CONTENTS OF No. 40, VOL. VI.

The Volunteer Review,

AND

MILITARY AND NAVAL GAZETTE.

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

OTTAWA, MONDAY, OCTOBER 7, 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.

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.

IN the United States service a cast-iron gun with a breech reinforce of wrought iron shrunk on it has been successfully rifled. It is known as the *Parrot gun*, and ranges from eight inch to a 300-pounder; it is greatly praised by the able artillerists of that service. The *Rodman* gun generally smooth bore has been cast up to 15 inches in diameter. From the superior excellence of the material at command the expense of *built up* ordnance in the States or Russia may be avoided, although the latter power seems to find its account in purchasing Krupp's steel guns in Prussia.

This latter system is simply that of forging the block out of a steel ingot tempered in oil and boring it out—shrinking on reinforces and for heavy guns strengthening coils.

English cast-iron could not bear the requisite strain for heavy guns, and as the supposed exigencies of modern warfare demands that a weight of metal averaging from 400 to 700 lbs. should be discharged from ship and battery guns, the problem presented to her Engineers was to find a metal capable of resisting an increasing force varying from 22 to 66 tons per square inch. The means resorted to accomplish its solution were described in a former article, and we have now only to deal with the specialities of the weapon produced with such skill and labour.

Built-up ordnance in the British Service may be classed as breech and muzzle-loading—as a general rule it consists solely of rifled guns. The great inventors of this system are Sir W. ARMSTRONG and Sir JOSEPH WHITWORTH, the outlines of their improvements have been heretofore described. Armstrong's gun being a many grooved cylindrical bore, with this peculiarity that the *lands*, i. e., spaces between the grooves were less in surface than the grooves, and the number of the latter increased with the calibre. Whitworth's gun was an hexagonal bore having the same number of grooves under all circumstances.

The Armstrong guns were generally built up of wrought iron coils welded into a solid mass, the coil was made by twisting a long bar of carefully forged iron around a *mandril*, the fibre of the metal was thus disposed to stand the greatest possible tangential strain, and as the coils could be repeated the conditions of compression and tension would be complied with. The breech piece was a solid forging of wrought iron, it was turned, bored, and shrunk on to the chase—to further strengthen the gun a trunnion ring was shrunk over the barrel.

Breech-loading Armstrong guns were of two kinds, screw and wedge; the principal parts of the gun are the barrel or chase, breech piece, trunnion ring, vent piece, breech screw, tappet ring, lever ring.

In the barrel are the bore, the shot chamber, and the powder chamber; in all guns except the 7-inch at the end of the powder chamber is screwed a copper ring, against the outer edge of which the copper facing of the vent piece fits and so closes the bottom of the bore; the 7-inch gun has a wrought iron ring in the powder chamber.

The vent piece is kept against the end of the barrel by the breech screw which is supported by the breech piece, and the latter has to resist a longitudinal strain—that exerted by the force of the expanding gas against the vent piece to force it backwards, therefore it has been necessary to make the breech piece a solid forging with the fibre of the metal disposed to resist the strain.

The vent piece is a piece of iron or steel tempered in oil which when dropped through the opening or slit in the top of the gun to its position and pressed by the breech screw tightly against the end of the powder chamber effectually closes the bottom of the bore.

All the vent pieces except those of the 7-inch guns have a copper facing, ring shaped and angular to correspond with the copper ring at the end of the powder chamber and the closing of the breech of the gun to prevent escape of gas, depends on the accuracy with which those surfaces are fitted.

The 7 inch gun having only an iron ring at the bottom of the chamber the vent piece has no copper facing, but the bore is closed by placing a tin cup behind the cartridge—all those vent pieces have handles, or as they are technically called *shackles*, by which they can be lifted out, so that if it becomes necessary to disable a gun, all that would be required would be to carry away the vent piece, a far easier operation than that of spiking.

The *breech* screw fits in the thread cut in the breech piece, and is worked by the lever or tappet so as to press home or release the vent piece.

It is bored hollow of a larger diameter than the powder chamber to enable the charge to be passed through in loading the gun—it is allowed a certain amount of play—if made to fit very accurately it would be liable to become clogged with dirt.

The *tappet* ring fits on to the octagonal part of the breech screw, it has *cams* against which the lever acts and thus works the screw.

The *lever* ring is an arrangement by which additional power is acquired for tightening or releasing the vent piece.

There are six different *natures of screw* B. L. rifled guns, viz.—7 inch 40, 20, 12, 9 and 6-pounders.

Of the 7 inch guns there are two kinds—heavy of 82 cwt., light of 72 cwt.; the first is used in land and sea service; the second for land service only. They can be used in garrisons as siege guns, the shells containing large bursting charges would be formidable against earthworks or masonary; they can only be fired with small charges and would be formidable against wooden vessels or as a defensive weapon in position.

Of the 40 pounders there are two varieties, 40 pounders G pattern, 35 cwt.; do. old pattern 32 cwt.; they are intended either for land or sea service; in the former case they are mounted on block trail travelling carriages and would be employed either as siege or position guns—they may be used in fortresses.

There are three varieties of 20 pounders, L. S. of 16 cwt., S. S. 15 cwt., do. of 13 cwt.; the first is mounted on a block trail carriage and would be employed as a position gun or for heavy field batteries. The 15 cwt. gun was intended for a broadside gun for vessels of the sloop class, and the 13 cwt. for boat service.