(No. 62.)

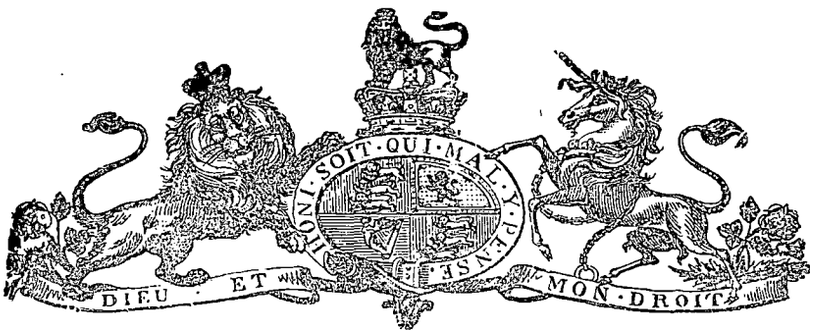
1890.

PARLIAMENT OF TASMANIA.

CANAL, EAGLE HAWK NECK:

REPORT BY C. NAPIER BELL, M. INST. C.E.

Presented to both Houses of Parliament by His Excellency's Command.



CANAL, EAGLE HAWK NECK.

REPORT BY C. NAPIER BELL, *M. Inst. C.E.*

SIR,

ACTING under your instructions, on the 3rd of May, 1890, I proceeded to Eagle Hawk Neck and made a careful inspection of the site proposed for cutting a Canal through it. As I required a survey and levels to be taken, Mr. Fincham sent Mr. Christopherson, who made the plan and soundings attached hereto.

At Eagle Hawk Neck an arm of Eagle Hawk Bay runs up to within 17 chains of the sea at Pirates Bay, and is closed from it by a neck of sand, which forms a line of beach between Port Arthur Peninsula and the mainland; the sand is here heaped up into a ridge about 20 feet high, being blown sand covered with bushes.

The seaside forms a deep bay, which between Clyde and Fossil Islands is 1¼ miles across and 60 chains deep, so that towards the east it is exposed to the open sea. As the plan is deficient in soundings in this bay I am uncertain as to the depth, but the water is pretty deep not far from the shore, and is shown to be 10 fathoms deep in the line between the above islands.

The arm of Eagle Hawk Bay varies from 12 chains to a quarter mile wide, and the depth varies from 16 or 18 feet to over 30 feet, but close to its upper end, and 20 chains from the sea beach, there is a singular pool with 4 fathoms of water, and the proposed Canal is from this pool to the sea.

The Neck consists of fine sand, but at L.W.M. on the sea beach rock has been touched at 8 feet below L.W.; the extent and dip of this rock is not ascertained, but pits sunk in the sand nearer the inlet have not touched rock at a depth of from 12 to 21 feet.

The prevailing winds being westerly, it is usually very smooth on the sea beach, there being just enough surf to make it unpleasant to launch a boat; with easterly or southerly winds there is a rough sea on the beach, and in easterly gales a tremendous surf rolls in, breaking three-quarters of a mile from the beach. Such gales are, however, by no means frequent.

The levels taken show that the ordinary rise of tide, both at sea and in the inlet, is 4 feet, and that the sea tide is about one foot nine inches higher than the inlet tide. I think, however, that this requires a more careful and longer study to define accurately the difference of level of the tides on either side, as it is likely that under different conditions of wind and tide the water of the inlet may be the highest.

If it is really the case that there is the above difference of level in the water on either side, then we must expect that there would be a very strong current through the proposed canal from the sea to the inlet, which would, perhaps, be reversed at different states of the tide. Such a current would, of course, keep the channel open, but at times, when the tides were equal on both sides, there would be no current, and then the sea would immediately close the opening; besides which it would be almost impossible to maintain the sides and bottom of a canal through soft sand with the waves rolling into it. Allowing, however, that it would keep open without protective works, it would be impossible for a vessel to take the channel in any but the smoothest weather, as in running the breakers she would most likely run on the beach, and at any rate it would be attended with such risk as no master would care to incur.

It would be necessary, therefore, to protect the mouth of the canal with the object, first, of preventing the waves from closing it up, and, second, to secure still water to allow a ship to pass in. To make a closed harbour with breakwaters in the bottom of this bay is an unfavourable position as regards the liability to silting up by drift sand. I do not, however, think that any sand drifts round the headlands forming the bay, consequently that which forms the beach of the bay would be the only source of trouble, if any, from this cause.

I believe the breakwaters would exclude the sand of the beach altogether—that is to say, that the sand would not accumulate outside so as to extend to the outer ends of the breakwaters; and this being so, the only risk of the harbour silting up would be from the action of the waves on the bottom tending to shoal the entrance between ends of breakwaters. To prevent this they must be extended into such depth of water that the bottom will not be influenced by the waves.

Accordingly, in the plan accompanying this report I have shown the mouth of the canal enclosed by breakwaters, which are extended out into the least depth of water that I consider would ensure the object indicated above—that is, about 22 feet deep at low water.

The breakwaters are fully exposed to the sea, and must be of the strongest description. I have shown them to be built of rough rock as being the cheapest style of construction, and I take it for granted that heavy rock can be quarried in the neighbourhood, where to all appearance there is abundance of rock. Of course, if the rock is so defective that the breakwaters have to be made of concrete blocks the cost would be much greater.

Having constructed the breakwaters there would be no practical difficulty in cutting the Canal. The sand could be easily dredged; but it would require protection by stone-pitching where the waves raised by passing steamers disturbed the sides near the surface. I have said above that I am still in uncertainty about the difference of level in the water at sea and in the inlet, and if the difference is as great as that indicated on the plan, or even greater at times of gales and spring-tides, it might be found that the current through the Canal was so strong as to necessitate pitching the whole of the sides down to the bottom. I was told of the existence of a bed of rock near the sea beach; the plan, however, shows nothing of it, and I have therefore assumed its position and extent in order to allow for it in the estimate; but I do not rely on the accuracy of it as shown in the sections of this plan. The rock, judging from the neighbouring deposits, is a hard shale, which could be easily blasted and removed, of course at a far greater cost than the excavation of the sand.

The excavation and maintenance of the Canal is thus shown to be practicable, and I have given an approximate estimate of cost. As to the utility of it I am in doubt whether it is intended to save coasting steamers and sailing craft the extra time which is taken in rounding the south-east point of Tasman Peninsula, or to afford a refuge when it is too stormy to sail in the open sea round Cape Pillar. In heavy south-west weather the Canal would be a safe passage, but in heavy south-east, east, or north-east weather I consider there would be some risk in entering the Canal, and in a gale from these quarters it would be impossible, as the sea breaks in nine or ten fathoms, and no ship would dare to attempt the entrance. Usually the weather is westerly, and the passage through the Canal would then present no difficulty, and might prove of great benefit in saving time in the passage round the Peninsula to Hobart.

I have the honor to be,
Sir,
Your obedient Servant,
C. NAPIER BELL, *M. Inst. C.E.*

The Hon. the Minister of Lands and Works.

Approximate Estimate of Cost.

	£
Excavating and Dredging of Sand	7000
Excavating and Dredging of Rock	7812
Pitching sides of Channel	6300
Heavy rock in protecting Breakwaters	61,100
Administration and Contingencies	6577
Railway Locomotive Engines, Plant, Tools, less resale on completion of work	5000
Total Approximate Cost	£93,789

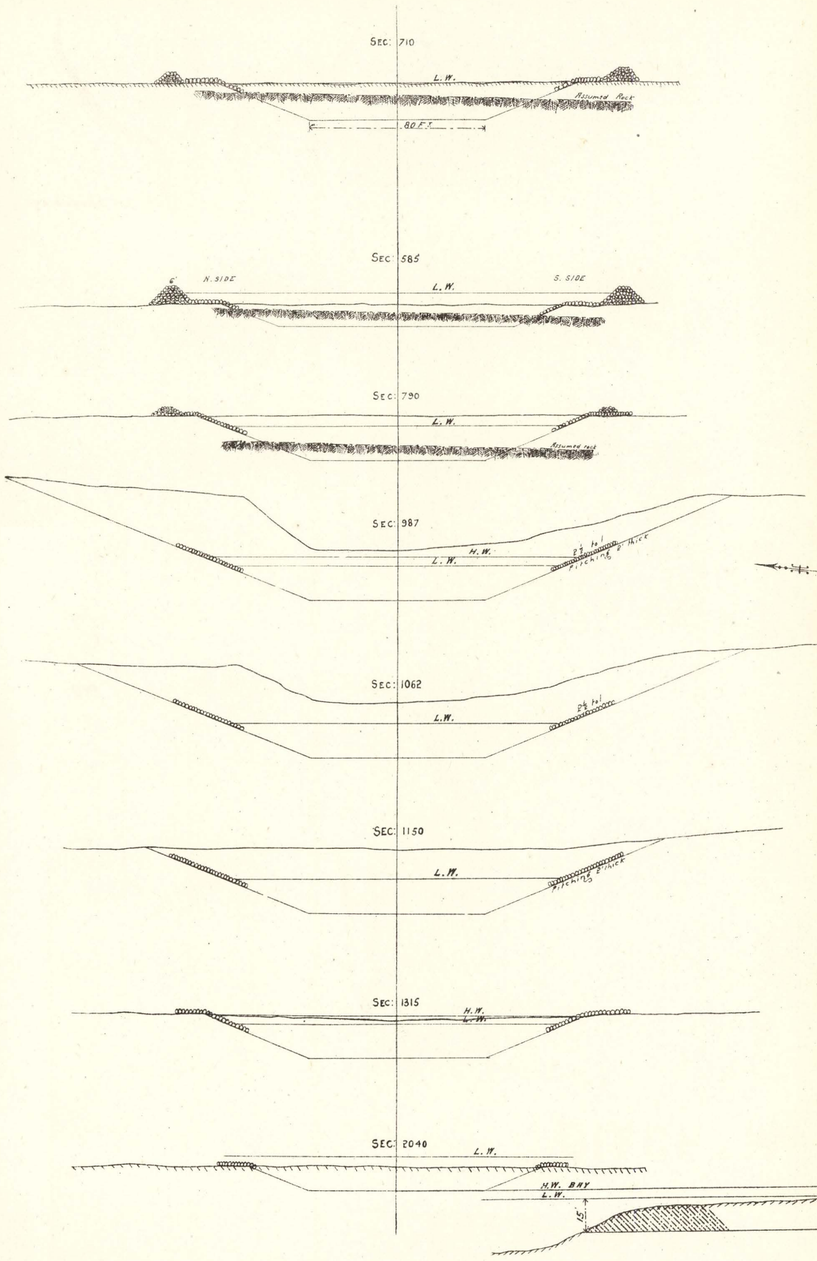
WILLIAM THOMAS STRUTT,
GOVERNMENT PRINTER, TASMANIA.

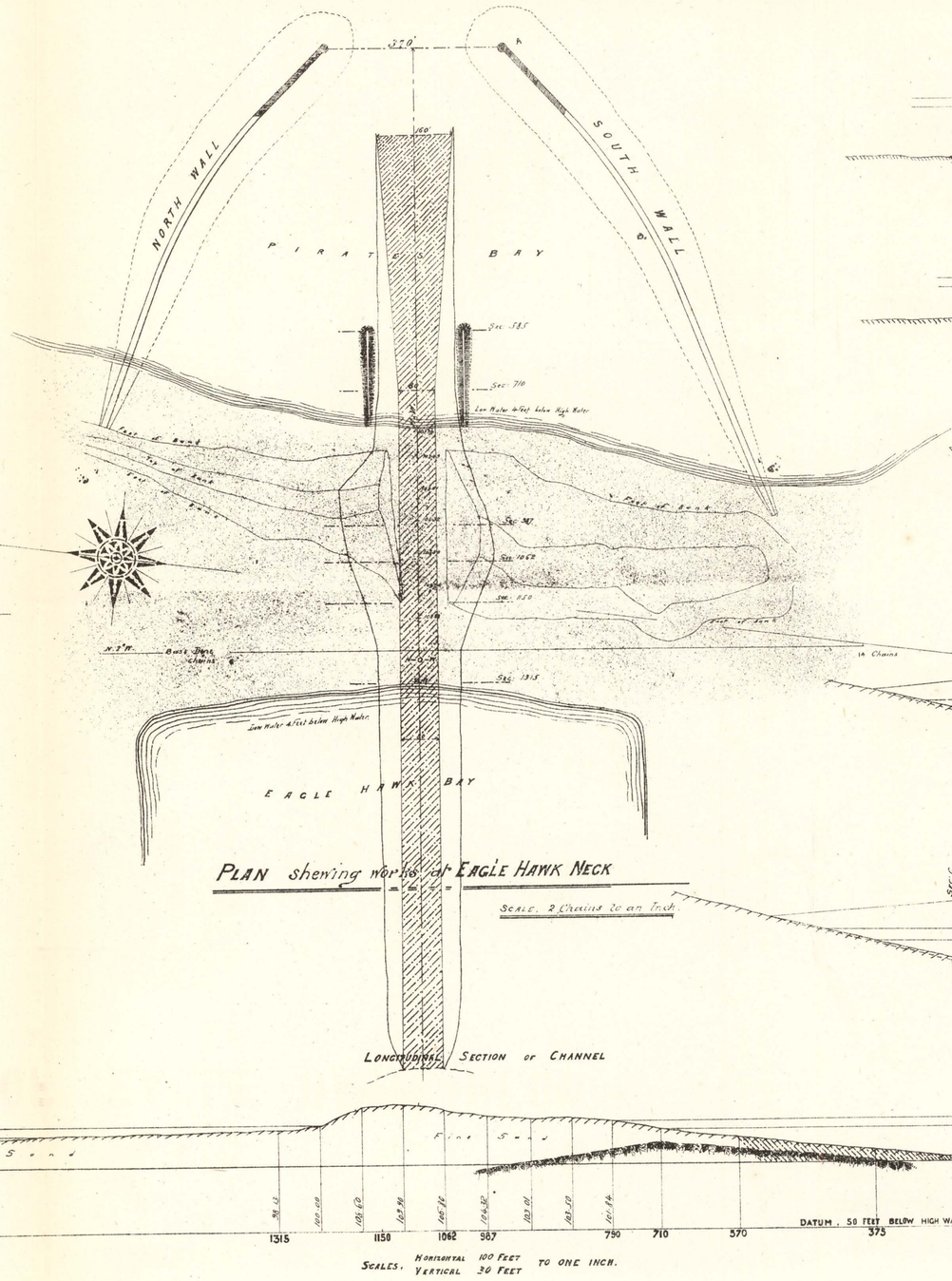
EAGLE HAWK NECK

DRAWING Nº 2

CROSS SECTIONS.

SCALE. 30 Ft to one Inch.



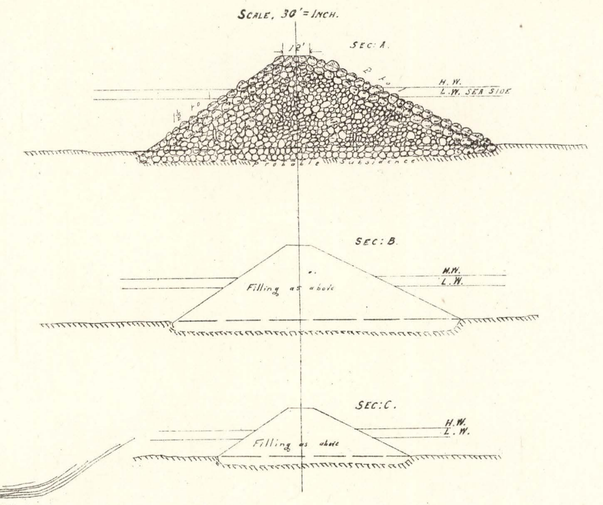


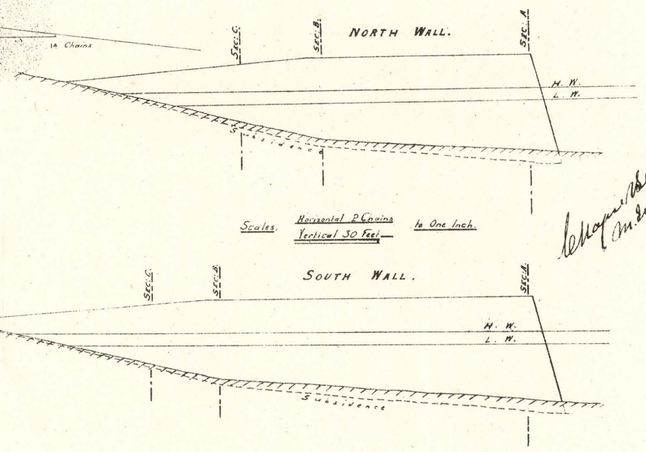
PLAN shewing Works at EAGLE HAWK NECK

SCALE. 2 Chains to an Inch.

LONGITUDINAL SECTION of CHANNEL

SCALES. HORIZONTAL 100 FEET TO ONE INCH.
VERTICAL 30 FEET





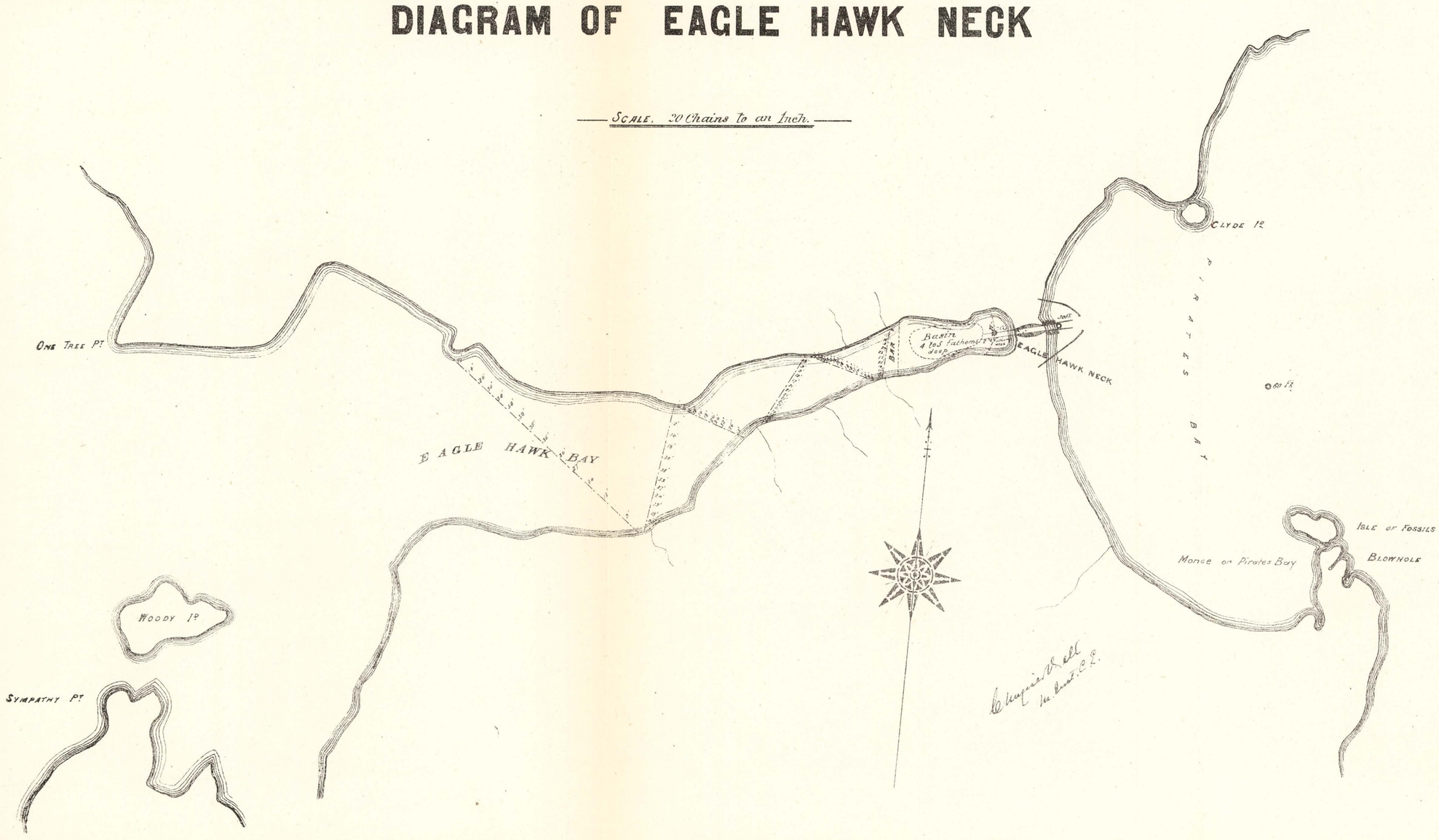
Scales. Horizontal 2 Chains to One Inch.
Vertical 30 Feet

Thomas Bell
Mr. Surv. C.E.

DRAWING Nº 1

DIAGRAM OF EAGLE HAWK NECK

SCALE. 20 Chains to an Inch.



Thomas Bell
Mr. Surv. C.E.