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The Volunteer Review,
AND
MILITARY AND NAVAL GAZETTE.

"Unbribed, unbought, our swords we draw,
To guard the Monarch, fence the Law."

OTTAWA, MONDAY, OCTOBER 14, 1872.

LIEUT.-COLONEL WAINEWRIGHT GRIFFITHS, at present on a tour through British Columbia, has kindly consented to act as the Agent for the VOLUNTEER REVIEW in that Province.

TO CORRESPONDENTS.—Letters addressed to either the Editor or Publisher, as well as Communications intended for publication, must, invariably, be *pre-paid*. Correspondents will also bear in mind that one end of the envelope should be left open, and in the corner the words "Printer's copy" written, and a two or five cent stamp (according to the weight of the communication) placed thereon will pay the postage.

FROM the details already given it will be seen that practically very little has been determined as to what system the *Gun* of the future shall belong.

The United States and Prussia have each a system of their own, and in both cases failures of a striking character have occurred.

What is really wanted seems to be a gun capable of bearing the greatest strain that can be applied to it in ordinary practice—that will have endurance—that will be easily handled—and that can be made to throw its projectiles with certainty.

In addition to all this its mechanical construction should preclude the possibility of accidents such as have destroyed the best ordnance in the British service, and all other things being equal, that it should be as certain and as easily handled comparatively as an ordinary Rifle.

On behalf of the present system it has been urged that the destruction of the gun was due to a false and vicious method of rifling founded on the theory that it was necessary to retard the shot in order to enable the powder to ignite.

As a theory the idea was correct, but the method taken in practice was decidedly wrong—it was to increase the twist towards the muzzle of the gun—the effect being retardation of the shot in the weakest portion of the bore, anh the increasing stroke or pressure in the effort to force it out threw the shot out of gear, i.e., forced the studs out of the grooves causing a smash up of the shot, or, as was often the caset, at the first impact the shot was thrown out and the second effort ended in rupturing the inner tube and destroying the gun.

That both operations took place admits of no doubt. The fracture of the steel tube of the *Woolwich infant* (35-ton gun) was caused by the wedging of the shot in the tube near the muzzle, being thrown out of gear by the first impact, and the breaking up of the *Hotspur's* shot is evidence of the second. Both operations evidently occurred at distinct times and in different parts of the bore.

This mere mechanical difficulty can be easily overcome, but rotation must be given to the shot or its flight will be uncertain and its effect nil. Provided the twist was uniform throughout, that a powder was devised which would burn quickly, would both those conditions obviate the difficulties attendant on M. L. rifled ordnance? we do not think they would, and our reasons are as follows: The shot is relatively harder than the tube or bore, its motion is or should be that of a *turning tool* on a shaft, its tendency is constantly to strip the bore, if *fitting tightly*, and so damage it; if fitting loosely the same series of events as now occur will be repeated; it will jam in the bore whether the shot be studded, ribbed, or grooved.

The *Vavassuer* gun is proposed to have the surface of the shell grooved or rifled with the same twist as the *lands* of the bore, but the very same objection holds against it as in the studded shot, and will hold against all ordnance when the projectile must be of necessity harder than the face of the tube along which it must slide; and the problem is more complicated from the fact that the projectile of modern ordnance having to deal with wrought iron must in all cases be *case* hardened, a quality byno means necessary when only wood and stone were in question.

Before the whole of this question is settled a projectile coated with some substance (not a metal) sufficiently tough to resist the friction of the face of the tube or bore, sufficiently elastic to fill it easily and completely, and with sufficient tenacity to remain fixed to the shot till it struck the object aimed at must be found.

In the Armstrong system this was attempted to be attained by coating the shot with lead—it was a failure—and it does not appear that any experiments were set going to ascertain whether a substitute might not be found.

It has been seen that expanding sabots of *papier mache* have been used with good effect, and might it not be possible to employ some modification of India rubber, gutta percha, or saw dust to accomplish the desired object of keeping the shot from *planing* the face of the bore, and giving it the necessary rotation at the same time. Except the mechanical difficulties can be overcome M. L. rifled ordnance will not be a striking success.

It would appear the breech loading rifled ordnance fell into disuse without sufficient reason; no serious effort was made to remedy defects which were after all slight in comparison to the difficulties attending the development of the other system.

The great objection seems to be alleged weakness in the breech, but remedies could be easily found for such a defect if it existed, of which there are no records, while its many and great advantages have been entirely ignored.

Smooth bored ordnance may be said to be nearly extinct in the British Service, yet it is very doubtful whether it could not be made a really effective weapon at small expense.

The experience acquired in the *Hotspur* and *Glatton* experiment was not at all favorable to M. L. rifled ordnance, the damage effected although it involved great cost did nothing to impair the efficiency of the vessel, and it would be hard to say how many shots she would sustain before real damage affecting her efficiency was inflicted.

It would appear that a projectile propelled with greater velocity having a smashing force would undoubtedly test her endurance better.

In the United States a 20-inch Rodman gun is in use which will throw a spherical ball of 1100 pounds, and it is averred that a velocity of 1600 feet per second can be attained; what would have been the effect on the *Glatton's* turret if such a projectile had struck it?

The force of a moving body is as its velocity per second multiplied by its weight. The *Hotspur's* shot moving at the rate of 1400 feet per second with a weight of 600 lbs. struck the *Glatton's* turret with an impact of 375 tons; a shot from the 20-inch Rodman with a velocity of 1600 feet per second weighing 1100 lbs. would have exerted a force of 785 tons.

It is quite possible that the rifled shot would drill the neatest shot hole, but it is