

definition and of rather low grade, the mine is at present idle and full of water.

"The Creme d'Or, adjoining the railway yard upon the east, upon which a long and rich shoot was worked some years ago, is now being opened by a vertical shaft sunk to a depth of 200 feet, from which a crosscut is being driven to the reef. In a winze sunk below the old workings in the direction of this crosscut the reef was found to go down strongly and to carry gold at the rate of $1\frac{1}{2}$ ozs. per ton.

"To the northward of the last is the East Fingall, where a vertical shaft has been sunk to a depth of 500 feet with the object of cutting the dip of the Eureka No. 5, which belongs to the same company. Two quartz reefs have been cut at the bottom level, one of which carries gold in payable quantities, but without some very great dislocation has taken place it cannot be the Eureka reef.

"A fissure, very heavily charged with water, was cut in the 250ft. crosscut, therefore this has now been dammed up; however had it been possible to continue that another 40 feet the Eureka reef must have been cut.

"The Rubicon has practically ceased to be a productive mine since the lode in the lower levels, although of considerable size and well defined, carries no values. Prospecting has been carried on upon a most extensive and systematic style to a depth of 800 feet, but unfortunately so far without results.

"Adjoining the Rubicon upon the east are some old mineral leases which have recently been retaken up. Upon these there are some small copper lodes of very fair ore, but sufficient work has not yet been done to form any opinion as to their permanency.

"There are a large number of these gold-bearing reefs in the district some of which are being worked upon a small scale, but owing to the large volume of water met with at a comparatively shallow depth and the expense of getting the stone crushed and carted when raised, proprietary mining is on the whole extremely quiet.

"Cuddingwarra is situated about seven miles to the westward of Cue, in the greenstone area upon the western side of the grano-diorite belt.

"At the present time there is only one mine working, viz., the Victory United, and upon this property only development work is going on.

"In this mine, a short but rich shoot has been traced down from the surface to the 600ft. level and the lode, apparently rich, followed down for another 100 feet by a winze.

"There are a number of apparently promising reefs in this district, but owing to the heavy water struck at a shallow depth and other great expenses such as cartage and treatment it would be quite impossible to work there without capital."

BARRAMBIE AND ERROL'S.

Mr. H. P. Woodward visited Barrambie and Errol's and in November submitted the following report on the result of his inspection:—

"Barrambie is situated at the 284 mile post upon the Rabbit-proof Fence and about 72 miles due east of Cue; by road however the distance is about 90 miles owing to the fact that the old Lake Way road

is followed (which runs in a north-easterly direction) until it intersects the new cut track from Nannine to Barrambie at a point near Barangi Rock. Several attempts have been made to obtain a direct track from Cue but owing to the rough and broken nature of the country between the two points this has so far proved to be impossible.

"The nearest railway station is Nannine, which is 60 miles distant, and from it a direct road *via* Quinns has been cleared, but since there is at present no State Battery at this centre a good deal of the traffic has been diverted to Tuckanarra, 70 miles distant, where there is one, on account of the chance of return loading.

"The Barrambie Ranges present a bold appearance when approached from the westward, but since they are backed up by an elevated tableland upon the east, from that side they appear only like a series of low rocky peaks.

"The rocks composing this range are schistose greenstones the foliation of which runs in a nearly north and south direction with a dip to the eastward. The surface is extremely rough, the rocks being little weathered except immediately along the ore channels along which they have been considerably altered to a depth of 100 feet.

"Upon the eastern side of the range the rocks are much more highly altered where, in some canyon-like ravines, sections of 30 to 40 feet of weathered rock with cappings of detrital laterite are exposed.

"Little quartz is exposed along the main belt but in the direction of the General Kuropatkin, which is about $1\frac{1}{2}$ miles in a south-easterly direction, large reefs are in abundance.

"The main lode can be traced at the surface along the range for a distance of 34 chains without a break, but about 3 chains south of the main shaft in a small cross gully it apparently ends. This is possibly a fault line which has thrown the reef to the westward since south of this point a well-defined lode can be traced for 15 chains in that direction.

"The Barrambie Ranges G.M. Co. own the principal group of leases but it is only upon one of these that any development work can be said to have been done, this is called the Golden Treasure, G.M.L. 1458, and upon it three shafts have been sunk to a depth of about 100 feet and one to 45 feet and the whole connected by a level. There has also been sunk a shaft to the same level upon the boundary of this lease with the Golden Hill, G.M.L. 1459, which together prove the existence of the lode at the 100ft. level for a length of 500 feet.

"The main shaft, which is upon the underlay, has been sunk to a depth of 105 feet, the grade being about 70 degrees from the horizontal. This shaft is now equipped with a head gear and winding engine, the latter being located in the engine room which also contains the engine intended to drive the 10-head stamper mill, which latter is already erected and housed. It is proposed to add rock breakers and automatic feeders to the plant, also concentrating tables, in order to eliminate the sulphides before the sands are passed in to the cyanide vats.

"From the bottom of the main shaft, the lode has been driven on in a northerly direction for a distance of about 400 feet and this level will be carried on (so soon as the winding engine is working) to the shaft that has been sunk just within the Golden

Hill lease, which is about 100 feet distant from the present face.

"The lode has also been driven on for a length of about 200 feet at the 45-foot level, whilst the other two underlay shafts exclusive of the Golden Hill shaft have been sunk to the 100 feet level.

"The lode is well defined showing a particularly well-formed hanging wall at one or two points where it is exposed but the footwall is not so marked. The entire lode between the walls where crosscut is from 5 to 6 feet but since only from 20 inches to 2 feet upon the footwall side is rich the portion upon the hanging wall side has not been removed although to judge from its character and the richness of the footwall portion it is probable that it will be found more profitable to work the whole body as a lower grade rather than only a portion as a higher.

"So far the value of the lode has been estimated only by the dolly pot, therefore the values of the sulphides have not been taken into consideration and as a consequence the formation without quartz upon the hanging wall side, which carries pyrites, is looked upon as barren.

"Quartz only occurs in small veins and strings in the rich footwall portion of the lode, this at the 100-foot level is heavily mineralised but still carries free gold in considerable quantities, whilst in the oxidised zone the cavities from which the sulphides have been removed are often filled with spidery forms of gold.

"Large quantities of very rich specimens were obtained from this mine, so rich in fact that it was found necessary to bag many tons, but still upon examination the dumps which contain close upon 1,000 tons are seen to be covered thickly with specimens, whilst all the stone yields good prospects.

"It is proposed to carry down the main shaft still upon the underlay to the 200-foot level as soon as the winding gear is in working order, this should go far to demonstrate the permanency and value of the lode and may possibly also prove the existence of a water supply upon the mine.

"So far as can be judged at present this lode, owing to its well-defined hanging wall, angle of its dip, and length of the outcrop, appears to be of the class generally called true fissure veins whilst the length over which the rich stone extends in the sulphide zone promises well for its continuation to lower levels.

"It appears that the shoot or shoots are dipping to the northward but no decided opinion can be expressed upon this point until the 200-foot level has been driven, and until this question is determined it would be wise to postpone the question of sinking a main vertical shaft.

"At present the water supply is being obtained from a water shaft upon the flat about three quarters of a mile to the south-west, the water level being 130 feet, but it is probable that a supply will be cut in the mine in the course of sinking to the 200-foot level.

"The water is of fair potable quality but hard.

"Timber for mining purposes is not plentiful but there is a considerable quantity of firewood in the neighbourhood which should last for some time.

"Upon the other properties not held by the Company very little work has been done owing to the fact that the nearest State Battery is at Tuckanarra, therefore the owners who are mostly working miners find it difficult to devote much time to them, but are holding with the object of a sale; however properties like the Magnum Bonum, Dawn of Hope, Barrambie South, Queen, and General Kuropatkin appear to be worthy of development.

"*Errol's* is situated upon the flats about 10 miles to the north-west of Barrambie. There are no rock outcrops, the whole surface being covered by a cement capping much quartz strewn, with here and there reef outcrops having very variable courses.

"The main line, which is called the Legacy, can be traced at the surface by a series of blows for a distance of 30 chains, striking in a north-westerly direction with a westerly dip.

"This reef was tested by a series of trenches cut across it at distances of 10 feet apart, the results being apparently satisfactory to the purchasing company.

"The stone is for the most part massive, fine grained, and ironstained in places having an alabaster-like fracture with lines of cubical-shaped cavities often very rich in gold; they are apparently the moulds from which the pyrites has been leached.

"The solid stone carries very fine gold in places, but the only visible gold met with is in these cavities or along thin mineral lines, but upon the whole the stone prospects well.

"The reef has been opened upon by shafts at four points, Nos. 1 and 2 shafts being at the south end upon G.M.L. 1465, No. 3 or water shaft upon G.M.L. 1466, and No. 4 close to the boundaries of G.M.L.'s Nos. 1466 and 1474.

"In No. 1 shaft, which is 50 feet in vertical depth, from 6 to 7 feet of stone was cut at 20 feet from the surface.

"No. 2 shaft is 10 feet vertical where it cuts the reef, which is here 8 feet in width; from this point it was followed on the underlay for a distance of 25 feet, the dip being about 35 degrees west. At this point it was cut off by what appears to be a decomposed diorite dyke, which dyke was driven on a short distance to the northward, but in it no stone is visible; it was then crosscut when about 3 or 4 feet of quartz was passed through, dipping steeply towards what is apparently a decomposed granite dyke.

"At the cap of the reef at this point it appears to turn over in an anticlinal fold, dipping both east and west; it may therefore possibly be a saddle reef as the management hope, or this may only represent a spur or leader running off from it to the eastward; and this question it is proposed to set at rest by boring. The stone in this shaft is estimated at worth 15 dwts. No. 3 or water shaft so called from the fact that it was sunk to a vertical depth of 60 feet in order to obtain a supply of water for the battery. Just above the water level, a small quartz vein was cut which varied from 6 inches to 1 foot, but this opened out to 4 feet just beneath the water.

"No. 4 shaft has been sunk vertically to the water level upon the western side of the reef, and a crosscut is now being driven towards it.

"There is unquestionably a large quantity of payable stone in sight along the outcrop, but so far the limited explorations in depth have been of rather a negative character, this however is very possibly due to the fact that a reef of such variable size at the surface will maintain this character at a depth, therefore until it has been driven upon at the water level it is quite impossible to express an opinion as to its character with any degree of confidence.

"A 10-head mill is in the course of erection, whilst a good water supply has been struck in the mine itself at a depth of 60 feet.

"Good timber for mining purposes, like the Bar-rambie district, is not over-plentiful in the immediate vicinity, but the firewood supply should last for some time.

"There are several other properties which are at the present time attracting considerable attention, the principal of these is the Three Star, G.M.L. 1490, which is situated at the north end of the belt. This is an east and west reef which dips southerly at an angle of about 45 degrees. Only a small outcrop was visible at the surface, but it has now been traced for a length of 3 chains, the cap being covered by from 4 to 8 feet of cement.

"The west shaft was sunk to a depth of 12 feet, from which a crosscut was driven 10 feet south to the footwall of the reef, from which 4 to 5 feet of stone was taken out which prospected well, the remainder of the reef upon the hanging wall side as far as tested by drill holes was of little value, but its size is unknown.

"About three chains south in the main shaft, which has been sunk to a vertical depth of 20 feet with a winze 25 feet, a reef was cut so identical in character to that in the west shaft that it is apparently the same.

"The stone from the footwall portion of this reef has been stoped from the 20ft. level to the surface for a distance of 30 feet east of the shaft, but at this end the ore body is small, being only a few inches in the face.

"Two crushings have been taken from this reef, the first reported in the March statistics is 10 tons, yielding 55.66 ozs. of fine gold, or 5.66 ozs. per ton; the tailings from this parcel are said to assay 23 dwts per ton. The second parcel is not yet officially reported, but the 41 tons crushed yielded gold at the rate of 2½ ozs. per ton, but the sands have not yet been assayed.

"To judge from the nature of the decomposed rock passed through in these workings the country is apparently a porphyritic rock, most probably a dyke.

"The Inheritance, G.M.L. 1528, is situated immediately to the eastward of the last mentioned, but the reef here, which may possibly be the northern extension of the Legacy, strikes north and south, dipping west. An underlay shaft has been sunk to a depth of 59 feet with a drive north for a distance of 30 feet, the stone in these workings averaging about 2 feet, but is only about 10 inches at the south end.

"The stone differs from the other in this locality, being schistose, gossany, and much ironstained, whilst the country is weathered greenstone.

"A parcel of 11 tons was crushed from this lease which yielded 19.25 ozs. of fine gold, or at the rate of 1.75 ozs. per ton, whilst the sands are reported to assay 1 oz. 22 dwts. per ton.

"About 2 chains to the northward, a shaft has been sunk to a vertical depth of 30 feet, where a decomposed granite bar was met with and some broken reef, but northward of this although several shafts have been sunk no stone has been cut.

"At the south end of the line is the Legacy South, G.M.L. 1470, upon which there is an outcrop which prospected well, being apparently the extension of the Legacy line. A shaft had been sunk upon this, but collapsed after the rain.

"Some two miles south a lease called the Bar-rambie Perseverance has been pegged upon a large quartz blow which strikes east and west and dips north. From a crosscut at the west end of the blow some good prospects were obtained, and a vertical shaft is now being sunk with the object of cutting the reef at the water level, the country passed through so far being apparently a decomposed porphyritic dyke.

"The outcrop can be traced for a distance of 5 chains to the westward of the blow, where it is considerably broken, one branch apparently turning away upon a southerly course.

"There are several other leases upon which gold has been discovered, but so little work has been done upon them that they are not worth mentioning.

"As a whole the district is a promising one on account of the size, number, and value of the auriferous outcrops, large quantities of stone from which should pay the owners well to crush, but no opinion can at the present stage of the developments be expressed upon the permanency of the ore bodies in depth."

LAWLERS, MOUNT SIR SAMUEL, MOUNT IDA, DARLOT, AND WILSON'S PATCH.

In connection with the field work on the East Murchison and Mount Margaret Goldfields, the following mining centres were examined and reported upon by Mr. Gibson, who furnished the following interim report:—

"Lawlers, Mount Ida, Mount Sir Samuel, Darlot, and Wilson's Patch; in addition to which a brief examination was made of the country between these places and also between Wilson's Patch and Laverton.

"*Lawlers.*—This place is the administrative centre of the East Murchison Goldfield, and is situated about 80 miles north-west from Leonora, which is the nearest railway station.

"The rocks comprising the auriferous series are the usual type of greenstones, intersected by bosses and dykes of granite, the intrusive nature of which is beyond dispute; this main body of quartz is, in turn, intersected by numerous felsitic dykes, these occurring chiefly along, or close to, the junction of the two classes of rocks.

"The auriferous belt has a width of from 12 to 16 miles, and is known to be continuous between Lawlers and Mount Sir Samuel, cutting out northerly a little to the north of Abbots, its southern limit being some ten miles or so to the south of