Supplement to the C. M. Review.

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Sir William Palliser's Experiments.

On Monday last a few officers including Captain Cyprian Bridge, R.N., on the part of the Admiralty, and Major C. H. F. Ellis, R.A., on the part of the War Office, assembled at Erith to witness some novel and useful experiments in gunnery conducted by Sir William Palliser at the proof grounds of Messrs. Easton and Anderson, adjoining their extensive engineering works at Erith. The gun, which was a 64-pr. naval 71-cwt. gun of the Palliser type, had, we were informed, been previously fired nine times doubly loaded in the presence of a number of officers and engineers interested in the testing of guns to destruction. On the completion of this programme without injury, the gun was sent into the works and converted into a breech-loader on the plan presented to the Ordnance Select Committee by Sir William Palliser in 1863, and recorded with the drawings and model on September 18, minute 9908-9959. The principle will be best understood by our readers if we say that the gun is closed with a screw plug at the breech, almost exactly the same as the plug in the large Service wrought-iron guns, with this exception that the plug is movable. It has a gas check on its inner face, and is fitted in a screw collar, which again is attached to a hinge on the right side of the breech of the gun; on unscrewing the breech plug the gas check retires into a hood in the collar, and is thus protected from blows in action. It is stated that a 9-inch 250 lb. shot, if struck against a gas check in loading a gun would probably render it unserviceable, and, that therefore all gas checks should be protected on being withdrawn from the gun. When screwed home the breech closure does not appear to require any locking, as four rounds were fired from the gun loaded as a muzzle loader and without opening the breech. We were informed that this is due to the desire of the Canadian authorities that their breech-loaders should be made so as to act as muzzle-loaders, as it was found that in winter the breech-action sometimes freezes. On one occasion, during a night alarm, a Service 110-pr. B.L. rifled gun was found to be useless, as the breech action was frozen hard, and the lead-coated shot of course could not be put down the muzzle.

The gun inspected on Monday was in the open facing a mound of earth, and mounted on a wooden carriage and slide, the latter at a sharp incline. The design of this gun is to guide Canadian manufacture, as that country has adopted the Palliser system as cheap and of easy construction, within the means of their engineers; and as also possessing a remarkable capacity for being fired doubly loaded without bursting, which was quite unprecedented. The Canadians have just completed a number of converted guns, and are at work on two formidable 7-inch B.L. Palliser guns of 27 calibres. We subjoin a drawing of one of these guns with the 7-inch doubly loaded gun as fired a few months since, in order that our readers may compare the two. The obvious inference from an inspection of these drawings is that, if the light gun can stand such double charges, the heavier gun of the same calibre will be strong and serviceable, and do credit to Canadian enterprise.

On inspecting the gun, Sir William drew attention to his central fire apparatus. It consists of a rod of steel, about one inch in diameter; it is as long as the breech-plug, and is fitted with a capsule, containing powder at one end and two handles at the other; it is readily thrust into its place in the breech-plug, and half a turn of the wrist fixes it. Then can be seen the brass ring between the handles; on pulling this a pin comes out, to which the ring is attached, and a sharp click announces that the gun is on full cock, and then the pin, fitted with a spiral spring, is ready to descend on to the cap and little magazine (which is now close up to the powder charge in the gun) on the word of command to "fire."

The violence of the discharges suggested that, although the powder charges were 10 lbs. each, the whole detonated from the action of the small magazine and large copper cap. This cannot be positively ascertained until a few pressure gauges can be obtained. These have been applied for to the War Office, and will be employed without loss of time when received. After each discharge the central fire apparatus was seized by Mr. List, the manager of Messrs. Easton and Anderson's works, and it was seen that he gave a half turn to the two handles, withdrew the steel rod containing the central fire pin, and at once inserted the nozzle of a steam hose attached to a neighboring portable engine: the steam being turned on the smoke was blown out of the muzzle with a puff, and the gun perfectly cleaned inside in about eight seconds. *No sponging was therefore required.*

In turret ships and casemates the smoke issuing from large guns on opening the breech is a very serious nuisance to the gunners, and this simple invention of Sir William Palliser's is designed to do away with the inconvenience.

It would be interesting to see if sponging could not be avoided with our large muzzle-loaders by the use of the Palliser steam jet; like all good inventions it is simple and cheap.

The breech action acted very well; the thread on the screw plug differs from the French system in being complete instead of interrupted, and is therefore manifestly so much the stronger. Their system was proposed after Sir William had laid his plans before our Ordnance Select Committee, and had deposited his model at Woolwich, and Sir William was heard to declare on Monday that the French have to employ a key or lock to keep their plug in before each round; without this precaution their plugs are wont to shoot out to the rear at every round fired. And this reminds us that two 12-inch French guns have lately blown out their breeches. It seems a pity to run after the French for a system when an admittedly better one is to be found at home. The Canadians have avoided this blunder it would appear, so that their patriotic exertions to arm themselves become doubly interesting.

Before leaving the ground the officers inspected a small steel-faced plate which had been fired at by Sir William with small new pattern Palliser shot in comparison with the old pattern; the results were very remarkable, but we shall reserve our remarks on these for the forthcoming trial, the War Office having ordered twenty trial projectiles to be made at once.—*United Service Gazette, Nov.* 13.

The *Engineer* also has an interesting article, and sums up thus:—

"In conclusion, the following points may be noticed with regard to Palliser's breech-loading gun: It combines the tappet-ring system of closing the breech joint with the principal features of the breech-closing arrangement, subsequently designated the French system—that is to say, the screw-carrier pivoting on a vertical hinge fixed on one side of the breech. This, besides being a convenient arrangement, has the merit of being singularly well adapted to purposes of conversion, as exemplified in the very gun under trial. A very short length at the breech end is required for the screw, while the carrier hinge plate is readily attached to the breech of any gun. A general designation, such as 'Woolwich' or 'French,' is very convenient, because it gives no encouragement to any inventor's claims. Officers would doubtless be held responsible for connecting the names of individuals with designs adopted in the service, unless fully authorised to do so. Nevertheless, it is much to be regretted if on this account injustice is done, and an English idea becomes labelled with a designation calculated to disconnect it with its real origin."