

considered how mild the powder is? In the first place, we have a thick steel tube, in itself an untrustworthy article, but to make matters worse, this thick tube is hacked about in various ways, as seen in the drawings. These nicks and chasms cause this untrustworthy mass to expand unevenly under the pressure of fired gunpowder, and an uneven and sudden expansion is the worst possible strain to which steel can be subjected. To make matters worse, the tube is subjected to the uneven pressure of the various rings shrunk over it in building up the gun, and as those rings are mere patchwork, the gun is absolutely devoid of all longitudinal support excepting what it can obtain from its hacked-about steel tube. All these arrangements conduce to "ring fracture," the deadliest manner in which a steel-lined gun can break up.

The bursting of the *Duilio* gun was plainly due to "ring fracture" from longitudinal strain, as an inspection of the drawing will show. In a former article we stated that the *Angamos* gun had burst in front of the trunnions, but a closer inspection of the constructions of the gun inclines us to believe that the point of fracture was exactly the same as shown in the *Duilio* gun. In the latter gun the whole of the huge trunnion coil nipped the coil over the steel tube, keeping the front of the gun in its place; whereas, in the *Angamos* gun the rupture in the chambered breech chasm was followed by the parting of the joint under the centre of the trunnion coil, the nipping of only one half of which was insufficient to prevent the front of the gun being blown overboard, leaving the trunnions only in their place, and causing the splash in the sea under the smoke reported by Captain Lynch. As long as steel tubes are used the only remedy for these glaring faults is to follow the system now adopted at Woolwich, and supply solid casings, so to speak, with the appliance of a step in rear to meet the longitudinal strain, which would thus be transferred from the smaller area of the inner tube to the larger area of the casing, according to the law enunciated by Sir William Palliser to the late Ordnance Select Committee, and fully explained in our issue of July 17 of last year, viz, that Barlow's law of transverse strains in a gun holds good for longitudinal strains as well.

If we take up any cause, we think our readers will admit that it has all along been for the protection of the lives of our officers and men. Our correspondent who writes so vigorously against the introduction of dangerous weapons into the Navy happens to be a naval officer in no way connected with any system of artillery, so we have not "gone off the track" in publishing his incisive letter. He laughs to scorn the idea of this burst gun slipping through its trunnion loop "like an eel." He calls attention to the fact of the sailors being burnt by the escaping powder flames from the sides of the bursting gun, probably because in all his long experience he never knew of a gun's crew being burnt from the muzzle flames of a sound gun, much less from a gun 18 feet long. Finally, in true sailor fashion, he wants the gun, or its remains, fished up in order that his argument may be refuted and confidence restored, or the system condemned from the evidence of the pieces. It is stated that the writer from the scene of the disaster may yet have to fight these guns himself. We do not think so. We think and hope we have given these deadly weapons—deadly to those who may have to fight them—their death-blow, and that the necessary alterations we have pointed out will be insisted on by the authorities, and the powder charges reduced before any further orders are given for the manufacture and service of such guns.

In our review of the explosions caused by want of scientific knowledge in artillery construction, we have dwelt on the successful system adopted by the Canadian Government, for which the distinguished inventor receives no

pecuniary payment from either that Government or its manufacturers, any more than we do for showing the construction of this excellent artillery to our readers. We apologise for this statement, rendered necessary by a contemporary, which the ability of its contributors will, we feel sure, lead them to change for a line of scientific argument, showing, if possible, that the guns we this day illustrate were indeed good sound guns, fit to be placed on board Her Majesty's ships, or to be used in battery on shore. Such an argument will, we feel convinced, be one of great interest to our readers and all concerned.—*United Service Gazette*.

### General Roberts on Short Service.

To the Editor of the "Daily Telegraph."

Sir,—Sir Frederick Roberts' speech at the Mansion House recalls to me very vividly many deep impressions and significant events of the Afghan War. I visited General Roberts' camps at Kohat and Thall, and the letters describing my experiences were all, I believe, duly published in *The Daily Telegraph*. But the speech at the Mansion House, contrasting, as it does, the 8th King's with the 72nd Highlanders, reminds me that in one of my letters I made the same comparison a prominent feature of my description of General Robert's force. That distinguished officer said on Monday:

The Kuram Field Force in October, 1878, consisted of one regiment of British and five regiments of Native Infantry, one squadron of British and two regiments of Native Cavalry, one battery of Royal Horse Artillery and two batteries of Native Mountain Artillery. "The British element was so weak that it was imperative it should be of the very best material."

This does not mean, of course, that the native element was not of the best material, for if General Roberts had his pick of the Indian army I am convinced that he would choose a large proportion of such native regiments as he then commanded, notably the two splendid Ghoorka corps which formed part of his force, and which General Roberts, in his generous despatches, never failed to mention with the high honor of his soldierly approval. But, nevertheless, let your native infantry be what they may, they require British comrades before they can be depended upon to do their very best, and as General Roberts says, it was necessary that the English element of his army should be first-class in material, so that the native force should have always before it, whether in camp, on the march, or in the field, such a standard of good soldiering as should keep them up to a high mark themselves. How completely the 8th failed to set their native comrades a good example I remember telling you at the time.

In the artillery and cavalry which General Roberts had with him in the Kuram, the British element undoubtedly was first class, for as Sir Frederick Roberts said, "nothing could have been finer than Field Artillery, R. H. A. and a squadron of the 10th Hussars—and why? Because the short service system has as yet been only partially applied to those branches of the service. The men were old and seasoned soldiers. I believe," said the distinguished speaker,

I am correct in saying that there was not one death in the battery or among the Hussars from disease for several months; and such a thing as a man falling out on the line of march was unknown.

I remember well seeing the R. H. A. working their guns up a desperate mountain side on the road to Thall—it was a sight to do Englishmen good—a branch of the 72nd coming by also set to with their shoulders, and all of them cheered, as the jammed wheels jolted on to the road again, with a ring in their voices that made a