

## MOUNT IDA WATER-RACE.

Although this water-race has been in use for the last fifteen years, the revenue derived from the sales of water has never paid for the expense of maintenance, yet, notwithstanding this state of affairs, it is and will in the future be a valuable property. Even if there were no mining whatever, the elevation at which this race is constructed commands all the Maniototo Plains, and the water could be used for irrigation purposes. This water-race is managed by a local Trust, but certainly not with success. In January last Mr. R. Brown, County Engineer, and myself, at the request of the Hon. the Minister of Mines, inspected the race and the site of a proposed reservoir in the valley of the Eweburn.

The water-race is constructed from the middle branch of the Manuherikia River to Speck Gully, a distance of about seventy-seven miles, the water being conveyed in an open conduit for the whole distance, with the exception of about 7 chains of a tunnel, and four pieces of fluming, the largest of which is about 2 chains.

*Shingle-creek Crossings.*—There are a number of creeks between the head of the race and the place where it crosses the Marion Burn or left branch of the Manuherikia River; the ditch being constructed across the shingle-beds, every flood washes away the banks on the lower side, filling up the channel of the race. The following statement shows the nature of the creeks referred to:—

Name of Creek.	Width of creek-bed, all shingle.	State of Creek in Ordinary Weather.	Remarks.
	Chains.		
Manuka Creek ... ..	1	Water	Loose shingle-bed.
Little German Gully ... ..	0½	Dry	"
German Gully Creek ... ..	10	Water	"
Kirkwood Creek... ..	1	"	"
Little Bremner's Creek ... ..	0½	"	"
Big Bremner's " ... ..	1	"	Fair crossing.
Shepherd's Hut " ... ..	10	"	Loose shingle-bed.
Trinity " ... ..	0½	Dry	"
Old Shepherd's " ... ..	1	Water	Fair crossing.
Ten-chain " ... ..	10	"	Loose shingle-bed.
Hut " ... ..	1	"	Fair crossing.
Pierce's Gorge " ... ..	1¼	"	Bad crossing.

It will thus be seen that there are 37¼ chains of creek-beds composed of very loose shingle, across which the water-race channel is excavated. The result is that there is always a large amount of leakage, and, although some of these gullies and creeks are dry in fine weather, in wet weather they are mountain-torrents. The race is constructed alongside the foot of a high steep range, and the water is continually bringing down large quantities of shingle, which is deposited in the beds of the gullies and creeks. Therefore, after any heavy rain the ditches across these creeks are always either completely filled up to the surface of the bed, or else the water has scoured a deep channel in the shingle across the race-channel. These creeks and gullies being long distances apart, it takes a considerable time before the repairs are effected. In fact, at the very time when there is a good supply of water available, the race is invariably being repaired. This state of things should not exist; the race should be differently constructed across these streams, so that the water would be always available for mining.

*Construction of Race.*—The greater portion of the water-race is constructed on an easy sideling, and in many places over flat ground; but no attempt has been made to construct a foot- or horse-track alongside the race. This could have been easily done by the maintenance-men from time to time, by merely levelling down the top of the excavated material, so that a man could ride alongside the race for the whole of the distance, for purposes of inspection. Owing to the nature of the ground through which the race is constructed, constant attention, especially during wet weather, is necessary, and as each maintenance-man has from sixteen to twenty miles of race to look after it is absolutely necessary that he should ride in order to effect necessary repairs quickly.

*Condition of Race.*—The condition of the race itself is very unsatisfactory, the upper side in many places having partially slipped in, either during heavy rains, or probably after frost; and in some parts the material is still lying in the race. The vegetation on the lower side of the ditch in many places is very considerable, and hangs into the ditch amongst the water, which, of course, greatly reduces the carrying-capacity of the channel. Judging from the appearance of the top of the excavated material, and the complete rabbit-warren of the low side of the race, with holes burrowed in every direction, it leads one to suppose the race has not been thoroughly examined for several years, or, if it has, the motto has been to "Do nothing more than is actually necessary to make the water flow in the channel."

*Capacity of Water-race.*—There are several places where there are steep sidelings which could be done away with if the water were carried across the gorges in a siphon. This specially applies to Pierce's Gorge, and the Wedderburn. At the former place a siphon 30 chains in length would cut off nearly two miles of a very steep rocky sideling, which gives a great deal of trouble every spring: the frost loosening the high bank on the upper side, and filling up the race. The same thing occurs at the Wedderburn; and there a siphon from 40 to 50 chains in length would also cut off 4 miles 50 chains of very bad ground. According to the longitudinal sections of race-line, which we examined on our return to Naseby, there is about 36ft. fall between the