of the reef. The gold is associated with the clinker but none is referred to the reef itself." These ferruginous seams are probably of secondary origin and the gold associated with them has probably been leached from the reef and redeposited with the iron in the footwall country. It is possible of course that some of the ferruginous seams

mentioned by Twelvetrees and Montgomery may represent the direct oxidation of gold-pyrite veins, but such ferruginous seams as can be seen at present appear to be of secondary origin. A small limonitic seam, from the tunnel at the crest of the hill, was tested but yielded no gold.

In addition to that associated with seams of limonite, some gold of secondary origin would probably also be present in tiny cracks or fissures in the country rock adjacent to the reef.

As the vein has been worked only in the oxidised zone the secondary occurrences described have apparently left an impression that the gold is distributed through the country rock adjacent to the vein as well as through the vein itself. Although this is undoubtedly true, in part, for the oxidised zone, the fact must not be lost sight of that all secondary enrichment will cease below that zone, i.e. below the level of the ground waters. Hence once the vein passes from the decomposed rock into the unweathered greenish porphyrite the gold will be restricted to the vein itself and possibly also to small quartz or pyritic (?) veins penetrating the walls. At present a prospector named Lanigan is commencing to drive an adit from Lynch Creek in order to test the country below a very old shaft. It is not to be expected that this work will disclose anything of importance.

Conclusions.

It seems fairly certain that the greater portion of the reef is of fairly low grade, and that any gold to be won from it would be restricted to occasional rich pockets.

Should it be decided to test the reef below the present workings the most economical method would be to clean out the bottom of the old workings and sink a few test holes on the reef. These holes could be made sufficiently wide to test some of the footwall country.

It is difficult to forecast the depth of oxidised ground below the level of the old main tunnel but it should not be expected to continue for more than 50 to 100 feet. The cheapest method of testing the reef below the zone of oxidation would be by diamond drilling. The drill holes could be arranged so that they would cut the reef at a depth of 100 to 200 feet below the level of Lynch Creek. In the event of diamond drilling being carried out it would probably be necessary to put down the preliminary test holes mentioned above on account of a slight uncertainty with regard to the actual position of the reef.

Careful consideration of the history of the mine shows that large sums of money have been expended and that a considerable amount of work has been carried out at various times. Unfortunately a complete return showing the amount of gold won cannot be obtained, but, as far as can be judged, the amount expended appears to outweigh the actual returns from the mine. Hence should it be decided to give the reef a further testing along the lines indicated above it is suggested that such work be carried out as economically as possible. Furthermore such work must be regarded purely as prospecting, attendant with more than the ordinary risk attached to such ventures.

(K.J. Finucane) Sgd.
FIELD GEOLOGIST.

Mines Department,
Hobart, 19/12/32.

(F. Blake) Sgd.
ASSISTANT GEOLOGIST.