

8 cubic feet of water per second at the paddock, the static head being 225 ft. The company during 1910 had a brief and successful trial of their plant, and in 1,248 working-hours obtained gold to the value of £224 9s. from approximately 16,000 cubic yards of wash, being at the rate of 3½d. per cubic yard, which is payable. Operations were subsequently suspended to enable a more permanent water-supply to be brought in. This being now almost completed, sluicing will be shortly resumed.

The Mont d'Or Company at Ross, the oldest and most consistent of the dividend-paying alluvial gold-mining companies in Westland, have obtained gold to the value of £4,111, and distributed £1,800 in dividends during the year. Since the registration of the company bullion to the value of £134,749 has been obtained, dividends declared to the end of 1910 being £49,800. Sluicing operations have been carried on whenever the water-supply has been available, which only amounted to 139 days during the year. A new deep-level tail-race at a lower level has been constructed at considerable cost.

At Kumara several new claims have been taken up in the vicinity of Westbrook and Maori Point, in prospect of the early completion of the Government Kumara Water-race extension by a 30 in. steel inverted siphon of 2 miles 1 chain in length, crossing the Valley of the River Taramakau from Larrikin's to Anderson's Dam, North Terrace. During June of the current year the most difficult stage in connection with this water-race extension was carried out by the laying of 650 ft. of 30 in. heavy cast-iron flexible-jointed pipes from specially designed pontoons on to the bed of the swiftly flowing River Taramakau, the velocity of the current varying between 5 and 7 knots. The river pipes were laid by the Mines Department staff under my superintendence. This conduit and its storage-dam will be capable of supplying 46 cubic feet of water per second for twelve hours per day, and if utilized for the development of hydraulic power at the depression in the siphon at the river-crossing will be capable of an output of 2,612 brake horse-power from water-motors. Drawings and photographs in connection with these operations accompany this report.

The Dominion Gold and Ironsand Company have taken up claims covering 200 acres of the once prosperous and very productive old diggings at the Five-mile Beach, Okarito, South Westland. The above claims extend for about two miles along the sea-beach above high-water level and embrace practically all the old beach claims. It is proposed to work the marine gravel containing two or more parallel leads at depths varying to 25 ft. by either hydraulic sluicing and elevating or suction dredge. The company have surveyed and cleared a pipe-line connecting the claims with Lake Alpine. The length of such line is 2 miles 30 chains, and there is a static head of 330 ft. It is proposed to connect lake and claims with a 20 in. wrought-iron main having a capacity of 20 cubic feet of water per second. The lake is in area about 230 acres, with a catchment of about 1,000 acres. Its storage-capacity may be much increased by a small and inexpensive dam. I understand that the company intend to thoroughly prove the ground by drilling prior to laying down a mining plant.

Wheel-of-Fortune Syndicate (Stafford): This syndicate have recently reconstructed their hydraulic-sluicing and bucket-elevating plant upon improved lines. A new bucket-elevator, working on a well-braced ladder and derrick 60 ft. in height has been built from the main bottom (reef) of the paddock. Well clear of this elevator the stones from the claim will be delivered by means of a shoot. The buckets are operated by vertical ropes from a Pelton wheel. A maximum speed of thirteen or fourteen buckets per minute is attainable, but the working-speed will not exceed eight or nine buckets per minute. The syndicate have two pipe-lines, the main pressure line being 1,100 ft. in length; also a drainage tunnel. The capacity of the new plant is estimated to be about 50 cubic yards per hour. A photograph of the bucket-elevator and derrick during construction accompanies this report.

The Ross Goldfields (Limited) having unwatered their mine, which had remained inundated since 1887, the main shaft was retimbered, and mining operations commenced in June, 1910, and continued until the 12th August of the same year, when a breakdown occurred owing to faulty insulators on the transmission line. As a result of this, and the fact that the capital of the company had become exhausted, the mine was closed down, and subsequently the company went into voluntary liquidation. During the two months when mining operations were intermittently carried on, the following returns were obtained: Gravel excavated, 3,111 cubic yards; wash removed, 2,150 cubic yards (280 square fathoms); total gold produced, 480 oz.; gold per cubic yard, 4.46 dwt.; per fathom, 1 oz. 14.28 dwt. The working-cost of the hydro-electric pumping installation averaged £52 per week. The maximum quantity of water dealt with did not exceed 1,000 gallons per minute. The cause of frequent breakdown of the turbine pumps during unwatering operations were: Gritty water causing heating of thrust bearing-rings; heating of lower gland brasses at the delivery end of the shaft; fracture of the steel-ball race. The permanent pumps were placed in an unlined chamber excavated in the gravel at the 7th level at a depth of 350 ft. in the shaft and unprotected from inundation, which occurred at the breakdown of the transmission line in August. It was then found that the shaft-fittings prevented the admission of the sinking-pumps to unwater the chamber in which the permanent pumps and motors were installed. Through exhaustion of capital this company went into voluntary liquidation, and on the 22nd September, 1910, the company was reconstructed. At the annual meeting on the 2nd May, 1911, it was considered advisable, if possible, to sell the hydro-electric plant, and, if funds could be raised, install a bucket-pump (*i.e.*, Cornish draw-lift) to be driven by a steam-engine for greater reliability and efficiency, as recommended by the experts, Messrs. W. P. Gauvain and F. Black, who had reported on the pumping and power plant for the company.

Southern Inspection District.

Muddy Terrace Sluicing Company: Sluicing operations commenced in September, 1909, were suspended in December of that year, and were not resumed until March, 1910, and then only in a tentative manner until May, when the late autumn rains enabled the whole plant to get sufficient water to deal with the faces in a business way. During the time that the race