

HEAVY GUNS AND TIME FUSES.

(From the *Broad Arrow*, June 22.)

One of our contemporaries—the *Pall Mall*, if we mistake not—recently stated that the premature breaking up or bursting of the studded projectiles in the present service guns was due to some *hidden* cause. It has, perhaps, in mind those minute cracks which are not always discernible by the naked eye, but which, radiating from the stud-holes, cause the disruption of the shot. The *Engineer*, however, a journal devoted to mechanical science, clearly pointed out at the time of the proposed adoption of the spurious French system, viz., in 1865, the results that would necessarily follow the weakening of projectiles by first boring holes and then wedging or swedging hard studs into the cavities. In a later impression, dated June 10, 1870, the same scientific paper stated, in respect to the constant breaking up of the studded projectile, that it “seems to be always in antagonism to the objects of its own existence.” Again, the *Engineer* of this present month says the work in which the skill and resources of the Royal Laboratory have been so highly taxed for so many years may not be inaptly described as the task “of devising a perforated postage-stamp which will not tear through the holes.”

We now turn to the explanation of the accidents which have happened to the guns of the *Hercules*, more especially as to the recent disabling of another 18 ton gun. In the columns of the *Globe* of the 17th instant, we are informed “that common shells are liable to be prematurely exploded by time fuses, whether of the ordinary wooden pattern or of brass. The latter can not be thrown out by any sudden check.

Yet the shells fused with it exploded prematurely.” This accords with our own statement in the *Broad Arrow* of the 15th instant, in which we pointed out that the concussion arising from the checks or shocks which the studded projectile is subjected to in its passage through the bore of the gaining-twist gun tend to break up the time-fuse composition, and by allowing the flame to reach the bursting charge, cause a premature explosion of the shell. We cannot, however, accept our contemporary's conclusion, viz., that because some shells (the size and numbers are not specified) have been fired with a cap screwed down over the fuse, and the fuse found to be uninjured on recovery, that therefore the rush of gas past the base of the shell is the cause of the destruction of the fuse composition, and of the consequent premature explosion of this projectile. If the premature explosion, when time-fuses are employed, is due to the rush of gas, why not substitute the concussion-fuse for the time fuse?

We are under the impression that concussion fuses are still more liable than time fuses to cause the premature explosion of heavy shells fired from the gaining-twist gun, for, as we understand it, the shock of the sudden pressure of the powder gases upon the base of the projectile liberates the detonator or striker, after which any subsequent shock, such as that caused by the projectiles' rear stud on first coming into contact with the driving side of the gaining twist, would set off the detonator and cause the premature explosion and bursting of the shell.

Engineering, as well as the *Mechanics Magazine*, concur with the other mechanical journals, the *Naval and Military Gazette*, and the *Standard*, and the leading paper of our great naval ports, in denouncing the present gun system, which as they point out, is so

faulty that the *Hercules*, which alone had any lengthened experience with its application in the 18-ton guns, cannot get through “the ordinary quarterly training practice at targets without disabling three out of her eight 18-ton guns in less than three years.” Well may naval commanders feel alarmed at the prospect of being knocked over by the broken pieces of the shell of a *friendly* vessel; and well may the captain of our turret ships hesitate at firing over or near bulk-heads, which a split projectile might unhappily pass through to the great destruction of life. We are still at peace, and we trust that the favorable opportunity for reviewing the condition of our guns, as well as improving our powder and keeping it dry for any emergency may not be lost.

The U. S. flagship *Worcester* left Key West, May 10, for Kingston, Jamaica, to inquire into the *Edgar A. Stewart* difficulty. A despatch from Kingston, Jamaica, May 10, reports that the steamer *Edgar Stewart* arrived there on the 14th of April, under peculiar circumstances. She cleared from New London, Conn. for Key West, but there were munitions on board which were not to be found on her clearance papers, and which would, had they been discovered on board prior to her leaving port, have given sufficient ground for her detention under a charge of violating the neutrality laws of the United States. Prior to her arrival in Jamaica she made the island of Cuba, and her instructions were that she should not sight the island of Cuba at all in daylight, but from a given point which should be shown her commander, and at a time which he should be informed of by some one on board of her. She should then proceed in a direct line “through a channel” at night “so as to be seen from neither point.” This she accomplished, and landed a boat with ten armed men; but as these did not return, and as daylight was gaining upon them, the *Edgar Stewart* put out again to sea, but returned the following night, in the hope that their missing companions might be heard from: but though the steamer made signals no boat came off. The crew (or rather the Cubans on board) then rose against the captain and took command of the steamer themselves; but sighting a Spanish gunboat in the offing, which gave them chase, they restored the captain to his command, and ran into the port of Kingston, Jamaica, at night, where she reported herself in distress. On arrival at Kingston, having powder on board, according to harbor regulations, she was not allowed to proceed further than Fort Augusta, where all such combustible material must be deposited, while here the captain preferred charges of “mutiny and piracy” against those on board, and they in turn preferred charges of filibustering against the captain, who to make matters still worse, stated that he apprehended that those on board would carry off his vessel, leaving him behind. These several declarations were forwarded to the Governor and the United States Consul, and in accordance with a law which enables the Governor of this island, on certain representations of the collector of customs, to detain such a vessel pending an investigation, she was taken in charge by the naval authorities at Port Royal. These circumstances brought about an examination, and it was found that the coal on board the *Edgar Stewart* was wrongly charged with bacon, and that she was capable of running sixteen knots an hour. It now became a question with the Governor how they could deal with this vessel. She had reported herself in distress

but then there were these declarations of those on board as to the unlawful character of her mission, and this was supported by the nature of her cargo. There was therefore considerable delay; but the Government eventually decided on letting her go, and so informed her commander and the United States Consul, to whom she was delivered over. Meanwhile a Spanish steamer of war came to look after the *Edgar Stewart* and not long after her the American steamer of war *Wyoming*, from Key West. The officers of Her Majesty's steamer *Plover*, who had been keeping a strict watch upon the *Edgar Stewart* to prevent her escape, and who had their guns loaded and bearing upon her day and night were sadly disappointed when they found they had to grant her liberty, and still more chagrined when they found the *Edgar Stewart* again captured by the captain of the United States steamer *Wyoming*, who put an armed crew on board of her and announced his intention of carrying her off to Key West, where he declared the British authorities had a right to have taken her as a prize for adjudication. While the *Edgar Stewart* was in charge of Her Majesty's ship *Plover*, the latter vessel having just returned from a cruise off Hayti, had not a ton of coal on board, and it was found difficult to keep up the appearance of readiness. When she was absent coaling, although the *Stewart* had been told not to leave port, and which she might easily have done during the night for all Her Majesty's steamer *Plover* could have done to prevent her, it was found that she was getting up steam. The *Plover*, which had been shovelling in coal into the furnaces, as it was being brought on board in baskets, then came up but before she came alongside the *Edgar Stewart* the engineers of the latter had turned on their hose and put out the fires, and on being charged with an attempt to escape, declared they had no fires, no steam, yet the engines were so hot that the engineers of Her Majesty's ship *Plover* found it impossible then to disconnect the engines, which they afterwards did, to prevent any similar attempt to escape. It is now stated that an officer and crew from the *Wyoming* will take the *Edgar Stewart*, convey her to sea, and then despatch her to Key West in charge of an officer and crew, who will be responsible for her going nowhere else.—*U. S. Army and Navy Journal*.

At a recent meeting of the American Association for the advancement of Science in Dubuque, Prof. Asa Gray read an interesting paper on the *sequoia gigantea*, or the big trees of California, in which he took occasion to correct the popular error that they are the oldest and tallest trees in the world. Certain Australian gum trees are taller, and he believed that several groups of trees in the world were probably older. Prof. Gray's theory is that these trees are the few survivors of a race that once flourished in Northern America, Asia, Europe, and the islands of the Northern seas.—Fossil remains of the *sequoia gigantea* have been found throughout the miocene formations of Northern Europe, and in those of Iceland, Spitzbergen, Greenland, Alaska, and the Rocky mountains. All of these fossil specimens are almost exactly the same as the big trees of California. The only conclusion to be drawn from such facts is that these trees are the last living relics of gigantic forests which once belted the earth, they having in some manner escaped the destruction in which the other of their species were overwhelmed ages and ages ago.