

The same difficulties are to be encountered in fighting guns at sea. There appears to be no method yet devised for enabling a vessel to mark her opponent in a similar manner to that detailed, but in approaching shore batteries the trigonometrical observations easily taken on board will enable her to determine distances as well as that proposed, still a plain and practical rule or method would be most desirable. On board a broad-side vessel the apparatus described might be used with advantage, but in turret ships its application would be a matter of some difficulty. The whole subject is of great interest and importance, and we hope to see some of our Canadian artillery officers devise a range finder applicable to land and sea service.

To the Editor of the Army and Navy Journal.

SIR: That a more accurate and ready means of pointing heavy guns is desirable, will be admitted by every artilleryman. Our present method is clumsy, and correct pointing by it, at a moving object is simply impossible. Pointing consists of two distinct operations, namely, giving the direction and giving the elevation, each of which is attended with a set of difficulties peculiar to itself. In the first operation these arise from indistinctness of vision, coarseness of sights, the necessity of giving the direction before the elevation, and the difficulty experienced by the men, guided only by the indefinite commands of the gunner, in traversing to the desired position with promptness and precision. Most of these difficulties can be overcome by a proper use of the telescope. I am not aware that any determined effort has ever been made in this direction. I remember some rude attempts of the kind in 1861, but the necessity of removing the apparatus from the gun before firing, and the difficulties attending adjustment, caused their abandonment as impracticable. The great mistake and cause of every difficulty on that occasion, was attaching the pointing apparatus to the piece. I would propose an instrument for pointing entirely separate and distinct from the gun; an instrument by which two or more guns could be pointed simultaneously, and which would overcome most of the difficulties experienced under the present system. For long ranges a telescope would of course be used, but instead of attaching it to the gun or any part of the carriage, I would mount it over a disc or plane table permanently fixed on a pedestal of some sort between the guns. The telescope should revolve horizontally on the axis situated in the vertical plane passing through the centre of the gun pintles. The arc of fire should be graduated on the disc, and also on the traverse circle, so that when the index finger attached to the traverse fork and that on the disc marked the same degree, the axis of the piece and the line of collimation would be in parallel vertical planes. With such an instrument the guns could be pointed at any elevation, and the aim corrected up to the very instant of discharge. The commands to the men at the traverse wheels being definite, would be executed promptly, and much precious time, now wasted, would be saved. The instrument is simple and need not be expensive. The telescope, perhaps, the most expensive part, is not absolutely essential in all cases, as common sights attached to the straight edge on the plane table would be sufficiently accurate for short range firing. The chief difficulty attending the second

operation of pointing, is the correct determination of distances. This can be readily overcome by trigonometry. Simultaneous observations at a moving object from the ends of a long base line, however, are not always obtainable; besides this method involves a certain amount of calculation, which should be avoided as much as possible when the co-operation of enlisted men is required. A method which would enable the artilleryman to determine the position of an approaching enemy by inspection, is what is needed. To effect this I would propose the following. Obtain a correct chart of the channel. With the position of table No. 1 as a centre, and the extreme effective range as a radius, describe an arc, and lay off and graduate on it, the arc of fire. These graduations would correspond with those on the traverse circle. Then taking into consideration the time required for loading, and the probable speed of the approaching vessel, determine other radii and describe concentric arcs, each of which would mark where the enemy should be subjected to the fire of the battery. These arcs should be marked in the channel in some way so that the gunners could be practised in determining with the eye which arc a vessel was beyond. The proper elevation to carry the shot to the different arcs should be determined by experiment and marked on the breech. Now, suppose an enemy approaching. He would be observed while yet beyond extreme effective range, and the battery prepared to receive him. The guns would be loaded and elevated so as to carry to arc No. 1, and the direction would be given and constantly corrected as he approached. To deliver the fire effectively, it only remains to determine the instant he is on that arc. For this purpose a second plane table, at some distance from the first, is necessary. On it should be pasted the chart above referred to, showing the different arcs already described. The table should be oriented, and the point at which it is situated determined on the chart. Around this point as a centre the sight or straight edge with the table is provided should revolve. The operator at table No. 1 having determined that the ship is approaching, and beyond arc No. 1, brings the telescope to bear on it, and reading the degrees marked by the index finger, gives the necessary command to the man at the traverse wheels, and causes the information to be conveyed, by signal or otherwise, to the operator at table No. 2. The latter brings the straight edge to the graduation on the arc indicated, and applying his eye to the sights, waits until the vessel comes in line, when he signals fire. If the observations have been properly made, the guns are correctly pointed. If an error has been made in determining which arc the vessel is approaching, it would be apparent to the operator at No. 2, who could correct it for subsequent fires. When a vessel's position is once found, no difficulty would be experienced in dealing with it during the remainder of the action.

No. 2 table might, like No. 1, be made of a permanent nature, the various arcs and graduations being engraved thereon, and a telescope used instead of sights.

If these suggestions should meet the eye and approval of any one in a position to give them a practical test, my object in writing this paper will be attained.

Fort H—, May 2, 1874.

The following letter which appeared in the United States Army and Navy Journal of 23rd May, will give our readers an idea of

the meaning of discipline as practiced in what some amateur soldiers laud as the *ne plus ultra* of military efficiency and perfection—the Prussian Army.

Highly as we esteem those qualities that go to make a perfect machine of a series of individual units, yet few will differ from us in saying that the realization of the idea is hardly worth the price at which it may be bought. There is always something more than the mere mechanical power required, and that is the brain to set it in profitable operation. History gives us the essence of former experiences in this direction and it shows that highly disciplined Prussian soldiers were beaten by badly disciplined French soldiers within the last seventy years. Although probabilities are against it a repetition is not impossible, and a thorough mastery of strategy may compensate for objectionable minor tactics.

To the Editor of the Army and Navy Journal.

SIR.—Perhaps it may be of interest to some of your readers to know what information and impressions were gained by an ex member of the National Guard, N.Y., in recent observations of the German Army, as seen in the principal cities and barracks.

I was fully confident I should find better soldiers than I had seen in France or Italy, which I had carefully noticed for comparison but I did not imagine such great perfection in drill, such iron discipline, as is evident in the German soldiers. They are, I am satisfied, unapproachable. In every command and every execution I saw in Germany, there was testimony of the administration of able brain. The Prussians themselves regarded Von Moltke as the greater than a Napoleon, and to him is accorded the great glory of the grand success of the German arms so far beyond their dreams. The Germans are not at all a handsome people, but they are remarkably sturdy looking, of enduring physique and averaging taller than the French or Italians. They look as if they could march all night and fight well next day. Great point is apparently made in drilling the men to long endurance. I saw a school of recruits one afternoon drilling, as systematically as in the manual, at vaulting fences, climbing ladders and "peg poles," jumping over strings and ditches, and practising on parallel bars. One of their first schools is the fatiguing bayonet drill, and they are also trained in long cross country marches. Officers seem to be unnecessarily harsh and strict, but from their confidence and the absolute servility of the rank and file, there can be no doubt that there is "a great gulf fixed" between the soldier and the officer, that the command of an officer is the voice of the infallible king, and must be obeyed to the echo, whether it bring at the critical moment glory or death. There is a constant and unsparing attention to details that makes a dress parade of every drill in effect. I saw a review before the king at Dresden, and while it was clearly certain that every man was at his best, it seemed to me no better work than I had seen in the barrack drill at Berlin.

In the review referred to all were in white pants, and the brilliant sun on the helmets, with a large proportion of cavalry, made an inspiring scene. The king's staff numbered about forty five officers, all of whom were good riders, as are nearly all mounted Ger-