

turn over the old ground and pick up a certain portion of the reef, where, apparently, most of the gold found by them is got, but the number of Chinese is getting less year by year, which shows that the alluvial ground is getting pretty well exhausted.

Blue Spur Company.—During last year this company has had a great deal of litigation and many difficulties to contend with, but they now appear to have got over their troubles, and are getting very fair returns from their ground. Their workings so far have been confined to tailings at the head of Gabriel's, opposite the Blue Spur. These are being elevated on an average to a height of 60ft. The manager estimates that during the year ending the 31st December last 410,000 cubic yards of tailings have been elevated and sluiced, which yielded 1,478oz. of gold. This would give an average yield of only $1\frac{3}{4}$ gr. of gold, or $3\frac{3}{4}$ d. per cubic yard. The expenditure on wages during the same period was about £2,580, or about $1\frac{1}{4}$ d. per cubic yard of material sluiced. This shows that extremely poor ground can be made to pay for working. In my last report some figures were given to show the power required to elevate the tailings. In comparing these with the work done now, the following figures will show the power absorbed in friction: They have two hydraulic elevators, one of which is single, and the other double. The single elevator lifts the material to a height of 56ft. 4in., using 150in. of water on breaking-down nozzle and 350in. on the elevating-jet, and lifting 56 cubic yards of tailings per hour, or 3,136lb. of tailings per minute. The quantity of water lifted is 500in., which is equal to 46,875lb., making the total weight lifted 50,011lb. to a height of about 56ft. 4in. per minute. The quantity of water used to do this work is 350in., with a head of 400ft., which is equal to 397.7 theoretical horse power, while the actual power required to lift the water and material is equal to 85.4-horse, thus showing that 312.3-horse power is absorbed in friction. The second elevator lifts the material 68ft. 6in., using 500in. of water in the elevating-jet on the upper lift and 300in. in the nozzle and elevating-jet combined on the lower lift, which elevates the water and material to a height of 14ft., the head of water on the elevating-jet being about 400ft. Taking, therefore, the total quantity of water and material lifted by the upper lift, it amounts to 5,137,500 foot-pounds, and the horse-power required to do this work is equal to 155.6, while the power of the 500in. of water, with a head of 400ft., is equal to 568.2 theoretical horse power. This shows that 78 per cent. of the power of the water was absorbed in friction in the case of the single hydraulic elevator, and 73 per cent. in the case of the upper elevator in the double one.

During the three months ending the 31st March last 760oz. of gold was obtained, thus showing that the ground that has recently been worked was considerably richer than any the company have worked previously; but this ground is nearly sluiced up to the gut going through the Blue Spur. The cement in the Blue Spur is apparently lying in a basin, the bottom of which is about 40ft. deeper than the bed-rock in the bed of the gully, where the present sluicing operations are carried on. This basin is at the present time filled with water to a depth of about 70ft. It is the intention of the company, as soon as the tailings are sluiced away up to the place where the cement commences, to sluice off the top of the cement after breaking it up with either blasting-powder or dynamite; but, judging from the hardness of the cement, very little of it can be worked by this method. If it contains gold all through it, it requires pulverising machinery to be adopted before the gold can be recovered in the sluice-box.

At the time of my visit the company were increasing the capacity of their water-race from the Beaumont River, from which they hold a right of eight sluice-heads of water. The water-race was constructed many years ago, but its carrying-capacity was only about three and a half sluice-heads. It is now being enlarged for about 4 miles 22 chains, to carry twelve sluice-heads, and the water is then led into the Waipori Race, at the Beaumont Saddle. When this enlargement is made the company will have a supply of about forty-two sluice-heads of water, instead of about thirty heads, as at the present time.

Annexed are plans of the hydraulic plant used by the Blue Spur Company, furnished me by Mr. J. Howard Jackson, the superintendent of the company. These show all details of the elevators and washing appliances.

The elevating-pipes are 15in. in diameter, some of them being made of steel, No. 12 B.W.G. The liners at the bottom end are made of hæmatite iron having an internal diameter of about 6in. when new, and they wear away until the inside diameter increases to 8in. and sometimes to 9in. On asking the manager about the wear-and-tear on these bottom liners, he informed me that the material being fine gravel with very few large stones amongst it it never breaks the liners until the metal is worn down to about 3in. thick, the wear-and-tear on the rest of the elevating-pipe being very small. In connection with gold-saving, Mr. Clayton, the working manager, has applied for a patent for a ripple made with cast-iron sides and cross-bars of angle-iron 2in. wide placed $\frac{3}{4}$ in. apart. These are 3ft. wide, and made in 2ft. lengths. There is nothing peculiar in the shape of these ripples, neither are they new. Last year when visiting the Island Block Company's and the Hercules Company's workings in the Clutha Valley, angle-iron ripples were used, the only difference being that they had no cast-iron sides, which would not make the slightest difference to their gold-saving capabilities. There have been, on an average, about thirty men employed by this company during last year.

CLUTHA VALLEY.

This is one of the richest auriferous-drift valleys in the colony: almost every place containing wash-drift on the hillsides and also the beds of the tributaries leading into this valley contain sufficient gold to pay for working if a supply of water could be obtained. When so large a river as the Molyneux is flowing through this valley it may be wondered why a supply could not be obtained from this river, or some of the lakes which drain into it, but this would be so gigantic an undertaking that it would require an immense capital to carry it out, and unless a very large area of ground was secured the outlay would not be justified. The country along the side of the Clutha Valley is of such an extremely broken and rocky character, that it would require an immense number of viaducts or siphons to cross gullies and breaks in the side of the range; the character also of the