Preliminary Report on NEW RIVER GOLDFIELD.

Preliminary Statement.

This report may be considered as an incomplete preliminary to a report on the Mount Victoria goldfield as a whole.

In general it treats with certain mineral lands until recently held under option by a syndicate styled Legunia Consolidated Options.

The majority of the reefs on these properties have been examined but there are several of which it was found necessary to leave until a later date. These will be described in the detailed district report to follow.

Location and Access.

The New River goldfield, of approximately 4 square miles in area, is situated some 8 miles south-east of the Legerwood, a station on the North-Eastern railway line. Legerwood is 66 miles east of Launceston. A motor road from Legerwood passes through Ringarooma and bounds the area on the north. A narrow unmetalled road, over which motors may travel with safety in good weather, leaves the motor road and traverses the western portion of the area on the way to Pyengana.

A cart track, commencing in the vicinity of Central Ringarooma mine, connects with the main road 19 chains east of Crown Prince Creek. Another track, recently cleared, is that used for transporting the diamond drill material. It commences at the road 6 chains west of Crown Prince Creek, and passing Nos. 1 and 2 bore holes joins the cart track 30 chains further south-east of the latter.

Previous Literature.

In 1900, W.H. Twelvetrees, Government Geologist, in a report on the North Mount Victoria Goldfield, describes the work completed to that date on New River mine, afterwards Prendergast mine.

In 1923, Loftus Hills, then Government Geologist, reported on "The Mount Victoria Goldfield" and gave an account of the known reefs as far north as the Homestead reef.

Topography.

The main topographical feature of the area consists of a ridge rising gradually from New River flood plain in the north. It traverses the area in a south-easterly direction and eventually joins the main mass of Mt. Victoria. This ridge or spur is bounded on the east by the valley of New River and on the west by that of Dorset River. Crown Prince Creek, the main stream within the area, flows north-westerly to join New River. A western branch of the former runs northerly through the middle of the properties before its confluence 5 chains south of the road.

Geology.

Cambro-Ordovician - The oldest rocks exposed are the slates and sandstones of the Mathinna series. These form the bedrock of pratically the whole of the mapped area.

The slates of this series are normal types and vary in colour from yellowish-brown to blue-grey.

The sandstones are fine grained argillaceous types of a brown colour. Hard grey sandstones, approximating quartzites, appear in places and the brown sandstones are considered to be the weathered derivatives of the former.

Rock types intermediate between the slates and sandstones occur and may be described as arenaceous slates.

The rocks have a general north and south strike in the western portion of the area and they dip to the west. Towards the east the exposures are few and the strikes and dips variable and less reliable.

It would appear that the western portion represents the west dipping limb of an anticlincal fold having a general meridional trend. The eastern part of the area may conform to the eastern limb of the anticline but it is also possible that it represents minor folding on the western limb.

Further work to the south should help to determine the structure more definitely.

No definite evidence with regard to the age of these rocks was found. From lithological and structural considerations they have been correlated with the Mathinna series of slates and quartzites and are considered to be of Cambro-Ordovician age.

Upper Mesozoic. - The only igneous rock seen in the area has been uncovered by recent trenching 2 chains south-west of Drunkard's Dream reef. It is in the form of a soft, partly decomposed dyke; 18 inches wide. The rock is poorly exposed in two trenches 50 links apart where it intrudes slates and sandstones of the Mathinna series.

A section shows the rock to be fine to medium grained in character and from intermediate to basic in composition. The constituent minerals are much altered by decomposition and all that can be definitely recognized is a number of felspar laths. One or two six sided opaque figures appear but they are indeterminate. The arrangement of the felspars suggest a dolerite facies and the rock is provisionally placed with the dolerite (diabase) of Upper Mesozoic age as exposed in adjoining areas.

Pleistocene. - A small area of clay and gravels, resting on Cambro-Ordovician slates, are exposed by a cutting in the cart track at a point 6½ chains south of Crown Prince Creek. This is an old alluvial deposit representing an apparently isolated portion of a previous bed of either New River or Crown Prince Creek.

Three chains north of the South-east corner of 88¾ acres, purchased from the Crown by A. Fry, similar terrace gravels are visible. They appear in the steep hillside some 30 feet above New River flood plain level.

Recent. - Deposits of recent age occur along

Crown Prince Creek, and the lower parts of the branch creek shown on the plan. They consist of waterworn gravel, clay and sand, and occasionally they attain a depth of 15 feet.

Economic Geology.

The mineral deposits of the New River area consist of gold bearing quartz reefs and veins traversing the Mathinna series of slates and sandstones.

The quartz generally is of a dense nature but in places both coarse and fine crystalline patches occur. The colour varies from white to dark grey, the former predominating. The dark colour in some of the reefs is probably due to the presence of sulphides.

Angular fragments of black slate or carbonaceous material are occasionally seen in the quartz of some reefs.

Other minerals contained within the quartz are pyrite and arsenopyrite. They are not abundant constituents but are usually spasmodically distributed as small crystal agregates.

Gold is rarely discernible in the quartz and is not distributed with uniformity through the reefs. It appears to be confined to irregular patches within the quartz.

The reefs all occur on the eastern slopes of the main spur with the exception of one on the crest of the ridge. They are comparatively short and narrow bodies of quartz ranging in length from a few feet up to 350 feet, and in width from 1 inch to 3 feet.

The smaller reefs and those which have only been partly exposed do not usually conform to any particular line of strike.

The depth to which the reefs penetrate has not been determined since in no case have they been tested below 188 feet.

Relationship between the Geological Features and the Reefs.

The present survey has failed to reveal any definite structural features which may have influenced the distribution of the ore bodies. As indicated when discussing the general geology, it seems probable that the reefs in this part of the district occur along the limb of an anticline but further work will be necessary to confirm this view.

The examination of the field indicated that the lithological character of the rocks may have had some influence on the occurrence of the various reefs. Thus on the western margin of the area, where the sandstones predominate, no reefs have been found while in the reef belt the rocks consist of interbedded slates and sandstones; an argillaceous type generally predominating.

The Mining Properties.

The reefs are discussed herein according to the sections in which they occur. The whole of the land within the area is freehold property.

With the exception of a small number, indicated in approximate position on the plan, the reefs and workings have been connected by survey to corners of mineral and purchased blocks. They are shown in their correct position and orientation.

The results of the boring campaign, recently completed by the Mines Department diamond drilling plant, are given in their appropriate places.

137P/G.

Ten acres are comprised within this lease held by E.H. Stephens and H.M. Krushka, being portion of 94 ac. 3 rds. 21 per. alienated to E. Singline. The mineral section was first taken up as 96P/G by L.F. Krushka in 1924 but was cancelled in 1927. In 1930 it was held by W.J. Gough and H.M. Krushka as 137P/G and was transferred to the present lessees in 1931.

(a) Krushka reef is situated 4 chains north-easterly from the south-west angle of the lease. The workings, of comparatively recent date, consist of 3 shafts sunk on the outcrop. The most northerly shaft is vertical and 48 feet in depth, the central one has a slight underlay to the west and is 40 feet deep, while the southern shaft is vertical and 38 feet deep. A drive on the reef connects the northern and central shafts and the reef has been stoped out above the drive.

The reef at surface is in the form of two veins which dip towards each other and junction 8 feet below, thus forming the one reef. On the bottom of the workings the reef averages 3 feet side. It is generally vertical with the exception of portion in the vicinity of the central shaft, where it underlays slightly to the west. From the north shaft the reef strikes 214° for a distance of 10 feet whence it turns and continues for 60 feet to the south shaft on a strike of 176°. It is terminated at the northern end by what appears to be a fault showing in the shaft. The reef has not been picked up on the north side of the fault, but some underhand stoping has been carried out to a depth of 30 feet immediately north west of the shaft. This has now fallen in but the owners state that 3 tons of rich quartz was extracted from what proved to be an isolated patch.

A little fine gold can be seen in the quartz on the dumps in the vicinity of the shafts.

No. 1 borehole was arranged to cut Krushka reef at a vertical depth of 100 feet below the outcrop. It was started at a point 108 feet west of the north shaft and drilled in an easterly direction towards the shaft at a depression of 45°. Slates and quartzites were passed through, with one inch of quartz at 162 feet. The reef should have been cut between 150 and 160 feet, and it is evident that it is represented by the one inch of quartz. The hole continued to 200 feet, without cutting any more quartz.

The borehole was very close to the fault which probably exists at the north shaft, and may possibly have passed through it. The cuttings between 105 and 110 feet were assayed with the following results, the rocks at that point being broken sandstone. Gold, 13 gr. per ton; silver, 4 dwts. 17 gr. per ton.

(b) To the north-east and east of Krushka reef a number of quartz reefs ranging in width from 4 to 18 inches are exposed in short trenches and shallow shafts. Their strike and dip, where obtainable, are indicated on the accompanying plan. Small parcels of gold bearing quartz are said to have been removed from the shafts and a little gold dollied from some of the quartz in the trenches.

183P/M.

This mineral section was first applied for by V.A. Chipman in 1924 under No. 95P/G and was cancelled in December, 1925. It was again taken up by H.M. Krushka and G.N. Brownell in June, 1932 and is still held by them. The area is 40 acres.

A small quartz reef is partly exposed in a short trench 10 feet deep at a point 4 chains south of the eastern re-entrant angle of the section. It is here 6 inches wide, has a strike of 320° and underlays to the north-east at a high angle. The workings on the reef also comprise a collapsed shaft at the south end of the trench. A little gold was obtained by H.M.Krushka from dollying the quartz.

97P/G.

The area of this section is 35 acres and is not now held under lease. Formerly V.A. Chipmen applied for a lease in July, 1925, but it was declared void in December of the same year.

(a) Two small reefs occur about 7 chains north-east of the south-west angle of the section. The more southern reef is exposed in a small shaft 7 feet deep. The quartz in this case is 6 inches across at the bottom of the shaft and shows a little arsenical pyrite. It strikes on a bearing of 50° and dips 75° to the north-west.

The northern reef is disclosed in a trench 13 feet long and is 8 inches wide. It courses at 216° and underlays to the south-east at 65°. H.M. Krushka states that gold was dollied from this reef.

(b) On the eastern boundary of the section the top of a 6" quartz reef is uncovered in two short trenches. The strike is 133°and underlays to the south-west at from 75° to 80°. A little gold was also dollied here by Krushka.

(c) No. 2 borehole was drilled on this mineral section and is situated 6 chains north-west of the south-east angle of the lot.

It was sited to cut at depth any downward extension of an outcrop of oxides of iron. It was drilled in an easterly direction with a depression of 45°. The bore passed through ironstone rubble with specks of quartz between 10 feet and 32 feet, with 6 inches of quartz below. The remainder of the bore was in slates, quartzites and sandstones, with veins or irregular patches of quartz in the rocks between 48 feet and 50 feet; 83 feet and 83.5;

154 feet and 168 feet; and 172 feet and 180 feet. The cuttings between 48 feet and 50 feet were assayed, and gave a result of gold nil and silver trace.

(d) One chain south-west of the north-east corner of the section is an old shaft now partly filled in. Water has collected in it and only about 15 feet of the depth is now visible.

A formation consisting of arenaceous slates traversed by quartz veins is exposed in the collar of the shaft.

The strike of the formation is 185° and the dip to the west at 53°.

118P/G.

S.M. Gadsby was the holder of this section from December, 1926 to October, 1929, but no lease now exists. The area was originally 40 acres but 10 acres of the western portion has since been leased under 133P/G.

(a) Battery reef is the most important on the section. The workings comprise open surface stopes 40 feet in length, and reach a maximum depth of 40 feet. The reef averages from 2½ feet to 3 feet of white quartz with clean walls on each side. It underlays to the south-east at 65° and strikes on a bearing of 215°.

Three chains north-east of Battery lode some quartz is visible in the bed of a creek on the downstream side of the foot bridge. It probably represents what what was known as the Homestead reef about which Loftus Hills in 1925 states "It is situated near Donovan's homestead and outcrops in the creek bed. It has a bearing of 340°. It has only been exposed for about 15 feet which shows a width of from 4 to 5 feet. A crushing of 5 tons yielded 5 or 6 dwts. per ton".

(b) Two and a half chains south-west of the south-east corner of 183P/M a reef averaging 6 inches wide has been trenched over a length of 20 feet. The strike is 207° and the reef dips to the south-east at 55°.

It seems probable that it may be a continuation of Battery reef.

(c) No. 1 reef workings occur on the eastern boundary of the section and extend into 317 ac. 2 rds. 15 per. purchased by L. Singline from the Crown. They comprise two underlay shafts, drives and surface stopes on the line of the reef, over a length of 66 feet. The greatest depth to which the workings penetrate is 20 feet.

The reef underlays to the south-east at an angle of 60° and strikes on a bearing of 216°.

The quartz is 4 inches wide at surface and widens to a width of 18 inches in the bottom. It is laminated and carries a little arsonopyrite. The quartz on the hanging wall is broken and mixed with slate.

Loftus Hills in 1923, records that 8 tons of quartz from No. 1 lode yielded 1 oz. of gold per ton.

104P/G.

This is now vacant but was held by D.J. and M.M. Donovan from February, 1925 to December, 1926.

The reefs on this section were not examined and reference must be made to Loftus Hills (1923) report on "The Mount Victoria Goldfield" wherein Browns, Mystery and Sulphide lodes are described.

105P/G.

D.J. and M.M. Donovan were the lessees of the section from February, 1925 to December, 1926 but no lease has been held since the latter date.

(a) Prendergast or New River reef. Some of the old workings on this reef were completed prior to 1900 by the Ringarooma Gold Mining Company. Two adits were driven to intersect it and a shaft sunk to at least 80 feet. The shaft is stated by some to have been 180 feet but it is now partly filled in and the depth cannot be verified.

From a depth of 80 feet in the shaft a northerly crosscut is said to have cut the lode but only 40 feet was driven on it owing to the reef splitting into veins.

The portal of the lower adit, driven from creek level, has now collapsed and is inaccessible.

The upper adit is accessible for 107 feet, to the point where the reef was cut. From this point stopes have been worked to the surface. They are now partly filled in and the reef is concealed under debris. At 98 feet from the portal an oblique fault dips easterly at 30°. The fault is again discernible in a small cut driven 8 feet south-easterly and 10 feet north-easterly from 107 feet along the adit. In that portion of the cut running parallel to the adit a small winze in the floor exposes the reef which here appears to pitch to the east below the fault. It consists of white quartz in which a little fine gold is visible. A displacement of the reef, evidently connected with the fault, has taken place here since stoping on the main portion of the lode is 8 feet north westerly in the adit.

Judging from the stoping at surface the general strike of the reef is 240° and the underlay to the south-east at 80°.

As far as can be ascertained the greatest depth to which the Prendergast reef has been worked is approximately 110 feet below the outcrop.

W.H. Twelvetrees in 1900 stated, "The shoot of payable stone is 150 feet long in the tunnel, and 60 feet at outcrop. For this length it has been stoped up to surface, 75 feet on the underlay. At the outcrop it is from 18 inches to 4 feet wide, and in the tunnel, from 9 inches to 3 feet. Taking the whole length of the stope, it may be reckoned as 2 feet of payable quartz".

Loftus Hills (1923) gives the figures of the average yield on the ore produced as between 20 and 25 dwts. per ton and the total value approximately £18,000.

Number 3 borehole was located to intersect the Prendergast reef at a vertical depth of 180 feet.

The hole was commenced to the south of the reef, and was bored at a bearing of 298° from a point 150 links from the reef, and at a depression of 70°. The rocks passed through were slate, sandstone and quartzite. A two foot reef was passed through at 195-197 feet, which was the estimated position. An assay gave a result of a trace of gold and 1 dwt. 1 gr. of silver per ton. Quartz veins mixed with slate, etc., were cut between 20 and 30 feet, 44 and 51 feet, 80 and 82 feet, 200 and 206 feet, 222 and 255 feet. The samples between 200 and 203 feet and 203 and 206 feet were assayed, and gave gold nil and silver nil, and gold nil and silver trace, respectively.

Number 4 borehole was started from a point 105 feet W.S.W. of No. 3, and was sited to cut Prendergast reef further west than in No. 3 hole. The collar was 150 links from the reef at a bearing of 298° and the angle of depression was 70°. The rocks passed through were slate, sandstone and quartzite. Between 194 and 198 feet a reef of highly-mineralised dark quartz, mixed with some quartzite, was passed through. An assay of the material returned a trace of gold and silver respectively. A foot of white quartz was cut between 199 and 200 feet which gave an assay of gold nil, silver trace, while veins of quartz in the country rock were passed through between 119 and 119.5 feet, 177 and 179 feet, and 188 and 190 feet.

(b) The Standard reef occurs 3 chains south-west of Prendergast reef. The workings consist of an underlay shaft and surface stopes over a length of 25 feet, now partly collapsed. The lode is made up of a number of veins striking generally at 244° with an underlay of 80° to the south-east.

The veins are stated to have yielded from 20 to 25 dwts. of gold to the ton.

(c) Four chains south of Standard lode a shallow underlay shaft has been sunk on Reserved reef. Very little can now be seen but it seems to consist of two or more veins, the main one of which is striking 157° and dipping 80° to the south-west.

It is stated from one source that the quartz yielded 2 oz. of gold per ton, and from another that the yield was 15 dwts. per ton.

(d) Two short trenches within 10 feet of each other have been cut on a reef or reefs at a point 1½ chains north-east of Reserved reef.

The western trench, 10 feet long, exposes quartz 15 inches wide striking 245°. The quartz in the eastern trench is 2 feet across and the strike is 292°. These exposures of quartz may represent one and the same reef but further work is necessary before this can be determined.

(e) Crest reef is located on top of the main ridge some 5½ chains west of Standard reef, and close to the Pyengana road.

The reef is from 6 inches to 18 inches wide, the strike averages 205° and the dip between 75°

and 80° to the north-west.

Workings expose the reef in several places over a length of 200 feet. They consist of a shaft and surface stopes, both partly fallen in, and 3 short trenches.

119P/G.

This mineral section is now vacant but was held by S.M. Gadsby from December, 1926 to November, 1928.

(a) Drunkard's Dream reef is 4 chains south-west of the north-east corner of the section on the eastern slope of a small creek.

The workings consist of a number of trenches, 3 shafts with short drives, and a little stoping as shown on the attached plan. They occur along a line 350 feet in length bearing 217°, and suggest one lode.

The trenches are of recent date but the remainder are old workings now partly filled in.

Very little of the reef is visible and the width varies from place to place. In the north shaft the quartz is mineralised with arsenopyrite and pyrite. It is 2 feet wide at the lowest accessible part of the excavation, viz. 30 feet from surface.

The reef exposed in a 20 foot drive from the south shaft is 6 inches across and underlays to the south-east at 77°. It is striking 207° at this point.

Loftus Hills (1923) reports that statements have been made to the effect that crushings from Drunkard's Dream reef yielded 3 ozs. of gold to the ton and that the stone in the bottoms of two shafts gave a similar figure.

(b) Numbers 3 and 5 reefs occur on the section and their approximate positions are shown on the plan.

For reference to Nos. 3 and 5 reefs the report by Loftus Hills, in 1923 must be consulted. No. 5 reef is also mentioned by W.H. Twelvetrees in his report of 1900.

317 ac. 2 rds. 15 per. L. Singline Pur.

The land comprised in this purchased area has never been held under mineral lease.

(a) Tiger reef is situated 3 chains north of the south-west corner of the block. The reef is exposed in a number of places on a bearing of 42° over a length of 290 feet. The main workings consist of two shafts 45 feet apart and unconnected by mining. The first work was commenced about the year 1896.

The northern shaft is vertical and is stated to have originally been 70 feet deep. It is now filled to within 25 feet of the surface. From the shaft, in a north easterly direction, stoping had

been carried to surface over a length of 11 feet. A 30 ft. drive on the reef connects with the stoping at a depth of 25 feet. Near the top of the shaft the reef is only 2 inches wide. In the north end of the drive it is 12 inches at the top and widens to 20 inches at the floor. In this vicinity the reef strikes 47° and dips 72° to the south-east.

Shallow underhand stopes, 13 feet long, on the south-west side of the shaft expose 4 inches of quartz.

The southern shaft is 31 feet on the underlay, which is here 60° to the south-east. A drive on the reef bears 215½° from the bottom of the shaft, for a distance of 30 feet. The reef at the north end of the drive is 4 inches wide while in the south 18 inches of quartz is exposed.

Three shallow trenches, at a distance of 120 feet in a north-easterly direction from the main workings, expose part of a quartz vein 2 - 3 inches wide. The vein is on a continuation of the Tiger line of strike and probably represents an extension of the same reef.

The reef generally is made up of white, close grained, quartz but in places it is darkened by the presence of sulphides.

Loftus Hills in 1923 reported that the quartz output was 100 tons which yielded 1 oz. of gold per ton. He observed that, "values are stated to have decreased in the bottom". A statement in W.H. Twelvetrees 1900 report reads, "No reliable information is available; report says the first crushing went 1 oz. gold per ton, and subsequent returns only 9 dwts."

(b) Singline reef occurs 7½ chains east of Tiger reef. It is exposed in places over a length of 40 feet along a general bearing of 232°. The workings are of recent date and consist of an underlay shaft, 14 feet deep, and adjacent surface stoping, 22 feet long. The reef is also disclosed in a shallow trench at the eastern end.

In the shaft the reef is 6 inches wide near the surface and 14 inches in the bottom. It consists for the most part of coarsely crystalline, white quartz mineralised by a little pyrite and arsenopyrite. A band of sandstone, 9 inches across at the widest part, is included in portion of the reef.

The observed strike at the shaft is 251° and the angle of dip 56° to the south-east.

Some fine gold was visible in the quartz on the dump at the workings.

Conclusion and Recommendations.

Numerous auriferous quartz reefs have been proved to exist in the New River goldfield. They range in width from a few inches up to 3 feet and have been exposed over lengths ranging from 10 feet to 350 feet. Many of the reefs have been worked in the past over short lengths and to shallow depths. The deepest workings are on the Prendergast reef which has been developed for 110 feet below the outcrop and has been

penetrated by drilling at a depth of 188 feet.

No official statistics are available as regards production of the partly worked reefs. From statements made it would appear that up to 1 oz. of gold per ton was obtained in a number of cases. The fact that mining was discontinued at shallow depths suggests that secondary enrichment has taken place in the upper portions of the reefs.

Although parcels of quartz have been mined from many of the reefs there are few records available as to production and there is nothing to indicate the gold content of their unworked portions. Furthermore there are a number of reefs outcropping on which only a little trenching has been done. Hence any scheme for the development of the area should include a thorough sampling of the more important reefs. This process, although laborious, is the only one which will yield definite information. With gold at its present price, viz. £7 per ounce, there may be unworked portions which it would now pay to extract. It is suggested that the larger reefs should be investigated first and among these may be numbered Prendergast, Drunkard's Dream, Tiger, Battery, No. 1, Krushka, Singline, and Crest.

Should the sampling operations indicate the presence of profitable quartz, or should they give sufficient encouragement for further development, it would be advisable to confine such development to that reef affording the greatest possibilities.

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