

## APPENDIX No. 14.

## GOVERNMENT CARTRIDGE FACTORY.

QUEBEC, 1st December, 1889.

To the Deputy Minister of Militia and Defence,  
Ottawa.

SIR.—I beg to forward this my annual report for the current year.

The quantity of service ball ammunition appointed to be manufactured this year, has been produced and issued into store. The ammunition was tested during manufacture with satisfactory results.

A number of 9-pounder and 64-pounder studded common shell has been manufactured this year at the factory, in accordance with instructions. These shell do not differ from patterns which govern the manufacture of studded shell for these natures of ordnance in the Imperial service.

A complete set of gauges and other testing apparatus, in this connection, have been devised at the factory, comprising: Ring gauges, length gauges, test plugs for fuze holes, gauges for thickness of walls, base, size of stud hole and undercuts, angle of rifling, shape and size of studs, apparatus for testing centre of gravity and concentricity of projectiles, &c., to ensure close adhesion to specifications.

Chemical analysis has been resorted to in order that the quality of metals employed should be ascertained.

The 64-pounder shell were tested at the Island of Orleans, in May last, by the Commandant of the School of Artillery at Quebec and found serviceable in every respect. Some were issued to the Artillery during competitions, and no difference was observed in their performance when fired concurrently with shell from Woolwich.

The 9-pounder common shell were tested in October last by the Commandant of the School of Artillery, Kingston. The practice was carried on at 1,700 yards' range. The average error in range was found to be seven yards. Six direct hits out of 16 rounds on a target six feet by two feet were recorded. This result is highly satisfactory. Nine hundred shrapnel were also tested on the same occasion and answered very well. These shrapnel can readily be manufactured here. All that is required for their manufacture is now prepared, a few machines having been made suitable for this purpose. The supply of 64-pounder shrapnel could also now be entrusted to this establishment, obtaining from the trade the heavy wrought iron discs required for diaphragms until such time as a steam or drop hammer should be procured. If these were obtained—and they would be useful for many general purposes—the manufacture of 64-pounder shrapnel and of heavier natures if required could be carried out entirely at the factory.

As several hundred thousand rounds of Martini-Henry ammunition are fired during each year at target practice, I beg to point out that it would be an advantage to obtain the small number of machines, additional to our plant, necessary to manufacture Martini-Henry ammunition in this country. A considerable part of the alterations to our machinery required for the inception of this fabrication could be done in our workshops. Only such machines as would be special and which it would be very costly to manufacture here (having no patterns for casting the beds and other parts, &c.), would have to be purchased in England. A start in that direction was begun this year by altering a bullet machine to see if the alterations could really be carried out. In about half an hour the machine can now be con-