

ENDURANCE.

How much the heart may bear, and yet not break;

How much the flesh may suffer, and not die;
I question much if any pain or ache
Of soul or body brings our end more nigh,
Death chooses his own time; till that is worn,
All evil may be borne.

We shrink and shudder at the surgeon's knife,
Each nerve recoiling at the cruel steel,
Whose edge seems searching for the quivering
life;

Yet to our sense the bitter pangs reveal,
That still altho' the trembling flesh be torn,
This also can be borne.

We see a sorrow rising in our way,
And try to flee from the approaching ill;
We see some escape we weep and pray;
But when the blow falls then our hearts are
still,
Not that the pain is of its sharpness shorn,
But to think it can be borne.

We wind our life about another life—
We hold it closer, dearer than our own;
Anon it faints and falls in deadly strife,
Leaving us stunned, and sicken and alone.
But ah! we do not die with those we mourn,
This, also, can be borne.

Behold, we live through all things—famine curst,
Bereavement, pain; all grief and misery,
All woe and sorrow; life inflicts its worst
On soul and body—but we cannot die,
Though we be sick, and tired, and faint, and
worn;
Lo! all things can be borne.

The following remarks on the use of depressing Gun Carriages in *Barbette* batteries have been copied from the United States *Army and Navy Journal*, and is recommended to our readers because we are satisfied that the system of fortification to which it is applicable, must eventually supercede the parapet with embrasures.

It is much simpler, easier constructed, and stronger, affording consequently more cover to the artillery, and presenting a more massive profile, as well as a command, completely masking the ditch a matter of first rate importance in field work.

OFFICE OF BOARD OF ENGINEERS FOR
FORTIFICATIONS, ARMY BUILDING,
NEW YORK, November 11, 1871.

Brigadier General, A. A. Humphreys, Chief
of Engineers, U. S. Army, Washington, D. C.

GENERAL: The Board of Engineers desires to present for your consideration the following remarks setting forth the necessity for a depressing gun carriage for barbette batteries, having a low or even a medium reference above the water level, its utility for those which are even usually called high batteries, and the advantages derived from a high covering parapet for all open batteries. A tracing is submitted herewith, fully illustrating the remarks that follow:

In its general report of October 23, 1869, this Board recommended,

"1st. The construction, wherever the site will permit, of cheaply built barbette batteries with magazine traverses between each pair of guns, a parapet, where necessary, to guard against reverse fires, and generally wooden gun-platforms. Such batteries may hereafter be readily modified for the use of depressing or counterpoise carriages, and

unless on very elevated sites, should be planned having this in view.

"2nd. The substitution for the barbette carriage of one which will admit of the depression of the gun below the crest of the parapet for loading."

And further alluding to the Moncrieff carriage, and other forms under which the depressing carriage was then being studied in connection with these barbette batteries, the board remarked, "in the achieving of a practical result, may be found a way of attaining an efficient service of modern sea-coast artillery when the proper sites present themselves." It thus appears that this board has from the beginning regarded the introduction of a depressing carriage into our sea coast batteries, unless placed on very elevated sites, as a necessity. Indeed it is an acknowledged part of the system of defence by open batteries; for, if the iron-clad is not a failure, it can pass near enough to throw shells with some degree of accuracy at shore guns, and can at least use grape and canister with efficiency against them. It is not believed that the gunners will stand to their pieces and sponge and load them under such fire in low batteries, and probably not in those of medium height. Hence the Board of Engineers has favored trials of depressing carriages that gave reasonable promise of success, always regarding expenditures looking to the solution of so important a problem as being made in the right direction. If we must have barbette batteries, and there is as yet no other solution of the problem of defending our harbors by guns, we must have cover for the gunners while loading, and a high covering parapet to protect them as far as possible in all parts of the terreplein; and the only question that seems at all open for discussion in this reference is, how for a high battery may shield it from the severe fire which would make the low one unserviceable. Now, in the high battery, the men while loading are but partially exposed to the fire coming from ships that have approached as close as they dare to the shore, and in all parts of the terreplein they are quite as well covered. As the hostile fire becomes more distant, the protection due to height becomes less and less, but the accuracy of that fire diminishes rapidly with the increased distance.

To set forth fully this question of cover attained by high reference of parapet—by high parapet—and by the use of a depressing carriage, the board has caused drawings to be prepared, showing the trajectories of 12-inch rifled shot fired at angles of elevation from 1 deg. to 8 deg. inclusive, with charges of 70 lbs., and with initial velocities of 1,183 feet. In connection with these trajectories sections of the parapets of batteries have been constructed with different elevations so that these trajectories shall touch the interior crests of the sections at distances from the initial point, varying from 1.4 to 1.34 miles. The object of this drawing is to show the direction of solid shot as it passes over the terreplein of batteries of different heights above the water, and fired from ships at different distances. In fact, to exhibit the varying conditions of an attacking fleet in relation to shore batteries of various heights.

It is believed that vessels must be near enough to use grape and canister, or near enough to attain accuracy of fire with shot and shell, to silence a shore battery. Distant fire alone from ships cannot stop the fire of batteries, though it will give essential aid to close fire, especially if delivered very obliquely to the parapets. It is probable that canister will not be efficient beyond 1.4 of a

mile, and that grape will not be used beyond 1.2 mile. Solid shot beyond 1.2 mile, to be efficient, must be poured in rapidly. Shells, however, will doubtless be used more abundantly than solid shot at all distances. It is in fact the fire from 1.4 of a mile distances up to 3.4 of a mile, or, at most a mile, that fleets must rely upon to overwhelm sea coast batteries.

Comparing the different sections on the accompanying drawing* some estimate may be formed of the partial security gained for the gunners by elevating the battery. At the distance of 1.4 mile, and with a reference above the water level of 160 feet, the terreplein is well covered, and the gunners in loading are not so much exposed, not more so than through an embrasure or a port hole. Of course the cover is by no means perfect, and the exposure will somewhat interfere with the rapid and accurate service of the piece; still it is believed that gun for gun, the battery would maintain itself against an iron-clad.

At the distance of 1.2 a mile the protection due to the same height of reference is less than at 1.4 mile. The terreplein is well covered as against direct shot, in this, as in the former distance. It is probable that less accuracy of fire from the ship, by reason of increase of distance, will quite offset the greater exposure of the men in loading, and that grape would not silence this battery 160 feet high, providing the opposing armaments were equal, gun for gun. But at both of these, and at all intermediate distances, the fire either of canister or grape (though the greater part of the charges must of necessity be wasted) would attain the interior by so curved a flight that even in this high battery a greater cover than 7 feet, as hitherto practised, is desirable.

At 3.4 mile distance, shells would take the place of grape. While the cover due to height, both in loading on the terreplein is rather better in the high than in the low battery, the difference is by no means so great as at the low ranges. But it is more difficult to hit a mark on a height, than on the same level, and it is not at all probable that the exposure to solid shot or shell is sufficient to prevent the service of the pieces, unless there is a disparity of guns in favor of the attack. But at all these distances, there would be a better feeling of security, were the breast height 11 feet high instead of 7. As the distance of the ship increases, the difference of protection or cover, given by a high or low battery, becomes smaller and smaller and if the distant fire is oblique, as shown on the drawing, the height of 7 feet, hitherto practised for interior slopes, is entirely inefficient. The drawing illustrates this, by showing the relative positions of the descending curve of fire into the battery, and the two terreplein levels, one 7 and the other 11 feet, below the crest. It is true, that from the distant ships the greater portion of the fire must be lost, and that only an occasional shell would graze the parapet, or burst just at the right point to throw in destructive fragments. But the higher the covering parapet, the better are the chances for the gunners on the terreplein to escape these fragments. Now as batteries are, or may be liable at the same time, to all these attacks, by the different ships of a fleet taking distances from 1.12 miles down to 1.4 mile from the shore guns, it seems necessary, in order to procure efficiency of service in the land battery, even if high, to give the cannoniers all the cover that can be conveniently attained by

* This drawing, being 11 by 36 inches cannot be reproduced in the Journal.