

diminished. He did not pretend to say that they would be as efficient as guns constructed for the purpose; but that they would serve for all secondary purposes, such as retarding the fire of wooden ships or for bombardments. His reasoning, excellent for the 32-pounder and 8 in. English guns, is not applicable to our 9 and 11 and 15 inch, since these are much lighter and with larger proportional calibres; therefore will not admit of a suitable shell.

In 1855 the French, after some successful experiments with the smaller calibres, commenced the manufacture of the 16 cm. (equivalent to our 100 pounder rifle), of 32 smooth bore calibre. This gun was rifled with two grooves, and for the same reasons given by Mr. Ward to enable it to utilize the old round shot and shell for the same calibre. In 1858 the model was changed; and also the number of grooves to three, for reasons evident to every artilleryman; they still continued to use spherical projectiles. About this time the importance of centring the shot in the bore became manifest, and arrangements were made which while allowing sufficient windage to enable the shot to enter easily, assured the centring.

They used a studded projectile and reasoned as follows: "Lorsque le projectile est rendu au fond de l'anne, il est soutenu en équilibre sur ses trois bords, puisqu'il s'agit de placer autour du centre du gravité; mais son axe n'étant pas maintenu tout entier sur celui de la pièce, il en résulte au moment de l'explosion de la charge, des battements, des chocs violents, contre les parois de l'anne; on a garni l'arrière du projectile de trois rondelles en zinc appelées plaques isolantes."

These plaques isolantes are the "boutons" of Mr. Ward, and serve exactly the same purpose. It therefore appears that neither the combined rifle and smooth bore guns, nor the plan of centring the shot is original with Mr. Ward. The "gills" of Mr. Ward are entirely his own; but no practical artilleryman, certainly, not one who has fired guns in anger, could ever give his sanction to such a delicate and complicated arrangement.

With respect to the form of the projectile the pamphlet report says, it has the English ogival point—so far so good—but as it weighs no more than the solid spherical shot it may be said to be all point, and besides it very imperfectly fulfils the requirements of a rifle projectile. Moreover, all projectiles having a mechanical fit, (as the one Ward proposes), require a greater nicety of construction and greater windage to allow for the inevitable fouling after continued fire.

We next come to "the triumph achieved" by penetrating 15 inches of 3 in. iron plates without backing, at 60 yards range. Now we have before this called attention to the fallacy of the great point attempted to be made by penetrating 15 inches of iron simply. The fact is, this target was a laminated one, made up of three 5 inch plates; and, besides as the appearance of the iron shows, it was of a quality quite unfit for armor. Reference to the English experiments with the 10 inch and other guns against solid plates prove conclusively that the effect of the shot on the target at Nut Island is no criterion whatever by which to gauge the effect of shot on the armored sides of an enemy. Mr. Ward, in fact, set up a target in no way representative of present armor, and fired at it projectiles propelled by a charge of powder (140 pounds) which might be used for a sensational "experiment," but which every one knows the gun could not be called upon to stand for a number of consecutive fires.

We do not pretend to see further into a millstone than other people, but we think we readily discover, in the manner of the conduct of Mr. Ward's experiments, and the subsequent exploiting of them, reason enough for suspecting that a scheme for extracting money from the Treasury is all that underlies this singular gunnery business. One does not, in fact, need to go further than the \$500 a gun he proposes to charge for his patriotic invention (which is certainly not new, and would do more harm than good), to find the motive of Mr. Ward's solicitude about our great guns.

MANY of our correspondents seem to favor the idea of staff college in connection with the Canadian military force. Our own opinion is, that—a staff may be formed sufficient for all purposes out of existing material without college training, but that it may be necessary to create such an institution, if the higher scientific knowledge cannot be obtained without it. Appended are the "Regulations for 'Staff College Examinations' of the British Army for 1873.

The regulations regarding the examination of officers who may be candidates for admission to the Staff College in February 1873, have been issued by the War Office.

There will be vacancies for twenty officers, of whom three may belong to the Royal Artillery and two to the Royal Engineers, provided they are among the twenty highest on the list. The qualifications requisite for admission are:—

(a) A service of not less than five years, previously to examination, exclusive of leave of absence. (c)

(b) A certificate from his commanding officer, that the candidate is in every respect a thoroughly good regimental officer.

(c) A report on the following questions, to be confidently answered by a board, consisting of the commanding officer and the two next senior officers of the candidate's regiment, (b) viz:—

Is his conduct marked by steadiness and prudence? and is his temper in his habits?

Is he extravagant in his mode of living?

Does he display zeal, activity, intelligence, and discretion, in the performance of his duties? and does he appear to take an interest in his profession?

Report any other characteristic of the officer which render him suited or otherwise for the duties of a staff officer.

Is his disposition such as would enable him to perform those duties with tact and discrimination, and in a manner calculated to ensure their being cheerfully carried out by those to whom orders would be conveyed by him? or, are his manners and temper objectionable, and likely to cause him to disagree with those with whom he might be associated, or brought in contact?

Is he active and energetic in his habits?

Is he a good (fair or indifferent) rider, and is he short sighted?

(d) A certificate that the candidate, if not a captain, has passed the examination for a troop or company.

(e) A medical certificate of good health and fitness for the active duties of the staff.

(f) This is not to apply to the usual leave of absence granted to officers.

(g) Officers on half pay whose regiments have been disbanded, are, if possible, to obtain answers to these questions from the three senior officers under whom they have most recently served.

(f) Every candidate before being admitted to the entrance examination, will be attached to the staff of a general officer commanding a brigade or division, who at expiration of this period will report confidentially upon the candidate's general fitness for staff employment, and especially upon his aptitude for business, and for conducting official correspondence. (c)

Every application to study at the Staff College must be made through his commanding officer, whilst the officer is present and serving with his regiment. No application from an officer on leave will be entertained.

Home station officers serving in the United Kingdom who are desirous of entering the Staff College, must, before the 1st of May next, inform their commanding officer, by whom the certificates from (a) to (e) will be prepared and forwarded through the usual channel to the Adjutant General of the Forces. General officers, in transmitting these applications, will record their opinions as to the fitness or otherwise of the applicants for staff work, should they be able to do so from their personal knowledge of them.

If these certificates are satisfactory, orders will be issued for carrying out the test prescribed in paragraph (f).

General officers will report not later than 30th June, upon the candidates then attached to their staff; after which date, the officers, if approved, will receive, from the Director, General of Military Education, the rules to be observed at their examination.

The examination will take place in London on 23rd July next, and following days.

General officers commanding at foreign stations will issue their own local orders, specifying the date up to which applications will be received by them from officers wishing to be examined.

A board of officers will be appointed at the most convenient station of the district by the general officer in command, and will consist of three officers; one of them to be, when practicable, a staff officer, having the rank of field officer, and the other two, if possible, not under the rank of captain. One of these officers will belong to one of the scientific corps, where any such officer can be obtained.

The candidates will write their answer to the question in the presence of the board, and their papers, together with the printed examination questions, will be collected at the hour appointed, and made up into a packet, which will be sealed before being taken from the examination room.

The board will, immediately on the conclusion of the examination, forward the papers of the candidates to the general officer commanding, for transmission to the Director General of Military Education, accompanied by a certificate that the candidates obtained no assistance from books, or help of any kind, in their examination. The board will at the same time, forward the names of the candidates, corresponding with their index numbers in the examination, in a separate envelope, for transmission to the Director General of Military Education.

The following will be the order of the examinations:—

First Day—Military drawing, 3 hours; Hindustani, 3 hours. Second Day—Fortification (obligatory), 1½ hours; ditto (voluntary), 1st paper, 1½ hours; ditto (ditto), 2nd paper, 3 hours. Third Day—Mathematics (obligatory), 1st paper, 3 hours; ditto (ditto), 2nd paper, 3 hours. Fourth Day—Mathematics (voluntary), 1st paper, 3 hours; ditto

(c) See General Order 19 of 1871.