

would pass over the end while the fine stuff went through the perforators and passed into the sluice-box and tables, would answer better than a revolving screen, the fine material being distributed more regularly on the tables. The dredge is constructed to lift about 60 tons of material per hour, but the manager stated that only about 30 tons are lifted, as it is found that the washing appliances are not capable of treating a larger quantity. This is perfectly true, as it is not capable of treating even this quantity of material properly, the total surface of the tables being only 144 square feet. The quantity of gold obtained up to the time of my visit was about 110oz., but since then the returns have been much larger.

The electro-motive force which works the dredging appliances, pumps, and other machinery, is generated by two Brush Victorian machines, having armatures of 2ft. in diameter. These machines or dynamos work at a speed of about 500 revolutions a minute, producing a current of forty amperes, having an electro-motive force of 650 volts. The dynamo can be worked to produce 800 volts, or equal to about 36-horse power each. These dynamos are driven by Pelton water-wheel 4ft. 6in. in diameter, which makes 213 revolutions per minute. The water for supplying the motive-power is lifted from Rapid Creek, from which it is brought in an open conduit round the side of the range, at an elevation of about 700ft. above the level of the Pelton wheel; but about 500ft. of head is only utilised. The pipes leading from the tank to the wheel are 18in. in diameter for the first 100ft., for the next 900ft. they are 15in., for the next 400ft. 13in., and thence diminishing to 6in. diameter at the lower end, having a nozzle of 1½in. in diameter, which is capable of discharging about two sluice-heads of water.

The electrical plant is situate about one mile and a half further up the Shotover River than where the dredge is at work, and the electro-motive power is transmitted by a copper wire about ¾in. in thickness. This is connected with a similar dynamo or motor to that used for generating the electricity on the dredge, and from this machine the whole of the machinery is driven with rope belting. This plant works extremely well, giving no trouble, and shows how electricity can be applied to work machinery of any description when water-power is available within a reasonable distance. Mr. Fletcher, the electrical engineer who erected this plant, deserves the highest credit for the manner in which the work is performed. The same gentleman erected the electrical plant which drives the Phoenix battery at Skipper's, and he has had considerable experience in applying electro-motive power for working machinery.

*Sew Hoy Company.*—This company has recently had three additional dredges constructed. They have now three working on the Big Beach, and one immediately above the bridge at Arthur's Point. These are all constructed on the centre-bucket principle, and are made to dredge a depth of 30ft. The three new dredges were at first all filled with revolving cylinders, but the perforations were found to be too large, and they have been discarded. The material passes from the buckets down the sluice, which is 37ft. long and 3ft. wide, a grizzly at the end, over which the stones and coarse shingle pass over the stern, and the fine material goes over return tables covered with cocoanut matting, but, judging from the manner in which the sand was lying on this matting, it would seem that a great deal of gold could not be saved. The water for sluicing is supplied by a centrifugal pump, 18in. diameter, making 800 revolutions per minute, lifting it into a tank, from which it is regulated into the sluice-box and tables. Each of these dredges is worked with three men on each shift, and kept going for the whole twenty-four hours.

There is another dredge constructed in the gorge between Moke Creek and Arthur's Point, but work had not been commenced at the time of my visit. The situation of it is such that an accident may occur at any time when the river is flooded. It is certainly in a very unsafe position, and men should not be allowed to remain on board when the river is flooded.

*Talisman Company.*—This company has a dredge on the Shotover River, below the gorge leading from the Big Beach. The ground here ought to be payable for dredging, as the bed of the river was not worked in the early days. However, so far the dredging operations have not proved successful. It is found that there is a great depth of shingle and gravel on top of the wash-drift, and it is questionable whether the ladder is sufficiently long to dredge to the bed-rock.

*Frankton Beach Company.*—This company's dredge is working at the side of the Kawarau River. It is constructed to dredge to a depth of 30ft., and is filled with a revolving screen and side transverse tables somewhat similar to those used on the Sand-hills Company's dredge. These two dredges have the best washing appliances so far of any working in this district. The managing director, Mr. Jenkins, informed me that he had obtained 59oz. 11dwt. of gold for the two weeks' work previous to my visit. Since dredging operations were commenced a strip of ground, 200 yards long and 50 yards wide, yielded gold to the value of about £800. This was for three months' work.

Two more dredges are working at the side of the Kawarau River, between the Shotover and Arrow Rivers, and are said to be getting gold. The cost of each of the dredges at work in this district is stated to be from £4,500 to £5,000; and the one at the Sand-hills, including the electric plant, cost about £7,500.

On the Molyneux River, from Coal Creek down to the Beaumont, there are about twelve dredges, some of which have been working the river successfully for many years. The early dredges are worked by a current-wheel, which answers very well in the stream, but they are not suitable for working the beaches where there is an eddy in the river. In some cases steam-engines have been placed in lieu of the current-wheels; these are found to be more profitable, as dredging can then be carried on at any part of the river.

#### WAIKAPA.

The dredges in this locality are constructed on the Welman principle, which are suitable for the class of material to be lifted here, which is principally sand, with very few stones. The Waikapa Creek Dredging Company has been re-formed under the name of the Waikapa Dredging Company, and are only waiting for a new suction-pump, which is daily expected from England, before again commencing operations.

*Six-mile Beach Dredging Company.*—This company's claim is situated about 18 miles from