

The character of the gold was exceedingly fine, thin, and scaly and, though of good quality, was a light gold, and a great bulk of it would be required to weigh an ounce. The gold found had evidently travelled a considerable distance, and could not have had its source in the rocks of the immediate neighbourhood.

The valley of the Mangamaire has been choked with pumice-drift to a depth of 120 ft., and through this the stream has again cut its way to the bed-rock, leaving terraces of pumice material clinging to the hill-slopes; while at the level of the stream all pumice has been carried away, and no pumice appears except a stray piece washed out of the higher terraces. As in the Ngaruroro, a sprinkling of volcanic rocks of greater density than pumice appears in the shingles of the bed of the creek, and there is in the wash of all the creeks of the district considerable quantities of magnetic black sand.

Owing to the flooded state of the Mangamaire, the west or right bank of the stream could not be reached, and it was on this side that Mr. Yuill stated he had obtained his best prospects, and, as he explained, from a red gravel resting on slate rock. As but the width of the creek interposed, and as the red gravels were also exposed on the left bank, they were prospected, but no gold was found. One mile further down the stream a shingle beach was tried, but no gold was found, and half a mile higher up prospects were washed from a good-looking beach on the main stream, and also at the mouth of a tributary creek coming from the east, but without results.

This scarcity of gold was conformable with the character of the rocks in which the valley of the Mangamaire has been excavated. They consist, as usual, of hard sandstones and dark shales and mudstones, which are in nowise mineralised, are wholly destitute of iron-pyrites and other sulphides, and there is also a remarkable absence of quartz. The magnetic sands found in the wash of the different creeks have been derived not from the older rocks, but from the pumice and rhyolite fragments scattered over the country. These magnetic sands are found equally in the pumice of the mountain-tops and the reassorted pumice drifted into the valleys.

The eastern Kaimanawas have been reported as abounding in quartz reefs. This I found to be not the case. From Kuripapanga to the sources of the Rangitikei quartz of any kind is remarkably scarce. At Kuripapanga, where the Ngaruroro breaks through the southern end of the Kaweka Range, the rocks are well exposed in the banks of the river and in the road-cuttings across Gentle Annie, on the line of travel from Napier to Inland Patea. The rocks are thin-bedded sandstones and shales, and the joints of the sandstones are mostly covered by a white mineral, powdery or in thin films, which often leads to the impression that the thin-bedded sandstones are quartz. These rocks extend throughout the Kaweka Range and west to the valley of the Taruarau at Owhakao, and may thus have given rise to the reported frequent occurrence of quartz. Thin veins of calcite do occur in these rocks, more especially towards the west.

On the ridge of mountains between the upper valley of the Taruarau and Kaimanawa Creek there is one vein of grey flinty quartz, but this, not more than 8 in. thick, contains no pyrites, and otherwise looks most unpromising for gold.

On the southern end of the range, between the Kaimanawa Creek and Mangamaire Stream, there are two heavy bodies of grey cherty quartz identical with what may be met with, and has long been known to occur, in the Rimutaka, Tararua, and Ruahine Ranges. The larger of these lodes carries a fair sprinkling of pyrites, and, as usual with this stone, it may carry a little gold. Samples from this reef were sent to Wellington some years ago, and, on analysis, gave a return of 7 dwt. of gold to the ton of stone. This reef is 27 ft. across, and if the 7 dwt. return be maintained in the samples brought by me it is possible the reef may be worked to profit. The lesser body of stone lies a short distance to the westward, while more to the north there are lesser veins that strike more to the westward, and would therefore make junction with the larger of the two main reefs.

Two miles and a half more to the north, and on the same range, there are one or two small reefs of white and more crystallized stone, but these are of little consequence, being too small to work. Four miles to south-east there is another outcrop of quartz, white and crystallized. This I did not have an opportunity of examining, but Mr. Macdonald has kindly forwarded samples, which show that this is a stone likely to carry gold, although very little mineral of any kind is to be seen in the quartz.

These quartz lodes on the Mangamaire Range all lie towards the southern end of the range, between the Kaimanawa Creek and Mangamaire Stream, and near the junction of these with the Rangitikei. The strike of the larger bodies of stone is north-north-west, and the dip is to the west-south-west at high angles. The more crystalline lesser reefs strike more to the west, and thus, if continued, intersect the larger.

The larger bodies of quartz are evidently continuous outcrops for a very considerable distance, and this is the character of the rock elsewhere. When at Tokaanu in 1898 I learned that over and above the small leaders usually prospected (because more accessible and usually showing more pyritous mineral) there was a very large reef high on the mountains, towards the source of the Rangitikei River. It is in this direction, or possibly somewhat more to the east, that the larger reefs here described do strike.*

Altogether the results of the expedition in so far as concerned the finding of gold were somewhat disappointing.

GEOLOGY.

The rocks along the line of travel from Napier to Kuripapanga, and thence by the coach-road, to the Rangitikei River, of the Kaweka and Kaimanawa Mountains are in descending order, as follows:—

* An unavoidable delay has arisen with respect to obtaining analysis of the samples of quartz collected, and, since my return to Wellington, forwarded to Wellington, and thus their value cannot be stated at the present time.