

the ground be very rich, without water being brought on to the ground the method adopted of working was not likely to pay. The area of the deposit is also too small to warrant the construction of costly works for the purpose of bringing water on to the place.

*Sutherland's Hill.*—This lies to the east of Coghill's Hill, and is divided from it by a deep gully. It is also capped by quartz gravels and cements, but so far as could be seen no prospecting for gold has been done on it. The area of quartz gravels is greater than on Coghill's Hill, and should they prove auriferous, which is likely, water could be got on to some parts of the deposit, or the wash could be shot down the hill to the Waitahuna River.

*Hills East of Waitahuna Gully.*—There are several patches of quartz grits lying on the hills immediately to the eastward of Waitahuna Gully. Gold is reported to have been found in these gravels, but, all the water that could be brought on to the ground being employed elsewhere, nothing appears to have been done in the way of testing them.

*Waitahuna Flat.*—Above and below the Township of Havelock, beneath the superficial gravels deposited by the river, lie beds of clay, lignite, and quartz drift, of which the latter, it is generally supposed, may be gold-bearing. No serious attempt has been made to reach through this false bottom to the bed-rock, on which it may be expected the more auriferous gravels will rest.

*Manukau Hill.*—This lies on the left or east side of the railway-line from Lawrence to Milton, and nearly opposite Mount Stewart. As seen from the railway there appears to be a small area of quartz grits on the top of the hill. These have been worked with highly paying results, but the deposit is isolated and apart from any extensive tract of the same material; and where similar beds are present, as is the case to the south and east, they are either not prospected, or, being prospected, have proved not sufficiently auriferous. Mr. Cox says, "At Coombe's claim, between Adams's Flat and Waitahuna, grits occur which resemble the coal-grits as developed at Pascall's. As far as I can judge, these beds are younger than the cements themselves, since the coal at Pascall's no doubt overlies the cements, and the grits rise into hills in the surrounding district (quartz hills) between Adams's Flat and the Tokomairi Plain."

*Glenore Railway-station.*—Half a mile above the railway-station at this place the tops of the hills are covered with a deposit of quartz grit, loose, or cemented into a hard rock. The beds strike away to the south-west in the direction of Stony Creek and Stirling, and gradually dip under the Tokomairi Plain and its continuation as low ground to the Molyneux River between Stirling and Kaitangata. The low hills and downs between the Tokomairi Plain and Kaitangata Lake are composed of quartzose sands and grits, with beds of shale and brown coal, all of which may be seen in the numerous railway cuttings or in natural exposures over this part of the country. These may possibly be gold-bearing, but there is less likelihood of their being so than are the similar beds that lie farther among the hills to the north and north-west. Yet it is not to be denied that payable gold is found in similar beds much farther removed from the source whence the quartz grits have been derived than are the beds skirting the Tokomairi Plain, and forming the low hills and downs at its western end. The same remarks apply to the whole area of the Kaitangata Coalfield, and to the slopes of the hills to the north of the Tokomairi Plain as far as the Waiholo Gorge or thence to the Waipori River. Further on, when other facts have been brought to bear on it, this subject will have due consideration.

*Upper Waitahuna.*—The road from Lawrence to Waipori crosses the sources of two branches of the Waitahuna River in which there are recent alluvial deposits that deserve some notice. It is not my intention, as it would serve no purpose, to describe in detail modern river- and creek-gravels, wherever these may chance to be gold-bearing, but there are instances of more than ordinary interest, illustrating in what manner some of the older drifts have been formed; and the deposits along the source branches of the Waitahuna River is a case in point. On the road from Lawrence to Waipori the schist rock is at many places so crowded with thin laminae of quartz that sometimes from a fifth to a third of the whole may be said to be quartz. The slate in such cases very easily decomposes, and readily falls into a micaceous clay, speedily removed by the agency of water, while the harder quartz is left or carried along to where it forms beds of nearly pure quartz gravel or angular grit, in the gully-bottoms and along the banks of the different creeks. This is seen notably at two places on the road from Lawrence to Waipori, and in both cases the quartz gravels have been turned over in search of gold. From Lawrence to Waipori there are no reefs or reef-quartz to be seen along the road, yet the gold of the valleys has evidently been derived from the adjoining hills. This is shown by the manner in which the workings have followed the lesser gullies to their heads, or, it may be, on to a spur, along which the last efforts of prospecting have been made. Clearly the gold has been obtained, not from distinctive reefs, but from bunches and formations of quartz in the schist rock. The considerable body and the purity of the quartz shingle formed as above described showed distinctly how in a more extensive watershed much larger masses of quartz drift might be formed; nor was such an illustration far to seek.

*Upper Waipori Valley.*—The low grounds of this part of the Waipori Valley may be divided as follows: First, the Jutland Flat and river-valley, above the township; second, the river-flat below the township to Post Office Creek; third, Lammerlaw Creek.

The Upper Waipori Valley and Jutland Flat to the junction of Lammerlaw Creek is filled with detrital matter, mainly quartz and beds of clay in two divisions, an upper and a lower. At the base of the upper division, 10ft. to 20ft. from the surface, there is over the Jutland Flat a deposit of clay and lignite which constitutes a false bottom, to which level early mining operations were carried, and beyond which dredging operations are not carried at the present time. Shallow old workings extend up the valley some considerable distance, all of them apparently on this false bottom, as are the workings on the south side of the valley, opposite the township. Where the clay and lignite beds were absent, in such workings as were examined by me, it was very hard to distinguish between the upper and the lower series of quartz gravels, although this appears to be easily done by the miners. The underlying beds, below the lignite, appear to be mainly composed