

which show at one or two places on the road to Rocky Creek. It is, however, within the middle part of Muddy Creek that along this line the quartz drifts have any special interest. In the Scandinavian Claim they are nearly horizontal in position, and in the sands are found large trunks of trees, while beds of clay and lignite are also present. Near the mouth of the creek the quartz drifts disappear under the sandstone gravels terminating the St. Bathans's spur, and they appear in the bed of the Manuherikia, and on its right bank, up to the entrance to the gorge, here also overlain by "Maori bottom." The quartz drifts cross above the gorge, and on the east side of the river run along the eastern slopes of the Hawkdun Home Hills, but are not again seen higher up the valley on the right bank of the river.

*Manuherikia River to Saddle between the Hawkdun Home Hills and East End of Blackstone Hill.*—Quartz grits, clays, and lignite beds from the foot of the Manuherikia Gorge skirt the western base of the Hawkdun Home Hills, and, dipping westward, disappear below the river-gravels of the flat on the south side of the Manuherikia. At the spring of the saddle leading to Hill's Creek these beds alter their direction, and trend to the westward, and, gradually acquiring a high angle of dip, follow the northern base of Blackstone Hill to the river-crossing near Blackstone Hill Station. Gold is found in Pennyweight Gully and other gullies draining from the Hawkdun Home Hills, but, as the wash is a coarse gravel, it is, though not certain, possible that the gold has been derived from the quartz grits. The Hawkdun Home Hills are, however, formed of slates and sandstones such as are found in the Mount Ida and Hawkdun Ranges. These are not gold-bearing, and it is therefore unlikely that they have yielded the gold that rests upon them.

*Pipeclay Gully and Downs to the North-west.*—The road from Blackstone Hill Saddle to Clyde follows these downs as a flat ridge between Pipeclay Gully and the Manuherikia. The quartz grits are seen to be present till opposite the workings in Pipeclay, beyond which they are overlain by sandstone gravels ("Maori bottom") on the higher ground to the west, and dip under the more recent river-gravels to the north; but they are continued along Pipeclay Gully, at first on both sides, but finally on the left bank only, to the point where the creek joins the river. Cliffs and isolated masses of hard cement appear in the upper part of Pipeclay and on the downs opposite, but these appear to have been but little regarded as a possible repository of gold. Between the highly-inclined banks of white clay and the schist rock forming the slopes of Blackstone Hill are bands of quartz gravel that have been and still are being worked, but as these are followed to the westward the gravels die out and the clays rest directly on the schist rock, still, however, maintaining a high dip to the north.

*Hill's Creek.*—On the east side of Blackstone Hill Saddle there are clay-bands with lignite-seams, and underlying these quartz grits, the latter being very much disturbed, due to the action of a fault, which can by surface-indications be traced running north-and-south along the line that limits towards the east the quartz drifts. The quartz drifts at this place have been worked to a considerable extent; and also, on the southern slopes of the Hawkdun Home Hills, both quartz drifts and rough sandstone-wash have been worked since the early days of the Otago diggings. Followed east along the southern slopes of these hills most of the workings appear in coarse sandstone gravels, which must be regarded as "Maori bottom." Beds of white quartz cement stone occur here, and also nodules of clay iron-ore in connection with the wash and lignite beds. Of these workings, formerly known as Blackstone Hill Diggings, writing last year, Mr. Gordon says, "Some very rich patches of ground were worked on the saddle of the range where the old quartz drift appears, but as this drift gets further into the ranges it is covered over with a more recent deposit, or it may be said that since the quartz drift was deposited here the rocks have been tilted up, and are now positively overlying the quartz-drift deposit. Underneath the quartz drift there is a bluish-black puggy bottom, or, at least, when exposed to the action of water and the atmosphere it gets soft and swells up, so that the superincumbent weight of material above the auriferous layers in the quartz drift has the effect of causing the bottom to bulge up, and very little of the auriferous layers can now be got at. The drift has been worked along the foot of the hill for a considerable distance, but it has not so far proved remunerative; but Mr. Johnstone is still continuing a cut-up through the ground with the hope that it will improve."\*

*Marion Burn.*—Marion Burn, in its lower part, runs along the northern base of the Hawkdun Home Hills. In the creek-bed the slate rock is exposed, but higher on the hill-slopes the quartz drift covers the slate rock to a considerable extent, and rises to a height of 2,500ft. above sea-level. The bed of Marion Burn has been worked for gold in its lower part, but not above the point where it is crossed by the most easterly line of quartz drift; and to either, or both, of the lines of quartz drift—that on the Home Hills, and that running along the foot of the Hawkdun Mountains—must the gold found in Marion Burn be referred. The gold found in the Marion Burn is reported as being of a coarse description, and, as usually the quartz drifts contain moderately fine gold, it may be assumed that on the northern slopes of these hills it is coarser than usual. Very little prospecting has been done in these quartz drifts. Only two prospecting-holes were noticed, though it may be that others exist.

*Western Base of the Hawkdun Range.*—From the northern base of Little Mount Ida a line of quartz drift runs along the foot of the Hawkdun Range to near the head-lift of the Mount Ida Water-race. About three miles above the junction of Spencer Burn with the west branch of the Manuherikia River quartz drift occurs on the slope of the range at some height above the level of the Mount Ida Water-race. Some years ago a rush took place to this locality, it having been reported that a second St. Bathans's had been discovered there; but after what may be regarded as a fair trial the place was abandoned, but not before it was shown that with abundance of water and in a less remote place the ground might have been made to pay for working. From the junction of Spencer Burn for some considerable distance the line of drifts is below the level of the water-

\* Goldfields Reports, 1893, p. 118.