

rolls in New York, \$4,500; and the weight, 28,438lb. These require an automatic feeder weighing 2,000lb., costing \$200. The cost, therefore, is as follows: Cost of two sets of 26-inch rolls and one automatic feeder, \$4,700; freight to locality, \$780; cost of setting up, including lumber, \$700: total, \$6,180; or a saving of \$10,938 against stamps." These figures are taken from calculations made of the cost of the different classes of machines in the United States; and I see no reason to doubt their correctness. In any case the difference is so great that, even admitting the first cost of rolls to be half the cost of a stamping-battery of equal power, and working expenses one-third less than that of the stamp-mill, then there is a great saving; but this is not all, for the cost of wear and tear in a stamp-mill to do the same amount of work as two sets of 26-inch rolls would be at least one-half more, or, to put it in round numbers, the total saving by adopting rolls would be at least £5 per day.

Plan and sections of S. R. Krom's steel crushing-rolls can be seen in the *Engineering and Mining Journal*, New York, of the 10th October, 1885; and I have no doubt that machines on this principle will soon supersede the old-fashioned stamping method of reducing ores and quartz.

In adopting steel rolls the ore must first be operated on by a pulverizer to reduce it to somewhat uniform size before the rolls are effective. This may also be said with regard to stamps. It has been found at the Clunes, in Victoria, that the quantity of quartz crushed by the stamping-batteries was greatly increased when a stone-breaker was used in the first instance to reduce the quartz. The increase of work done by stamps more than compensated the cost of using the stone-breaker. With regard to the fineness of crushed material, the steel rolls are proposed to be adopted in some parts of California to crush the tailings from a stamping-battery; which is a reversal of all former ideas on the subject.

There is no doubt a great deal to learn with regard to the most economical method of reducing ores from what I have seen and read about recent improvements in crushing-machinery in other countries. The systems adopted in America are applicable here; and any improved appliance that lessens the cost of labour, or the cost of reducing ores, or the saving of gold and silver, will materially assist in making many of the poor-grade quartz lodes in many parts of the colony remunerative for working.

VALUE OF WORKS CONSTRUCTED.

The total value of works constructed under the direction of the Hon. the Minister of Mines, since the votes were under the control of the department, for the development of the mineral resources of the colony, either wholly undertaken by the Mines Department or by subsidies to local bodies and mining companies, and the amount expended by the Mines Department, and the liability on same on account thereof, are as follows:—

Nature of Work.	Total Cost of Construction or Amount authorized to be expended.	Expenditure by way of Subsidy or otherwise by Mines Department.	Amount of Liability by Mines Department on Works in Progress.
UP TO YEAR 1882-83 AND 1883-84.			
Water-races	£ 29,252 s. 1 d. 11	£ 14,853 s. 9 d. 5	£ 14,398 s. 11 d. 6
Roads on goldfields	21,437 11 2	13,089 16 0	8,347 15 2
Roads and tracks undertaken by County Councils, and subsidized by Mines Department	52,841 17 0	21,844 16 7	10,207 15 9
Works undertaken by prospecting associations, subsidized by Mines Department	13,216 13 4	3,350 0 0	3,400 0 0
Construction of drainage- and sludge-channels, subsidized by Mines Department	5,750 0 0	2,468 15 4	781 4 8
Totals	122,498 3 5	55,606 17 4	37,135 7 1
1884-85.			
Water-races	4,846 1 9	14,596 2 9	4,648 11 6
Roads on goldfields	13,667 10 1	9,630 9 6	12,384 15 9
Roads and tracks undertaken by County Councils, and subsidized by Mines Department	13,566 14 1	6,293 16 6	12,739 17 6
Roads to mines, other than gold, subsidized by Mines Department	4,594 10 0	111 19 0	2,888 1 0
Works undertaken by prospecting associations, subsidized by Mines Department	850 0 0	108 0 0	3,692 0 0
Construction of drainage- and sludge-channels, subsidized by Mines Department	4,050 0 0	1,050 0 0	1,931 4 8
Diamond and other drills	3,600 0 0	1,858 0 0	..
Totals	45,174 15 11	33,648 7 9	38,284 10 5
1885-86.			
Water-races	10,428 14 7	6,063 2 3	6,964 4 4
Roads on goldfields	27,543 18 8	12,360 14 9	27,567 19 8
Roads undertaken by County Councils, and subsidized by Mines Department	14,773 2 3	13,043 15 9	12,477 9 2
Roads to mines, other than gold, subsidized by Mines Department	1,738 13 6	4,327 0 10	490 12 8
Works undertaken by prospecting associations, subsidized by Mines Department	11,860 18 0	1,999 5 7	6,389 5 9
Construction of drainage- and sludge-channels, subsidized by Mines Department	10,459 1 9	3,994 16 6	6,995 9 9
Totals	76,804 8 9	41,788 15 8	60,885 1 4