

metre (284 lb. per square inch), n being the pressure in atmospheres, R^1 the outside radius, and R the inside radius. Concrete only yields under a load of 300 kilogs. per square centimetre (4,267 lb. per square inch), so that it will easily, taking 1:10 as the safety coefficient, support a permanent minimum strain of 30 kilogs. per square centimetre (427 lb. per square inch); and the above-named thickness given to the lining in the present case, which only has a pressure of 19·8 kilogs. per square centimetre (284 lb. per square inch) to withstand, is therefore amply sufficient.

Comparison of the Old and New Systems.

The above table sums up the principal results connected with sinking (a) the first 50 m. with brick lining, and (b) that of the last 50 m. with simultaneous lining of concrete.

Combining the results obtained as regards advance, cost of labour and materials, it will be seen that the method with simultaneous concrete lining affords—(1) A mean daily advance of excavation and lining together 29 per cent. greater; (2) a mean cost of labour for sinking and lining together 82 per cent. less; and (3) a mean cost for materials 148 per cent. less than with brickwork. Moreover, while bricklayers are necessary in case *a*, labourers are sufficient in case *b*; and in the former case accidents may occur through the fall of stones from the sides and moving about the parts of the temporary lining, while in the latter accidents through the fall of stones are impossible, and there is no temporary lining.

INSPECTORS OF MINES.

Mr. JAMES COUTTS, Inspector of Mines, Thames, to the UNDER-SECRETARY, Mines Department.
SIR,—

Inspector of Mines' Office, Thames, 28th May, 1900.

I have the honour to furnish herewith the annual returns and report on the gold-mining industry in the Hauraki district for the year ending the 31st March, 1900.

During the year a new and important gold discovery was made on the Kapowai Block, Kauri Timber Company's lease, near Gumtown. The reefs carrying the gold vary from 4 in. to 18 in. in thickness, and several parcels of quartz broken out and treated have in each case given good payable returns. There is yet a large area of country unprospected between the place where this gold has been found and the falls on the Kauaeranga River, in which it is reasonable to expect gold will be found in payable quantities. Although some of the new mines have been disappointing in not turning out as well as anticipated, it is pleasing to find the gold returns from the district, compared with the previous year, show a considerable increase, and the prospects are such that a decided increase in the output of gold may fairly be expected for the year ending the 31st March, 1901.

COROMANDEL.

Kapanga Mine.—This company's attention has been directed during the year to opening up their mine above the 450 ft. level, the work consisting of driving and stoping on the Kapanga and Scotty's reefs. There have been fifty-one men employed on wages continuously during the year; therefore a very large amount of important work has been carried out, the reefs not being a uniform thickness, but of a buncy character, varying from 3 in. to 4 ft. in thickness. The quantity of ore obtained is not as large as would generally be expected from the number of men employed. The management does not look so much for the quantity of ore that may be obtained as the prospect of discovering a rich chute of gold, and it is to be regretted that a company like this, which has persevered and found money to prospect their mine, has not met with better success. During the year 626½ tons of quartz was treated for 1,346 oz. 7 dwt. of gold; value, £3,868 7s. 6d.

Hauraki Mine.—This company's operations have chiefly been confined to driving and stoping on the various leaders that traverse the claim above the 400 ft. level to the surface. There was a falling-off in the monthly gold returns for a portion of the year, and it must be encouraging to shareholders to learn that a considerable improvement has taken place during the last few months, and should this continue for a time dividends may be looked forward to at no distant date. In the old Union Beach section driving and stoping operations are proceeding on the leaders that traverse this section, and with encouraging results. 2,155 tons of ore and 1,648 lb. of specimens were treated at the company's battery for a return of 5,430 oz. 17 dwt. melted gold; value, £13,881 4s. 3d. 105 men were employed.

Blagrove's Freehold.—This company's operations were stopped for a portion of the year, the funds being exhausted, but, after reconstruction, again resumed work on the 28th May, and since then up to the end of March the drives on the reefs at the 200 ft. level have been extended 634 ft., rising done above this level 261 ft. and a winze sunk 11 ft., an intermediate level driven above the 200 ft. level a distance of 56 ft., and a considerable amount of stoping done. Colours of gold have been occasionally seen in breaking out the quartz, and pieces of picked stone obtained at different times, and several tons of general dirt from the most promising places in the reefs have been preserved for treatment.

Kathleen.—This company's operations have been directed in opening up and prospecting the reefs at No. 2 level, and, as the company has had twenty-four men constantly employed, a very large amount of work has been done. The property to all appearance is well situated, adjoining the Hauraki Company's ground, and it was confidently expected an important discovery would be made here; therefore it was disappointing that, after spending a large sum of money, no gold has been obtained.

Kathleen Crown.—There were twenty-three men employed in this company's mine in the early part of the year, the work being of a prospecting nature, but operations were stopped for the want of money, and pending the company being reconstructed.