

expected that a full and regular supply of water will be available for the future, except under very exceptional circumstances. From the date on which the company commenced work up to the 22nd of January last, the total quantity of gold obtained amounted to 530oz., of the value of upwards of £2,000. The quantity of wash-dirt from which this has been obtained is estimated at 70,000 cubic yards, making the average per cubic yard 3·65gr., or a little over 7d. This does not include a part of the bottom which, at the date of last report, had not been fully cleaned up, and from which about 200oz. was expected to be realised. Should this turn out as good as expected, it will bring up the average yield per cubic yard to 9d. or 10d. This is a splendid yield, and leaves no doubt whatever about the value of this part of the company's property."

*Blue Spur Company.*—This company have now got fairly into the cement workings, and will in course of the year be able to see whether the cement can be worked at a fair profit or not. The workings in the old ground—or what may be termed the tailings and headings left in the gully—was all worked in November last, and a commencement made on the cement. At the time of my visit in January last, the manager was experimenting to some extent with the view of arriving at the most economical method of working this class of material. He had two sets of horizontal rollers 2ft. long placed in the sluice-box, the top roller is 2ft., and the bottom one 9in. in diameter, having a clear space between them in the first set of 3½in. The large rollers have hæmatite iron rings, 4in. thick. As soon as the material leaves the first set it travels with the water for a short distance and goes through a second set of rollers, which are set with an opening of 2½in. The water brings all the material down the tail-race, and, before it comes to the first set of rollers, a certain quantity of the fine material and the water passes over a perforated iron-plate and falls into the box below, there being a sudden drop in the sluice-box at this place which is about from 5ft. to 6ft. ahead of the first set of rollers. The fine material and a certain quantity of the water passes underneath the bottom roller, and the rest rushes down on the false bottom and passes through the rollers, the cement getting broken up in pieces about ½in. in diameter; some pieces may be a little larger, but the bulk of the material is tolerably well broken up. These rollers are driven by a turbine water-wheel, and appear to revolve at about one-third the revolutions of the turbine, or about from 130 to 140 revolutions per minute. The quantity of water used on the turbine to drive this roller-crushing machinery is 500in., with a head of 375ft., which would be equal to about 319 horse-power, after allowing 40 per cent. for friction of water in pipes and turbine. The whole cost of this machine is said to be £438.

With regard to the efficiency of the roller crushing-mill, it cannot be said to be a success. In the first place the cement has to be broken up in the face by manual labour to pieces about 6in. in diameter before it is sent into the sluice, which is too slow a process for low-grade cement to be made to pay for working; secondly, there is mixed amongst the cement very hard-rounded stones, which, when they come down the sluice to the rollers, do not break up, but stick in front with the rollers sliding on them, and when perchance one piece gets through the first set of rollers, the same thing takes place at the second set. It ought to be mentioned that the upper roller axle-blocks slides up in a groove, so that when any very hard stone or perchance a hammer were to get into the sluice, it could go through the rollers without anything breaking; the top roller would merely lift up sufficiently to allow it to get through. In addition to the hard stones skidding in front of the rollers, it has the effect of causing a blockage in the sluice. This frequently occurs, and requires a man to be standing continually at a lever to raise the iron plate in front of the drop in the sluice, and allow all the material, coarse and fine, to pass down under the bottom rollers and get away without being crushed up.

It is a difficult matter to design a machine to treat this cement successfully. It can only be made to pay for working by putting a very large quantity through at a nominal cost. Plenty of it only contains a few grains of gold per cubic yard; some portions of it is richer than others; but unless operated upon in a wholesale manner, there is very little hope of success attending the venture. The machine designed and constructed by Mr. Jackson is an ingenious one, and possibly he may yet manage to remedy its defects. The material to operate on is different to any either in this or any of the Australian colonies that has hitherto been attempted to be worked by crushing-machines, and there is no record of similar material being crushed in America. In many of the hydraulic-sluicing claims on the Pacific Slope the ground is loosed by large blasts, but this cement is more like a conglomerate, nearly as hard as stone, and when blasted comes down in large blocks, which does not appear to be affected but to a very slight extent with atmospheric action. It has to be blasted and reblasted before being small enough for men to break it up with picks and hammers to send it away into the sluice. It would be an easy matter to construct a machine to thoroughly disintegrate it, but the important question is at what cost; the value of the gold in the material being so very small, it requires crushing-machinery specially designed to operate on a large quantity of material at a very small expenditure. Having these difficulties to contend with, it is hardly to be expected that a perfect machine can be produced at once to solve the problem of making any low-grade cement pay for working. The whole of the deposit left may be said to be very good ground for sluicing if it could be broken up by the force of water from nozzles.

The yield of gold from this company's claim during the twelve months ending the 31st of December last, was very encouraging—it amounted to 3,470oz. 10dwt., representing a value of £13,330, while the manager informed me that the working expenses only amounted to about £6,000, or, say, the profit on working the claim during this period is in round numbers £7,000, which must be considered highly satisfactory. The average number of workmen employed by this company has been about forty-three.

Sir Walter Buller, in a report to the deputy-chairman of the company (Lieutenant-General Sir John Stokes, K.C.B.), states with reference to the result of last year's working: "We have paid interest at the rate of 8 per cent. on a mortgage of £18,000, and speaking generally we are now in a position to reduce the capital debt by £3,000, to pay 8 per cent. dividend on 7,497 preference shares, and to declare a small dividend on the 80,098 shares of the company." In another portion of his