secure. When the besieged have blown up the batteries that were to open the breach, they must make good uſe of the time which the enemy will ſpend in repairing them, and strive to perfect the retrenchments, which ſhould have been set about at the commencement of the siege, in the gorge of the half-moon, and in thoſe of the bastions of the front attacked.

The mines for blowing up the batteries of the covert­-way may be dispoſed in ſuch a manner as to tumble the guns into the ditch, as may be ſeen in the courſe of mathematics by Μ. Belidor, who performed it with ſucceſs at the aca­demy of La Fere.

It is certainly a great advantage thus to be able to be­come masters of the cannon of the beſiegers, and to oblige them to erect new batteries, which must take them up a considerable time. A doubt here may ariſe, whether if theſe batteries are oppoſite to that part where the enemy intend to paſs the ditch, this would not be helping to fill it up, ſhould the besieged blow up the guns: but this inconvenience is of no great conſequence, eſpecially as it may easily be remedied, by clearing away the rubbiſh of the mine which tumbles into the ditch along with the battery.

As the besiegers work at the deſcent into the ditch at the same time that they are preparing their batteries, the besieged must think of retarding both theſe operations alſo at the same time. If the deſcent into the ditch is made under ground, miners ſhould be employed to interrupt the work; and if the ditch is dry, ſmall detachments, as Μ. Goulon obſerves, of five or six men, may be placed near the counterſcarp, to watch the moment that the enemy break through it, and immediately to fire into the gallery : this diſcharge will either kill or frighten the miners ; and at least will retard the works. Thoſe who have fired, ſhould retire on each side the opening to load their arms again, which may be repeated ſeveral times. Fire-balls and grenades may be likewiſe thrown into this opening, which will oblige the ſappers to retreat.

If the ditch is filled with water, the same operations may likewiſe be performed with ſmall boats made on purpoſe ; and theſe boats a kind of parapet ſhould alſo be raiſed by means of strong boards, with holes to fire through upon the ſoldiers, who upon opening the gallery will throw faſcines into the ditch. At the siege of Lisle, marshal Boufflers contrived ſome boats of this kind to retard the passage over the ditch, before the grand lunettes or tenail­lons in the front attacked, and that before the half-moon.

When the enemy make their opening into the dry ditch, they must be oppoſed with a strong fire, as well from the face of the bastion which flanks the ditch before the half­moon, as from the place of arms or traverſe, which ought to be constructed the whole breadth of the ditch, in order to strengthen the defence. By night ſmall ſallies ſhould be made from this place of arms, with a view to interrupt the pasſage over the ditch, and to retard, as much as possible, the fixing of the miner.

There are two ways of passing the dry ditch, and of bringing the miner to the foot of the revetement which he is to enter. The first consists in making a gallery six feet wide, with a double row of barrels. Theſe must be filled with ſand-bags, and so must the ſpaces between them, in order to render the passage of the gallery more ſafe ; and that there may be a ſhelter from fire-works, strong planks are laid over it, and theſe again are covered with raw hides, or with earth and dung. This gallery is continued within three or four feet of the revetement ; and in this ſpace a good epaulement is raiſed with ſand-bags to cover the miner on the side expoſed to the place. In regard to the other side, it is of no uſe to stop it up ; nay, it serves for an opening to fill the ditch with the earth dug out of the galleries, which the miners are making in the rampart of the work attacked. It is eaſy to oppoſe the progreſs of this gallery with a continual fire, and with ſeveral lesser works constructed within the ditch.

The other way, which, as we have already ſeen in treat­ing of the attack, consists only in getting to the foot of the breach by sap, with an epaulement on the side expoſed to the place, may be covered, in order to protect the passage from the fire-works and grenades of the besieged. But this sap may be retarded by ſallies ; the besieged may like­wiſe steal away the earth by night from the epaulements, and endeavour with hooks, &c. to diſplace the gabions and faſcines.

If the ditch is filled with water, the besieged must inter­rupt the enemy’s bridge with a continual fire from their great and ſmall guns, as well as with grenades and shells, if they are in a condition to fire upon the bridge and its epaulement. If the water has a strong current, they must open sluices in order to break down the bridge, or at least to carry away the faſcines. They ſhould alſo attempt to ſet fire to it with artificial works prepared for this purpoſe. They may likewiſe approach the epaulement in the night, and draw away the faſcines with hooks. They may even throw anchors upon it ; and by means of capftans placed in thoſe parts which flank the ditch, they may draw theſe anchors with cords fastened to them, and tumble part of the epaulement into the ditch. In short, every expedient must be tried that may possibly retard the enemy’s ap­proaches : for when once they have perfected their bridge, they will ſoon be matters of the outwork to which that bridge leads, whatever precaution the garriſon may take to defend the breach ; becauſe, as the besiegers can always pour in freſh men to ſupply the room of thoſe that are lost in the attack, they must at length ſurmount all opposition.

7. *Of the Defence of the Half-moon.*

While the enemy are effecting the passage over the ditch, besides the difficulties that are raiſed to retard the work, all proper precautions should be uſed to defend the breach, and prevent the taking of the half-moon. For this purpoſe guns are placed in all the works from which the breach may be ſeen; and they should be placed on carriages or on pieces of wood, as the garriſon find most commodious, of least hinderance to the defence, and productive of the best effect.

If the half-moon has no reduit, as here we ſuppoſe it has none, the retrenchments, which ought to have been made there, must be put into good condition ; a row of paliſades must be placed before it, in order to stop the first fury of the enemy after they have made themſelves masters of the breach; in a word, the besieged must prepare to diſpute every inch of ground, and to retire from the half-moon into the town, when they find themſelves hard pressed and no longer able to maintain that post.

When the enemy preſent themſelves at the foot of the breach, a great number of grenades, and ſacks filled with powder, are thrown among them, with a view to fling them into diſorder. Glaſs or earthen bottles filled with powder, and burning matches twitted round them, are capable of doing them a deal of mischief. A great quantity of looſe powder may be ſcattered about the breach when the enemy are ready to mount to the assault; and when they are mount­ed, lighted matches or burning coals may be thrown among the powder to ſet it on fire ; which will burn and diſable a number of thoſe who are in the breach. It will be proper alſo to throw into the breach a quantity of harrows, stuck full of large nails with the points upwards : and to prevent