

water from the Kumara Water-race is £2 per sluice-head per week. The cost of the Kumara Water-race and channel has been £54,601. These works were commenced in 1876 and completed in 1879. Taking the whole of the works connected with the Waimea-Kumara Water-supply, they have cost about £173,077, and the value of water sold amounts to £60,338. The approximate amount of gold obtained by the miners whose claims were worked by means of these works was 140,861oz., representing a value of £538,359.

Nelson Creek Water-supply.—This water-supply is brought from Lake Hochstetter, which is about 830ft. above sea-level, on to the terraces on the east side of Nelson Creek, in the County of Grey. The total length of the works connected with this supply is about eighteen miles. The head-works consist of a large reservoir capable of holding six months' supply without any water coming into it. This reservoir is made by placing an embankment across Nelson Creek, near Lake Hochstetter, thereby raising the original surface of the lake—which covers an area of about four square miles—12ft.; this extra depth of water also increases the area of the lake to a considerable extent. The embankment is made of earthwork, having a puddle-wall in the centre; the maximum height of the embankment being 24ft., and the length on the top about seven chains. It is 12ft. wide on the top, and has a slope on the breast of 3 to 1, which is pitched to a depth of 18in. with stones, while the outside slope is $1\frac{1}{2}$ to 1, and sown with grass. There is an outlet-tunnel constructed in the solid ground at one end of the embankment, which is lined with bricks set in cement; and at the intake end of the tunnel there is a sluice-gate for regulating the supply of water to the race. The water is conveyed in tunnels, aqueducts, and open conduits, which are constructed on a grade of 1 in 660, having a carrying capacity of sixty sluice-heads of water. There are about seven miles of tunnels, one mile of aqueducts, and the rest in open conduits. The country through which this supply is taken is very rough and broken, having a succession of deep gorges with almost perpendicular sides. These had to be spanned with bridges from 60ft. to 150ft. span. The longest of these bridges are constructed on the arch-braced principle, with boxing on the top. The size of the open conduits is 5ft. 3in. in the bottom and 3ft. 3in. deep, having a slope on the sides of $\frac{1}{4}$ to 1. The principal tunnels are constructed 3ft. 9in. wide and 6ft. in height in the clear. These have a drop of 2ft. at the intake end, which gives them the same carrying capacity as the open conduits. These works were first commenced in 1873, and were completed in 1878, their total cost being £90,152. The approximate amount of gold obtained by the miners by means of this supply up to the 31st March, 1886, was 26,341oz., representing a value of £100,754; while the value of water sold was £13,720. The price paid by the miners for water from this supply is as follows: From 8 a.m. to 4 p.m., £2 per head per week; from 4 p.m. to midnight, £1 10s. per head per week; from midnight to 8 a.m., £1 per head per week; continuous water, £3 per head per week for the first two heads, and £2 10s. for each additional head per week.

Charleston Water-supply.—This supply is taken from a reservoir which is constructed in a basin, and is entirely dependent on rain-water to keep it full. The water is brought on to the flats and terraces on the water-shed of the Nile River, in the County of Buller. This reservoir, and a water-race leading from it, were constructed by a private company; but, the supply being inadequate to the requirements of the district, the Government was induced to purchase this company's rights and enlarge the works, which has since been done. The purchase was completed in 1879; but, as the field did not prove so extensive as was at first anticipated, the enlargement has only been completed during the last year, and an extension is now in course of construction. The carrying capacity of the tunnels, flumes, and open conduits, which are, in the aggregate four miles in length, and form the works in connection with this supply, is twelve sluice-heads, and the cost of these works up to date has been about £14,183. The approximate amount of gold that this supply has been the means of obtaining is 5,478oz., representing a value of £20,953; while the value of water sold has been £3,529. It may be considered a supply of small magnitude; but it is sufficient for the class of mining there is in this locality, which is working black sand. The whole country here has been covered by the ocean at one time, and the gold obtained is of the same character as that found on the ocean-beaches, very fine and scaly. The price charged for water from this supply has hitherto been £2 15s. per sluice-head per week.

Mount Ida Water-supply.—This supply is taken from one of the branches of the Manuherikia River, in the County of Maniototo, and works have been constructed about seventy miles in length, which consist principally of open conduits, having a carrying capacity of about forty sluice-heads of water. This is brought on to the terraces in the vicinity of Naseby formerly known as the Hogburn Diggings. Near the termination point there is a reservoir constructed for storing water when not used for sluicing, which acts as a reservoir to supply flushing-water to a sludge-channel, which was constructed in connection with this supply for ten miles in length, in order to get clear of the tailings from the mining-claims, and deposit them on a large flat near the Taieri River. This sludge-channel, or, properly termed, tail-race, is constructed 6ft. wide in the bottom, which is pitched with stones, and the sides are lined with stones and scrub. This channel is constructed with three different grades—viz., 1 in 100, the lower portion; 1 in 60, the middle portion; and 1 in 40, the upper portion; which has proved a very objectionable feature in the construction of tail-races, inasmuch as they are always liable to silt up and block at the change of grade. The total cost of these works up to date has been £65,766. The approximate amount of gold that this water-supply has been the means of obtaining up to the 31st March, 1886, is 17,711oz., representing a value of £67,493; and the value of water sold and channel-fees amounts to £11,715. These works were completed in the early part of 1877; but the amount of gold and value of water sold is only calculated from 1878. The measurement of water from this supply is different from any of the other water-races. A sluice-head is known here as 16 inches, or a little over one-third of a sluice-head of water defined by statute. However, it is by the measurement known best in the district that the water is sold; and the price paid is £1 per sluice-head per week.