

of quartz sands of coarser or finer grain. Their thickness has not been ascertained, except it may be in the vicinity of the present hydraulic workings of the deep lead close to the bank of the river. The lower flat, from the township down stream to where the river-bed is seen to be schist rock, is, like the upper flat, covered by a superficial wash, having clay and lignite as a false bottom, or simply, as higher up the stream, there is a parting, often obscure, which limits the superficial gold-bearing drifts, and separates them from the lower. Together, the upper and the lower flat may have an area of some two square miles, extended along the river-valley a distance of some six miles.

What is singular and distinctive of this Waipori drift-deposit is that it is confined to the low grounds of the valley, and, unlike the similar deposits of the Tuapeka and Waitahuna watersheds, there is not a trace of it on the higher grounds. It is also distinguished by the total absence of cement-stones, which have formed elsewhere in similar deposits, although these abundantly occur to the north-east and the south-west, where the quartz grits occur on high ground. Weighing all things together, the conclusion is that these Waipori quartz drifts have originated much in the same manner as, but on a larger scale than, those described as present in the Upper Waitahuna Valley.

Deep-lead, Lower End of Lammerlaw Creek.—A little above the junction of Lammerlaw Creek a deep and narrow run of quartz drift trends nearly parallel with the creek, and has been traced across the valley of a small tributary stream to a distance of a quarter of a mile, when it divides, becomes tortuous, and shallows out to the surface. This narrow run of deep ground (some 30ft. to 60ft. in depth) is thought, on entering the valley of the main stream, to be continued in a south-east direction, or at an angle across the flat opposite the township; but this is unlikely to be the case, as on joining the main body of drift its distinctive character as a specially rich run or lead would be lost, due to the greater power of the main stream in comparison with Lammerlaw Creek. There can be no doubt that the ravine of the Deep Lead was once the bed of Lammerlaw Creek.

Island Block, Old River Channel.—From the Beaumont to five miles beyond Rae's Junction the main road along the west side of the Molyneux Valley is some distance from the river. The river runs along a narrow valley, rock-bound, and closely backed by hills on each hand—hardly a gorge, but something like a gorge is thus formed. Island Block constitutes a range of hills of moderate elevation, which, with the hill-slopes on the opposite side of the river, confine the Molyneux within the limits of a comparatively narrow channel with steep banks, perhaps correctly enough called a gorge. On the western side of the Island Block Range an old channel of the Molyneux separates it from the Spylaw Range to the west. Near the southern end of this old channel of the Molyneux the extensive hydraulic-sluicing operations of the Island Block Company have for some time been in progress.

Mr. Gordon, in his report of last year,* says, "This company has done a considerable amount of work, and have expended over £21,000 on the plant and claim. The place where they carry on their operations has been known for many years as the Island Block, on account of a rocky ridge running alongside the river on the western side for a distance of about three miles and a half; and on the western side of this ridge is a wide low valley between it and the main range. This ridge is termed the island: hence the name of the Island Block. Judging from the topographical features of the country, there seems no doubt that the Clutha River at some time flowed at the western foot of this island, as a distinct channel can be traced out of the present river-bed where the low ground on the southern end of the island or rocky ridge joins the low valley previously referred to and the river. After the company commenced operations, near the side of the river on the southern end of the island, they got into a deep gorge full of rough rounded river-wash, in the bottom; and on the southern side of this deep gut, on the shelving reef, very rich auriferous drift was found. But there was very little gold found in the bottom of the deep gut, the best layers being higher, amongst the drift. On taking a cut up from the river towards the main range they got off the run of gold, and after working over twelve months, sinking paddocks here and there, they came on rich auriferous drift in the low valley on the western side of the island at the southern end; but it is really very questionable if they have got the original river-bed yet. The valley is from 20 chains to 35 chains in width, and it takes some time to get a cut put across this. Judging by the curves of the main range on the western side of the island, the river has at one time flowed close to the foot of the range, and wherever a gentle curve inwards is found in the course of a stream the water follows that curve. Hence, it seems to me that probably the deep ground will yet be found between the present workings and the main range; although there is little doubt but that the river must have had different channels from time to time along the valley, and that the present workings are in one of these. The ground is about 40ft. in depth. At the time of my visit there was in the centre of the paddock a deep gut. The rich layers were a considerable distance above the bottom, from which very good prospects were being obtained by washing a little of the drift on a shovel."

Under the loamy subsoil the drift is moderately coarse, well-rounded river-wash, consisting mainly of the harder parts of the schistose rocks of the river-valley from this point to the upper end of the Dunstan Gorge, mixed with a proportion of sandstones and quartz pebbles. There are no clay banks dividing the drifts into different parts, and the whole is just what might be expected as the deposit of a large and moderately-swift running stream. If this is to be taken as illustrative of the action of a considerable river, and comparison made between the deposits at this place and some or many of the supposed old river-channels, the results, it will be found, do not always agree, and there would be some difficulty in understanding such deposits as are found at the Blue Spur, Weatherstone's, the Bannockburn, the Nevis, and the Cardrona if they were strictly to be compared by this standard. But this is not actually necessary, and the deposits of the old channel of the Clutha at Island Block may be typical of but one phase only of the river's action, and the slightly different though generally agreeing type may yet be discovered.

* Goldfields and Mining Report of New Zealand, 1893. Report by Mr. H. A. Gordon, Inspecting Engineer, page 112.