

REPORT ON PROSPECTING OPERATIONS, VICINITY OF FLANNAGAN'S CREEKIntroduction:

The area under review was examined, briefly, in December, 1931 by P.B. Nye, Government Geologist, in the course of a one day trip from Queenstown. At that time, two parties were engaged working alluvial ground and prospecting generally in the vicinity of the workings.

The area, for many years afterwards, was more or less abandoned until recently, when a member of one of these parties, claiming to know where Penney's "lode" was, interested Mr. Jas. Brock in the possibility of the discovery of the source of the gold in the one time rich alluvial deposits of Flannigan's Flat.

It was to enable an inspection of the prospecting operations recently completed by Mr. Brock that a geological examination, extending from the 1st to 7th March, 1938, was undertaken.

Location and Access:

The area is situated in a "hanging" valley, north of the saddle between Mount Sorell to the south east, and Mount Strahan to the west.

Access is gained by way of the old Flannigan's Flat track as far as the Garfield River, then by means of an old timber track on which all bridges have been destroyed by bush fires. From funds made available under the Aid to Mining scheme, the track has been cleared recently as far as the Garfield and repairs to the King River bridge effected.

The track follows a general south-easterly direction from Lynchford along the eastern side of the Queen River as far as the King River, a distance of approximately three miles. The King is crossed by a substantial, high level wooden bridge. Following the valley of the southern branch of Newell Creek, for several miles, the track rises gradually up good grades until it eventually crosses through a relatively low saddle into the valley of the Currie River, distance about five miles between the two rivers. Continuing in a general southerly direction, the Garfield River is reached within a mile. One to two miles south along the timber tracks are the headwaters of Flannigan's Creek, the area prospected.

The track is very rough in parts due to deep scouring by flood waters. Horse and foot traffic is possible as far as the Garfield, provided the Currie can be forded, but beyond that horse traffic is impossible.

Topography:

The area is one of relatively high relief, presenting as it does a hanging valley nearly a thousand feet above the general level of the King River drainage system. Mount Strahan forms the western boundary of the valley, while an ever-rising spur, ultimately reaching a height of 3,756 feet at Mount Sorell, forms the eastern limit. A low saddle between Mounts Strahan and Sorell marks the southern boundary and the northern is indicated by the steep fall to Flannigan's Flat.

The present topography is largely due to block faulting and tilting and differential erosion, modified to some extent by glaciation.

Flannigan's Creek flows through the area in a general northerly direction, being deeply entrenched in a gorge while traversing the porphyry. The main tributaries are three east flowing creeks which rise in the eastern slopes of Mount Strahan. A most striking feature is the consequent drainage indicated by the abrupt change of direction made by the creeks when they reach the remnant of the glacial deposit.

## G E O L O G Y

### Silurian:

With the exception of the narrow and persistent dyke-like mass of quartz-felspar porphyry and a few remnants of Pleistocene glaciation, the whole of the rocks exposed in the area examined are referred to this age. No definite evidence of age was obtained and they were assigned to this age purely on the presence of the West Coast Range conglomerates and quartzites and slates and sandstones which have a strong lithological resemblance to Silurian rocks elsewhere in Tasmania.

The predominant rock type is the West Coast Range series, which caps with great thickness both Mount Sorell and Mount Strahan. Generally this series consists of thickly bedded conglomerates, quartzites and sandstones of a striking pinkish to red colour; the basal members being very coarse. In this area, however, only the finer varieties are represented, indicating a position fairly high in the series. The strike and dip of the variously tilted blocks varies between wide limits.

In the valley, slates and sandstones are best developed. The slates are normal and buff to grey in colour while the sandstones are fine-grained and thinly bedded.

The strike is generally south-east with a vertical dip.

### Devonian:

The most prominent feature, geologically, is the persistent and relatively narrow dyke of quartz felspar porphyry which traverses diagonally across the area under review in a general south-easterly direction. It is similar in character to the "breccia conglomerate" so well developed in the Lyell district and represents the "coarse conglomerate" variety, which contains numerous boulders and pebbles completely replaced by the quartz felspar porphyry. On Mount Sorell, the selective replacement of a particular conglomerate bed in the West Coast Range Conglomerate series is strongly suggestive, although, in the valley, numerous keolite-like blocks of slates and sandstones, varying in size from a few inches to several feet supply evidence of the intrusive nature of the porphyry. It is difficult to interpret the many complicated processes which govern such an unusual occurrence without intensive study, far beyond the scope of the present investigation, therefore nothing further can be added to the tentative explanation already advanced in "The Mount Lyell Mining Field" by the Geological Survey staff in 1934.

Tertiary:

In a depression, between variously tilted blocks, of West Coast Range conglomerates and quartzites, which form the south-eastern spur of Mount Sorell and the watershed between Flannigan's Creek and the Garfield River, an unconformable junction, between coarse grits, which dip flatly to the south-west and Silurian slates striking south-east with vertical dip, is exposed.

Approximately five chains south, up the creek, the coarse grits contain a thin band of fossil molluscan fragments which are very friable, and crumble when removed. Unfortunately, specimens suitable for even an approximate determination could not be obtained, but some of the fragments suggested one of the Terebratulacea, for the shell was ovate, with strongly developed radial sculpture and prosogyral umbo.

In the northern end of the depression, some ten chains north of the unconformity, dark slates striking south 200 east with very steep dip to south west are exposed; between the slates, which form the eastern wall, and the block of West Coast Range quartzites to the west, a narrow cut has been sluiced at least 100 feet in length to a maximum depth of 20 feet in loosely compacted, white to pink sands and occasional pebbles, apparently derived from crush zones in West Coast Range conglomerates and sandstones. Well rounded grains of a black mineral, probably chromite and some micaceous mineral, are abundant.

In the absence of definite palaeontological evidence, the exact age of these grits cannot be determined; but it must be undoubtedly later than Silurian and the probable post-Devonian faulting. Lithologically the sediments resemble Tertiary sands and grits in the degree of compactness and, on this and the indefinite fragmentary molluscan evidence, are assigned to the Tertiary age. The presence of probable Tertiary marine or fresh water sediments in this area indicates a more extensive incursion of Tertiary seas or the Macquarie Harbour lacustrine conditions than has been recorded previously.

Pleistocene:

The glacial material consists of a heterogeneous accumulation of rounded and partly rounded to sub-angular masses of rock, composed chiefly of conglomerate and quartzite and occasionally porphyry etc. embedded in a clay-like matrix. A remnant, only, remains of a one-time extensive deposit and it is confined mainly to the western side of the porphyry dyke along the eastern slopes of Mount Strahan. Reference has been made, already, to the effect these deposits have had on the drainage of the area.

PROSPECTING OPERATIONS

The alluvial workings have been described already by P.B. Nye, 1931, and since that time there has been little or no active mining undertaken in this area.

General prospecting in the valley failed to reveal any area worthy of attention other than the three creeks on the eastern slopes of Mount Strahan. These had been worked out for the greater part of their course through the glacial till. The alleged source of this gold was

discovered by dish prospecting up the side of Mount Strahan until no further prospects could be obtained. This suggested a line in a general north-westerly direction approximately 30 chains west of Penney's Hut. A shallow cut across the assumed line shows only a shattered quartzite and the gold reported to have been obtained from it must have been lodged in crevices in the rock.

Prospecting by means of three shallow adits driven into the glacial till, the work of some former party, was undertaken without success, the adits being too shallow to intersect the underlying slates and sandstones.

The presence of grains of a rounded, black mineral apparently identical with that described in the Tertiary deposit on the Garfield River fall of the south-eastern spur of Mt. Sorell, in the alluvial material on Flannigan's Flat, indicates a more extensive Tertiary deposit in the valley of Flannigan's Creek than is evident at the present time.

#### CONCLUSIONS

Alluvial mining and prospecting operations have indicated the presence of limited deposits of shallow, gold-bearing gravels extending along the western side of the quartz felspar porphyry.

Prospecting, however, has failed to reveal any quartz veins, the initial source of the gold, comparable with the amount of alluvial gold obtained in the district.

The recent gravels represent resorted glacial material etc. and, in view of the presence of coarse water worn pieces of gold on elevated ridges, near the probable Tertiary sediments, the writer is of the opinion that the greater proportion of Flannigan's gold represents the natural concentration of gold contained in these deposits; although some auriferous quartz veins are undoubtedly present, associated with the Devonian igneous rocks, they have contributed only a small proportion of the gold. Therefore the prospects of locating quartz veins sufficiently encouraging to warrant development are distinctly unfavourable.

Q. J. HENDERSON,  
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