

to fall in the centre of this box, there is a plate of sheet-iron bent into the segment of a circle and placed on the side of the screen against its revolving motion. As most of the material comes out of the screen on this side, the segment of iron plate shoots it down to the centre of the distributing-box, and by this means it is evenly distributed over the tables on both sides of the screen.

The dredging appliances are worked by a compound steam-engine having cylinders of 8½ in. and 16 in. in diameter respectively, with a stroke of 17 in., making 104 revolutions per minute, the steam being cut off at half the stroke; and the minimum pressure of steam in boiler that is capable of driving the engine to its proper speed is said by the company's engineer to be 50 lb. per square inch. This means that the average pressure of steam on the piston of the high-pressure engine is 42 lb. per square inch, and, taking the low-pressure cylinder to be equal in power to the high-pressure one, then the engines are developing 42½-horse power theoretically. The actual horse-power required to lift 45 cubic yards of gravel per hour, from a depth of 22 ft. under water to a height of 18 ft. above water-level, and disregarding the difference in weight of shingle under water-level, is equal to only a little over 4-horse power theoretically; so that it will be seen that there is a very large amount of power absorbed by friction in dredging.

This company has also another dredge at work a little further down the flat, the hull of which is 93 ft. long, having a beam of 18 ft. The dredging-buckets have a capacity of 3½ cubic feet each, and dredge to a depth of 22 ft., and when going full speed lift fourteen buckets per minute. There is no revolving-screen on this dredge. The material, after being dumped into the hopper, passes into a centre sluice, in which there is a grizzly placed, having bars 6 ft. in length and placed ½ in. apart. Underneath this grizzly is a distributing-box, from which the fine material passes on to tables 12 ft. wide and 9 ft. long, covered with cocoanut matting, and from these tables the material passes into side sluices. The centre sluice is 4 ft. 2 in. in width and 64 ft. in length, and the side sluices are 3 ft. wide and 54 ft. long. This dredge cost £3,370, while the upper one only cost £2,472; but, being of a larger capacity, it pays the company much better than the smaller dredge. The average quantity of material dredged per week by the larger dredge is 8,000 cubic yards, and the average quantity of gold obtained is 24 oz., being at the rate of 1.44 gr. of gold per cubic yard. The average quantity lifted by the smaller dredge is 5,000 cubic yards per week, giving an average of 15 oz. 7 dwt. of gold, which is equal to 1.47 gr. of gold per cubic yard; there being six men and three boys employed on each of those dredges. The expense of working is nearly the same, but the extra quantity of material operated on by the larger dredge gives 8 oz. 13 dwt. more of gold per week, and consequently proves more remunerative for working. The company at the time of my visit were thinking of suspending operations with the small dredge. During the year ending the 31st March last, it is said that this company obtained about 1,495 oz. of gold, which would represent a value of £5,793.

Jutland Flat Company.—This company has one of the most complete dredges there is at work in the colony, as far as lifting the material and machinery is concerned; but in regard to gold-saving, the appliances are equally as defective as in any of the others. Every manager of a dredge seems to be under the impression that he is saving the gold, and that all he is losing is harmless. On one of my visits to Sew Hoy Company's dredges on the Big Beach, on the Shot-over River, the manager was confident that he was saving a very large percentage of the gold, and yet the same dredge actually worked the same ground twice and three times over, and got equally as large returns of gold for working it on each operation. The loss of gold in some of the dredging operations is simply appalling. The auriferous material is lifted, and rushed through the sluices, and again deposited at the stern of the dredge, and in all probability will be worked over again at a profit.

The hull of this dredge is 80 ft. long, with a beam of 20 ft., having the dredging-buckets with a capacity of 3½ cubic feet each. They dredge to a depth of 18 ft. under water, and lift about 23 ft. above the water-level, and travel at the rate of eleven buckets per minute. The dredged material is dumped into a hopper and passes into a sluice-box 4 ft. in width, having a division in the centre, forming as it were two sluices each 2 ft. wide and 58 ft. in length. At the stern of the dredge there is a grizzly in the sluice 10 ft. in length, with the bars of spring-steel, placed cross-wise in the box, and ¾ in. apart. The fine material coming through the grizzly falls into a distributing-box, and thence passes over return tables 5 ft. wide and 12 ft. long. The water for washing purposes is supplied by a centrifugal pump having a runner or disc of 18 in. in diameter, which is driven at a speed of 660 revolutions per minute, and is estimated to be lifting 2,000 gallons of water—5½ sluice-heads—to a height of 17 ft. 6 in. The winches for working the ropes and anchor-chains are very compact, and still have plenty of room to effect any repairs. The engines and the whole of the machinery are kept in excellent order, which reflects the highest credit on those in charge. There is a large area of ground already dredged, and looks on the surface as though a large amount of trenching had been done. The company have constructed a dam in the centre of the river to prevent the tailings from being washed down by the stream; in fact, every care seems to be taken to work the ground without damaging those below them. This company's dredge is working ground about thirty chains up the river-flat from the township, while the Waipori Company are working about half a mile below the township. The total quantity of gold obtained by this company last year is said to be 1,281 oz., representing a value of £4,964.

Clutha Valley.

Most of the dredges on the Clutha River have done fairly well last year. The current-wheel dredges will shortly be a thing of the past, as they are being supplanted by steam-dredges. One would think that the current-wheel dredge would be more economical to work than a dredge worked by steam; but this would only apply when the dredge is placed and working in the centre of the stream. Indeed, current wheel-dredges are only suitable for working in places where the current of the river is strong. They are not adapted for working near the beaches and in eddies, and it is generally in these places where the best of the auriferous gravel-drift is found. The early-