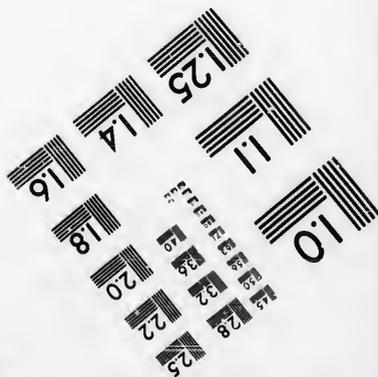
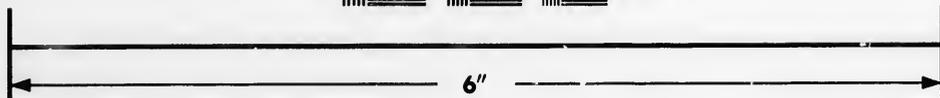
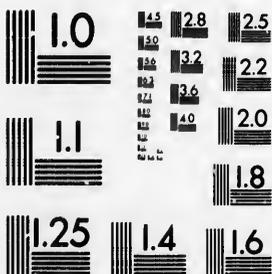


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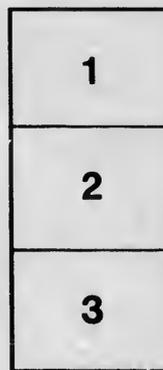
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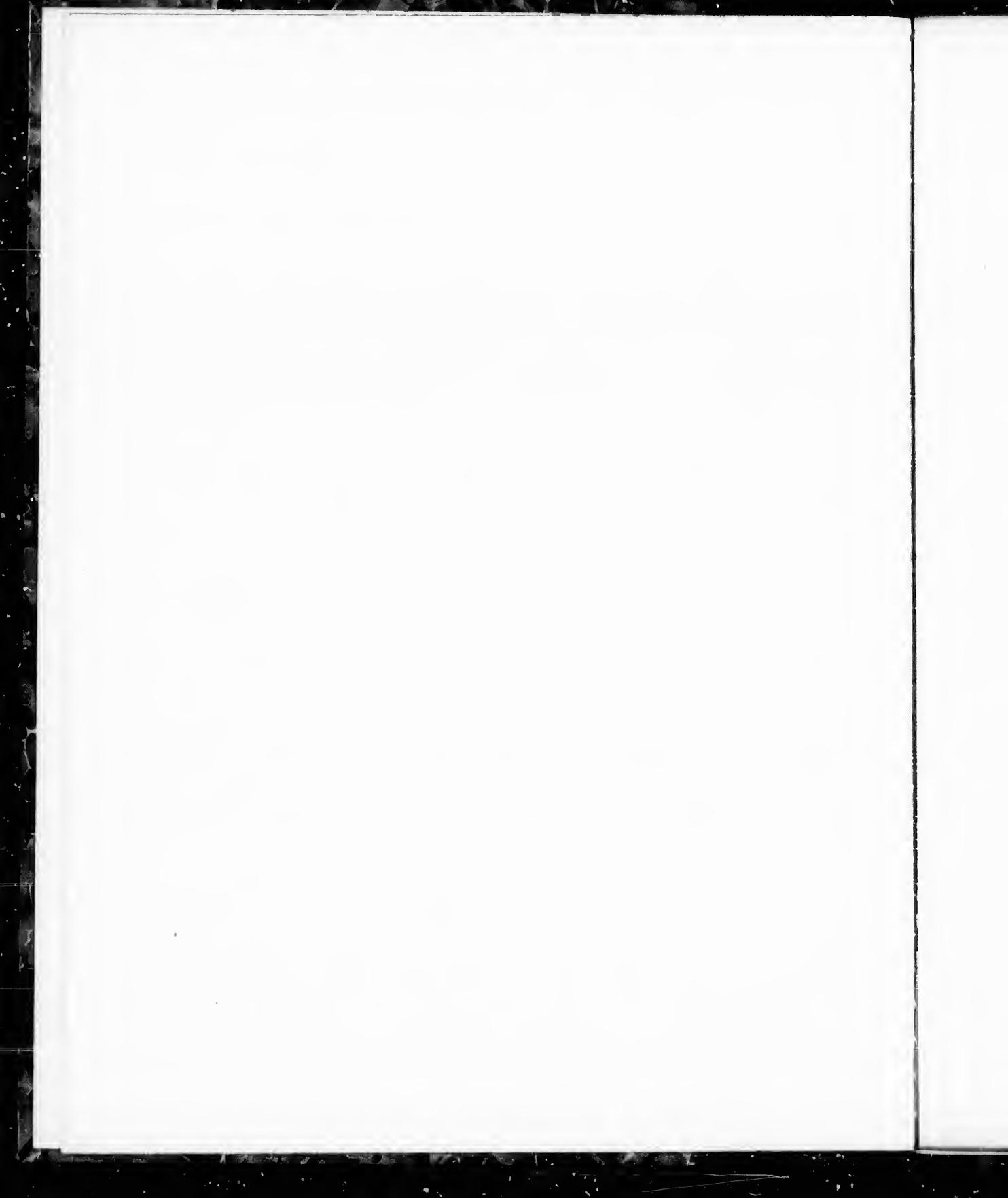
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922710
Reports by Engineers Vol 2 1838



III.— *Account of the Demolition of the Glacière Bastion at Quebec, in 1828.*

In order to proceed with the new works, according to the plan laid down for the formation of a Citadel at Quebec, it became necessary to remove a portion of the old French works, called the Glacière Bastion, to give place to a new counter-guard, intended to cover the escarp of both faces of Dalhousie Bastion, from the high ground on the Plains of Abraham.

The 5th company of Royal Sappers and Miners having been out of England between four and five years, and the arduous duties of the corps in Canada affording them little or no time for instruction in their field duties, it was considered that the demolition of this work, by a system of mines, would not only afford most useful instruction to the company, but would probably be the most economical and effectual method of shaking down its escarp.

The commanding engineer having given his permission, and obtained the sanction of the commander of the forces, the company commenced driving the galleries Nos. 1, 2, and 3 by day-work, and continued them till they had formed junctions with each other: and, with the exceptions of meeting with rock or masonry, each squad generally averaged about eight feet a day. The nature of the soil was clayey, occasionally mixed with fragments of rock; made ground, but having acquired, from the length of time it had lain together, a considerable degree of compactness.

The galleries being completed, the company was told off in three brigades, consisting of one serjeant, three corporals, and nine privates, with orders to relieve each other every six hours; and the remainder of the company off duty were employed in making the coffers, hose, and casing-tubes; and occasionally relieved such men as felt oppressed by too long confinement under-ground.

On Monday, the 11th of February, the branches and chambers were commenced, at the points *x*, *y*, and *z*, leaving each squad nearly an equal portion of labour; and, as soon as the coffers were properly fixed and filled, and the train laid, each squad commenced a fresh branch, and the excavation was employed in tamping the one just completed. (*See Plate.*)

By this arrangement, the whole of the branches and chambers, measuring about 370 feet in length, were excavated, the powder placed in the chamber, the train laid, and the whole tamped up, and ready for explosion, on the Monday following. A coffer 13 inches cube, containing 70 lbs. of powder, was placed its own depth in each counterfort, at its junction with the scarp; and another of 12 inches cube, containing 50 lbs., was placed its own depth in the back of the scarp, equidistant from those in the adjacent counterforts.

The line of least resistance, opposite the 70 lbs., was nearly 9 feet, and opposite the 50 lbs., nearly 8 feet, and the average height of the scarp was from 21 to 25 feet.

It is not thought necessary to enter into the detail of the dimensions of the galleries, branches, &c. as the system pursued was strictly conformable to the instructions received from Chatham.

On Tuesday, the 19th of February, the Earl of Dalhousie, Governor General, and Commander of the Forces in his Majesty's North American Provinces, accompanied by his staff, and a great number of others, both civil and military, attended to witness the explosion.

The galleries being in several parts very wet, and fearing from the length of time it required to prepare the mines, that the powder in the hose might get damp, it was determined to fire the mines at the three points, 1, 2, and 3, and thereby produce a more simultaneous explosion: but the sapper stationed at No. 3, having taken the signal from the bugle where his Lordship and the spectators were stationed, instead of waiting for the repeating bugle on the spot, the whole of the mines, 20 in number, were exploded from that point.

The effect produced far surpassed the most sanguine expectations of the officers employed upon this service.

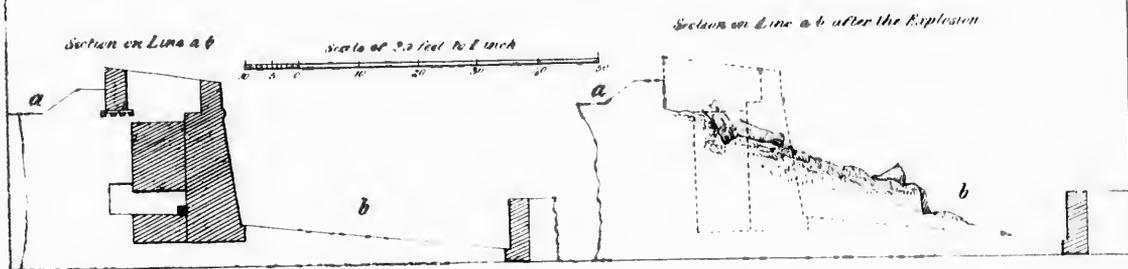
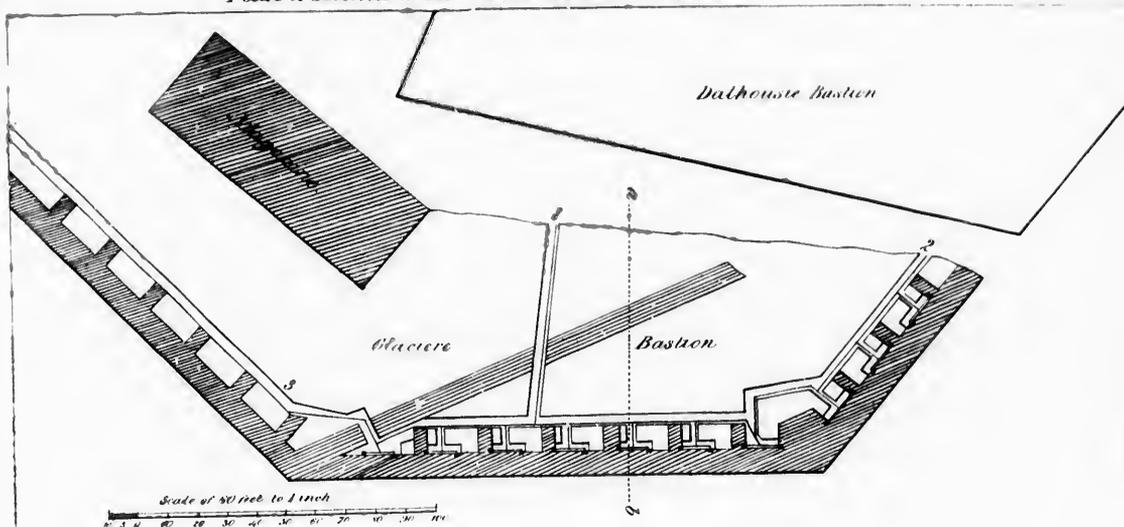
The explosion not only crumbled the escarp to pieces, without projecting a stone 50 feet from its original position, but brought down the whole of the parapet, together with its interior revetement; forming throughout the whole line a most practicable breach.

The only parts which descended in masses were the exterior revetement of the parapet, and the earth between that and the interior revetement, showing the enormous power of the intense cold in Canada, which strikes nearly four feet into the ground.

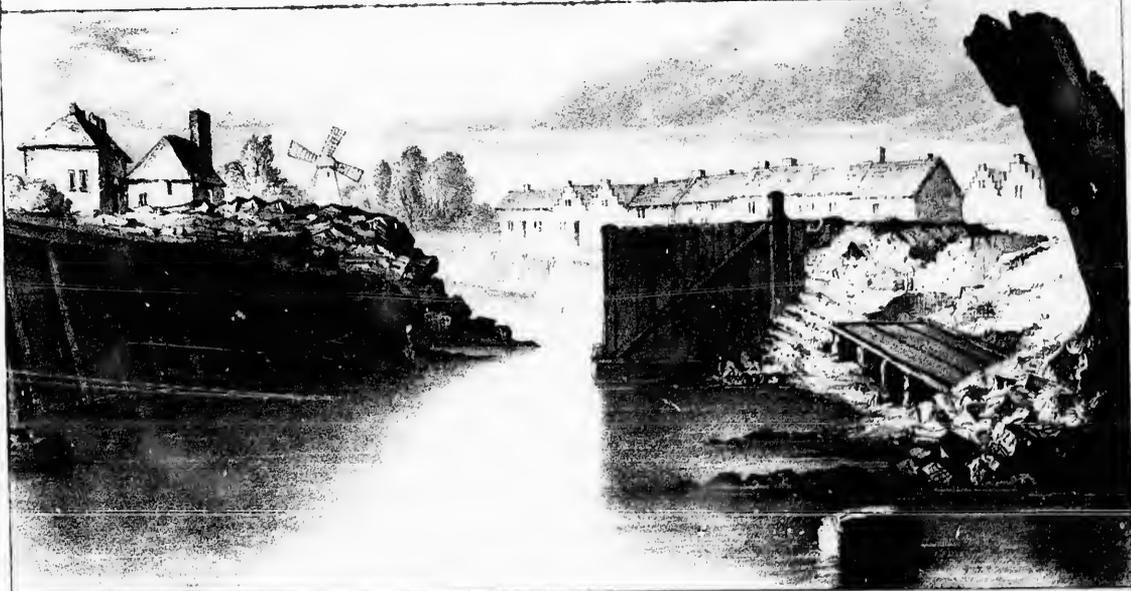
The escarp was of rubble masonry, and in an excellent state of preservation.

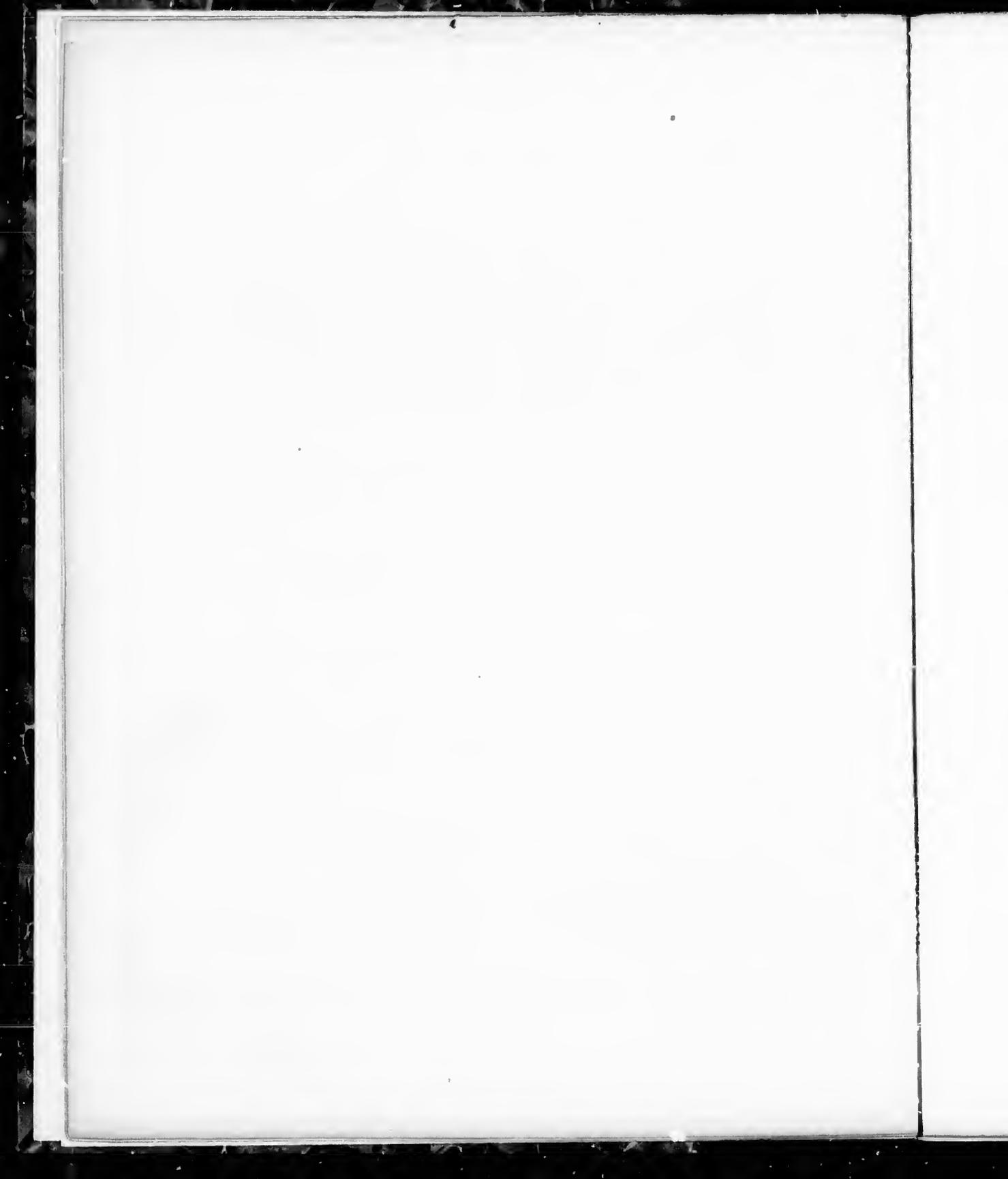


Plan & Sections of the Glaciere Bastion at Quebec.



Sketch of the Dock Entrance at Flushing after the Explosion.





Remarks deduced from the foregoing Practice.

1st. As the mines were exploded from one point, instead of three as intended, and as the interval of time between the first and last explosion, in a distance of at least 220 feet, did certainly not exceed three seconds, it is presumed that a simultaneous explosion of mines (requiring great length of hose, much time to adjust, and great additional labour), can seldom or never be required, and if resorted to, that the effect would not be materially increased.

2ndly. From the immense masses in which the earthen parapet descended without being shaken, it is almost evident that, in a cold climate, during the winter season, rock may be excavated with greater facility than earth, when both are equally exposed to the effects of frost.

3rdly. That the distance to which a gallery may be driven without the aid of bellows, depends entirely upon the state and temperature of the atmosphere. In the present instance, No. 1 was driven at least 140 feet, and the lights burnt tolerably well, though eight men were frequently employed in it.

CAPTAIN MELHUISE,

Royal Engineers.

