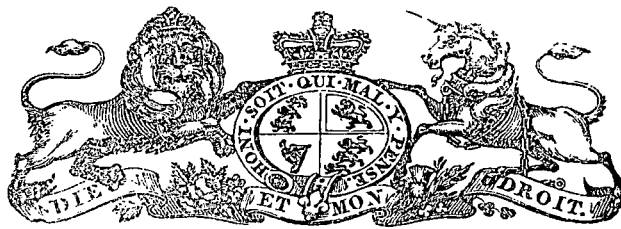


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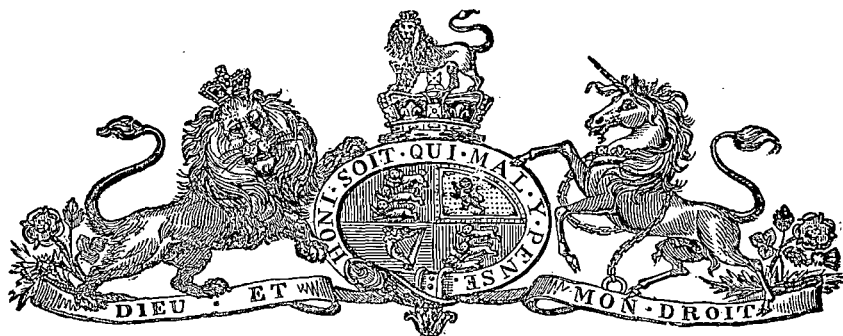
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**DIAMOND DRILLS :**

**CORRESPONDENCE RELATING TO THE PURCHASE OF.**

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Laid upon the Table by the Minister of Lands, and ordered by the House to be printed, August 26, 1881.



## DIAMOND DRILLS.

*Lands and Works Office, Hobart, 4th July, 1881.*

SIR,

I AM directed by the Hon. the Minister of Lands and Works to acknowledge the receipt of your letter of the 13th ultimo, and to thank you for your courteous attention to Mr. Richard Crosby in the matter of Diamond Drills.

If not trespassing too much on your valuable time, the Hon. the Minister of Lands would esteem it a favour if you would kindly furnish this Department with such information as lies in your power respecting the Diamond Drill; also the cost landed in Victoria; whether imported by the Government of your Colony and hired out to Mining Companies; and such other particulars as you may think would be of assistance to the Tasmanian Government should it be decided to send an order to England or elsewhere.

I have the honor to be,

Sir,

Your obedient Servant,

GEO. F. LOVETT, *Ministerial Clerk.*

F. COUCHMAN, *Esq., Secretary for Mines and Water Supply, Victoria, Melbourne, Victoria.*

*Victoria.*

*Department of Mines and Water Supply,  
Melbourne, 18th July, 1881.*

SIR,

IN reply to your letter of the 4th instant I beg to inform you that the cost of three surface Diamond Drills,\* imported from the Pennsylvania Diamond Drill Company, Pottsville, Pa., U.S., and landed in Victoria, amounted to £4000 (about), and the cost of an underground drill,† capable of boring at any angle, imported from the same Company, was a little over £800. These drills were supplied with boring-rods and fittings complete. The cost of a Ford's Patent Air Compressor, &c., to work the underground drill, was £520. This compressor was manufactured in the Colony.

This Department has recently entered into contracts for the supply of five additional drills, out rods or fittings, as under:—

Two underground drilling machines .....	£233 each.
Three large surface ditto .....	£350 each.
(The Atlas Company of Engineers, Latrobe-street, Melbourne.)	
Three boilers for surface drills, at .....	£306 13s. 4d. each.
(Robinson Bros., Sandridge-road, Melbourne.)	

The first drill is to be delivered in ten weeks from the date of the acceptance of contract (8th June, 1881), and each remaining drill in five weeks after that date.

The drills are lent to Mining Companies, who pay £10 per week for the wear and tear of each machine, including diamonds, &c., and these companies also reimburse the Government the sums disbursed for wages.

The average cost per month for wages to a company working a drill with two shifts is about £100, and with one shift (three or four men) is about £50, exclusive of the cost of fuel and water.

Diamonds required for setting in bits, &c. are obtained through the Agent-General from J. K. Gull & Co., Victoria-street, London, or from the Foreign and Colonial Tunnelling and Prospecting Company, 4, Broad Sanctuary, London.

\* Capable of boring from the surface to a depth of 1500 feet.

† Capable of boring a distance of 500 feet.

I forward for your information a copy of the printed conditions under which the use of a Diamond Drill is granted.

I have, &c.

G. F. LOVETT, *Esq.*, Ministerial Clerk,  
Lands and Works Office, Hobart, Tasmania.

F. COUCHMAN,  
Secretary for Mines and Water Supply.

DIAMOND DRILLS.

THE following are the Conditions under which the Diamond Drills belonging to the Government will be allowed to be used in approved localities at the instance of any local bodies or individuals hereinafter called the Prospectors.

1. The management, charge, and working of the Drills, and the employment of the necessary labour, will be under the absolute control of the Department of Mines and Water Supply.
2. The Government will pay all necessary freight and other charges for the actual removal of the machinery from one station to another on any Railway.
3. The cost of providing all necessary carriage from a Railway Station or other place, and the fitting up of the Drills upon any selected site, and all wages and other charges, including the cost of fuel, supply of water, and repair of breakages, shall be borne by the Prospectors at whose instance the work is to be performed.
4. The Prospectors shall at their own cost provide the necessary means for the conveyance of the whole of the machinery and appliances from the nearest Railway Station or other place, but the arrangements for carriage shall be subject to the approval of the officer in charge of the Drill.
5. A requisition for the estimated amount of the cost of working the Drill for each month shall be furnished in advance to the Prospectors, who shall before the commencement of the month forward the amount by bank draft to the Secretary for Mines and Water Supply.
6. If the cost of working the Drill during any month be less than the amount forwarded to the Secretary for Mines, the amount unexpended will be placed to the credit of the Prospectors. If the cost should, however, exceed the estimate, the excess will be included in the next requisition.
7. The Honorable the Minister of Mines reserves to himself the absolute right to suspend or terminate the operation of the Drill at any time should he deem it necessary to do so, and the Prospectors shall not be entitled to any compensation for such suspension of operations.
8. In addition to the charges above-mentioned, a fixed charge of £10 per week will be imposed to cover the cost of wear and tear of the machinery, destruction of diamonds, &c.

DIAMOND DRILL OPERATIONS.

ACCOUNT of Boring done by Machine No. \_\_\_\_\_ at \_\_\_\_\_ for the Week ending \_\_\_\_\_.

	Distance Bored.				Amount of Core obtained.	Running Time.		Kind of Rock.	Feed.	Engineer.	Delay Time.	Cause of delay and Remarks.
	Solid Bit.		Core Bit.			H.	M.					
	ft.	in.	ft.	in.								
Amount previously reported [Day of Month.]												
MONDAY,												
1st Shift,												
2nd „												
TUESDAY,												
1st Shift,												
2nd „												
WEDNESDAY,												
1st Shift,												
2nd „												
THURSDAY,												
1st Shift,												
2nd „												
FRIDAY,												
1st Shift,												
2nd „												
SATURDAY,												
1st Shift,												
2nd „												
Total for Week....												
Total amt. Bored .												

## DIAMOND DRILL OPERATIONS.

## CHECK ROLL.

MACHINE Number \_\_\_\_\_ Month 188 .

Name.	Number or Description of Core at which work has been performed.	Days of the Month.						Total No. Days.

Hobart, 15th July, 1881.

SIR,

I ENCLOSE estimate of cost of Diamond Drill and National Rock Drill furnished me by the Melbourne agents for the American manufacturers.

They inform me that they had none in stock in Melbourne, but that they could execute an order in about three months from time of receiving it, that is, they could land it on the Melbourne wharf in that time.

When in Victoria I went up to Ballarat, Creswick, Maryboro', and Moolort, to see the Drills at work, but was disappointed at each place; they were at the time being shifted to new ground.

I gathered from Major Couchman, Secretary to the Minister of Mines, that the wear and tear was not heavy, and was principally in the diamonds, which cost about £2 each; and also that the greatest wear to the diamonds was when working in drift and not when working in solid rock.

According to the weekly return sheets I saw, the greatest depth bored in one week was 167 feet. The average would, I should think, be about 100 feet, and the expenditure about £25 for that time, or about 5s. per foot.

The Government of Victoria let them out to the different mining companies, finding men, &c., and charging the companies merely the bare working expenses. I understood, however, they intended in future to charge a little more so as to cover wear and tear.

You will notice the estimate only includes 200 feet of rods; extra lengths could, I think, be procured here without difficulty.

I have, &amp;c.

RICHARD CROSBY.

The Hon. the Minister of Lands and Works.

## COST OF DIAMOND DRILLS.

	£	s.	d.
No. 5.—Capable of boring a 4-inch hole, taking out a 3-inch core to the depth of 2000 feet. Outfit furnished with the machine and included in the price—1 diamond bit, 2 blank bits, core-lifter, core barrel, 200 feet drill-rods, independent steam pump, water-joint and hose, safety clamp, lifting-jack, and complete set of tools for operating the machine and keeping bits in order. Price in Bond .....	1445	0	0
No. 7.—Prospecting Drill, oscillating steam cylinder, 4-inch stroke, hydraulic feed, hinged swivel head, and swivel-hoisting gear complete. Will bore a 2-inch hole 800 feet with steam or compressed air, will work vertical or horizontal, outfit the same as with No. 5. Price in Bond .....	686	10	0

Mr. R. CROSBY, 14, Queen-street.

*Lands and Works Office, Hobart, 21st July, 1881.*

SIR,

I HAVE the honor to acknowledge the receipt of your favor covering cost of Diamond Drill and National Rock Drill furnished you by the Melbourne agents for the American manufacturers, for which I am exceedingly obliged.

The information that you have been good enough to obtain and place at the disposal of this Department will be of service to the Government.

Thanking you for the trouble taken,

I have, &c.

C. O'REILLY, *Minister of Lands and Works.*

RICHARD CROSBY, *Esq., Hobart.*

*Hobart, 8th August, 1881.*

DEAR SIR,

WE beg to enclose particulars and *estimated cost in Melbourne* of No. 5 and No. 7 Diamond Drills, exclusive of power required to drive the machines, say, £1443 18s. 1d. and £686 9s. 5d. respectively.

We may very shortly be in possession of further particulars, and if so, will place them under your notice, if likely to be useful.

We have, &c.

MACFARLANE BROS. & CO.

*The Hon. C. O'REILLY, Minister of Lands and Works.*

*COST of Diamond Drill, say laid down in Melbourne.*

	£	s.	d.
1 No. 5 Prospecting Drill without Boiler, capable of boring a 4-inch hole, taking out a 3-inch core to the depth of 2000 feet, outfit furnished with machine and included in price; 1 diamond bit, 2 blank bits, core lifter, core barrel, 200 feet drill-rods, independent steam pump, water joint and hose, safety clamp, lifting jack, and complete set of tools for operating the machine and keeping bits in order—Home cost, 6000 dollars—4.78 dollars to the £ .....	1255	4	8
Estimated Freight .....	22	15	0
Insurance, 2 per cent. on £1280.....	25	12	0
½ per cent. Exchange.....	6	10	3
	1310	1	11
Wharfage .....	1	1	0
Lighterage .....	1	15	0
10 per cent. Commission .....	131	0	2
	<u>£1443</u>	<u>18</u>	<u>1</u>

*COST of Diamond Drill, say laid down in Melbourne.*

	£	s.	d.
1 No. 7 Prospecting Diamond Drill, oscillating steam cylinders 5 inch bore x 4 inch stroke, hydraulic feed, hinged swivel head and swivel hoisting gear complete; will bore a 2-inch hole 800 feet, with steam or compressed air; will work vertical or horizontal—Home cost, 2850 dollars—4.78 dollars to the £ .....	596	4	8
Freight <i>via</i> London .....	11	0	0
Insurance, 2 per cent. on £607 .....	12	2	9
½ per cent. Exchange .....	3	2	0
	622	9	5
10 per cent. Commission .....	62	5	0
Wharfage .....	0	15	0
Lighterage .....	1	0	0
	<u>£686</u>	<u>9</u>	<u>5</u>

The above figures for Freight, &c. are estimated, and if they are less allowance will be made in settlement. The outfit will be the same as with the No. 5 Drill.

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*Lands and Works Office, Hobart, 9th August, 1881.*

GENTLEMEN,

I HAVE to acknowledge the receipt of your letter of the 8th instant on the subject of Diamond Drills, covering an estimate of cost, exclusive of driving power, laid down in Melbourne, viz., No. 5 and No. 7, say £1443 18s. 1d. and £686 9s. 5d. respectively, for which I am exceedingly obliged.

The information will be of service to the Government when dealing with the question of the purchase of these machines, which the Government intend introducing into Tasmania to assist in developing the mining industry.

I have, &c.

C. O'REILLY, *Minister of Lands and Works.*

*Messrs. MACFARLANE BROS.*  
*Macquarie-st., Hobart.*

*Hobart, 16th August, 1881.*

*REPORT on the Uses, Costs, and Working Expenses of Diamond Drills.*

SIR,

I HAVE the honor to submit, at your request, the following Report on Diamond Drills; viz.—

Diamond Drills work upon an entirely different principle than other rock-borers; with the latter a percussive action is necessary, whereas Diamond Drills progress through the rock by contact and pressure; the drills are pressed firmly, and are rapidly rotated against the rock to be bored. The tube so forced against the rock is armed with a number of boorts—black non-crystalline diamonds—inserted in the metal, and arranged in such a manner as to cut a clean annular groove out of the rock, leaving a solid “core” standing inside, which, on being brought to the surface, demonstrates what rocks the drills may have penetrated.

There are two kinds of Diamond Drills; one that can only bore vertically, owing to the arrangement of the working gear,—this is very useful to prospect for coal, water, and deep diluvial leads; the other, the Mining Diamond Drill, which can be set to bore at any angle, and as it is very compact takes up very little room, is most useful in mountainous country, in the bottom or levels of mines, or anywhere else.

The vertical drill is generally worked by steam power, and a suitable tubular boiler, with fire-box for wood, is necessary.

The Mining Drill can also be worked by steam from the surface; but in mountains, or in deep mines, adits, &c., steam would condense and lose its expansive power: compressed air is therefore generally used, also water, where sufficient pressure can be obtained. If by compressed air, a steam boiler would still be necessary.

It would be requisite on ordering these machines to specify as to what depths it is intended to bore, and obtain the length of tubes accordingly; also not less than three “core bits” for each drill which are armed with the boorts, and likewise a quantity of loose black diamonds for replacing any that may be worked out or become broken. The three first diamond drills the Victorian Government bought (on my recommendation, on my return from California,) were vertical, and cost in the aggregate £5000, which included however, in part, I was informed, the salaries paid to two experts who were sent out to instruct Victorian engineers to work the drills. I am under the impression that, by ordering the drills direct from the manufacturers at Pottsville, Pennsylvania, U.S.A., the Government could purchase at less than that price just mentioned. A vertical drill, three-inch core, to bore 1500 feet, with boiler and every requisite, should not cost more than £1200; and mining diamond drills, to bore 500 feet, with tubing (in both cases), should not exceed £500; in the latter case an air compressor would have to be added, to be worked from a boiler driving other machinery; the National Compressors are the best, as they include the engine to work the compressor; this would cost about £265 more, but this compressor could work two, if not three, mining diamond drills, cutting a core 1½ inches in diameter.

As regards the cost of working these machines. They require one skilled foreman each, at £4 10s. per week, three labourers at £2 5s. per week, wear and tear, interest, and damages, £6 each week, or about £16 per week, at which amount the Government could let them out to work by Mining Companies,—always, however, employing their own men, who are responsible for the state of the machines.

In making these approximate estimates for the purchase of the Drills, I have not included Agent's Commission, inasmuch as I am in doubt whether the Melbourne firm are Agents also for Tasmania besides Australia.

In conclusion, I would most respectfully submit that the Government should purchase one Vertical Drill and two *Mining* Diamond Drills, &c. to test for coal, and for deep leads (Corinna), deep lodes (Heemskirk), and for prospecting purposes generally.

I have, &c.

G. THUREAU, *F.G.S.*

*The Hon. C. O'REILLY, M.P.,  
Minister of Lands and Works, Hobart.*