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An investigation of the Golden Ridge (Long Plains Goldfield), northwest Tasmania

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Historical overview

The first recorded discovery of gold at Long Plains was made in December 1879 at Big Duffer Creek, near the southern margin of the Golden Ridge. A small rush ensued, but with the yields being poor the field was soon abandoned. Two years passed before rich deposits of alluvial gold were discovered less than one kilometre north of the original find. All streams draining the northern perimeters of the Golden Ridge were heavily worked with Smiths Creek, Grays Creek and Jarmans Creek being the richest on the field (Julen, 1981).

The first recorded production primary 'reef' gold was made in 1883 on Weetman and Crockfords claim, which lay on the western flank of the Golden Ridge near the headwaters of Grays Creek. Although results were generally patchy, several reefing operations continued along the Golden Ridge up to and beyond 1903. Total production for the field was estimated at 20,000 to 30,000 ounces (Twelvetrees, 1903), the majority of which is likely to have come from the alluvial workings.

Geology and mineralisation

Precambrian schist and slate forms the major lithological constituent of the Golden Ridge. These are finely bedded and in places graphitic and/or limonitic. They have a relatively uniform strike of 005° to 025° and a steep easterly dip of 60° to 85°. Associated with this unit are numerous bedding-parallel quartz veins which are often highly deformed and ptygmatic in nature, and are most likely syn-deformational (Plate 1). Early on in the development of the field the auriferous nature of certain well defined and distinctly ferruginous beds was noted; four such beds or formations have been delineated. These formations range from 15 to 25 metres in thickness and carry gold, silver and copper values (Plate 2, 3). Auriferous veins cross-cutting these beds consist of quartz, pyrite and siderite (Petterd, 1910), and occur in sets of two or three discontinuous parallel veins with an east–west strike and a southerly dip. These veins are auriferous only when cross-cutting the ferruginous formations, and "when passing through the hungry-looking micaceous schist never carried a trace of gold" (Twelvetrees, 1903).

The gold found at the Golden Ridge was most characteristic in nature, occurring as absorbent spongy masses and hollow skeletal forms. Most noteworthy was the relative abundance of well-formed crystalline masses of gold with individual crystals measuring up to 7 mm in length and aggregated into nuggets of considerable size (Petterd, 1910).

According to an account of the discoveries made by Weetman and Crockford in 1883, nuggets of crystalline gold weighting up to 6½ ounces were found (Twelvetrees, 1903). The nature of such specimens would rank the locality as one of the finest occurrences of crystalline gold in Australia, if not the world. It is unfortunate that no such specimens are known to have survived. "It is to be regretted that more examples of these peculiar masses were not secured as museum specimens, for now their occurrence has almost become a matter of history"(Petterd, 1910).

Previous exploration

In 1985 an exploration program was undertaken along the southern margin of the Golden Ridge (EL4/61) by Metals Exploration. The aim of the program was to delineate possible major gold-bearing horizons. Channel sampling of old workings, a soil sampling program, and three drill holes were completed. The drilling program yielded little result, although several zones of anomalous gold values were obtained in the soil sampling program (up to 438 ppm). The correlation with the auriferous formations (previously defined in 1903 by Twelvetrees) was poor (Shannon *et al*., 1985).

Recent field investigations

Two field investigations have recently been undertaken. On the first, a three day field trip in late February 1994, I was accompanied by Mr Adrian McKenzie, a fellow gold prospector. The purpose of this investigation was to assess the current potential of the Long Plains Goldfield to produce crystalline gold.

A second field investigation was undertaken in early March 1994 in conjunction with Mr Ralph Bottrill, Geologist/Petrologist, Tasmania Development and Resources. The aim of this trip was to further determine the potential of the field.

Access to most of the field is greatly restricted by very thick undergrowth, with exposed outcrop being restricted to old workings and recently constructed access tracks. At several places along the track made by Metals Exploration in 1985, a well defined heavily mineralised zone of sediment is exposed (Plates 2, 3), and can be correlated with Cox's formation (Twelvetrees, 1903). This formation is approximately ten metres wide and contains numerous ferruginous 'mouse eaten' quartz veins (indicating primary sulphide and/or carbonate mineralisation). These veins are bedding parallel and appear to be the same syndeformational veins common throughout the entire unit and are differentiated from the associated veins by their mineralised nature.

The condition of underground workings is generally good, making them readily accessible. Workings generally consist of a drive running east-west across the strike of the country through the ferruginous formation(s), with crosscuts developed on favourable beds or crosscutting veins within this zone.

In one set of workings investigated (possibly the Big Tunnel), stoping has been undertaken along the intersection of a cross-cutting reef with a highly graphitic and chloritic unit within the ferruginised formation. The intersection of these two structures pitched gently to the south and has been stoped for about ten metres and traced for a further twenty metres(approximately). It is highly likely that this intersection defined a discontinuous high grade 'shoot' of auriferous stone of small relative volume and low tonnage; such shoots often yielded hundreds of ounces to the ton. These deposits are characteristic of the 'indicator' type gold deposits historically exploited throughout central Victoria.

During the recent investigations several samples of gold from the field were found with the aid of metal detectors. On the first trip eight specimens of gold were recovered , four from the eastern branch of Little Duffer Creek, the largest of which weighted approximately ½ ounce and displayed a characteristic spongy form. Two or three samples of gold were also obtained from the indicator zone noted in the Big Tunnel workings, with several more samples being recovered on the subsequent visit. Although no distinctly crystalline specimens were found, most specimens displayed a hackly, spongy and semi-crystalline form (Plate 4), which is a characteristic of gold found in indicator type deposits. All specimens recovered during these investigations are now in the collection of Tasmania Development and Resources.

Conclusions

It would appear that the primary gold mineralisation in the Golden Ridge area of the Long Plains Goldfield conforms to the classic 'indicator' style gold deposit. Such deposits are, by their nature, practically impossible to define statistically, and very difficult to exploit even on a small scale. There is potential for a large (in excess of 30 Mt) low grade deposit incorporating the whole of the Golden Ridge but in view of the patchy nature of the mineralisation, the delineation of the resource would be both complex and expensive.

The potential for the field to produce further specimens of crystalline gold is high. Historically yields of up to six ounces to the pan have been recorded and nuggets of over three ounces were common from the surface workings along Golden Ridge (Twelvetrees, 1903). A small operation utilising earth-moving machinery to clear the slopes of vegetation and overburden, combined with the use of sophisticated metal detecting technology, would have a high probability of discovering both residual nuggets and in situ specimens of crystalline gold. The very dense nature of the undergrowth may be a limiting factor on the economic viability of the operation.

References

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[1 March 1994]

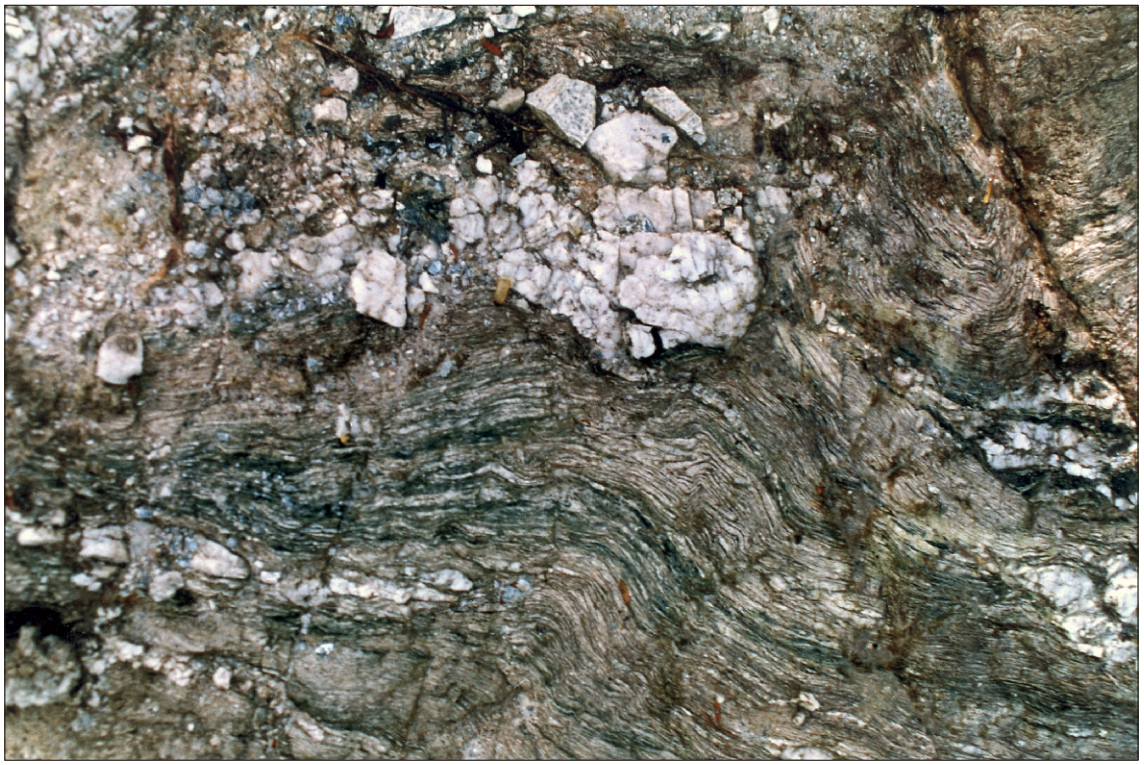

Plate 1

Chloritic schist displaying ptygmatic veining plus numerous bedding parallel 'buck' quartz veins. Exposed on eroded track, Golden Ridge .
(FOV approximately 400 mm)

Plate 2

Ferruginous unit containing numerous heavily mineralised quartz veins, possibly correlating with Cox's Formation. Exposed in track excavation, Golden Ridge.
(FOV approximately 1000 mm)

Plate 3

Ferruginous unit, possibly correlating with Cox's Formation, containing numerous heavily mineralised quartz veins. Exposed in track excavation, Golden Ridge.
(FOV approximately 400 mm)

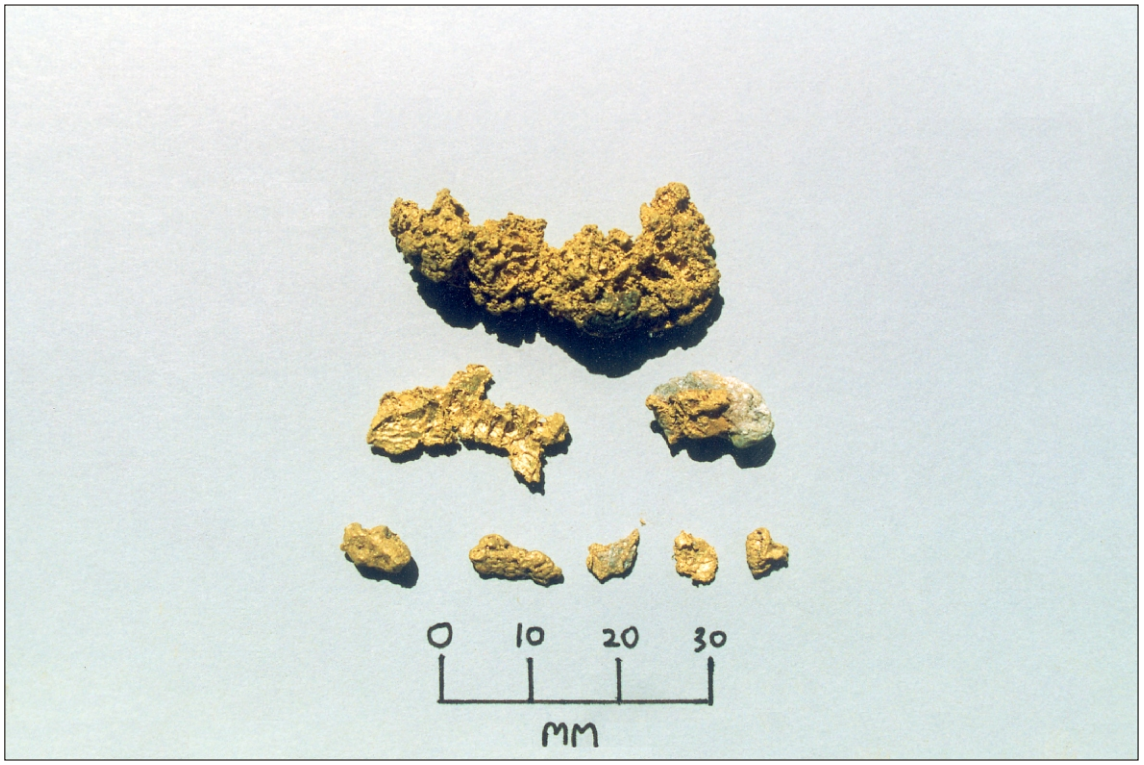

Plate 4

Gold specimens, displaying characteristic spongy and hackly forms, recovered during investigation of the Long Plains goldfield.