No. 3. This is a small machine with a detached boiler, as in No. 1, which was in use at Newington, when it bored to 500 feet, running a core of 1⅜ inches diameter. It is not now in use. The price is £750, or £500 without the boiler.

No. 4. This is also a smaller machine intended for tunnelling and preparing blast holes, which takes out a ⅞-inch core at any angle downwards, forward, or upwards for 100 feet distance with a 2-horse-power engine and separate boiler; but is also adapted for working with the same air compresser as the ordinary rock-drill. The price of the small machine, without a boiler, is £320.

The rods used in all the machines are of a peculiar make, being hollow, and formed by rolling them in tough sheet-iron in a threefold cylinder. They can be supplied at the following rate: 7s. 6d. per foot for 1⅛ inches diameter, 9s. per foot for 2⅜ inches diameter.

As far as I can judge from the inspection of the various cores, of which I forward two samples, the performance of these machines is most satisfactory, and confirms the opinion, which I have previously expressed, that such machines would effect a great saving of time and expense in exploring for mineral ground at the Thames, and that their use would probably lead to a revival of mining industry in that district. As the chief object at the Thames would be to determine the position and boundaries of the bosses of undecomposed rock in which no remunerative reefs are to be expected, borings of considerable depth might be required, so that one of the larger machines, either No. 1 or No. 2, would be most suitable.

For testing the distribution of auriferous cements at Tuapeka, for which this process of boring is eminently adapted, smaller size machine No. 3 would, I think, be quite sufficient.

As the work done might lead to very important results as regards individual interests, Government might find it necessary, if the first attempts were sufficiently successful, to create a demand for the services of the machine, to charge for its use, either according to the work done or for the hire of the machine itself. The former arrangement would be obviously the best, as the machine should be in the charge of competent persons experienced in its application; and I therefore enclose a schedule of the conditions and prices for boring by contract adopted by the Australian company.

Trusting the foregoing information may be sufficient to guide Ministers in forming an opinion of these machines, and how far they might be of service for New Zealand,

I have, &c.,

JAMES HECTOR,
Executive Commissioner.

The Hon. the Colonial Secretary, New Zealand.

P.S.—Cores forwarded under separate cover.

MEMO.—The cores may be seen in the office of the Mines Department at the Government Buildings.—O. W.

A.—*List of Outfit for each Machine.*

No. 1 *Machine.*—Large size hydraulic machine to bore to a depth of 1,200 feet, with the following outfit: 1 drill set on car with 4 cast-iron wheels, 1 double-acting pump, 2 oscillating engines 6 x 6, 1 winding barrel, 1 core barrel 10 feet long, 1 core lifter, 200 feet of drill rods with couplings, 1 boiler on carriage with steam dome, 1 funnel, 12 feet suction hose, 12 feet water joint hose, 1 water swivel, 1 vice 3-inches, 1 lifting jack, 1 safety clamp, 1 lb. of copper wire, 1 Brest drill, 2 files, 2 chisels, 1 engineers' hammer, 1 set diamond setting tools, 2 pairs of pipe tongs, 2 screw wrenches (1 12-inch and 1 18-inch), 1 bit set with diamonds, 2 blank bits. This machine will produce a 2-inch core, and leave a 2½-inch hole, and bore though the hardest known rocks or quartz.

No. 2 *Machine.*—To bore 1,000 feet, complete on boiler as follows: 1 drill mounted on locomotive boiler, 1 double-acting pump, 2 oscillating engines 6 x 6, same outfit and rods, &c., as No. 1 machine. This machine will produce a 2-inch core, and bore a 2½-inch hole.

No. 3 *Machine.*—To bore 500 feet, producing 1⅜-inch core, and leaving a 2-inch hole, with boiler and 100 feet of rods, pump, 1 oscillating engine, and the same outfit as No. 2 machine.

B.—*General Conditions for Boring or Prospecting for Minerals.*

1. The work to be paid for monthly on a fixed day as it progresses, at the rates mentioned in the accompanying schedule, the measurement in each case to commence from the surface of the ground.

2. The employer to find water and engine-power (which includes engine, fuel, and driver); or, should he prefer it, the company will find the engine-power at a cost of £25 per month. (An ordinary portable 12-horse-power boiler, with or without engine).

3. The company to find labour, machinery, and all tackle necessary for the proper carrying out of the work.

4. The company does not bind itself to bore any specified depth, but will use its best endeavours to reach that required.

5. The company will keep and deliver to the employer, or his authorized agent only, an accurate account of the depths of the borings, and of the nature and thickness of the strata passed through; and hand over to the employer, or his authorized agent, all cores that may be brought up of rocks bored, and mark and certify such cores, so as to preserve an accurate account of the strata.

6. If a total amount of work of 500 feet, or less, be done, the cost of transport of the machinery to and from the site of operations will be charged. If the total amount of work is between 500 and 1,000 feet, the same charge will be made. If the amount be in the aggregate 1,000 feet, or over, no additional charge made beyond the schedule prices, except in the cases mentioned in paragraph 7.

7. If holes are put down to a depth not exceeding 250 feet each, the cost of shifting the machinery, &c., from the site of one hole to that of another, and re-erecting it, is to be defrayed by the employer.

8. The company does not hold itself liable for any necessary damage to fields or roads that may be caused in getting their machinery on and off the ground.