

THE BRITISH MONITOR "GLATTON."

Last week we gave an account of the cannonade of this new ship by the heavy guns of the *Hotspur*, at a range of 200 yards. We now present an engraving of the *Glatton*, together with sundry other illustrations, showing the effects of the projectiles upon the fourteen and fifteen inch plates composing the *Glatton's* turret.

The *Glatton* carries a single revolving turret in which are mounted two of the heaviest guns in the service. The vessel is 2,700 tons measurement, 54 feet wide, 264 feet long, and draws 19 feet. The following particulars of the trial are derived from the *Engineer*:

The turret of the *Glatton* is roughly shown in horizontal section through the upper plates in Fig. 1. Her armor consists of plates laid on in two rings or tiers, each consisting of eight plates, the upper ring or belt having six plates of 12 inches thick and two plates of 14 inches thick, namely, those pierced by the portholes. The lower ring contains seven plates 12 inches, and one plate 14 inches thick, the last mentioned being that between and beneath the portholes. The backing, not being liable to cause injury from coming in contact with iron in the proximity of salt water, consists of oak, not teak. It is of such thickness as, with the plates, to make up a total of 29 inches everywhere—that is, 15 inches of oak behind 14 inches of iron, or 17 inches of oak behind 12 inches of iron.

Behind the backing comes 1½ inch of skin, consisting of two thicknesses of ¾ inch plate; then vertical girders, 5 inches in depth with spaces between, and finally, what may be termed an inner skin or mantlet skin of ½ inch iron, to prevent bolt heads and splinters from flying into the interior of the turret and injuring the men working the guns in service.

Against the strongest portion of this structure, the 12 inch gun of 25 tons weight of the *Hotspur* was brought to bear at a range of 200 yards, firing "Palliser large cored shot," or, speaking loosely, "Palliser shell without bursting charges."

As regards the object of the experiment, it was clear that the turret would be subjected to such a test as it would hardly meet with on service; for should the *Glatton* be

a number of rivet heads (as well as the bolt heads) being thrown into the interior of the turret.

Although a little below the spot intended, it was quite clear that this round gave a heavy contorting blow to the turret, the top of which had been so far forced back; it was, nevertheless, found that the turret revolved without the slightest difficulty, and for the object of the experiment the next round might be proceeded with.

Considering the spot struck by the first blow, it seemed advisable to pass on at once to the trial of a blow at the line of junction between the turret and glacis plate. This was done. By means of a mark painted at B (see Fig. 2) a shot was delivered at II, grazing the glacis plate at a point 3 feet from the turret and glancing into the turret, which it penetrated to a depth of about 15 inches, the shot, as before,

at the conclusion of the experiment. Considering how great are the chances against a second shot falling exactly on a spot already struck, it would hardly be going too far to say that the *Glatton* was in nearly as good condition to go into action as before the trial. Yet, it would be difficult to put her through a more severe ordeal except by bringing the 35 tun gun to bear on her, and as for the object of the experiment, namely, injury to the working of the turret, it may be doubted whether much more effect would, even then, have been produced. A plunging fire we are inclined to believe the most likely to jam the turret.

Engineering says:—The result of the contest between the 25 tun gun of the *Hotspur* and the turret of the *Glatton* is almost an exact counterpart of that obtained by the trials which took place on Friday the 15th of June, 1866, when the armor of the *Royal Sovereign* was attacked by the 9 inch 12½ tun gun of the *Bellerophon*, and this trial again finds its counterpart in September, 1861, when Captain Powell conducted a lengthened experiment against the cupola gun shield of Captain Coles, on board the *Trusty*. In each case, the heaviest available artillery was brought to bear against the shield; in 1861 the 100 pounder Armstrong attacked the light cupola defence; in 1866 the 12½ inch gun was resisted by the 8½ inch plates and 14 inches of teak backing, which formed the protection of the turret of the *Royal Sovereign*, and in the recent trial (July 5th, 1872) the 25 tun gun, throwing the 600 pound shot was repulsed by the 15 inches of armor backed by 14 inches of teak, which was opposed to it on board the *Glatton*.

Satisfactory as these results are in one respect, pointing as they do to the continual precedence which the science of defence takes over that of attack, it must nevertheless be borne in mind that such a partial and peaceful experiment as that of Friday last cannot be compared to the rough realities of war. So far as it went, however, the trial was all in favor of the turret, and while we may congratulate ourselves upon the power of resistance it exhibited, we cannot regard with satisfaction the performance of the gun. True, the Palliser shot stood well to their work, the first one penetrating through 14 inches of armor plate and 4½ inches of wooden backing, and making a gap of 2

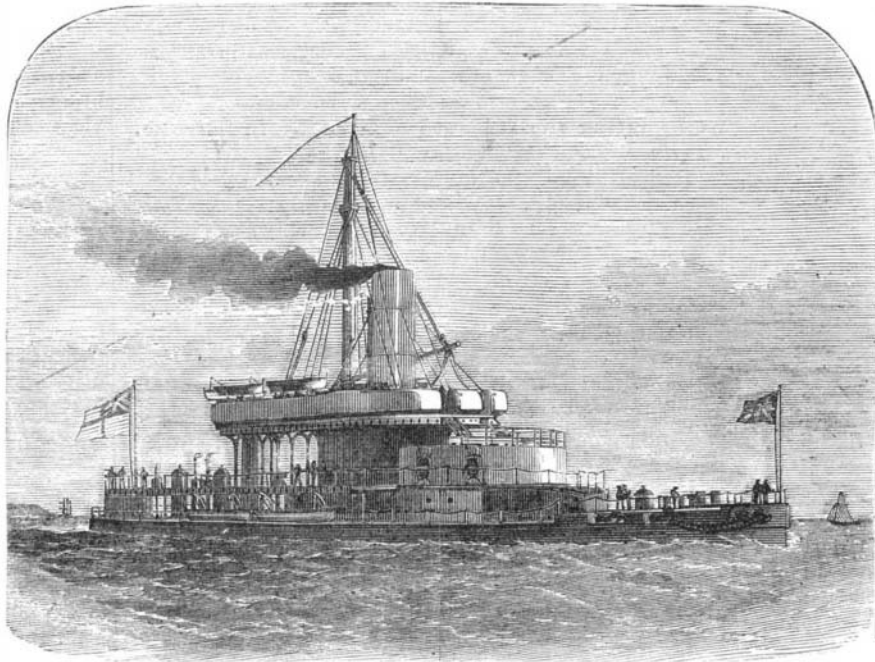
inches between the upper and lower 15 inch outside plates; while the second shot, glancing on the glacis plate, penetrated 13½ inches into the armor. But the most unsatisfactory part of the trial lay in the difficulty experienced in getting the shots to go where they were wanted.

TWELVE LOCOMOTIVES DESTROYED.—On the 24th of July, the repair shops of the Erie Railway at Jersey City, N. J., were destroyed by fire, the loss of property amounting to nearly one million dollars. Five hundred men were thrown out of employment. Twelve locomotives were lost, together with many cars and much valuable machinery. Among the locomotives was a new one lately built by the Rogers Locomotive Works, at a cost of \$40,000.

DURING a recent Sunday school convention held in Ballston, N. Y., one of the delegates hitched his horse in the street and allowed it to stand there in the hot sun from 8 o'clock in the morning until 5 in the afternoon (nine long hours) without food or drink. It was a black, small pony with one white hind foot, hitched to a black gold mounted top buggy, in which was a white blanket trimmed with red. During the afternoon some one placed a card on the horse on which was printed: "I belong to a Christian; I have stood here since morning without food or drink."

THE caisson, on the New York shore, for the Brooklyn suspension bridge, is now filled in, and the erection of the stone tower will proceed as rapidly as possible. The tower on the Brooklyn side has reached the height of 105 feet above high water. The towers are to be 150 feet high. The wire cables will be 120 feet above the water. The span of the bridge is 1,600 feet.

THE Croton lake from which New York is supplied with water is nearly forty miles distant from the city.



THE BRITISH MONITOR "GLATTON."

standing well up to its work and coming easily out of the hole, uninjured as far as the front row of studs.

The effects produced by this round are chiefly shown in Figs. 4 and 5. They are—(1) Penetration about 15½ inches; (2) glacis plate grooved to a depth of about ½ inch, and cracked; (3) flange ring covering joint of turret and glacis, cut through and bent; (4) lower side of glacis plate bent back, and split open to a width of about 8 inches; (5) (not shown in figure) a sort of binding plate, fixed on the lower edge of the armor

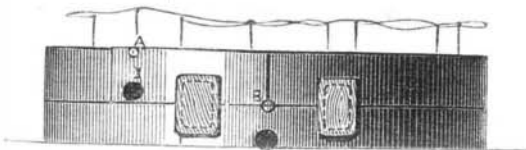


FIG. 2.—FRONT ELEVATION OF TURRET FROM FIRING POINT AFTER STRIKING AT I. AND II.

side beneath the deck, broken off for a length of some feet, and the edge bulged downwards.

This round again severely tested the working of the turret, not perhaps quite so severely as might be conceived were a similar blow to fall in a more downward direction, but quite

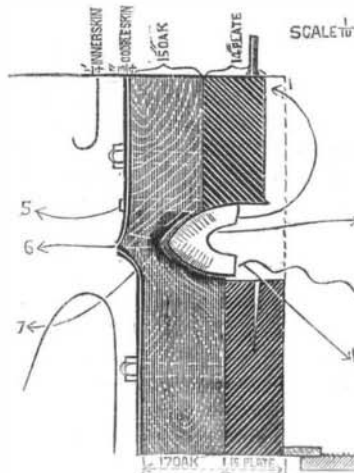


FIG. 3.—VERTICAL SECTION THROUGH PORTION STRUCK BY SHOT I.

the kind of blow intended. On trial the turret was again found to work freely and easily. The ports, which up to this time had been covered and plugged up with beams of wood, were cleared open, and two rounds were fired from each gun; one a full blank charge of 70 pounds of pebble powder, and one a battering charge of 85 pounds of pebble powder with shot. The turret revolved easily in about a

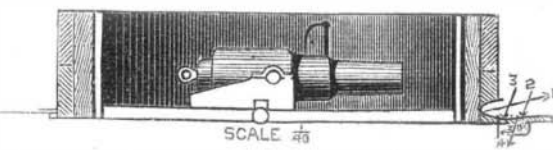


FIG. 4.—VERTICAL SECTION OF TURRET THROUGH PORTION STRUCK BY SHOT II.

minute, and we are not aware that any effort was used to obtain speed. In short, the *Glatton* was in good fighting trim

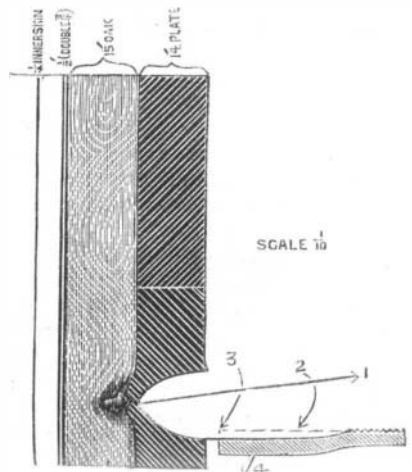


FIG. 5.—VERTICAL SECTION THROUGH PORTION STRUCK BY SHOT II.

inches between the upper and lower 15 inch outside plates; while the second shot, glancing on the glacis plate, penetrated 13½ inches into the armor. But the most unsatisfactory part of the trial lay in the difficulty experienced in getting the shots to go where they were wanted.

TWELVE LOCOMOTIVES DESTROYED.—On the 24th of July, the repair shops of the Erie Railway at Jersey City, N. J., were destroyed by fire, the loss of property amounting to nearly one million dollars. Five hundred men were thrown out of employment. Twelve locomotives were lost, together with many cars and much valuable machinery. Among the locomotives was a new one lately built by the Rogers Locomotive Works, at a cost of \$40,000.

DURING a recent Sunday school convention held in Ballston, N. Y., one of the delegates hitched his horse in the street and allowed it to stand there in the hot sun from 8 o'clock in the morning until 5 in the afternoon (nine long hours) without food or drink. It was a black, small pony with one white hind foot, hitched to a black gold mounted top buggy, in which was a white blanket trimmed with red. During the afternoon some one placed a card on the horse on which was printed: "I belong to a Christian; I have stood here since morning without food or drink."

THE caisson, on the New York shore, for the Brooklyn suspension bridge, is now filled in, and the erection of the stone tower will proceed as rapidly as possible. The tower on the Brooklyn side has reached the height of 105 feet above high water. The towers are to be 150 feet high. The wire cables will be 120 feet above the water. The span of the bridge is 1,600 feet.

THE Croton lake from which New York is supplied with water is nearly forty miles distant from the city.

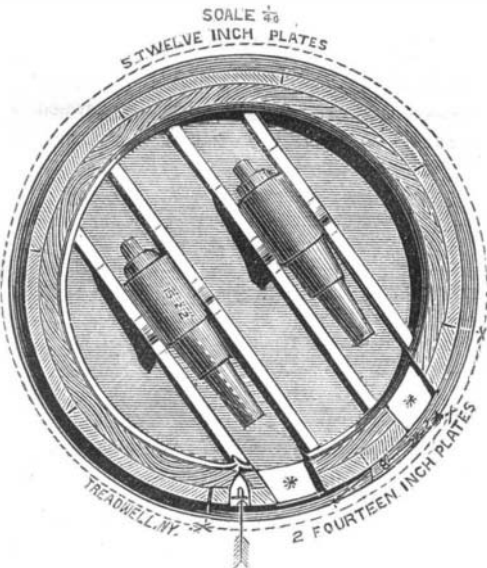


FIG. 1.—HORIZONTAL SECTION THROUGH TURRET AT LEVEL OF PORTION STRUCK BY SHOT I.

even exposed to the fire of guns equal to that of the *Hotspur* at 200 yards range, it would be very unlikely that she would receive so fair a blow as on this occasion; while, should she be closer than 200 yards, although the shot would strike harder, it would be rather less likely to be quite true in its direction, from not having time to steady after leaving the muzzle.

The first shot struck at the spot marked I in Fig. 2, with effects shown in Figs. 1 and 3. The shot stood well up to its work, the front portion, as far as the front ring of studs, remaining apparently intact and buried deep in the turret side.

We have presumed to show in Fig. 3 the place occupied by the shot's head and the depth to which the point has penetrated; we believe this cannot be far wrong on the following grounds: The rear edge of the front studs was about 6½ inches past the face of the plate, and the projectile, if a Palliser 12 inch shell, would measure from this to the point nearly 14 inches.

Supposing our estimate to be correct, the following are the effects produced, shown by the numbering and arrows in Fig. 3:—(1) The entire upper plate forced back to a distance at point of junction with lower plate of 5½ inches; (2) shot penetrated to a depth of nearly 20½ inches; (3) horizontal joint between upper and lower plate opened to a width of 2 inches, the same effect being manifest in the corner of the top plate being lifted 2 inches higher than that of the adjacent plate; (4) the lower plate cracked in a vertical and laminating direction, if such a word may be allowed, and otherwise contorted at the edge; (5) a bolt driven some inches backwards, the head flying into the interior of the turret; (6) the double skin being bent back and forced open to a width of about 8 inches, the wood protruding; (7) the ½ inch or inner skin torn open and hanging down to the extent of about 4 feet by 18 inches,