TASMANIA
DEVELOPMENT
AND RESOURCES

Mineral Resources Tasmania

REPORT 1993/34

Northeast Goldfields:

A summary of the Alberton goldfield

by J. Taheri

MINERAL RESOURCES TASMANIA PO BOX 56 ROSNY PARK TASMANIA AUSTRALIA

CONTENTS

FIGURES

INTRODUCTION

The Alberton goldfield lies approximately in the middle of a 90 kilometre NNW-trending linear belt of gold-bearing quartz veins in northeast Tasmania. The belt extends from Mangana in the south through Tower Hill, Mathinna, Dans Rivulet, Alberton, Warrentinna and Forester to Lyndhurst on the north coast (fig. 1).

The quartz veins in the Alberton goldfield mostly occur within a narrow belt, approximately 1 km wide and about 8 km long.

This report is basically a compilation of published and publicly-available unpublished information regarding the gold mineralisation in the Alberton goldfield. It briefly describes the history, gold prospects and production, geology and mineralisation of the area.

The objects of this report are to:

(a) provide a general background in regard to the gold mineralisation in the Alberton goldfield;

(b) locate the positions of gold prospects as accurately as possibly on a 1:25 000 topographic map;

(c) facilitate the identification of areas which can be more informative in establishing the genesis of the gold-bearing quartz veins through systematic geological, geochemical, petrographical, stable isotope and fluid inclusion studies.

HISTORY AND PRODUCTION

Auriferous quartz veins were first discovered in the Alberton goldfield prior to 1883 (Thureau, 1883). Over 100 gold-bearing lodes were worked intermittently between 1883 to 1939, although most of the gold discoveries, prospecting and mining took place before 1900. By 1904 only few mines, namely the Long Struggle, New Mercury, McCaul Brothers and the Ringarooma were still operating (Twelvetrees, 1904).

Until the late 1960s the geological information was mainly provided by the Government geologists including Thureau (1883, 1884), Twelvetrees (1904), Hills (1923), Reid (1925), Nye (1933), Scott (1933), Blake (1938), Hughes (1952*a*) and Threader (1967). These early reports describe the mineralisation and also the history of mining and milling of some prospects.

The Alberton goldfield, like most other goldfields in northeast Tasmania, has not been systematically studied or explored. Most geologists have realised the under-developed state of the mines and some recommended more systematic exploration programmes and proper mining development for the goldfield. However the companies either lacked sufficient development capital or were not convinced that the discovered lodes deserved any more systematic investigation.

At one stage the area was expected to become the richest goldfield in Tasmania (Hughes, 1952*a*). However most of the lodes were worked over short distances to shallow depths of commonly less than 60 m, with the deepest being at the Ringarooma United mine, which reached a depth of about 119 metres.

The Alberton goldfield is characterised by the highest density of relatively gold-rich lodes among the northeast goldfields, but factors such as the erratic distribution and gold content of quartz veins, and also the under-capitalised nature of companies, did not allow the full potential of the goldfield to be evaluated.

An accurate estimate of gold production for the Alberton goldfield is not known. However according to Hills (1923) £60,000 worth of gold, equivalent to approximately 425 kg of gold, was won from the Alberton goldfield. From this about 255 kg of the gold was obtained from the Ringarooma United mine.

The first and possibly the richest sample was reported by Thureau (1883), in which a 960 g sample yielded 21 g of gold. Gold values up to 120 g/t were also reported by Twelvetrees (1904).

A summary of gold production for different prospects is shown in Table 1.

Several exploration companies, including Stanton Engineering Company (EL 6/76), Amdex Mining Ltd (EL 7/80), Goldfields Exploration Pty Ltd (EL 26/85 and 17/86), Oceania Pty Ltd (EL 23/82) and Billiton Australia (Report No. 08.5594) have been involved within the area, although the exploration programmes were mainly limited to literature review and some non-systematic rock-chip and stream-sediment sampling.

GEOLOGY

The geology of the Tower Hill–Alberton area has been described in Taheri (1992) and is presented below.

The linear Mangana–Alberton–Warrentinna–Lyndhurst goldfield occurs within the probably Silurian to Devonian part of the Mathinna Beds of northeast Tasmania. These rocks consist of an apparently monotonous sequence of interbedded, fine to medium-grained, commonly graded quartz-rich sandstone beds and pelites. These rocks are intruded by I and S type granitoids ranging in age from Late Devonian to Early Carboniferous (fig. 2). The younger granitoids contain fluorite, topaz and apatite, and are extensively mineralised in tin and tungsten. These rocks are overlain unconformably by possibly Carboniferous and the Permo-Triassic sedimentary rocks of the Parmeener Supergroup, which contain sills of Jurassic dolerite. Subsequent Tertiary volcanism has produced isolated but extensive basaltic lava flows, some of which in the Alberton–New River region interdigitate with sediments of inferred Tertiary age. All rock units are overlain unconformably and mainly in valleys by Pleistocene–Recent sedimentary deposits.

Structural geology of goldfield

The auriferous quartz veins of the goldfield are hosted by the Mathinna Beds. These rocks are folded about generally northwest-trending axes to form both small-scale and kilometre-scale chevron folds with axial plane cleavage; in the pelitic beds this takes the form of a slaty cleavage and in sandstone beds a cleavage which may be very weak or may attain the 2A textural grade of Bishop (1972). Although the cleavage appears statistically to be axial planar, at one locality it transects a fold hinge at an angle of 25°.

According to the orientation of the bedding/cleavage intersection lineations, the fold axes plunge shallowly to as much as 40–50° northwest or southeast. This may be primary, be due to transection of fold hinges by the cleavage on a scale more extensive than identified, or may be locally due to the effect of granite emplacement. Alternatively, as a northeast-trending structure cut by the cleavage is known in the South Esk River Valley, the variation in orientation of the intersection lineation may be due to earlier folding.

As mapped according to form lines, the folds in the Mathinna Beds change shape within the fold stack and multiply-hinged folds may give rise to single-hinged chevron folds, or vice versa. Limb thrusts have been observed locally and extensional veining is common in the sandstone beds of fold limbs. Given the style of folding, hinge collapse structure and extensional quartz fractures and quartz reefs at fold hinges may be expected (Ramsay, 1974) although the nature of the exposures is generally too limited to demonstrate this.

A subsequent deformation has produced regional mega kinking about steep, northeast-trending kink planes (Goscombe and Findlay, 1989) as well as the production of numerous steeply-dipping kink bands with both sinistral and dextral geometries. The sinistral kink bands tend to trend north to northeast, while the dextral bands trend east to southeast. The age relationships between these variably-oriented kink bands have not been determined, although it is thought that the sinistral kinks and the mega kinks formed in response to north–northwest to north-directed compression (Goscombe and Findlay, 1989).

Quartz veining and small-scale faulting are common, but the full details of these structures are unresolved. As outlined above, some quartz veins were produced during folding, and given the style of folding particularly complex vein arrays may be expected at fold hinges. Other thin quartz veins follow northeast-trending joints which appear to postdate folding, and statistically are oblique by about 10–15° to the northeast-trending sinistral kink bands. Other veinlets accompany some post-fold kink bands. Some planar quartz veins follow the regional cleavage, while other quartz veins are boudinaged or isoclinally folded within the plane-parallel cleavage in some pelitic units. Quartz veins containing arsenopyrite and gold follow post-fold faults.

Structural control of gold mineralisation

Hills (1923) suggested that the gold mineralisation was controlled by folding related to a west-dipping thrust fault which he postulated would crop out west of Mt Victoria. He envisaged that the lodes were restricted to the crest and limbs of an anticline in the upper thrust plate; one group of lodes was seen as restricted to crestal fissures, whereas the lodes in the limbs were supposed to occur in conjugate fracture systems related to the folding. No evidence has been found to support this, and Hills' thrust has not been confirmed.

Powell (1991) has also discussed the probable relationship between thrusting and gold mineralisation in the

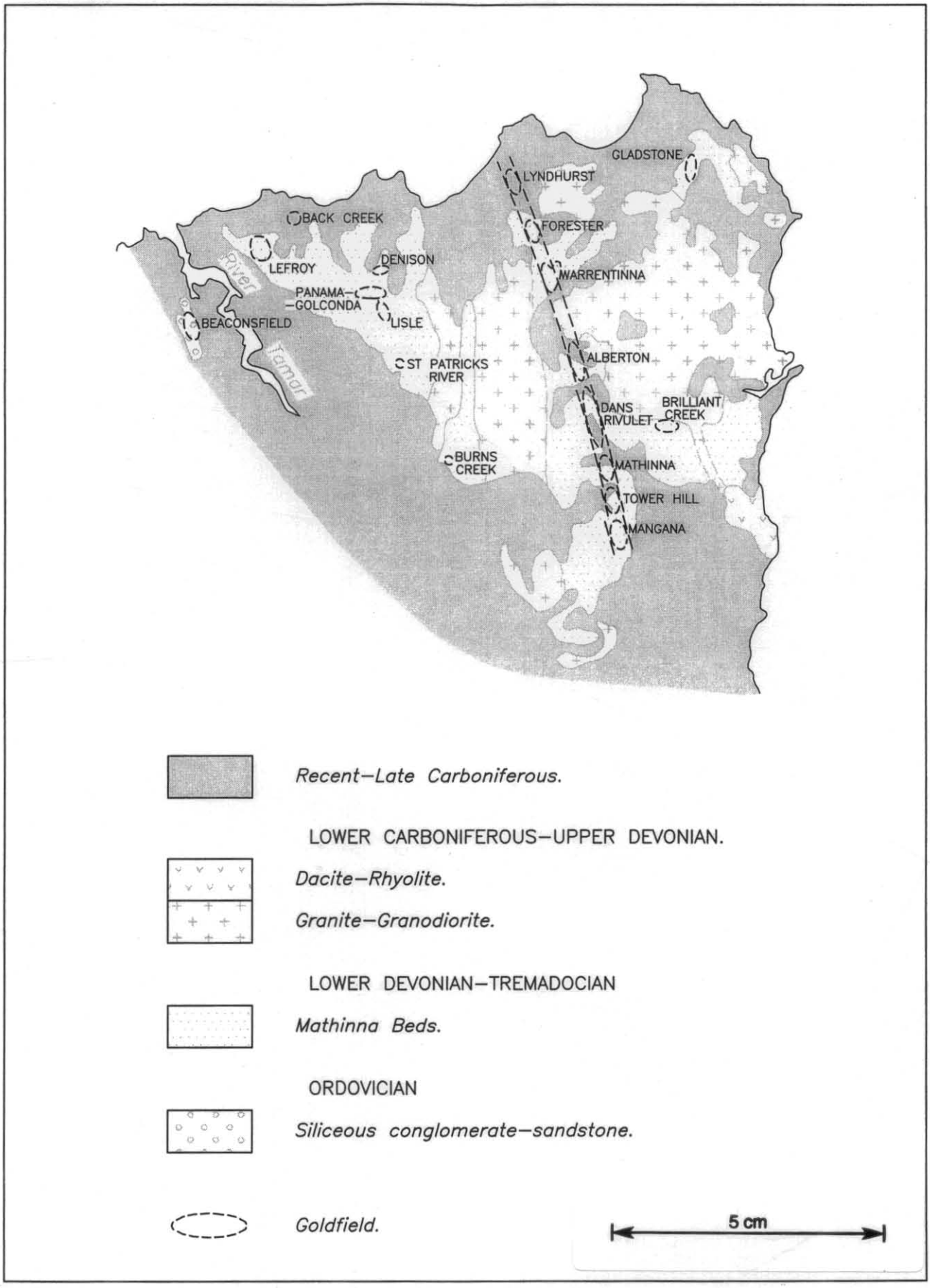


Figure 1

Location of goldfields, northeast Tasmania

TABLE 1

Gold Production, Alberton Goldfield

Deposit	Ore (t)	Gold (g/t)	Gold (kg*)
Alberton Quartz Mine (No. 1 and No. 2)	173	28	4.82
	47	12	0.55
Crown Prince	102	27	2.70
	10	28	0.28
	51	"Low"	-
Forest King (Jan's)	30	71	2.13
Bright Star	"First stone"	>29	?
	"Later Crushings" (Twelvetrees,1900)	~20	?
Brown's	10	71	0.71
Esk	4	15	0.060
Telegraph (Duke's)	6	7	0.04
Caxton	"Several Crushings" Twelvetrees (1904)	24	?
	30	28	0.84
	102	24	2.40
Tiger	102	28	2.8
	-	10	?
Pennefathers	14	30	0.42
	30	20	0.60
	51	?	-
McCaul	30	20	0.60
South Ringarooma	54	42	2.23
	19	66	1.25
	9	55	0.50
	12	32	0.39
	47	13	0.6
	47	12	0.55
Mt Victoria	?	20–60	145.76
New River	-	~30	130.83
Ragged Youth	?	20–50	7.34
New Mercury	94	10	9.20
	100	22	2.16
	109	10	1.07
Premier	-	~10	-
Ringarooma Gold Mining Co.	?	~30	255
Reform	17	1.4	0.24
	8	45	0.36
Mallunnah	38	20	0.74
Long Struggle	"Trial Crushing" (Twelvetrees, 1904)	95	-
		35	19.11
	59	50	3.00
Short Struggle	"Small Crushings" (Twelvetrees, 1904)	57	?
Frog	10	93	0.93
Boundary	5	2	0.11
New Mercury	-	-	46

* Recorded, quoted or estimated values.
References: Hills, 1923; Twelvetrees, 1900, 1904; McOnie, 1983.

Beaconsfield and Lefroy goldfields. At present it is not possible to correlate the thrusts discussed by Powell (1991) with structures in the Alberton–Mangana Lineament, although in view of the work by Powell and Baillie (1991), there is a clear need for structural analysis of the region between the Lefroy and Alberton–Mangana goldfields.

An alternative view presented here is that the mineralisation in the Mangana–Alberton goldfield may be caused by wrench faulting. It is emphasised that no obvious major wrench faults have been found. This idea is based on:

(1) the orientation of topographic lineaments between Mathinna and Mangana, the upper part of Dans Rivulet and Mathinna, and that formed by the Alberton Valley;

(2) the consistently restricted orientations of known gold lodes; and

(3) the offsets between the goldfields (fig. 2).

The topographic lineaments are here interpreted as following either major faults, or preferably broad fault zones in which the strain has been taken up in a broad zone on numerous minor faults. Each topographic lineament jogs right, and if formed as a dextral wrench system would produce extensional jogs at Mathinna, the head of Dans Rivulet, and at the northern end of the Alberton Valley. The Main Slide Lode at Mathinna may be interpreted as having formed as an extensional structure in such a system; likewise, the lodes in the northern end of the Alberton Valley. No data are known of such extensional structures in the alluvium-covered part of Dans Rivulet where an extensional jog is inferred.

The offsets between the Alberton, Dans Rivulet and Mathinna goldfields have been noted by Threader (1967), who proposed their offset on east-trending dextral wrench faults. These offsets are also consistent with the idea that the goldfields formed in extensional jogs in a dextral wrench system.

Finally, the restricted orientations of the gold lodes indicate that they follow faults related to such dextral shearing; given the proposed orientation of the proposed dextral faults, the gold lodes pick out what may be interpreted as a Riedel shear pattern related to such faulting. It is re-emphasised that this model needs further detailed field analysis before it can be proved.

GEOPHYSICS

Publicly-available geophysical information for the Alberton goldfield is basically limited to a reconnaissance regional gravity survey of Tasmania (Richardson and Leaman, 1987) and an aeromagnetic survey flown over the Mangana–Alberton area (Richardson, 1989). The aeromagnetic data were derived at a line spacing of 500 metres. The results indicated that the subsurface geology is dominated by the granodiorite bodies and the gold belt is marked by a magnetic low, related to a narrow depression in the magnetic basement (Richardson, 1989). On a small scale, an electromagnetic prospecting technique was also used to locate the southern extension of a few prospects including Rosiland, Premier, Gumsucker and Hannah (Oceania Tasmania Pty Ltd, 1985)

DRILLING

Only eleven diamond-drill holes have been drilled in the field, all of which were drilled by the Tasmania Department of Mines (Table 2).

Between 1932 and 1933 (Scott, 1933) four holes were drilled to intersect the Krushka and Prendergast Reefs at the northern end of the Alberton goldfield. The drill holes were relatively shallow, ranging from 51 to 65 metres. Several quartz veins up to 600 mm thick were intersected, but very few of the veins were assayed.

Three holes were drilled at the Long Struggle mine in 1937 (Blake, 1938). The first hole was horizontal and was drilled at the end of a northeast-trending crosscut at about 139 m from the main adit crosscut. The purpose was to intersect the northern extension of the Long Struggle Reef. Twelve 'lode matters' ranging in thickness from 150 mm to 1.5 m were intersected at different levels and were mostly analysed for gold and silver contents. The gold values in general were low (<4 g/t), however two lodes with widths of 600 and 150 mm yielded about 92 and 39 g/t Au respectively. A core sample containing 'coarse free gold' was not assayed.

The second hole was drilled in the same position as the first drill hole but at an angle of 55° and to a depth of about 69 metres. Two 'lode matters', about 600 mm wide, were intersected but showed only 'traces' of gold and silver.

The third hole was positioned 16 m along the northeasterly crosscut from the end of the main adit crosscut. It was abandoned after drilling 12 m in sandstone and slate without intersecting any lodes.

Hughes (1952*b*) proposed a drilling programme for an area to the south of the Long Struggle and Caxton workings. However this proposal did not eventuate.

Four holes, ranging from 263 to 314 m deep, were drilled in the Alberton area between 1966 and 1970. The drilling indicated sporadic quartz veining associated with minor disseminated sulphides in sandstone and phyllite, but in general the drilling failed to intersect any significant gold mineralisation, with the best value recorded as 'trace'. Base metal contents are also low (<2 g/t Ag, 0.04% As, 0.04% Pb and 0.09% Zn; Threader and Bottrill, in prep.).

Three 'electric drill holes' were drilled to determine the depth of 'sediments' in the Alberton River valley and also to investigate whether a distinction can be made between 'barren Ringarooma shingle and gold-bearing birdseye quartz wash'. This investigation could not make any distinction between the barren and gold-bearing quartz wash (Oceania Tasmania Pty Ltd, 1985). The report, in general, describes neither the 'sediments' nor their depth.

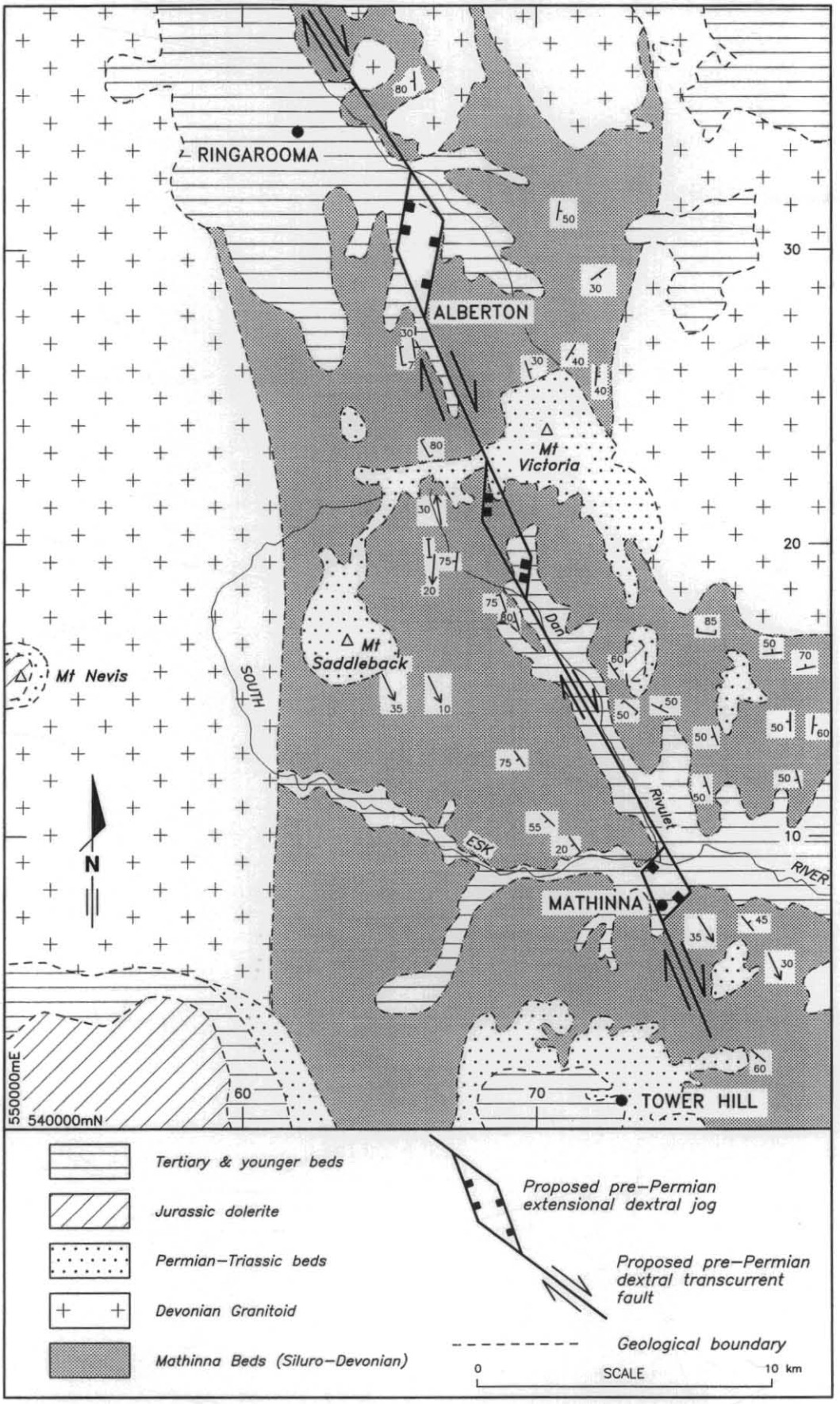


Figure 2

Simplified geology of Tower Hill – Ringarooma area, showing proposed pre-Permian extensional dextral jog and dextral transcurrent fault

5 cm

TABLE 2

Summary of diamond drilling in the Alberton Goldfield

DDH No.	Co-Ordinates/Location	Total Depth (m)	Year	Reference	Remarks
Alberton No.1	563 610 mE; 5 426 159 mN	296.3	1966–67	Threader 1967	Hole abandoned due to jamming of rods.
Alberton No.2	563 528 mE; 5 426 139 mN	262.7	1967–68	Threader 1967	Nil to trace of gold.
Alberton No.3	563 682 mE; 5 426 620 mN	313.9	1968–69	Threader, TDM drill log, 1969	
Alberton No.4	180m SW of DDH No. 3	291.4	1969–70	Threader, TDM drill log, 1970	
No.1	Long Struggle mine area	88.4	1937	Blake, 1933	Horizontal hole. Gold grades up to 90 g/t.
No.2	Long Struggle mine area	68.6	1937	Blake, 1938	Traces of gold and silver.
No.3	Long Struggle mine area	11.0	1937	Blake, 1938	Abandoned without intersecting any quartz veins.
No.1	Krushka mine area	61.0	1932–33	Scott, 1933	
No.2	320 m south of No. 1	63.5	1932–33	Scott, 1933	Nil gold content
No.3	Prendergast mine area	65.0	1932–33	Scott, 1933	Hole was drilled to cut the Prendergast lode at depth.
No.4	Prendergast mine area	51	1932–33	Scott, 1933	

GEOCHEMISTRY

Geochemical studies are limited to some stream-sediment and rock-chip sampling programmes. As a part of regional study undertaken by Billiton Australia (Randell, 1991), some twenty stream-sediment and twelve rock-chip samples were analysed for gold and other elements such as Ag, Cu, Pb, Zn, As, Ba and Bi.

Three anomalous stream-sediment sample sites showing gold values of 3.9 and 2.9 ppm (pan concentrate) and 0.27 ppm (-80# sediment fraction) were identified. The AMG co-ordinates for these sites were 5 426 700 mN–566 590 mE, 5 430 500 mN–567 750 mE, and 5 420 540 mN–568 690 mE respectively. The gold values from rock-chip sampling were less than 0.03 ppm, with the exception of two samples showing gold values of 0.12 ppm and 5.4 ppm. The samples were taken from "sheeted quartz veins within shear zones" and "quartz stockwork system over 75 m within the Mathinna Metasediments" (Randell, 1991).

According to Bendall (1986), limited geochemical analyses were also undertaken by 'Minstock'. Bendall (1986) stated "A number of grab samples of dump material were collected from the old workings and analysed for gold with a number of encouraging results being obtained as follows:

- Two samples from the Mercury mine yielded 2.96 g/t gold and 19.4 g/t gold.
- A sample from Hannah mine yielded 4.6 g/t.
- Two other samples contained less than 0.1 g/t gold.
- A sample from the Cross lode workings assayed 3.3 g/t gold. Of the three other samples collected from this mine the best value was 0.28 g/t.
- A sample from the Point adits yielded 9.1 g/t gold and a second sample returned 1.38 g/t gold".

As a reconnaissance study, eleven rock-chip samples were taken for gold analysis from seven mines, including the Premier, Mercury, Cannon, Ringarooma United and the Long Struggle (Morrison, 1981). The gold values were less than 0.3 g/t, with the exception of a sample showing 1.8 g/t of gold.

Some 95 samples (rock chip and channel) were also taken from various mines and were analysed for Cu, Pb, Zn, Ag, Bi, As and Au (Herrmann, 1987, appendix 3). The samples were collected mainly from sheared and faulted zones and consisted of composite samples (i.e. quartz veins and country rock) or quartz veins of different morphology, width and possible different generations. The gold values ranged from 0.08 to 53 g/t, although about 75% of the values are less than 0.5 g/t with a few being between 1 to 5 g/t. The higher values are mainly from the quartz veins rather than composite samples.

The relationships between the concentration of gold and those of As, Pb, Zn and Cu are shown in Figure 3. However care must be taken in interpreting the data, as some of the samples were probably weathered and if so, the metal contents may not represent the actual lode values. There is a positive correlation between Au and As and Pb concentrations (figs 3a and 3b). According to Figure 3a, samples with greater than 0.2 g/t of gold are mostly those which contain at least 0.2% As. Gold concentrations, however, do not show any systematic relationships with those of Zn and Cu (figs 3c and 3d). However this may simply represent weathering effect. The results from rock-chip analyses from Forester and Warrentinna (Herrmann, 1987) also indicate similar relationships between Au and As, Pb, Zn and Cu (fig. 3).

In general, systematic sampling with larger, more representative sample sizes is required to:–

(a) distinguish the barren from gold-bearing quartz veins;

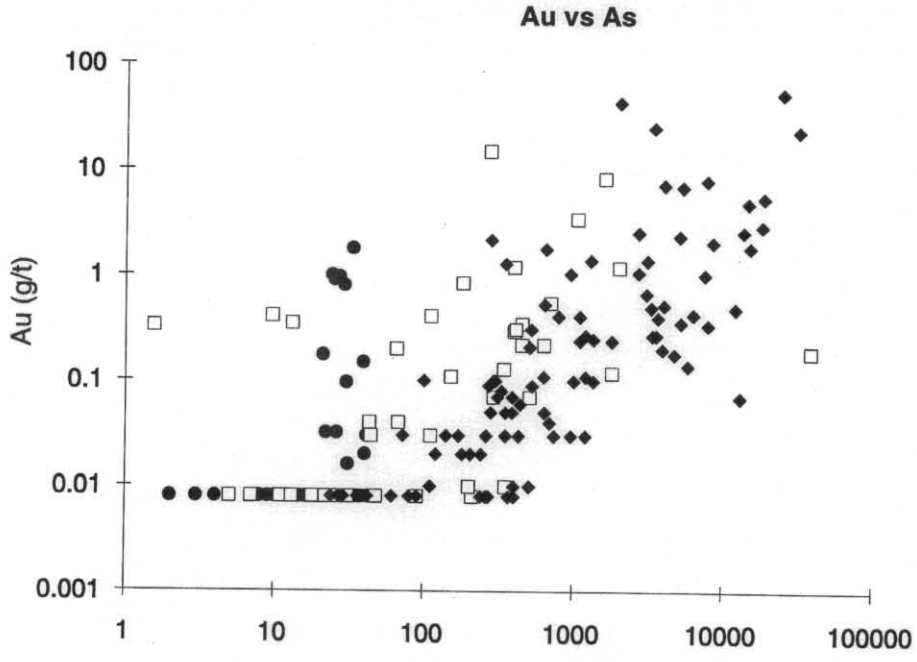


Figure 3a

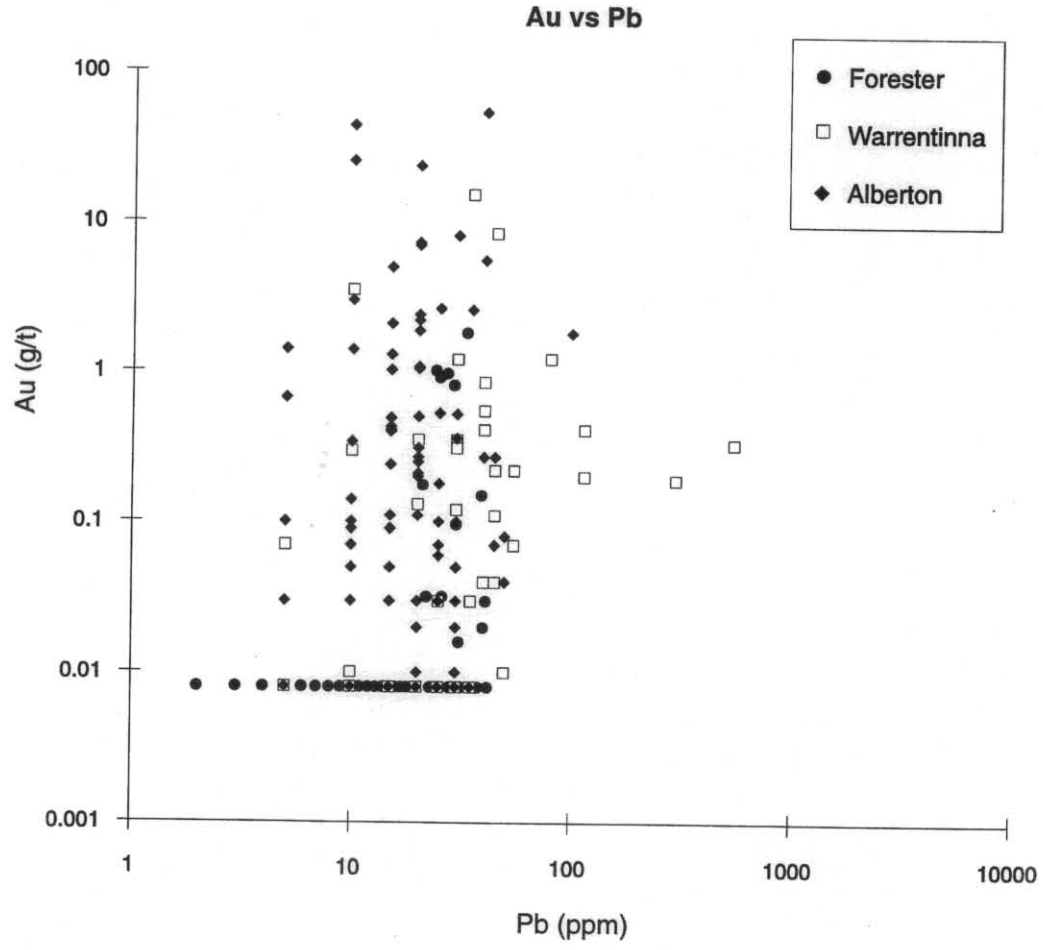
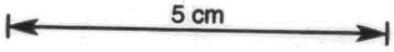


Figure 3b

Figure 3

Variation diagrams showing the relationships between gold and As, Pb, Zn and Cu from quartz lodes (quartz veins ± wall rocks), Alberton goldfield. Data from Herrmann (1987).



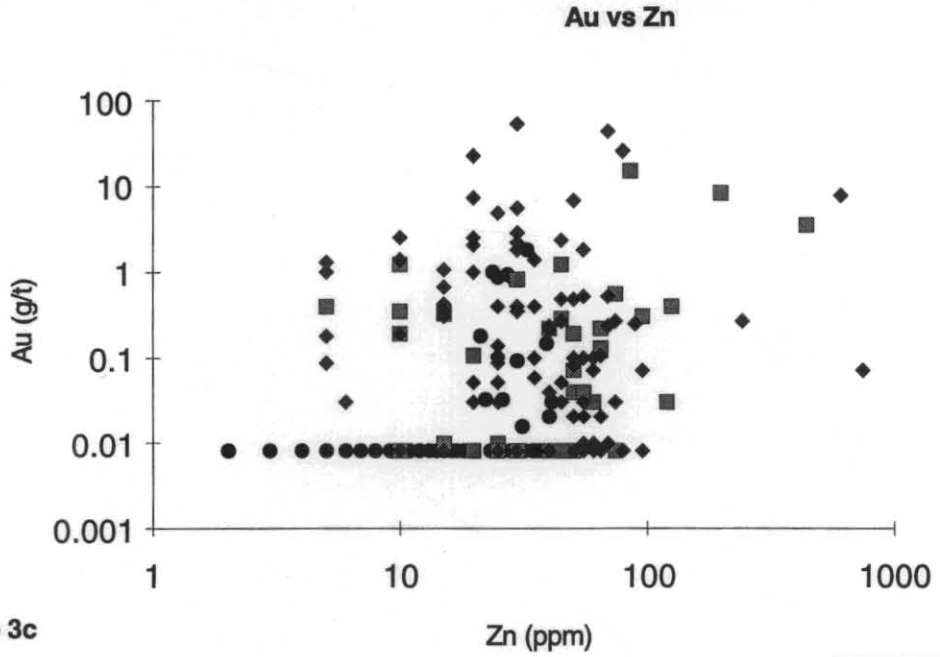


Figure 3c

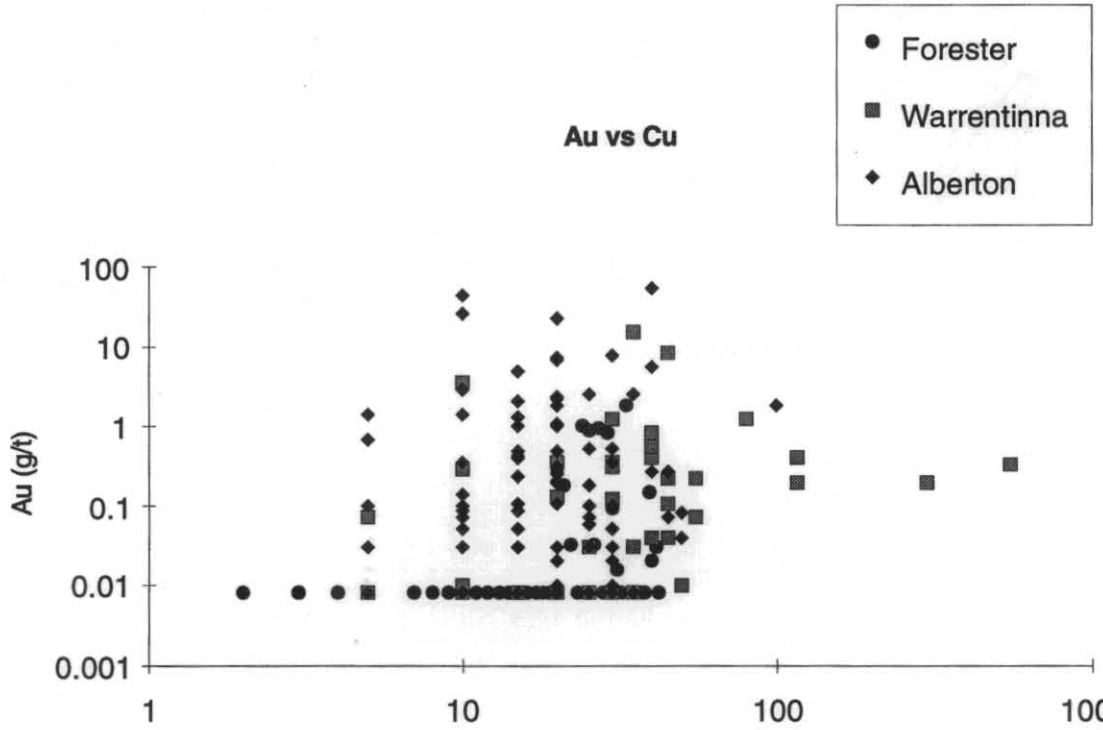
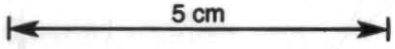


Figure 3d

Figure 3 (continued)



(b) determine the actual values of the metals over a particular width or length of lodes; and

(c) be able to establish the actual relationship between gold contents and the base metals.

Proper, systematic geochemical analyses combined with field and petrographical studies should provide answers to some of the fundamental questions such as:–

(a) is gold associated with a particular generation or type of quartz veining?

(b) was gold formed in the same stage as the hosting quartz vein?

(c) was gold introduced in one stage in association with sulphides?

(d) can the concentrations of sulphides, particularly arsenopyrite and galena, be reliably used as gold indicators?

It is also important to mention that almost all of the recent sampling has been only from accessible old workings, where

none or very little of the original gold-bearing lodes is left. Surely most of the exposed veins in these workings must have been already tested by early prospectors. This is clearly seen in most of the recent samplings, where the gold values from the prospects which used to be well known for high gold content are very low. In contrast, the gold values at depth or in some prospects which were abandoned due to financial or technical problems are still poorly known in the field. There are also some prospects with relatively high gold values which are either inaccessible or have not yet been located. Therefore, sampling from presently accessible workings may not necessarily indicate the actual gold content or the gold potential of the field. The exposed rocks may still be used to understand the genesis of the gold mineralisation through detailed structural, geochemical, petrological and fluid inclusion studies.

MINERALISATION

Primary

The Alberton goldfield occurs in the middle of a NNW-trending gold-bearing belt about one kilometre wide and approximately 90 km long which runs from Mangana in the south to Lyndhurst on the north coast.

Up until the late 1960s gold mineralisation in the Alberton goldfield was studied by many workers including Thureau (1883, 1884), Twelvetrees (1904), Hills (1923), Reid (1925) and Threader (1967). However no systematic studies of the area have been carried out in recent years. As a result, the genesis of gold mineralisation and structural features which may control the distribution of gold-bearing quartz veins are still poorly understood. The locations of gold deposits within the Alberton goldfield are shown in Figure 4 and Appendix 1, and are briefly described in Appendix 2.

The following is a brief summary of the gold mineralisation described by the above-mentioned authors.

The Alberton goldfield appears to have higher density of quartz veins than the other goldfields in northeast Tasmania, and the mines commonly worked on more than one lode (e.g. Mercury mine, Ringarooma United mine, see Appendix 2 for description). Most of the gold prospects are located to the east of the Dorset River on the northern and western flanks of the Mt Victoria (fig. 4).

According to Twelvetrees (1904), rocks are more carbonaceous close to reefs and in places they occur as inclusions in quartz. Slate is commonly black in colour in close proximity to reefs whereas it is brown to yellow in colour away from the veins.

Based on Hughes' (1952*a*) observations, there is no post-mineralisation faulting of any significant scale and the veins have rarely been displaced more than a metre or so. Quartz appears as massive to well-developed crystals and mainly occurs as veins showing well-defined walls. However in places, intensely-fractured country rocks, mainly quartzite, have been healed by quartz, giving a stockwork style of veining (e.g. Long Struggle mine area).

Gold occurs in quartz veins of possibly different generations. The veins trend in two main directions, northwest and southwest (fig. 4), with the latter dominating the field.

The quartz veins commonly range from 100 to 600 mm thick, although veins up to 1.5 m wide also occur in the field. In general, there is no correlation between the width of the gold-bearing quartz veins and their gold contents.

The maximum vertical and horizontal extensions of the veins are not known. They appear to be discontinuous, however at the Point Prospect area (see fig. 4 for location), a reef could be traced for over 400 m and there are also several other veins with a prospected length of up to 100 m or more. In general none of the lodes appear to be continuous throughout the field, but there are series of parallel reefs with unknown maximum length.

Most of the quartz veins were worked to shallow depths of less than 60 m, with the exception of a few mines in which the lodes were worked to greater depths. The maximum vertical extension of worked lodes at the Ringarooma United mine is about 119 metres. Hills (1923) believed that some of the lodes were likely to continue to greater depths, and based on 'geological evidence' he recommended two dip sinkings at the Ringarooma and the Mercury mines, where a few shallow shafts were already sunk. However this did not eventuate. Other lodes with a high possibility of being continuous at greater depths include the Prendergast, Forest King and the Long Struggle group.

Mineralogically, quartz veins may contain arsenopyrite, pyrite, galena, minor sphalerite and gold, with arsenopyrite and pyrite being the most common sulphide minerals. The concentration of sulphides in quartz veins varies from nil to a few per cent or higher. Quartz veins with fine, disseminated sulphides are characterised by a blue-grey colour.

The gold content of the quartz veins varies widely, and whether gold mineralisation is restricted to a particular generation or type of quartz is yet to be established. Extremely gold-rich veins have been reported in the field. For example, Hughes (1952*a*) reported the occurrence of a quartz vein about 25 mm wide at the Rich Youth Prospect (see fig. 4 for location) which yielded about 85 g/kg of gold to a depth of about two metres. In general, it appears that wider quartz veins may contain less gold, but exhibit more consistent gold values laterally or vertically.

Hughes (1952*a*) considered that gold has been formed in two different stages, an early-formed gold associated with sulphides and a later-formed 'free gold' which has been introduced into the fractures by a late hydrothermal solution.

As most of the lodes were worked to shallow depths it was believed that high gold contents resulted from processes such as oxidation and leaching of sulphides or leaching and reprecipitation of gold in near-surface rocks. There is no evidence for secondary enrichment of gold at shallow depths with the exception of the oxidation of sulphides at or near surface, but this is not a major process and fresh sulphides are often observed close to the surface, well above the levels where good gold values have been reported.

The possible structural controls on the distribution of gold-bearing quartz veins have been discussed by Hills (1923), Blake (1933), Hughes (1952*a*), Threader (1967), Findlay (*in* Taheri, 1992) and Bottrill *et al.* (1992).

According to Hills (1923) the gold mineralisation is controlled by folding related to a NNW-dipping thrust fault, and the reason for the absence of gold lodes to the west of the Dorset River is that the anticline occurs on the east side of the river. He considered that all the lodes were concentrated on the crest and limbs of this anticline and are of two types:

Type 1: The lodes that concentrated near the crest of the anticline and were formed due to tensional fissuring. They are generally limited both in length and depth, but may contain 'good gold values'.

Type 2: The lodes which have been formed by faulting due to a regional 'compressive force' and are of more significance as they may be continuous at greater depth.

Blake (1933) discussed the possible lithological effect on the distribution of the ore bodies and could not find any structural features which might control the distribution of the lodes.

Hughes (1952*a*) interpreted that the lodes form the western limb of an anticline striking NNW which has subsequently been subjected to cross folding, and that the greatest density of the quartz veins occurs where the cross folding is most intense (e.g. in the vicinity of the Forest King–Ringarooma, Mercury, Long Struggle–Mt Victoria and Central–New River systems of reefs, see fig. 4 for locations).

The ultimate source of gold-bearing solution was interpreted both by Hills (1923) and Hughes (1952*a*) to be the underlying granitoids.

Threader (1967) concluded that the gold mineralisation is related to shear zones rather than folding and emplacement of granitoid bodies.

Findlay (*in* Taheri, 1992) postulated that the topographic lineaments follow major faults in northeast Tasmania which jog progressively right northward. In this model each lineament is formed as a dextral wrench system, producing extension jogs which formed sites for deposition of quartz, sulphides and gold (fig. 2). Preliminary fluid inclusion and oxygen isotope studies undertaken in the Mathinna and Alberton goldfields (Bottrill *et al.*, 1992) suggested that the gold-bearing quartz veins were probably derived from metamorphically-derived fluids. However it was recognised that more detailed work was needed to substantiate this model.

Placer Gold Deposits

The potential for the occurrence of alluvial gold deposits in the Alberton goldfield has not been studied in any great detail, and available information is basically limited to early reports such as Hills (1923), Nye (1933), and Hughes (1952*a*). There is no record of the alluvial gold production from the area.

In general, the alluvial ground around the New River and Dorset River has good potential for economic alluvial gold deposits as there is about a 300 m difference in elevation between the base of the Permian below Mt Victoria and the flats around these rivers. The eroded rocks between these two levels would have contained gold-rich quartz veins from which the gold has been released into the alluvium, and at least some of the released gold must have been deposited within the area.

Hills (1923) suggested two localities with high potential for alluvial gold deposits, one near the Homestead and Tiger lodes and the other along the Dorset Valley. In particular he referred to an area above the Becker's lode at Alberton and near the junction of the creek flowing from Ringarooma. Some of the areas appear to have been unsuccessfully prospected for alluvial gold through difficult and expensive methods such as shaft sinking (Hills, 1923).

The Fowler alluvial gold deposit appears to be the only known deposit in the Alberton goldfield. It occurs about 800 m north of Alberton and includes the flats along the lower portion of the Ringarooma and the Forest Ring Creeks. Nye (1926) estimated that around 500 m of 'Cambro-Ordovician' rocks and their contained quartz reefs have been removed and passed down the streams from the area. He then concluded that a considerable quantity of gold must have been released into the valleys of the Ringarooma and Forest Ring Creeks, some of which has been deposited on the flats. The main workings included a deep tail-race about 250 m long, and at least nine shallow shafts. According to Nye (1933), gold was obtained in places at depths of around 1.5 to 6 metres. The alluvial deposits were found to be 'payable prospects'.

Hughes (1952*a*) stated that "boring has revealed a Tertiary Deep Lead near the New River Prospect". Early shallow workings in Recent alluvium have also been stated by Hughes (1952*a*) to have yielded good gold returns. However the number of bores and the locations of the workings were not mentioned.

The field clearly needs a regional and systematic investigation if any gold deposits of economic significance are to be found.

REFERENCES

BENDALL, M. R. 1986. *Alberton goldfield. El23/82. Annual report May 1986.* Oceania Tasmania Pty Ltd [TCR 86-2562].

BISHOP, D. G. 1972. Progressive metamorphism from prehnite-pumpellyite to greenschist facies in the Dansey Pass area, Otago, New Zealand. *Bull. geol. Soc. Am.* 83:3177–3197.

BLAKE, F. 1933. Preliminary report on New River goldfield. *Unpublished Report Tasmania Department of Mines* 1933:104–114.

BLAKE, F. 1938. Boring at Long Struggle mine – Alberton. *Unpublished Report Tasmania Department of Mines* 1938:1–4.

BOTTRILL, R. S.; HUSTON, D. L.; TAHERI, J.; ZAW, K. 1992. Gold in Tasmania. *Bulletin Geological Survey of Tasmania* 70:24–47.

GOLDNER, P. AND ASSOCIATES. 1986. An evaluation of the Alberton goldfield, *in* BENDALL, M. R. *Alberton goldfield, EL 23/82, Annual Report.* Oceania Tasmania Pty Ltd. [TCR 686-2562]

GOSCOMBE, B. D.; FINDLAY, R. H. 1989. Mega-kinking in the Mathinna Beds, north-east Tasmania. *Report Tasmania Department of Mines* 1989/42.

HERRMANN, W. 1987. Report on reconnaissance mapping and sampling of EL 17/86, *in* ROBERTS, P. A. *Annual report for 1986–87, Branxholm area.* Gold Fields Exploration Pty Limited. [TCR 87-2735]

HILLS, C. L. 1923. The Mount Victoria goldfield. *Unpublished Report Tasmania Department of Mines* 1923:35–66.

HUGHES, T. D. 1952*a*. The Alberton goldfield. *Unpublished Report Tasmania Department of Mines* 1952:50–54.

HUGHES, T. D. 1952*b*. Proposed boring, Long Struggle area, Alberton. *Unpublished Report Tasmania Department of Mines* 1952:61

MCONIE, A. 1983. *A review of the gold potential of north eastern Tasmania.* Gold Fields Exploration Pty Ltd. [TCR 90-3140]

MORRISON, K. C. 1981. *Report on preliminary investigations by Amdex Mining Ltd, EL7/80. [Alberton goldfield].* Amdex Mining Ltd. [TCR 81-1535]

NYE, P. B. 1926. Report on A. L. Fowlers alluvial deposit, Alberton. *Unpublished Report Tasmania Department of Mines* 1926:58–60.

NYE, P. B. 1933. Preliminary report. The Ringarooma United mine. *Unpublished Report Tasmania Department of Mines* 1933:157–158.

OCEANIA TASMANIA PTY LTD. 1985. *Alberton goldfield. EL 23/82.* Oceania Tasmania Pty Ltd. [TCR 85-2423]

POWELL, C. MCA. 1991. Structure of the Beaconsfield and Lefroy goldfields. *Report Division of Mines and Mineral Resources Tasmania* 1991/16.

POWELL, C. MCA.; BAILLIE, P. W. 1991. Tectonic affinity of the Mathinna Group in the Lachlan Fold Belt. *Tectonophysics* 214:193–209.

RAMSAY, J. G. 1974. Development of chevron folds. *Bull. geol. Soc. Am.* 85:1741–1754.

RANDELL, J. P. 1991. *Reconnaissance gold exploration, north east Tasmania 1989/90.* Billiton Australia. [TCR 92-3337]

REID, A. M. 1925. The properties of the Ringarooma Gold Mining Company, Alberton, Tasmania. *Unpublished Report Tasmania Department of Mines* 1925:119–129.

RICHARDSON, R. G. 1989. The Mangana – Alberton aeromagnetic survey, a preliminary interpretation. *Report Tasmania Department of Mines* 1989/19.

RICHARDSON, R. G.; LEAMAN, D. E. 1987. TASGRAV – The Tasmanian gravity database. *Unpublished Report Tasmania Department of Mines* 1987/02.

SCOTT, J. B. 1933. Notes on the boring campaign at the northern end of the Alberton field (New River). *Unpublished Report Tasmania Department of Mines* 1933:69–70.

TAHERI, J. (comp.) 1992. Northeast goldfields: a summary of the Tower Hill, Mathinna and Dans Rivulet goldfields. *Report Tasmania Department of Mines* 1992/10.

THREADER, V. M. 1967. *The geology of the Mangana – Waterhouse goldfields with particular reference to structure and mineralisation.* M.Sc. Thesis, University of Tasmania : Hobart.

THUREAU, G. 1883. Report on the recently discovered goldfield at Mount Victoria, Country of Dorset, Tasmania. *House of Assembly Paper Tasmania* 1883(50).

THUREAU, G. 1884. Report on the Mount Victoria, Dan Rivulet, Black Boy and Mangana gold fields, also remarks after the examination of the Tullochgorum prospecting area. *Parliamentary Paper Tasmania* 1885(61).

TWELVETREES, W. H. 1900. Report on the north Mount Victoria goldfield. *Report Secretary for Mines Tasmania* 1899–1900:xvii–xxx.

TWELVETREES, W. H. 1904. *Report on the Mount Victoria goldfield.* Department of Mines, Tasmania.

[8 April 1994]

APPENDIX 1

Summary of gold deposit locations, Alberton goldfield

Mine/Prospect	*Deposit No.*	*Location*	
		mE	*mN*
Reform No. 1	1	567 070	5 426 440
Reform No. 2	2	567 080	5 426 410
Reform No. 3	3	567 080	5 426 370
Telegraph	4	567 200	5 426 310
Ragged Youth	5	567 080	5 426 680
Battery	6	567 340	5 426 320
Rich Youth (Blende)	7	567 120	5 426 340
New Wilson	8	567 410	5 426 390
Long Struggle	9	567 320	5 426 130
Caxton No. 1	10	567 350	5 426 140
Martin's Cross	11	567 220	5 426 170
Beckers	12	567 370	5 426 040
Scotchman	13	567 420	5 425 980
Marrs	14	567 130	5 425 870
Mt Victoria	15	567 470	5 425 850
Montana	16	567 440	5 425 830
Mammoth No. 1	17	567 500	5 425 000
Mammoth No. 2	18	567 550	5 424 900
Bright Star	19	567 120	5 424 920
South Star	20	567 180	5 424 300
Everetts	21	567 410	5 423 680
Esk	22	567 580	5 424 450
Cobbings (Crown)	23	567 110	5 426 390
Mercury No. 1	24	567 060	5 426 630
Mercury No. 2	25	567 080	5 426 720
Point	26	566 840	5 426 530
Boundary	27	566 850	5 426 470
Martins	28	566 980	5 426 530
Frog	29	567 000	5 426 940
?	30	566 690	5 430 560
Strahan	31	567 000	5 427 720
Fowler	32	566 970	5 427 810
Endeavour	33	566 970	5 427 890
Magg or Roaring Mag	34	567 000	5 427 890
McCaul's	35	566 930	5 427 800
Cannon	36	567 150	5 428 030
Long Shaft	37	566 720	5 427 800
Rosalind (Gumsucker)	38	566 750	5 427 960
Cross	39	566 810	5 427 890
Bank (Hanah)	40	566 900	5 427 800
Plum-Pudding	41	566 890	5 427 910
Cake	42	566 910	5 427 920
Nelson (Soft Spur Lodes)	43	566 860	5 427 890
Stake	44	566 720	5 428 500
Forest King (or Jan)	45	566 830	5 428 400

Mine/Prospect	*Deposit No.*	*Location*	
		mE	*mN*
Alberton No. 1	46	566 690	5 428 540
Alberton No. 2	47	566 690	5 428 480
Crown Prince	48	567 150	5 428 360
Singline	49	567 450	5 429 750
Standard	50	566 800	5 429 690
Crest	51	566 620	5 429 640
Reserved	52	566 780	5 429 640
Central Ringarooma	53	566 830	5 429 450
Pennefather	54	566 660	5 429 540
Almora	55	566 620	5 429 160
'A1' (McCaul's)	56	566 700	5 429 250
Mallunah (Mullunah)	57	566 470	5 428 910
Holloway No. 1	58	566 620	5 428 840
Holloway No. 2	59	566 670	5 428 910
Tiger	60	567 280	5 429 810
Singline 'B'	61	567 260	5 429 600
Singline 'A'	62	567 250	5 429 680
No. 3	63	567 090	5 429 650
No. 5	64	567 040	5 429 610
Drunkard's Dream	65	567 170	5 429 860
Sulphide	66	566 950	5 430 060
Brown's	67	566 830	5 430 060
Mystery	68	566 830	5 429 990
No. 1 Lode	69	567 400	5 430 100
?	70	566 970	5 430 650
Homestead	71	567 140	5 430 340
Burr's	72	567 050	5 429 160
Sowell's	73	566 940	5 428 950
Jimmie Governor	74	566 810	5 429 010
Endurance?	75	566 700	5 428 380
?	76	567 170	5 430 390
Queen	77	566 750	5 428 440
Duke's	78	566 920	5 427 620
Baltic Searles	79	566 730	5 427 810
Golden Hinges	80	566 590	5 427 310
New River (Prendergast)	81	566 860	5 429 750
Cook's	82	566 620	5 429 380
Lane's	83	566 670	5 429 360
Premier	84	566 920	5 427 940
?	85	567 110	5 430 400
Chatterbox (Big Blow), Malmsbury	86	566 720	5 427 720
Bobby Evans	87	566 843	5 426 910
Searl's	88	566 970	5 426 550
Hope	89	567 280	5 426 540
Flat	90	567 270	5 426 330
Caxton No. 2	91	567 480	5 426 280
Short Struggle	92	567 350	5 426 080
Central	93	567 440	5 425 850
New River (alluvial)	94	568 000	5 430 000

Mine/Prospect	*Deposit No.*	*Location* mE	mN
McCaul's Little Show	95	567 360	5 424 170
Farrell	96	567 360	5 423 231
Dark Horse (Black Horse)	97	567 050	5 426 470
Mt Victoria (alluvial)	98	566 000	5 428 000
Martin's Cross	99	567 310	5 426 060
Battery	100	567 150	5 430 230
Singline No. 1	101	567 340	5 430 000
Bodyline	102	566 800	5 429 680
?	103	566 870	5 428 860
?	104	566 700	5 428 430
?	105	566 740	5 429 220
Packhorse	106	567 510	5 425 590
Victoria United	107	566 720	5 428 360
?	108	566 690	5 428 390
Cricket Field	109	566 280	5 427 620
Merrick's	110	566 750	5 427 410
West Dorset	111	566 840	5 426 160
Mammoth No. 3	112	567 560	5 424 850
Cottons Point	113	563 000	5 424 000
Dorset River (alluvial)	114	570 000	5 430 000
Crown Prince Creek (alluvial)	115	567 120	5 430 960
(alluvial)?	116	567 000	5 430 800
McCaul's	117	567 640	5 424 530
?	118	566 690	5 428 190
?	119	566 720	5 427 810
Cotton's	120	563 000	5 425 800
Heathorn's	121	569 500	5 428 500
?	122	564 900	5 430 700
?	123	565 600	5 431 980
?	124	565 200	5 431 200
?	125	564 820	5 431 050
Krushka	126	566 730	5 430 860
Stingel's Reef	127	567 200	5 426 140
New Reef	128	567 250	5 426 140
South Esk River (alluvial)	129	566 000	5 428 000s

APPENDIX 2
Summary of gold deposits

Prospect: CROWN PRINCE

Location: 567 150 mE, 5 428 540 mN

Style of mineralisation:

Quartz veining (fault fissure), striking 50° and dipping southeast.

References:

Twelvetrees, 1904, 1900; Hills, 1923; Herrmann, 1987.

Summary:

The workings consist of an adit and a shaft to a depth of 27 metres. The lode consists of 0.8 to 1.8 m wide zone of brecciated quartz-arsenopyrite and sandstone. The average gold content was around 28 g/t, but decreased at depth. Total recorded gold production is about three kilograms. One channel sample taken across the lode assayed 0.49 g/t Au and 1.2% As (Herrmann, 1987).

Prospect: PENNEFATHER'S LODE

Location: 566 660 mE, 5 429 540 mN

Style of mineralisation:

Fault fissure, striking 310° and dipping southwest.

References:

Twelvetrees, 1900, 1904; Hills, 1923.

Summary:

The lode is about 21 m long and up to 300 mm wide. A shaft to a depth of 37 m was sunk on the lode. A crushing of 30 tonnes of quartz yielded 594 grams of gold (Twelvetrees, 1904). Hills (1923) reported crushing results of around 39 g/t gold at the beginning but mining ceased due to the lack of an efficient ventilation system. Minimum gold production was about one kilogram.

Prospect: ALMORA

Location: 566 620 mE, 5 429 160 mN

Style of mineralisation:

Fault-fissure filling, striking 25° to 50°.

References:

Twelvetrees, 1900, 1904; Hills, 1923

Summary:

Workings included several shallow shafts. The quartz lode was about 88 m long and 250 to 600 mm wide. The indicated gold value is 4.5 g/t.

Prospect: **A1**

Location: 566 700 mE, 5 429 250 mN

Style of mineralisation:

Fault related fissure filling, striking 50° and dipping southwest.

References:

Twelvetrees, 1900, 1904; Hills, 1923

Summary:

The worked lode varied in width from 150 to 600 mm and was 10 m long. Gold values of crushings have been 'a little under' 28 g/t. A shallow shaft was sunk but very little stoping carried out. The lode contains pyrite and arsenopyrite.

Prospect: **ENDEAVOUR**

Location: 566 970 mE, 5 427 890 mN

Style of mineralisation:

Quartz vein, striking 5° to 30° and dipping southeast.

References:

Hills, 1923

Summary:

The lode is about 250 mm wide and appears to carry gold values of around 28 g/t.

Prospect: **MALLUNNAH (MULLUNNAH)**

Location: 566 470 mE, 5 428 910 mN

Style of mineralisation:

Mineralised fault fissure, striking 25° and dipping southwest.

References:

Twelvetrees, 1900, 1904; Hills, 1923; Herrmann, 1987.

Summary:

The reef was 1.2 m wide and 6 m long on the surface. The length increased to 27 m at a depth of 17 m, but at this depth the lode was merely a thread. Crushings yielded about 9 g/t of gold. The gold values appear to have been erratic and the reef was rich in arsenopyrite. A crushing of 27 tonnes of quartz yielded 0.74 kg of gold. The lode thickened to the south and about 15 t of quartz containing 34 g/t Au was recovered through sinking two shafts.

Prospect: **HOLLOWAY NO. 1**

Location: 566 620 mE, 5 428 840 mN

Style of mineralisation:

Quartz vein, striking 20° and dipping southeast.

References:

Hills, 1923.

Summary:

Trenching indicated a lode of 71 m length and up to 300 mm wide. The width of the lead increased with depth to a maximum of 300 mm. 'Good' gold values have been indicated, but no major work was carried out.

Prospect: **CENTRAL RINGAROOMA**

Location: 566 830 mE, 5 429 450 mN

Style of mineralisation:

Quartz vein, striking 20°.

References:

Twelvetrees, 1900, 1904; Herrmann, 1987.

Summary:

A 60 m long tunnel was driven on a quartz vein ranging in width from 100 to 600 mm. The gold values appeared to be around 20 g/t and the vein was rich in arsenopyrite. Two samples from "the best development near the inner end of the adit" yielded 0.03 and 0.05 g/t Au (Herrmann, 1987).

Prospect: **ESK**

Location: 567 580 mE, 5 424 450 mN

Style of mineralisation:

Quartz vein, striking 105° and dipping northeast.

References:

Twelvetrees, 1900, 1904; Hills, 1923; Herrmann, 1987.

Summary:

Workings included a 91 m long tunnel and a shallow shaft. The reef was about 900 mm wide and 60 m long. The quartz in the reef was about 200 mm wide. Gold values are not known. The average gold content appears to have been at about 15 g/t (Twelvetrees, 1904). Recent analyses include a 'representative' chip sample from a quartz vein and channel sampling over 0.5 m width from a network of veinlets which yielded 7.23 and 0.03 g/t Au respectively (Herrmann, 1987).

Prospect: **LONG STRUGGLE**

Location: 567 320 mE, 5 426 130 mN

Style of mineralisation:

Quartz vein, No. 1 reef 320°/50° NE, Whip Shaft Reef No. 2 45°/45° NW

References:

Hills, 1923; Twelvetrees, 1904; Blake, 1938; Hughes, 1952*b*; McOnie, 1983; Herrmann, 1987.

Summary:

There are several gold-bearing quartz veins on the section, however only two main reefs, namely No. 1 Reef and Whip Shaft (Reef No. 2) were considered to be of economic significance. No. 1 Reef was driven for 67 m with an average width of 30 0 mm, however the width varied considerably over short distances. Gold values ranged from 38 to 58 g/t.

The Whip Shaft (Reef No. 2) was about 100 to 300 mm wide with a total length of 91 metres. Two shafts to depths of 15 and 27 m were sunk. Crushings with gold values up to 87 g/t have been reported, however the average gold content is around 53 g/t for the mine. The total gold production is about 3 kg obtained from 59 tonnes of quartz.

Three holes were drilled by the Department of Mines (Blake, 1938); the results are summarised under the 'Drilling' section. Hughes (1952*b*) proposed a drill hole to further test the Long Struggle reef, but this did not eventuate.

McOnie (1983) indicated a total gold production of around 19 kg in the Long Struggle mine area which included other prospects such as Caxton, Stingle's, Ragged Youth and Short Struggle.

Some chip sampling from quartz stringers gave low gold values (0.008 to 0.1 g/t, Herrmann, 1987).

Prospect: **CAXTON LODE NO.1**

Location: 567 350 mE, 5 426 140 mN

Style of mineralisation:

Quartz vein, striking 320° and dipping northeast.

References:

Hills, 1923, Twelvetrees, 1904.

Summary:

The lode is conformable to the bedding and is parallel to the Long Struggle Reef. The length of the lode was about 104 metres. The width varied widely, with an average of around 400 mm. The lode is located within a 1.5 m zone of quartz-veined host rock. The gold values ranged from 8 to 29 g/t.

The lode was rich in arsenopyrite and pyrite and contained lesser amounts of galena and sphalerite. Three tunnels were driven on this lode. The minimum gold production was 3.2 kg.

Prospect: **NEW REEF**

Location: 567 250 mE, 5 426 140 mN

Style of mineralisation:

Quartz vein, 020°/90°

References:

Twelvetrees, 1904.

Summary:

The quartz vein is 100 to 150 mm wide and contains disseminated arsenopyrite and galena.

Prospect: **STINGEL'S**

Location: 567 200 mE, 5 426 140 mN

Style of mineralisation:

Quartz vein, striking 345°.

References:

Twelvetrees, 1904.

Summary:

A 20 m tunnel was driven on the reef which was about 250 mm wide. The quartz is bluish-grey in colour and contains arsenopyrite and pyrite. Samples taken by Twelvetrees (1904) assayed 1.5 g/t gold and 9 g/t of silver. According to Twelvetrees the owners obtained "some fair prospects from the stone". The reef is not exposed at the surface.

Prospect: **RAGGED YOUTH**

Location: 567 080 mE, 5 426 680 mN

Style of mineralisation:

Fault related fissure-filling quartz trending 30°/70° NW.

References:

Twelvetrees, 1900, 1904; Hills, 1923; Herrmann, 1987.

Summary:

The workings include an adit and a shaft sunk to a depth of 18 metres. The lode is very irregular and consists of a sheared zone of slate with up to 50% broken quartz pods and thin laminated quartz veins. The average gold content was around 30 g/t. The total gold production appears to have been around 8.5 kg. Recent sampling by Herrmann (1987) yielded gold values in the range of 1.86 to 55.17 g/t.

Prospect: **SHORT STRUGGLE**

Location: 567 350 mE, 5 426 080 mN

Style of mineralisation:

Fault related, fissure-filling quartz, 285°/80° N

References:

Hills, 1923; Twelvetrees, 1904.

Summary:

The lode was 15 m long and the width varied from 380 to 900 mm. The lode was sunk on for 55 metres. "Crushings have given several ounces to the ton" (Hills, 1923).

Prospect: **TELEGRAPH MINE**

Location: 567 200 mE, 5 426 310 mN

Style of mineralisation:

Quartz vein, 003°/80° W to 50° NW

References:

Hills, 1923; Twelvetrees, 1904.

Summary:

The vein was driven for 27 metres. It was 24 m long and the width was about 250 mm. Gold values varied from 4.5 to 12 g/t. This is based on six tonnes of quartz which "are said to have been crushed" (Twelvetrees, 1900).

Prospect: **BATTERY LODE**

Location: 567 340 mE, 5 426 320 mN

Style of mineralisation:

Quartz vein, 40°/75° southeast.

References:

Twelvetrees, 1904; Hills, 1923.

Summary:

The lode was about 300 mm wide and 12 m long. It contained arsenopyrite and pyrite. Samples taken by Twelvetrees (1904) assayed 29 g/t Au.

Prospect: **NEW WILSON LODE**

Location: 567 410 mE, 5 426 390 mN

Style of mineralisation:

Fault related, fissure-filling quartz, 320°/80° E

References:

Hills, 1923; Twelvetrees, 1904.

Summary:

The lode is about 61 m long and 400 to 600 mm wide. Quartz is associated with arsenopyrite and pyrite, and sampling by Twelvetrees (1904) indicated "traces" of gold.

Prospect: **MAMMOTH**

Location: No.1 – 567 500 mE, 5 425 000 mN
No.2 – 567 550 mE, 5 424 900 mN
No.3 – 567 560 mE, 5 424 850 mN

Style of mineralisation:

Quartz veining: No. 1 300°/65° northeast, No. 2 Striking 70°, No. 3 Striking 325° and dipping northeast.

References:

Twelvetrees, 1904.

Summary:

This appears to be the first mine opened in the Alberton goldfield (M. Bendall, pers. comm.). Reef No. 1 was worked for a length of 24 m and two shallow shafts were sunk on it. The reef was 150 to 200 mm wide, containing coarse gold and sulphides, mainly arsenopyrite and pyrite. Samples taken by Twelvetrees (1904) assayed 85 g/t gold. Reef No. 2 is located 140 m south of No. 1. A shallow shaft was sunk but the reef appears to be barren. Reef No. 3 is located about 60 m south of No. 2 and contains arsenopyrite but carries no visible gold. A mixed test crushing of a tonne from three places yielded 29 grams of gold.

Prospect: **MT VICTORIA**

Location: 567 470 mE, 5 425 850 mN

Style of mineralisation:

Fault related, fissure-filling quartz. General strike is northeast and dipping 70 to 80° northwest.

References:

Hills, 1923; Twelvetrees, 1900, 1904; Herrmann, 1987.

Summary:

The mine was one of the major gold producers in the field and was worked at four different levels. The Upper Adit was driven for 67 metres. The reef was 150 mm to 1.5 m wide and crushing of 250 tonnes "are said to have returned" 61 g/t gold (Twelvetrees, 1900). The gold content decreased to about 20 g/t in later times of production. According to Twelvetrees (1900) £20,000 worth of gold was taken from this reef over a total length of about 140 metres.

No. 2 level was driven for 91 m with limited workings.

No. 3 level was driven for 183 m and is 24 m below No. 2 level. The reef was followed in one direction and was driven for 67 m, where it was pinched out. Consecutive 6 m intervals over 60 m yielded gold values of around 5 g/t, with only three samples being above 0.1 g/t (Herrmann, 1987).

No. 4 level was driven for 396 m, but the reef was not intersected (Twelvetrees, 1900). The reef appears to have been displaced by a fault, however "very little attempt has been made to pick it up" (Twelvetrees, 1904). Total gold production was around 146 kg.

Prospect: **PACK-HORSE**

Location: 567 510 mE, 5 425 590 mN

Style of mineralisation:

Quartz vein, 45°E/SE

References:

Twelvetrees, 1904.

Summary:

The quartz vein is about 300 mm wide and a 'hole' was sunk on it. A tonne of 'stone' was crushed but the gold value is not known. Samples taken by Twelvetrees (1904) assayed around 12 g/t Au and 5 g/t Ag.

Prospect: **NEW RIVER (PRENDERGAST)**

Location: 566 860 mE, 5 429 750 mN

Style of mineralisation:

Quartz veins, general strike N-S to NE and dipping S to SE.

References:

Twelvetrees, 1900; Hills, 1923; Blake, 1933; Herrmann, 1987.

Summary:

A tunnel was driven for 60 m and the 'payable stone' was 45 m long and 450 mm to 1.2 m wide. The area is now thickly overgrown by blackberries, making the access to the workings very difficult.

There are several quartz veins in the vicinity of the mine and a few trial shafts were sunk on some of these reefs. The reefs, in general, are up to 600 mm wide and appear to be narrower at depth. Visible gold grains were observed and some reefs were thought to be payable. Twenty-four tonnes of quartz were crushed from one of these reefs and returned 28 g/t gold (Twelvetrees, 1900). According to Twelvetrees "a 350 oz cake of gold was turned out from 345 tons of quartz crushed at the New River Battery and the mine had 150 tonnes of 1 oz stuff to begin the new year with". Total gold production appears to be around 131 kg.

Two bore holes (Scott, 1933) were drilled on the lode and intersected several quartz veins up to 600 mm wide. However only few samples were analysed and these indicated a low gold content (trace or nil).

A 6 m channel sampling over "the most extensive zone" assayed 0.1 g/t Au (Herrmann, 1987).

Prospect: **POINT**

Location: 566 840 mE, 5 426 530 mN

Style of mineralisation:

Quartz vein, 325°/75° E.

References:

Twelvetrees, 1904; Hills, 1923; Herrmann, 1987.

Summary:

The length of worked vein was 58 m, however according to Twelvetrees the vein could be traced for about 400 metres. The width varied from 100 to 900 mm. Two shafts to depths of four and five metres were sunk on the vein. Samples taken by Twelvetrees (1904) assayed 16 g/t gold and about 4 g/t silver. According to Hills (1923), 482 grams of gold were obtained from "a bucket full of ore". However, the average gold grade is not known. A sample taken by Herrmann (1987) from the lode yielded 23.3 g/t Au, however the results from "stringer quartz veining" were low (<0.05 g/t).

Prospect: **REFORM LODES (Martins, Reform No. 1, No. 2, No. 3, Blackhorse, Cotton's)**

Location: Martins: 566 980 mE, 5 426 530 mN
Reform No. 1: 567 070 mE, 5 426 440 mN
Reform No. 2: 567 080 mE, 5 426 410 mN
Reform No. 3: 567 080 mE, 5 426 370 mN
Blackhorse: 567 050 mE, 5 426 470 mN
Cotton's: 567 070 mE, 5 426 400 mN

Style of mineralisation:

Quartz veins, striking 320° and dipping NE (Martins), 315° (Reform No. 1), 280° NE (Reform No. 2), 320° NW (Reform No. 3), 320° (Blackhorse).

References:

Hills, 1923; Twelvetrees, 1904.

Summary:

According to Hills (1923), there are six small lodes namely Martins, No. 1, 2 and 3 Reform, Blackhorse and Cotton's. The lodes are short, varying from 3 to 12 m and about 150 mm wide. "The values obtained at the surface in the lodes are certainly sufficient to warrant further attention" (Hills, 1923).

The following was summarised from Twelvetrees (1904).

No. 1 Reef: the reef is about 300 mm wide and the quartz is white and massive.

No. 2 Reef: two shallow shafts were sunk on the reef. The thickness of the reef, including narrow quartz veins and country rock, ranged from 300 to 800 mm. "The vein at the greatest depths attained gives good dish prospects", it is oxidised, and contains arsenopyrite and pyrite. A trial crushing of 17 tonnes yielded 14 g/t gold. A "rich stone assayed in Launceston yielded at the rate of 5 ozs".

No. 3 Reef: two shafts were sunk on the reef. The width varied from 400 to 600 mm. The minimum gold production was around one kilogram.

Prospect: **NEW MERCURY**

Location: No.1: 567 060 mE, 5 426 630 mN
No.2: 567 080 mE, 5 426 720 mN

Style of mineralisation:

Fault related fissure-filling quartz, 330° dipping NE (No.1), 315° (No.2)

References:

Twelvetrees, 1900, 1904; Hills, 1923; McOnie, 1983; Herrmann, 1987.

Summary:

Mining started on two parallel reefs between 1883 and 1884. The reefs were worked in three different levels and were up to 1.2 m wide. The reefs consist of the main quartz veins and closely associated quartz veinlets in the sandstone. Ninety-two tonnes of 'stone' was crushed from a winze and yielded 907 g of gold. The last crushing was in 1897 when 98 tonnes returned 2.155 kg of gold, but the average gold grade was around 28 g/t. Quartz contains minor arsenopyrite and pyrite. According to McOnie (1983) the total gold production was around 46 kilograms.

Recent sampling by Herrmann (1987) showed relatively low gold values (<1 g/t).

Prospect: **HOLLOWAY NO. 2**

Location: 566 670 mE, 5 428 910 mN

Style of mineralisation:

Quartz vein, striking 15° and dipping southeast.

References:

Hills, 1923; Herrmann, 1987.

Summary:

The workings consisted of a few trenches and a shallow shaft.

The quartz vein is parallel to Holloway No. 1 lode. According to Hills (1923), the lode can be explored by means of an adit driven from the creek below Almora and Mallunnah lodes.

Prospect: **ALBERTON NO. 1**

Location: 566 690 mE, 5 428 540 mN

Style of mineralisation:

Quartz vein (fault fissure), striking 35° and dipping southeast.

References:

Hills, 1923.

Summary:

The lode was about 18 m long and 300 mm wide. The gold value from crushing of a 12 tonne parcel was around 11 g/t.

Prospect: **ALBERTON NO. 2**

Location: 566 690 mE, 5 428 480 mN

Style of mineralisation:

Quartz vein (fault fissure), striking 50° and dipping southeast.

References:

Hills, 1923.

Summary:

The workings included a tunnel driven along the lode and stoping which was carried out to the surface. The lode consisted of milky quartz, clayey pug and some discontinuous pods of smoky quartz with minor arsenopyrite. The width of the vein varies from 700 mm to one metre. The average gold value of all crushings from the lode was about 8 g/t. According to Hills (1923), the lode "deserves close attention". Gold values of around 39 g/t were found in holes sunk below the adit level. A 'representative' sample taken by Herrmann (1987) showed a low gold content of 0.2 g/t.

Prospect: **STAKE**

Location: 566 720 mE, 5 428 500 mN

Style of mineralisation:

Quartz vein (fult-fissure) 20° dipping southeast

References:

Hills, 1923.

Summary:

The lode was only about 7 m long and 700 mm wide. The gold values are not known.

Prospect: **SINGLINE LODE GROUP**

Location: No.1 – 567 340 mE, 5 429 680 mN
No.3 – 567 090 mE, 5 429 650 mN
No.5 – 567 704 mE, 5 429 610 mN

Style of mineralisation:

Quartz veining (fault fissure) 45° SE (No. 1), 55°/90° (No. 3), 40° SE (No. 5)

References:

Hills, 1923.

Summary:

No. 1 Lode was about 12 m long and 300 mm wide. A parcel of about 8 tonnes yielded 28 g/t of gold.

No. 3 Lode was about 6 m long and 120 mm wide. A shaft to a depth of 18 m was sunk on the lode. Gold values were around 18 g/t.

No. 5 Lode contained gold values of around 55 g/t and was about 12 m long and 100 to 300 mm wide.

According to Blake (1933) quartz from the dump at the workings contained some visible fine gold grains.

Prospect **DRUNKARD'S DREAM**

Location: 567 170 mE, 5 429 860 mN

Style of mineralisation:

Quartz vein (fault fissure), striking 45° and dipping northwest.

References:

Hills, 1923; Blake, 1933; Twelvetrees, 1900.

Summary:

The workings consist of two shafts which were sunk at each end of the lode. The lode was about 23 m long and 700 to 900 mm wide. Gold values appear to have been high (85 g/t) and consistent. It is not known why work in this prospect ceased.

Prospect: **TIGER**

Location: 567 280 mE, 5 429 810 mN

Style of mineralisation:

Quartz vein (fault fissure), striking 45° and dipping southeast.

References:

Twelvetrees, 1900; Hills, 1923; Herrmann, 1987.

Summary:

The lode had a length of 24 m and the width varied from 300 to 600 mm. Shafts have been sunk at both ends of the lode. Crushing of 100 tonnes of quartz yielded 28 g/t of gold, however the gold values appear to have decreased with depth. The lode was associated with arsenopyrite and pyrite.

A 'high grade' grab sample of quartz with minor arsenopyrite assayed 1.40 g/t Au (Herrmann, 1987).

Prospect: **HOMESTEAD**

Location: 567 140 mE, 5 430 340 mN

Style of mineralisation:

Quartz vein, striking 45°.

References:

Hills, 1923.

Summary:

The lode was exposed for about 5 m with a width varying from 1.2 to 1.5 metres. A crushing of 5 tonnes yielded 45 grams of gold.

Prospect: **FROG**

Location: 567 000 mE, 5 426 940 mN

Style of mineralisation:

Quartz vein, striking 340°.

References:

Hills, 1923.

Summary:

A shallow shaft was sunk to a depth of about 11 m on the lode. Ten tonnes of quartz were crushed from which 935 grams of gold was recovered. An adit was driven below the shaft but the lode was not intersected, probably due to the irregularity of the vein.

Prospect: **BOUNDARY**

Location: 566 850 mE, 5 426 470 mN

Style of mineralisation:

Quartz vein, striking 5°.

References:

Hills, 1923.

Summary:

The lode was about 12 m long and 300 mm wide. A crushing of five tonnes of quartz gave 113 g of gold. This is the only known work on this lode.

Prospect: **CROSS**

Location: 566 810 mE, 5 427 890 mN

Style of mineralisation:

Fault fissure quartz lode striking 50° and dipping southeast.

References:

Hills, 1923; Herrmann, 1987.

Summary:

The main workings appear to include two adits and two shafts sunk to depths of 27 and 12 metres. The lode consists of a brecciated and sheared zone of country rocks and quartz and is up to two metres wide. The average gold content from crushing was about 40 g/t.

Recent sampling by Herrmann (1987) indicated erratic gold values ranging from <0.008 to 33.8 g/t.

Prospect: **CENTRAL**

Location: 567 440 mE, 5 425 850 mN

Style of mineralisation:

Quartz vein (fault fissure lode), striking 320° and dipping southwest.

References:

Hills, 1923.

Summary:

An adit was driven and the lode was worked for 30 metres. The width of the lode was about 200 to 500 mm. By starting another adit losses commenced and the work was stopped before cutting the lode. The gold values were around 55 g/t. A parcel of 45 tonnes of the lode was taken from the first adit but the gold value is not known.

Prospect: **MONTANA**

Location: 567 440 mE, 5 425 830 mN

Style of mineralisation:

Quartz vein (fault fissure), striking 35° and dipping northwest.

References:

Hills, 1923.

Summary:

The lode was about 45 m long and varied in width from 150 to 300 mm. No other information is available from this lode.

Prospect: **CREST**

Location: 566 620 mE, 5 429 640 mN

Style of mineralisation:

Quartz vein (fault fissure), striking 50° and dipping northwest.

References:

Hills, 1923; Blake, 1933.

Summary:

The located lode was about 40 m long and 300 mm wide. Gold values appear to have been low.

Prospect: **BRIGHT STAR**

Location: 567 120 mE, 5 424 920 mN

Style of mineralisation:

Quartz vein (fault fissure) striking 330° and dipping southwest.

References:

Hills, 1923.

Summary:

The lode was about 30 m long and varied in width from 200 to 300 mm. Gold value from a crushing of 15 tonnes was 39 g/t.

Prospect: **SOUTH STAR**

Location: 567 180 mE, 5 424 300 mN

Style of mineralisation:

Quartz vein, striking 325° and dipping southwest.

References:

Twelvetrees, 1904; Hills, 1923; Herrmann, 1987.

Summary:

The lode is about 300 mm wide and is 'low' in gold value. However there is "a zone of gash-veins in the country rock, some of which carry good gold" (Hills, 1923).

Recent sampling from the lode and quartz veinlets indicated relatively low gold values (<3 g/t, Herrmann, 1987).

Prospect: **EVERETTS**

Location: 567 410 mE, 5 423 680 mN

Style of mineralisation:

Quartz vein (fault fissure), striking 325° and dipping southwest.

References:

Hills, 1923; Twelvetrees, 1904.

Summary:

The lode is about 1.2 m wide, but there seems to be no other information available. Hills (1923) believed that this lode "is worthy of special attention". The lode is rich in pyrite and arsenopyrite.

Prospect: **PREMIER**

Location: 566 920 mE, 5 427 940 mN

Style of mineralisation:

Quartz vein, striking 355° to 360° and dipping 80°W.

References:

Hills, 1923.

Summary:

The lode is about 42 m long on the surface and the width varies from 300 mm to 1.8 metres. In general the gold content appears to have been relatively low (≈12 g/t).

Prospect: **STANDARD**

Location: 566 800 mE, 5 429 690 mN

Style of mineralisation:

Quartz vein, striking 75° to 90°.

References:

Blake, 1933; Hills, 1923.

Summary:

The lode consists of a number of veins. Gold values of around 29 g/t have been indicated.

Prospect: **RESERVED**

Location: 566 780 mE, 5 429 640 mN

Style of mineralisation:

Quartz vein, striking 325°.

References:

Blake, 1933; Hills, 1923.

Summary:

The lode consists of two or more veins. A shallow shaft was sunk on the lode. Very little quartz has been extracted, although it is stated to have yielded about 56 g/t (Hills, 1923).

Prospect: **SULPHIDE, BROWN'S AND MYSTERY**

Location: 566 950 mE, 5 430 060 mN (Sulphide)
566 830 mE, 5 430 060 mN (Brown's)
566 830 mE, 5 429 990 mN (Mystery)

Style of mineralisation:

Quartz veins varying in strike and dip.

References:

Hills, 1923.

Summary:

The lodes form a small group and "they are of indefinite strike and structure and probably represent irregular fracturing near the crest of the anticline" (Hills, 1923). According to Hills (1923) all of the above-mentioned lodes can be reached through a low level adit from around the 300 m contour.

The Sulphide lode is very rich in sulphide, particularly arsenopyrite, but no work has been done on it. The outcrop gold values appear to be low.

Brown's lode is 'small' and 710 g of gold was obtained from crushing of ten tonnes of quartz.

Mystery lode consists of quartz stringers and off shoots.

Prospect: **FOREST KING (JAN'S)**

Location: 566 830 mE, 5 428 400 mN

Style of mineralisation:

Quartz vein (fault fissure) striking 25° and dipping southeast.

References:

Hills, 1923.

Summary:

Forest King is one of the oldest known lodes in the field. The lode consists of a 300 mm wide quartz vein together with another 450 mm wide of soft country rock rich in quartz veins and stringers. A shaft to a depth of 18 m was sunk, however the operation had to cease due to water trouble. Subsequently an adit was driven along the lode. The lode, about 750 mm wide, gave an average gold content of around 14 g/t, however the quartz vein itself averaged 71 g/t of gold, as shown by a crushing of 30 tonnes of quartz from this vein.

Prospect: **RICH YOUTH (BLENDE)**

Location: 567 120 mE, 5 426 340 mN

Style of mineralisation:

Quartz vein, striking 35° and dipping southeast.

References:

Hills, 1923; Twelvetrees, 1904.

Summary:

The lode is about 300 to 700 mm wide and contains disseminated galena, sphalerite, arsenopyrite and pyrite. Crushings indicate an average gold value of about 57 g/t. One thin (25 mm) quartz vein gave 42 g of gold from 400 g of ore. Exploration at depth was strongly recommended.

Prospect: **BECKER'S**

Location: 567 370 mE, 5 426 040 mN

Style of mineralisation:

Quartz vein, striking 50° and dipping northwest.

References:

Hills, 1923.

Summary:

The lode was about 12 m long and 400 mm wide. A crushing of five tonnes of quartz returned about 198 g of gold.

Prospect: **SCOTCHMAN'S**

Location: 567 420 mE, 5 425 980 mN

Style of mineralisation:

Quartz vein, striking 35° and dipping northwest.

References:

Hills, 1923.

Summary:

This was a very small vein, about 3 m long and 100 mm wide. Gold values are not known.

Prospect: **MCCAUL**

Location: 566 930 mE, 5 427 800 mN

Style of mineralisation:

Quartz vein, striking 325° and dipping southwest.

References:

Twelvetrees, 1904; Hills, 1923.

Summary:

The lode is about 200 mm wide. Two shafts were sunk on the lode and a parcel of 30 tonnes of quartz yielded about 20 g/t of gold. The lode shows 'free' visible gold.

Prospect: **CRICKET GROUND (CRICKET FIELD)**

Location: 566 280 mE, 5 427 620 mN

Style of mineralisation:

Quartz vein, striking 25° and dipping vertically.

References:

Twelvetrees, 1904.

Summary:

The lode varies in width from 70 0 mm to three metres. Samples taken by Twelvetrees (1904) showed only "a trace of gold".

Prospect: **McCAUL'S LITTLE SHOW**

Location: 567 360 mE, 5 424 170 mN

Style of mineralisation:

Quartz vein, striking 335°.

References:

Twelvetrees (1904).

Summary:

The quartz vein is about 50 to 100 mm wide, mineralised and contains visible gold.

Prospect: **GUMSUCKER–ROSALIND**

Location: 566 750 mE, 5 427 960 mN

Style of mineralisation:

Quartz vein (fault fissure), striking 20° and dipping southeast.

References:

Hills, 1923.

Summary:

The lode was originally discovered in two different locations and was given two different names. The length varied from 45 m on the surface to about 100 m at depth. The width of the lode also increased with depth from few inches on the surface to 1.5 m at depth. The gold content varied from a few grams to about 90 g/t. The average gold values appears to have been around 30 g/t.

Prospect: **BIG BLOW (CHATTERBOX, MALMSBURY)**

Location: 566 720 mE, 5 427 720 mN

Style of mineralisation:

Quartz vein, striking 5°.

References:

Hills, 1923.

Summary:

The lode can be traced for some 60 m on the surface. It consists of quartz veins and stringers. Gold values were low.

Prospect: **PLUM PUDDING AND CAKE LODES**

Location: 566 890 mE, 5 427 910 mN (Plum Pudding)
566 910 mE, 5 427 920 mN (Cake)

Style of mineralisation:

Quartz veins, striking 355° and dipping east.

References:

Hills, 1923.

Summary:

The two lodes are close together and are around 10 m long, and 100 to 200 mm wide. The lodes have been worked to a depth of about three metres. The average gold content was around 30 g/t.

Prospect: **FOWLERS**

Location: 566 970 mE, 5 427 810 mN

Style of mineralisation:

Quartz vein, striking 335° and dipping northeast.

References:

Hills, 1923.

Summary:

The workings consist of few shallow shafts (4m). The lode was about 10 m long and varied from 100 to 150 mm in width.

Prospect: **MAGGI (ROARING MAG)**

Location: 567 000 mE, 5 427 890 mN

Style of mineralisation:

Quartz vein (fault fissure), striking 305° and dipping northeast.

References:

Hills, 1923.

Summary:

An adit was driven along the lode for 24 metres. The width of the lode was about 250 mm. The average gold content from crushings is about 45 g/t but gold values were as high as 90 g/t.

Prospect: **CANNON**

Location: 567 150 mE, 5 428 030 mN

Style of mineralisation:

Quartz vein (fault fissure), striking between 10 and 35° and dipping southeast.

References:

Hills, 1923.

Summary:

The lode is about 600 mm wide and gold values up to 120 g/t have been obtained. However, all the workings were very shallow (1-2 m). The lode was considered to be of economic significance, but very little work has been done.

Prospect: **BANK (HANNAH)**

Location: 566 900 mE, 5 427 800 mN

Style of mineralisation:

Quartz veining, fracture filling showing different directions.

References:

Hills, 1923.

Summary:

The lode consists of irregular veins and lenses up to 10 m long. The width varies from few centimetres to 1.2 metres. Some crushings were so high in gold content that the lode was known as "The Bank". Gold values varied from 15 to 300 g/t, with an average value of around 30 g/t.

A tunnel (Hannah's Tunnel) was driven to intersect the lode at about 40 m below surface. It revealed similar lode features at depth.

Prospect: **KRUSHKA**

Location: 566 730 mE, 5 430 860 mN

Style of mineralisation:

Quartz veins.

References:

Twelvetrees, 1900.

Summary:

The workings consist of a shaft, sunk on a 0.9 to 1.2 m wide lode. There are two types of quartz: grey-coloured quartz "which carries few gold" and quartz showing a bluish tinge and "only yielding gold on burning". Both types contain arsenopyrite.

APPENDIX 3

Geochemical analysis, Alberton, Forester and Warrentinna goldfields, northeast Tasmania (Herrmann, 1987)

Field no	*Location*	*Cu (ppm)*	*Pb (ppm)*	*Zn (ppm)*	*Ag (ppm)*	*Bi (ppm)*	*As (ppm)*	*Au (ppm)*
T7501	Forester	35	85	45	0.5	10	380	0.008
T7502	Forester	35	75	30	0.5	10	5	0.008
T7503	Forester	5	5	5	0.5	10	5	0.008
T7509	Forester	15	35	25	0.5	10	17	0.008
T7510	Forester	10	20	10	0.5	10	18	0.008
T7511	Forester	15	15	15	0.5	10	7	0.008
T7512	Forester	15	15	10	0.5	10	3	0.008
T7513	Forester	15	10	10	0.5	10	11	0.008
T7514	Forester	10	25	30	0.5	10	9	0.008
T7515	Forester	15	35	50	0.5	10	7	0.008
T7516	Forester	5	20	5	0.5	10	1	0.008
T7517	Forester	5	15	5	0.5	10	1	0.008
T7518	Forester	5	25	10	0.5	10	1	0.008
T7519	Forester	5	25	10	0.5	10	1	0.008
T7520	Forester	5	15	10	0.5	10	1	0.008
T7521	Forester	10	20	20	0.5	10	3	0.008
T7522	Forester	15	10	21	0.5	10	4	0.008
T7523	Forester	20	20	25	0.5	10	4	0.008
T7524	Forester	15	20	35	0.5	10	4	0.008
T7525	Forester	30	140	20	31	10	4200	0.176
T7526	Forester	5	10	10	0.5	10	100	0.032
T7535	Forester	5	30	10	0.5	10	180	0.008
T7536	Forester	15	245	25	0.5	10	1230	1.01
T7537	Forester	25	615	30	0.5	10	1870	0.912
T7538	Forester	30	45	45	0.5	10	270	0.032
T7539	Forester	20	3700	315	18	20	3670	0.968
T7540	Forester	10	55	10	0.5	10	79	0.008
T7541	Forester	5	360	45	1	10	4150	0.808
T7542	Forester	20	55	30	0.5	10	530	0.096
T7543	Forester	5	15	10	0.5	10	93	0.016
T7544	Forester	20	15	60	0.5	10	84	0.008
T7545	Forester	5	5	10	0.5	10	920	1.81
T7546	Forester	40	40	35	0.5	10	90	0.008
T7547	Forester	25	40	35	0.5	10	19	0.008
T7548	Forester	50	45	50	0.5	10	62	0.008
T7549	Forester	25	40	35	0.5	30	49	0.008
T7565	Forester	15	20	15	0.5	10	44	0.008
T7622	Forester	30	115	10	48	10	5350	0.15
T7623	Forester	5	5	5	0.5	10	100	0.02
T7624	Forester	5	5	10	0.5	10	100	0.03
T7687	Forester	10	20	10	0.5	10	510	0.008

Field no	*Location*	*Cu (ppm)*	*Pb (ppm)*	*Zn (ppm)*	*Ag (ppm)*	*Bi (ppm)*	*As (ppm)*	*Au (ppm)*
T7505	Warrentinna	10	10	20	0.5	10	90	0.008
T7506	Warrentinna	15	35	20	0.5	10	7	0.008
T7507	Warrentinna	30	30	30	0.5	10	210	0.008
T7508	Warrentinna	15	25	20	0.5	10	23	0.008
T7527	Warrentinna	10	30	45	0.5	10	400	0.296
T7528	Warrentinna	25	35	40	0.5	10	27	0.008
T7529	Warrentinna	30	40	75	0.5	10	22	0.008
T7530	Warrentinna	30	60	50	0.5	10	31	0.008
T7531	Warrentinna	15	45	25	0.5	10	11	0.008
T7532	Warrentinna	20	30	45	0.5	10	13	0.008
T7533	Warrentinna	5	5	10	0.5	10	5	0.008
T7534	Warrentinna	10	5	20	0.5	10	7	0.008
T7550	Warrentinna	30	30	15	0.5	10	450	0.35
T7551	Warrentinna	50	35	25	0.5	10	200	0.01
T7552	Warrentinna	115	45	50	0.5	10	65	0.2
T7553	Warrentinna	40	40	50	0.5	10	43	0.04
T7554	Warrentinna	35	30	60	0.5	10	44	0.03
T7555	Warrentinna	45	30	55	0.5	10	67	0.04
T7556	Warrentinna	30	70	45	0.5	10	2000	1.2
T7557	Warrentinna	55	35	50	0.5	10	290	0.07
T7558	Warrentinna	30	65	65	0.5	10	1800	0.12
T7559	Warrentinna	45	65	20	0.5	10	150	0.11
T7560	Warrentinna	40	25	30	0.5	10	180	0.85
T7561	Warrentinna	55	25	65	0.5	10	450	0.22
T7592	Warrentinna	40	30	125	0.5	10	110	0.41
T7593	Warrentinna	45	60	200	0.5	10	1600	8.32
T7594	Warrentinna	20	5	65	0.5	10	340	0.13
T7595	Warrentinna	35	5	85	0.5	10	270	15
T7616	Warrentinna	30	5	95	0.5	10	410	0.31
T7617	Warrentinna	45	5	40	0.5	0.5	630	0.22
T7618	Warrentinna	25	5	120	0.5	10	110	0.03
T7619	Warrentinna	10	530	445	5	10	1050	3.49
T7620	Warrentinna	5	5	50	0.5	10	510	0.07
T7621	Warrentinna	40	25	75	0.5	10	700	0.55
T7668	Warrentinna	35	5	25	0.5	10	48	0.008
T7669	Warrentinna	20	5	30	0.5	10	18	0.008
T7677	Warrentinna	80	5	10	0.5	1400	400	1.21
T7678	Warrentinna	20	5	10	0.5	410	13	0.35
T7683	Warrentinna	10	30	15	0.5	20	350	0.01
T7684	Warrentinna	300	25	10	15	130	38500	0.19
T7685	Warrentinna	115	5	5	9	190	9.55	0.41
T7686	Warrentinna	550	345	15	6	10	1.55	0.33
T7562	Alberton	30	60	30	0.5	10	5200	0.36
T7563	Alberton	30	30	70	0.5	10	4000	0.52
T7564	Alberton	40	60	245	0.5	10	3350	0.27
T7566	Alberton	15	75	5	0.5	10	350	1.29

Field no	*Location*	*Cu (ppm)*	*Pb (ppm)*	*Zn (ppm)*	*Ag (ppm)*	*Bi (ppm)*	*As (ppm)*	*Au (ppm)*
T7567	Alberton	15	50	5	0.5	10	7500	1.02
T7568	Alberton	20	60	15	0.5	10	2700	1.07
T7569	Alberton	35	50	10	0.5	10	2700	2.57
T7570	Alberton	45	75	75	0.5	10	3550	0.27
T7571	Alberton	50	20	50	0.5	10	330	0.08
T7572	Alberton	10	560	30	3	10	18000	2.98
T7573	Alberton	15	300	20	0.5	10	8450	2.08
T7574	Alberton	15	5	25	0.5	10	390	0.05
T7575	Alberton	50	20	40	0.5	10	690	0.04
T7576	Alberton	20	5	45	0.5	10	1200	0.27
T7577	Alberton	10	5	20	0.5	10	740	0.03
T7578	Alberton	30	30	55	0.5	10	290	0.1
T7579	Alberton	40	25	55	0.5	10	205	0.02
T7580	Alberton	25	30	60	0.5	20	310	0.07
T7581	Alberton	30	25	60	0.5	10	110	0.01
T7582	Alberton	30	20	65	0.5	10	120	0.02
T7583	Alberton	30	15	75	0.5	10	140	0.03
T7584	Alberton	30	20	80	0.5	10	260	0.008
T7585	Alberton	15	5	20	0.5	10	280	0.05
T7586	Alberton	15	5	15	0.5	10	6300	0.43
T7587	Alberton	10	25	25	0.5	10	1350	0.1
T7588	Alberton	15	15	25	0.5	10	1200	0.11
T7589	Alberton	10	50	15	0.5	10	7900	0.34
T7590	Alberton	15	30	25	0.5	10	3650	0.4
T7591	Alberton	30	1350	615	2	20	7700	8.03
T7596	Alberton	40	5	30	0.5	10	18500	5.49
T7597	Alberton	20	350	30	3	10	15000	1.86
T7598	Alberton	40	125	30	11	10	24500	52.95
T7599	Alberton	15	155	25	0.5	10	14500	4.93
T7600	Alberton	30	5	55	0.5	10	400	0.01
T7601	Alberton	100	60	55	0.5	10	650	1.79
T7602	Alberton	10	5	95	0.5	10	390	0.07
T7603	Alberton	5	5	35	0.5	10	100	0.1
T7604	Alberton	15	5	60	0.5	10	38	0.008
T7605	Alberton	5	5	25	0.5	10	27	0.008
T7606	Alberton	10	125	80	0.5	10	3400	25.08
T7607	Alberton	15	5	30	0.5	10	90	0.008
T7608	Alberton	25	5	30	0.5	10	80	0.008
T7609	Alberton	20	320	20	4	10	31500	23.31
T7610	Alberton	20	5	90	0.5	10	1350	0.25
T7611	Alberton	15	5	20	0.5	10	260	0.03
T7612	Alberton	25	5	75	0.5	10	430	0.03
T7613	Alberton	20	5	65	0.5	10	630	0.11
T7614	Alberton	10	5	45	0.5	10	640	0.05
T7615	Alberton	5	5	15	0.5	10	3050	0.67
T7625	Alberton	25	5	40	0.5	10	260	0.008

Field no	*Location*	*Cu (ppm)*	*Pb (ppm)*	*Zn (ppm)*	*Ag (ppm)*	*Bi (ppm)*	*As (ppm)*	*Au (ppm)*
T7626	Alberton	35	5	60	0.5	10	400	0.008
T7627	Alberton	15	80	35	0.5	10	1100	0.41
T7628	Alberton	15	5	40	0.5	10	370	0.008
T7629	Alberton	20	15	50	0.5	10	5300	6.93
T7630	Alberton	10	5	25	0.5	10	5800	0.14
T7631	Alberton	20	5	45	0.5	10	3300	0.5
T7632	Alberton	15	5	45	0.5	10	1200	0.03
T7633	Alberton	20	5	70	0.5	10	510	0.01
T7634	Alberton	30	5	6	0.5	10	350	0.03
T7635	Alberton	25	5	95	0.5	10	270	0.008
T7636	Alberton	15	5	30	0.5	10	240	0.008
T7637	Alberton	20	5	50	0.5	10	370	0.008
T7638	Alberton	20	5	50	0.5	10	180	0.02
T7639	Alberton	20	5	40	0.5	10	510	0.21
T7640	Alberton	25	5	55	0.5	10	640	0.53
T7641	Alberton	25	5	50	0.5	10	300	0.1
T7642	Alberton	20	5	45	0.5	10	5100	2.39
T7643	Alberton	10	60	5	0.5	10	270	0.09
T7644	Alberton	20	5	10	0.5	10	3900	0.2
T7645	Alberton	20	5	15	0.5	10	520	0.31
T7646	Alberton	20	5	15	0.5	10	36	0.008
T7647	Alberton	25	5	5	0.5	10	4700	0.18
T7648	Alberton	15	5	50	0.5	10	12000	0.49
T7654	Alberton	15	30	40	0.5	10	1100	0.24
T7655	Alberton	10	5	10	0.5	10	24	0.008
T7656	Alberton	20	5	30	0.5	10	280	2.19
T7657	Alberton	15	5	10	0.5	10	29	0.008
T7658	Alberton	20	5	20	0.5	10	4000	7.23
T7659	Alberton	20	5	25	0.5	10	960	0.03
T7660	Alberton	25	40	20	1	10	13500	2.62
T7661	Alberton	20	5	20	0.5	10	950	1.04
T7662	Alberton	15	5	25	0.5	10	530	0.09
T7663	Alberton	15	5	30	0.5	10	790	0.41
T7664	Alberton	25	5	35	0.5	10	440	0.06
T7665	Alberton	25	5	55	0.5	10	42	0.008
T7666	Alberton	25	5	65	0.5	10	61	0.008
T7667	Alberton	30	5	25	0.5	10	72	0.03
T7673	Alberton	5	10	55	0.5	10	170	0.03
T7674	Alberton	30	25	45	0.5	10	350	0.05
T7675	Alberton	5	5	35	0.5	10	1300	1.4
T7676	Alberton	20	50	40	0.5	10	240	0.02
T7649	Alberton	45	5	750	0.5	10	13000	0.07
T7650	Alberton	30	5	60	0.5	10	1000	0.1
T7651	Alberton	15	5	70	0.5	10	1800	0.24
T7652	Alberton	10	145	70	3	10	2000	43.33
T7653	Alberton	10	5	10	0.5	10	3100	1.39

INDEX OF DEPOSITS

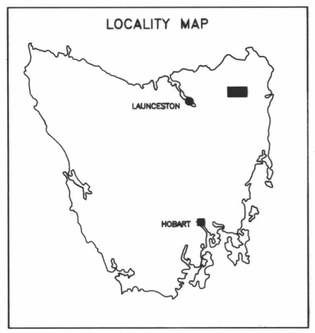
1	No.1 REFORM	64	No.5
2	No.2 REFORM	65	DRUNKARDS DREAM
3	No.3 REFORM	66	SULPHIDE
4	TELEGRAPH	67	BROWNS
5	RAGGED YOUTH	68	MYSTRY
6	BATTERY	69	No.1 LODE
7	RICH YOUTH(BLENDE)	70	?
8	NEW WILSON	71	HOMESTEAD
9	LONG STRUGGLE	72	BURR'S
10	CAXTON No.1	73	SOWELL'S
11	MARTINS CROSS	74	JIMMIE GOVERNOR
12	BECKERS	75	ENDURANCE
13	SCOTCHMAN	76	?
14	MARRS	77	QUEEN
15	MT VICTORIA	78	DUKE'S
16	MONTANA	79	BALTIC SEARLES
17	MAMMOTH No1.	80	GOLDEN HINGES
18	MAMMOTH No2.	81	NEW RIVER(PRENDERGAST)
19	BRIGHT STAR	82	COOK'S
20	SOUTH STAR	83	LANE'S
21	EVERETTS	84	PREMIER
22	ESK	85	?
23	COBBINGS(CROWN)	86	CHATTERBOX(BIG BLOW, MALMSBURY)
24	MERCURY No1.	87	BOBBY EVANS
25	MERCURY No2.	88	SEARLS
26	POINT	89	HOPE
27	BOUNDARY	90	FLAT
28	MARTINS	91	CAXTON No.2
29	FROG	92	SHORT STRUGGLE
30	?	93	CENTRAL
31	STRAHAN	94	NEW RIVER(ALLUV.)
32	FOWLER	95	McCAUL'S LITTLE SHOW
33	ENDEAVOUR	96	FARRELL
34	MAGG OR ROARING MAGG	97	DARK HORSE(BLACK HORSE)
35	McCAULS	98	MT VICTORIA(ALLUV.)
36	CANNON	99	MARTIN'S CROSS
37	LONG SHAFT	100	BATTERY
38	ROSALIND(GUMSUCKER)	101	SINGLINE No.1
39	CROSS	102	BODYLINE
40	BANK(HANAH)	103	?
41	PLUM—PUDDING	104	?
42	CAKE	105	?
43	NELSON(SOFT SPUR LODES)	106	PACKHORSE
44	STAKE	107	VICTORIA UNITED
45	FOREST KING(JAN)	108	?
46	ALBERTON No1.	109	CRICKET FIELD
47	ALBERTON No.2	110	MERRICK'S
48	CROWN PRINCE	111	WEST DORSET
49	SINGLINE	112	MAMMOTH No.3
50	STANDARD	113	COTTONS PT.
51	CREST	114	DORSET RIVER(ALLUV.)
52	RESERVED	115	CROWN PRINCE CREEK(ALLUV.)
53	CENTRAL RINGAROOMA	116	?(ALLUV.)
54	PENNEFATHER	117	McCAULS
55	ALMORA	118	?
56	"A1" (McCAULS)	119	?
57	MALLUNAH(MULLUNAH)	120	COTTONS
58	HOLLOWAY No1.	121	HEATHORNS
59	HOLLOWAY No2.	122	?
60	TIGER	123	?
61	SINGLINE "B"	124	?
62	SINGLINE "A"	125	?
63	No.3	126	KRUSHKA
		127	STINGELS REEF
		128	NEW REEF
		129	SOUTH ESK RIVER

FORM OF DEPOSITS

29 VEIN Strike indicated

▽ ALLUVIAL/RESIDUAL

LOCALITY MAP



SCALE 1:10000

SCALE 1:10000

SCALE 1:10000

5 cm

ALBERTON GOLDFIELDS