REPORT ON THE JUBILEE MINE, MATHINNA

Location

The workings of the Jubilee Mine are situated upon the following leases -

1624/G 10 acres H.E. Brock

1625/G 10 acres A.H. Solomon

These leases are located on the east bank of Long Gully, one and three-quarter miles SSE of Mathinna.

Access

The mine is connected with the township of Mathinna by a cart road about two miles in length. The road crosses the low spur at Mathinna between the Black Horse Gully and Long Gully and follows the latter until opposite the mine, when it turns up a small tributary on the eastern side and terminates at the old main shaft.

Previous literature

Descriptions of the mine appear in the following official publications dealing with portions or the whole of the Mathinna Goldfield.

Montgomery, A. Report on the Mathinna Goldfield, Secretary for Mines Report 1891-2.

Twelvetrees, W.H. Report on the Mathinna Goldfield Part II, 1906.

Twelvetrees, W.H. On Some Gold mining Properties at Mathinna: Geological Survey Report No. 5, 1914.

HISTORY

The quartz reefs on this property were apparently discovered some time prior to 1870. The first lease was applied for by Messrs. H.J. Turner and Wm Harris but was abandoned. A lease was surveyed in 1870 for W. St. P. Gellibrand and others, and a company known as the Derby being formed, the mine receiving the same name. It is reported that this company continued operations until 1881. Both the Main or Derby reef and the Flat reef were worked and rich gold bearing quartz was obtained from certain portions of these reefs. The Derby reef was opened up by underhand stoping from the surface and by an adit, while later a main shaft was sunk to 150 feet and a level opened out and connected with a winze from the surface workings. The Flat reef was opened up by two shallow adits.

The Jubilee Gold Mining Co. began work on the Flat reef in 1887, and is reported to have raised stone worth 9 to 10 dwts per ton. A small battery was erected, the crushing appliances being a Huntingdon mill. This company did not continue operations for any great length of time, and in 1892, tributors were working the Flat reef.

In 1896 the Tasmanian Exploration Co. Ltd. took over the leases and resumed mining operations. The main shaft was repaired to 160 feet and later sunk to 272 feet. Exploratory work was carried out at both the 160 foot and 260 foot levels on the Derby reef. No payable ore was apparently exposed and no stoping performed

In 1913 the mine was again opened up as the New Jubilee Gold Mine and further prospecting work carried out at the 160 foot and 260 foot levels which resulted in the discovery of Lyons reef. A 10 head battery was installed, and mining and crushing operations were carried on until 1916. The operations were apparently not profitable, and the mine was closed down on account of financial difficulties.

In 1923, Messrs. H.E. Brock and A.H. Solomon leased the ground upon which the workings are located. Work was commenced at the northern end of the Flat reef and resulted in the finding of rich, but narrow veins of quartz at several points.

TOPOGRAPHY

The mine workings are situated on the east bank of the Long Gully. The hills rise steeply above the gully on both sides to heights of several hundred feet. A small creek flows from the E into the Long Gully, most of the surface workings being situated to the N of this creek. The reef outcrop near the foot of the hills, and so though the conditions are favourable for development by adits, the amount of backs obtains do not exceed 100 feet.

GEOLOGY

The leases are occupied almost entirely by the Cambro-Ordovician slates. Only one set of structural planes are generally recognisable, and these either represent the bedding or the cleavage planes. No means of distinguishing these is generally possible and the planes are assumed to be these due to cleavage, and to completely mask the bedding planes. These cleavage planes have a strike of 315^{o} to 335^{o} and are either vertical or dip at high angles to the NE or SW. At a few localities two series of planes are visible, the other set cutting across the cleavage at an acute angle and dipping to the NE at medium angles. The latter probably represent the bedding planes, and the general direction and dips agree with those observed by Montgomery in other parts of the Mathinna district. The slates are light coloured at, and near the surface, but those from the deeper workings are dark blue or green in colour.

On the S side of the small creek, numerous lumps of completely decomposed basic igneous material are obtainable on the surface, but at no place has it been located in situ. Similar material occurs in other portions of the NE district of Tasmania and represents decomposed basic igneous dykes intrusive into the Cambro-Ordovician strata. They are probably of Devonian age and generally occur in the vicinity of gold quartz veins, but the relationship between the two has not yet been determined. Future work will, it is hoped, settle this problem.

Recent river gravels and alluvian occur along the course of the Long Gully and the small creek flowing into it.

ECONOMIC GEOLOGY

The formations of economic importance are the auriferous quartz reefs which occur in this part of the Mathinna Gold field. The reefs are of the gold-arsenopyrite-quartz type. The quartz is white, and varies from opaque to slightly translucent. When associated with sulphides it assumes a faint bluish tinge. Arsenopyrite

is the most abundant sulphide, but pyrite, chalcopyrite and galena occur in small quantities. The gold occurs mainly as "fee" gold, but a small proportion is also intimately associated with the sulphides. The galena and chalcopyrite are always favourably regarded as indicating the presence of gold. Arsenopyrite is not so favourable and at some points appears to occur to the exclusion of gold. Small amounts of a carbonate, probably calcite, are associated with the quartz from the deeper levels of the mine.

The reefs vary in strike and dip. The vertical parts of the Derby and Flat reef where they outcrop have bearings of 328°, and their courses are conformable to the cleavage planes. The eastern vertical part of the Flat reef, Steven's reef, and the Mountaineer reef have bearings similar to those of the bedding planes of the slates, but appear to differ from the latter as regards the amount and direction of dip. The City reef and a similar outcrop to the W of lease 1625 have bearings of 355°, and occupy channels cutting across both the bedding and cleavage planes. The flat parts of the Flat and Lyons reef cut across the cleavage planes and probably also the bedding planes, although at places they appear to follow anticlinal and synclinal folds, but this is not so in the case of the Flat reef. The cap of the Derby lode at its junction with Stevens reef resembles a saddle reef but it is due solely to the junction of these differently dipping reefs. Faulting, in particular faulting which would affect the reef, has not been recognised to any great extent. The "slide" between the 160 foot and 260 foot levels was formed before the reefs. The Derby and Lyons reef make strongly to the S of this slide and shoots of gold were also formed on that side of the slide. The slide does not appear to have the same effect on the Derby reef as regards the extension and the location of shoots near the surface. Whether it has any effect on the Flat reef could only be proved by prospecting work.

The localisation of the various small shoots is due to different causes in each instance, and no general conclusions could be deduced from which it might be possible to indicate where to search for others. The shoot in Lyons' reef is connected with the slide as described above. The shoot near the surface of the Derby reef may be partly due to the superficial enrichment. The short shoot at the cap of the Derby reef owes its origin to the junction of this reef and Stevens reef. There may be recurring shoots of this type to the South East. The shoot in the Flat reef is irregular and may be due partly to secondary enrichment by which means the shallow shoot at the outcrop appears to have been formed. The shoot at the Eastern vertical part of the Flat reef was formed above the junction of the flat and vertical parts. The good grade quartz in the Northern part of the Flat reef owes its presence to the convergence of the two vertical walls.

<u>The Flat Reef</u>

This reef outcrops in the South Western part of lease 1624-G, and also extends a short distance into the Northern part of 1625-G. The total length of outcrop is about 700 feet which is one of the greatest lengths on the Mathinna field. The bearing of the outcrop is 328°, and the reef is parallel to the Derby reef. In the portions of their lengths where the two reefs outcrop side by side, the Flat reef is 20 feet to the North East of the Derby reef. The dip of the reef varies considerably. It is generally to, the South East from angles of almost 90° at its outcrop down to 20° and less in the underground workings.

At some points the dip is reversed and is to the South West.

This reef has been opened up on the surface by means of numerous trenches, shallow shafts, and underhand stopes. Underground it has been developed by four adits (which for descriptive purposes have been numbered from 1 to 4) andthe accompanying drives, winzes etc.

The most Southerly opening on this reef is a shallow shaft on the North side of the small creek, and almost covered by dump from the main shaft. Large blocks of white quartz typical of the Flat reef occur on the dump of this small shaft. The Southerly continuation of the reef should be exposed in the road cutting to the South of the Creek at this locality but only a narrow vein, representing the track of the lode, is visible. Between the above shaft and the No. 1 adit several trenches cut during the Writer's visit to the mine exposed the reef which contained gold at some points and also a large amount of arsenical pyrite.

In the No. 1 adit the Flat reef is cut at 60 feet from the entrance where it dips from the back of the adit and is carried in the adit until 73 feet where it dips below the floor. The reef is 1 to 2 feet thick and consists of white massive quartz and contains a large amount of slate. A sample over a width of 18 inches was assayed in the Geological Survey Laboratory, Launceston with the following results:-

Gold	16 grains per ton
Silver ...	5 grains per ton

The reef has not been exposed on the surface between the No. 1 and No. 3 adits but has been intersected by the No. 2 adit between these points. In this latter adit it was cut at 130 feet from the entrance and passed below the adit at 165 feet. Between these intersections the reef is practically horizontal, and varies greatly in thickness and character. The quartz is white and dense and forms irregular veins throughout the slates. Numerous veins pass below the adit floor from the flat part of the reef. A few feet beyond the point where the Flat reef dips below the adit, a short drive has been put into the north- west along a smooth wall with pug against it. Two small makes of quartz occur against this wall one striking to the East and one to the West, but these do not extend any distance. The Flat reef appears to dip into this wall below the adit and a winze was sunk on the junction. Mr. Welvetrees reports "A winze was began on the gold bearing passed through in driving the adit. Here it was solid, fully 4 feet wide, but of rather poor quality. At 20 feet down, the main hanging wall was struck, underlying east 1 in 6. Theformation at that point was 2 feet of dark slate and quartz, and the hanging-wall portion carried a little gold. At 45 feet down the reef was small, but more defined". It is apparent, therefore, that the Flat reef has taken its course along the wall and dips easterly 1 in 6. From a point, 145 feet from the entrance of the No. 2 adit a drive has been put into the northwest along a portion of the Flat reef. The reef is more defined in the drive than in the adit, and appears on both sides as a solid body of white quartz at least three feet thick. At 18 feet a winze

was sunk but as would be expected, it is reported that the bottom (or footwall) of the reef was soon passed through. The reef is carried in the sides of the drive for 55 feet but at this distance it has passed above the back of the drive due to its very low pitch to the southeast. A drill hole was put up into the reef for a distance of three feet. The borings contained abundant arsenopyrite and on assay in the Geological Survey Laboratory gave the following results:-

Gold	1 dwt 13 grs per ton.
Silver	17 grs per ton

At 56 feet from the adit, a connection has been made over the back of the drive with the workings from the No. 3 and No. 4 adits. The reef at this point undergoes a reversal of dip on the eastern side of the drive and dips to the southwest. Near the face side of the drive a wall was encountered to the east with a strike of 295°. This is the continuation of the wall exposed in the No. 2 adit and short drive on the eastern side of the Flat reef. The reef appears to turn up into this wall instead of down as it did in the adit. This is confirmed in the old workings above the drive in which the vertical portion of the reef was stoped out.

The No. 3 adit was driven as a dip adit on the Flat reef which here dips at 15° to the north-east. At the entrance the reef is well defined and from 18 to 36 inches wide and except for one small break extends along the adit below water level. A sample from the south side was assayed in the Geological Survey Laboratory with the following results:-

Gold.....	2dwts 15 grs per ton
Silver ..	1dwt 19 grs per ton

No stoping was performed on the south side of the adit, but portions of the reef on the north have been stoped as far as the No. 4 adit, but the greater part of these are now inaccessible. In those which can be inspected the reef where left, maintains its usual width and character. A winze was sunk from the drive or working forming the lowest portion of these stopes, and connects with the northwest drive from the No. 2 adit referred to above. In this winze, the reef has a higher dip and consists of a large somewhat irregular body of quartz about three feet wide. At the bottome of the winze, the dip of the reef decreases and the reef becomes horizontal and forms the flat portion occurring above the drive from the No. 2 adit. No stoping was carried out from the winze, but a small amount appears to have been done at the bottom of it.

In addition to the flat portion of the reef immediately above the drive, another branch appears to occur above it, dipping to the southwest at 30° to 45°, and making onto the same vertical wall to the east. A connection occurs between the bottom of the winze and some old stopes on the vertical wall. These stopes extend to the northwest as far as the No. 4 adit from which they were worked by underhand methods. The two branches of the Flat reef make against this wall and a vertical extension of the reef occurs upwards along the wall. It was this vertical portion of the reef that was stoped out in these old workings. There is a fairly even wall to the east, and while the dip of this varies somewhat it maintains a generally vertical aspect. The upward extension of the reef decreases in thickness and the

reef peters out in the back of the stopes. The reef has been stoped right up to the "cap" which has a pitch of about 40° to the south-west.

On the surface between No. 3 and No. 4 aditsthe reef has been stoped by underhand methods for nearly the whole distance, some of the stopes being connected with those from the No. 3 and No. 4 adits. The reef is here exposed with a vertical dip which must however quickly change to a low dip to the east at shallow depths.

The No. 4 adit can only be entered a short distance as it is blocked by a fall of ground and the workings from it cannot be entered. A portion can, however, be entered from a shaft recently sunk to the north-east of No. 4 adit. It is seen that both the flat and eastern vertical portions of the reef have been stoped and that some of the stopes connect with those from No. 3 adit.

The reef maintains its usual bearing and a high dip for 90 feet to the north of No. 4 adit, and has been worked by shallow underhand stopes. Shallow workings also exist to the east of the outcrop and gold bearing quartz has apparently been obtained from these points.

Recently a shaft was sunk from a point 18 feet east of the outcrop. Numerous small but rich veins and stringers of quartz were found between the outcrop of the Flat reef and the shaft, especially toward the shaft. The shaft was sunk 16 feet with a steep underlay to the east, on the course of some of these veins. The southern end of the bottom of the shaft connected with the north end of the stopes on the flat portion of the reef. The eastern side of the shaft broke through into the northern end of the stopes on the eastern vertical portion of the reef. The northern end of these stopes showthe flat portion of the reef to be one to two inches wide and the vertical portion of a similar width. The flat vein passes through ther vertical vein at this point without affecting it, instead of turning up or down along it as in previous exposures.

A short drive was driven along the flat vein to the north of the shaft and crosscuts driven east and west from it. The vein of quartz was only 2 inches wide at the beginning, but increased in width until over one foot occurred throughout a formation three feet wide. The crosscut to the east showed the flat reef turning upwards along the extension of the vertical wall as at other parts of the reef. Another formation one foot wide and parallel to the vertical reef is exposed near the face of the crosscut. The crosscut to the west exposed the flat vein of both sides for a distance of 20 feet where it turns up along a vertical wall similar to that on the east. The flat portion of the reef in these crosscuts varies in width from a few inches to two feet. The quartz is mineralised in places and contains a fair content of gold. A combined sample from several portions of the reef gave the following results when assayed in the Geological Survey Laboratory:-

Gold .....15 dwts. 4 grs. per ton

Silver ..... 2 " 15 " " "

The eastern wall up which the reef turns is situated directly below the vertical portion of the reef at its outcrop, and the two are, therefore one and the same. At this point of its length the Flat reef therefore consists of a horizontal portion extending between two vertical portions on the east and west respectively. The vertical portion on the west outcrops at the surface but that on the west does not outcrop . The same features have been found in the other workings to the south(described above) the only difference being that at the most southerly point (No. 2 adit) the reef on its eastern side turns downwards. In the No. 1 adit the Flat reef also dips downwards at its eastern side, but this occurs 115 feet west of any possible extension of the eastern vertical wall and it cannot be stated as to whether the flat portion ultimately extends to the vertical wall or not.

In the workings from the above recently sunk shaft the two vertical portions are 20 feet apart. This distance is greater towards the south and increases regularly in that direction. This is due to the converging bearings of the two vertical portions or walls - that on the west represented by the outcrop having a strike of 328° and that on the east 307°. It is evident that these two vertical portions will intersect one another to the north-west of the shaft. This point of intersection coincides with the sudden change in the bearing of the outcrop of the eastern portion of the reef. The surface works show that the strike of the outcrop changes from 328° to 3° Recent underhand workings on this north and south part have proved narrow gold bearing quartz veins to occur along alength of 30 feet. These workings have an underlay to the east of 30°.

To the north of these workings, an old shaft was sunk to 10 feet and in the bottom exposed a reef two to three feet wide the eastern portion dipping easterly at a moderate angle. The quartz in this reef is stated to be of poor quality. Another old shaft to the north was sunk apparently to cut this east-dipping reef but no quartz is visible in it, although a drill-hole from the bottom is stated to have entered quartz.

The reef changes its course again between the two shafts and the northerly extension resumes the normal strike of 326°.

A short adit driven to the south-east was not extended sufficiently to cut the reef. A winze was sunk from it on several small gold-bearing quartz veins. Recently a crosscut was driven to the north-east and intersected the reef which consisted of irregular veins of quartz throughout slates forming a formation three to four feet wide. In the back the reef is vertical, but in the bottom of the crosscut it dips to the south-west. It was proposed to sink a winze on this reef in order to test it below the crosscut.

Several old and recent trenches to the north-west have been out along the course of this reef in a search for the source of the "rich loams" of gold obtained in the immediate vicinity. The recent trenches exposed only narrow veins of quartz distributed over a width of several feet of slates. Some of these veins are gold bearing, but others are barren. The gold in the surface soil and rubble was derived from these gold-bearing, veins some of which may have been much richer at levels higher than the present surface.

The reef cannot be traced further to the north-west and apparently does not continue beyond the reef of white quartz which occurs to the west (City reef).

THE DERBY REEF

This reef outcrops on the southern part of lease 1624, and on the northern portion of lease 1625.

It was cut by the No. 1 adit and a drive driven to the north-west and connected with the No. 2 adit. In the No. 2 adit the reef does not occur, but along the drive to the No. 1 adit the track of it becomes visible with a few inches of quartz making on it, and then the reef makes further to the south-east. The surface workings on the reef do not extend further north than the No. 2 adit and so this point may be taken as the northern limit of the Derby reef. The reef has been stoped from the outcrop to shallow depths along the whole of its course from the northern end as far as and beyond the entrance to the adit on the south side of the creek. The general bearing is 328° and the dip at high angles to the north-east. A winze from the No. 1 adit to the east of the reef is reported to have intersected quartz of fair grade, and this probably represents the Derby reef cut at depth due to its dip.

On the steep hill side to the south of the creek the outcrop gradually alters in bearin until it has a north and south strike. This is due to the combined effect of the decreased easterly dip of this portion of the reef and the steeply rising surface of the hill. The outcrop has been stoped to a depth of several feet as far south as the underlay shaft to the underground stopes.

An adit to the south of the creek cuts the reef at 90 feet and then follows the reef to the south-east for 90 feet. The reef was formerly driven on and stoped to the north-west but these workings have fallen in. Along the adit to the south-east, the reef has been stoped, both above and below for a distance of 70 feet and these stopes also extend probably to the north-west. In depth the stopes connect with these from the 160 feet level onthe Derby reef.

Towards the face of the drive the reef has not been stoped below, but a winze has been sunk on it at the face. Further back along the drive another winze connected with the bottom levels and formed a travelling way from these levels. Along this drive the reef varied in width from six inches to several feet, and apparently also in value the richer portions being stoped and the others left standing. The dip was 70° to the east in the northern part, but in the winze at the face it was only 55°.

Ten feet back from the face of the drive a branch drive was driven 30 feet to the north-west on what was called Stevens reef. This reef has a bearing of 300° with a dip to the south-west of 65°. The reef varies in width up to 15 inches and is exposed in the face and back of the drive. In the old stopes above the drive it is seen that the Derby and Stevens reef junction and form a flat cap the whole structure resembling a

saddle reef. In the central part of these stopes Narrow veins of quartz continue above the saddle on the upward extension of the Derby reef plane. In the northern part of these stopes the saddle is not in evidence and the Derby reef extends upwards to the surface where it has been stoped. The saddle, however, continues to the south-east beyond the stopes with a pitch of 20° in that direction. The large, flat body of quartz seen in the top of the winze at the face of the drive on the Derby reef represents the saddle. No veins extend above it at this place and any downward extension of the Derby reef from it was probably followed in the winze. The saddle pitches to the south-west beyond the winze but has not been tested in that direction. In the stopes it was apparently sufficiently rich to stope but at the top of the winze it was apparently unpayable.

The underground workings from the main shaft are filled with water and therefore, unaccessible. The following description of the main features in connection with the reef in these workings are taken from the descriptions by the late Mr. Twelvetrees, and information received from Mr. Brannan the last manager of the mine together with the plans of the underground workings.

At the 160 foot level the crosscut was driven to the south-west for a distance of 330 feet, Quartz reefs or formations containing quartz veins were intersected at the plat, at 90 feet (the Derby reef) 180 feet, and between 200 and 270 feet (the more definite groups of veins being at 200, 230 and 270 feet). Except for the Derby reef these reefs or formations have not been driven on, due probably to the fact that they were not auriferous where cut. The Derby reef was driven on to the north-west and south-east. In the north-west drive the reef was reported to be two to three feet wide but low in gold values. The drive was continued for 80 feet but at the face the reef was small and irregular, although occuring below portions which were stoped near the surface.

Conflicting reports are in existence as to what was encountered in the skuth-east drive on the Derby reef, and it is not certain that the reef was carried in the drive for the first 80 feet of its course. At this distance a "slide" was intersected which has a bearing of 50° and a dip to the south-east varying from 30° to 50°. To the south of this "slide" the Derby reef made strongly, while to the east of this reef another - termed Lyons reef - was also found making on the south-east side of the slide.

The Derby reef was driven on to the south of the slide for 110 feet which exposed the portions of it below those stoped below the adit o n the south side of the creek. The reef varied in width up to 2½ feet, but was reported to containein places only 4 dwts per ton of gold. At the face of the drive the reef was still exposed but reported to be "broken". About 200 to 300 feet of driving would be necessary to intersect the south-pitching cap of the Derby reef as exposed in the face of the adit. A winze was sunk 42 feet on the Derby reef at the 160 foot level from a point 30 feet south of the slide and proved that the dip of the reef flattened with depth. A short crosscut along the slide to the west

of the Derby reef exposed Lyons' reef. This was followed down by a winze at its junction with the slide against which its northern end abuts. Later the reef was stoped between the 160 foot and 260 foot levels, and it is reported by Mr. Brennan that about one-half has been extracted between these two levels. It was found that in this part of the mine the dip of the Derby reef became less and less with depth until finally it became horizontal. A horizontal portion occurred to the east, and formed a series of rolls, the occurrence being similar to the Flat reef. On the east side of this horizontal portion the reef turns upwards but does not persist for any distance as it breaks up into a number of narrow veins in a slate formation. It was this horizontal portion and the eastern vertical portion that were stoped as Lyons' reef.

It is evident though that the Derby and Lyons' reefs are parts of the same reef, the character of the Derby reef altering in depth and giving rise to Lyons' reef.

At the 260 foot level the crosscut was driven to the south-west for 190 feet. Quartz reefs or formations containing quartz veins were intersected at 20 feet: and 120 feet. The formation at the latter distance was driven on to the south for 100 feet, but apparently revealed nothing of value. This formation did not represent the Derby reef which should, if it maintained the same dip as at the 160 foot level and above, have been cut near the shaft. The stoping on Lyons' and the Derby reefs below the 160 foot level proved, however, that the Derby reef did not extend north of the slide. As the dip of the slide carries it a considerable distance to the south of the 260 foot crosscut, it was impossible therefore, for this crosscut to intersect the Derby reef.

The south-east drive referred to above was later extended in an easterly direction to reach a point below the stopes on Lyons' reef, and a rise put up to connect with these stopes. The drive was also extended to cut the Derby or Lyons' reef at this level. A number of short drives occur near the end, some being on the course of the reef but others apparently off it. A winze was sunk on a part of the reef below the 260 foot level to a depth of 30 feet.

EASTERN REEF

In addition to the above crosscuts and workings to the south-west of the shaft, crosscuts were driven to the north-east. The crosscut at the 160 foot level cut the Eastern reef at 35 feet. This reef was driven on both to the north and south. At some places the reef-channel was reported to be over three feet in width with two feet of mineralised quartz containing little or no gold. The north drive was continued to 280 feet, but no information is available as to what was passed through beyond 30 feet from the crosscut. The strike of the reef would be 343° and the dip is reported as being 50° to 70° to the east.

At the 260 foot level, the north-east crosscut was extended 38 feet, but would not at this distance cut the Eastern reef if the above dip was maintained.

CITY REEF

The name of City has been applied for descriptive purposes to the formation cut in the old City P.A. adit on Lease 1637. This formation consists of soft, altered slates with a width of 25 feet and containing several narrow quartz veins. The strike of the walls and the quartz veins is 355° with a dip of 85° to the east.

On the line of strike of this reef to the south, wide exposures of quartz occur on the surface as far as the dump of the No. 4 adit. The quartz is white and barren-looking. The reef generally consists of massive quartz ofthe above type, but at other places it consists of veins in altered slates. The northern extension of the Flat reef would junction with the City reef near the north-west corner of Lease 1624. It has not been traced beyond the City reef and apparently does not extend beyond it.

MOUNTAINEER MINE

The shallow shaft of this mine is situated on the eastern boundary of Lease 1625. The reef has been stoped from this shaft to shallow depths over a width of 2 to 2½ feet. It has a strike of 310° and is vertical. An adit was driven along the reef from a point 40 feet to the south-east of the shaft. At the entrance the reef is 15 inches wide and dips south-westerly at 85°. Within the adit the reef appears to have been stoped below. Large makes of quartz occur to the north of the foot-wall and also on a smooth wall five feet to the south-west of the foot-wall. In the face of the fallen-in adit no quartz is visible.

To the north-west of the shaft, two adits have been driven, one to cut the Mountaineer reef and the other to cut apparently both the Mountaineer and the Derby reefs. The latter adit would be situated some distance above the south-pitching cap of the Derby reef and could not therefore intersect it. Both adits are now blocked and cannot be entered.

OTHER REEFS, FORMATIONS AND VEINS

In the No. 1 adit between the Derby reef and the Flat reef, another vein occurs. It consists of white quartz, 12 inches in width, and a dip of 60° to the north-east. It has not been exposed at any other point and apparently has no great lateral extent.

A 9 inch sample was assayed in the Geological Survey Laboratory with the following results:-

Gold ... Trace.
Silver.. Trace.

The quartz is thus only very slightly auriferous.

At the face of the No.1 adit another vein is exposed. It varies in width from 3 to 12 inches and dips to the south-west in conformity with the slates. The quartz is slightly mineralised, and a six inch sample was assayed in the Geological Survey Laboratory with the following results:-

Gold .....2 dwts 0 grs.
Silver..... 13 "

CONCLUSIONS

Numerous quartz reefs veins and formations have been exposed in the various workings of the Jubilee mine. Of these, the most important are the Flat reef and the Derby, including the part known as Lyons' reef.

The Flat reef has been opened up at numerous places and a quantity of gold-bearing quartz has been stoped from it. The gold values were located at the outcrop of the vertical western part: at the junction of the flat and vertical eastern parts: and in an irregular shoot between No. 3 and No. 4 adits. Good grade quartz exists in the northern end, but the veins are narrow. At the southen end the reef should be intersected by any upward extendion of the slide exposedbetween the 160 foot and 260 foot levels, and shoots of gold may have been formed at the intersection. The slide should appear at the surface midway between the No. 1 adit and the small shaft on the Flat reef at the toe of the dump from the main shaft.

The similarity in form and structure of the Flat reef and Lyons' reef is suggested that the two might represent on and the same reef. The relative positions and the dips or pitchare also such that this might be the case. In the northern part, the flat reef joins a vertical portion parallel to and 20 feet east of, the Derby reef. Ifthe Flat and Lyons' reefs are therefore one an the same, a change is involved in the verical portions to which they are joined on the west, but this, however, is no objection to the above possibility. If the two are the same, it would appear that Lyons' reef occurs along the slide above and to the north of the 160 foot level, and then gives place to the Flat reef. It has been noted above that the slide should be exposed at the surface between the No.1 adit and the small creek, where, however, it has not been located. If the reefs are the same, the slide must have lost its prominence in the vicinity of the Flat reef. In the workings north of the 160 foot level, it would appear that portion of the Derby reef extended below the flat portion of it.

The Derby reef has been stoped to shallow depths along practically the whole length of its outcrop. The stopes below the adit south of the creek extended to greater depths. Between the 160 foot and 260 foot levels Lyons' reef and the adjacent parts of the Derby reef have been stoped. The slide which was the chief factor in influencing the shoots in this part of the mine, does not appear to have had the same effect near the surface as the surface shoot extended both north and south of any upward extension of it. Any future possibilities of this reef are associated with:

(1) The following of Lyons' and adjacent parts of the Derby reefs below the 260 foot level.
(2) The prospecting of the south-easterly

pitching cap of the Derby at its junction with Stevens' reef in the end of the adit south of the creek.

Lyons' reef is pitching to the east-south at an angle of 32°, and the cap of the Derby reef to the south-east at 20°. These occur to the south of the main shaft which is, therefor, unfavourably situated for their development. A vertical shaft on the south side of the creek, or an inclined shaft would be more suitable for any future work carried out on the above lines.

The other reefs and formations exposed on the surface and in the underground workings do not appear to have been sufficiently auriferous to warrant futher work on them.

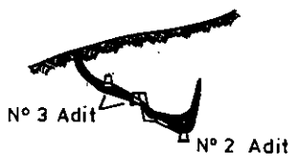
The mine and adjacent country undoubtedly occurs within one of the auriferous mineralised zones of the Mathinna goldfields, and from this viewpoint must be regarded as favourable for the occurrence of gold reefs. Whether these can be located and found to be of sufficient size and value to render their extraction a profitable enterprise, can only be determined by further prospecting work.

P.B. Nye,
GOVERNMENT GEOLOGIST.

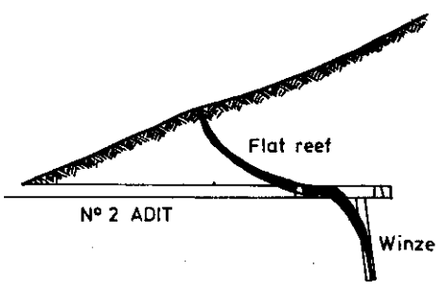
Hobart,

29th January, 1924.

SECTION A–B



SECTION C–D



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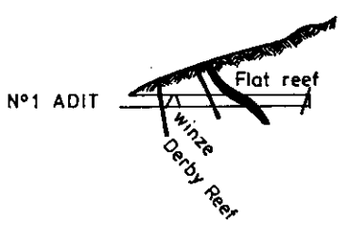

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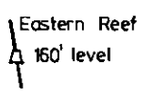

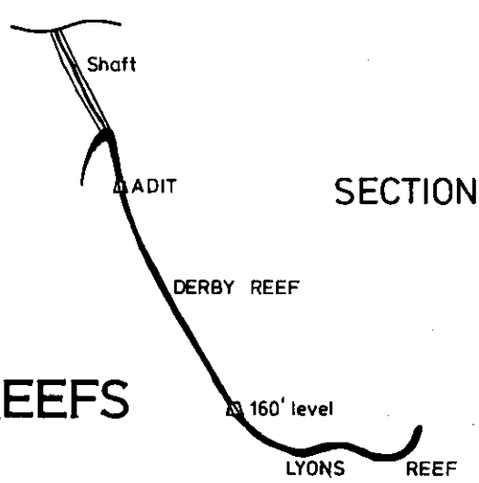

SECTION I–J

SECTION OF REEFS JUBILEE MINE

P.B. NYE Feb. 1924

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