

ness which enables us to look with satisfaction upon the defensive powers of the torpedo. With a sufficiently numerous Navy to maintain a complete blockade of an enemy's ports, we have no need to enter them, and with sufficient ships to prevent any of our own ports being blockaded for more than a few days, we may, by the help of such defensive means as were recently adopted at Portsmouth, prevent an enemy from landing at any part of our coasts.

We have already mentioned that only one form of the torpedo, and that the simplest, was employed in the recent sham fight. It was within the power of the defenders of Fort Monckton to despatch Waterhead torpedoes along the enemy's boats had there been any advantage found in so doing. But the attacking party had no weapon at their disposal except a torpedo for forcing the boom across the harbour, and countermines for destroying those of the enemy. They had to rake about in the darkness for the cables attached to the defender's mines, thankful if they were not found out by the electric light to be shot at by the Artillery or blown up by the Royal Engineers. So heavily hand capped were the Navy in this action that, with only the most moderate skill on the part of those on shore in the use of the appliances at their hands, the destruction of the attacking party was certain from the commencement. * * * *

The subject of torpedo defence is one which must prove interesting to the majority of our readers, no matter to which branch of the service they may belong, as in the event of hostilities, it would form an important particular in the defence of all the forts in the Maritime provinces, those on the river St. Lawrence, on the Lakes and those in British Columbia. If a hostile cruiser escaped the vigilance of the fleet, (as suggested by the General Officer Commanding the militia, in one of his able reports,) stationed in the vicinity of the Gulf of St. Lawrence, nothing in the present armament of Quebec would prevent her laying that city in ruins, and it would be possible for her to pass on to Montreal and reduce that city to a similar state. It is true that the crew might suffer afterwards for their temerity, but hundreds of commanders would only be too glad to run the risk were it open to them tomorrow. What defence has Montreal? St. Helen's island in an enemy's possession and it has no artillery but a Field battery to depend on. The garrison artillery being practically without guns. What is there on St. Helen's Island to prevent its being taken? A light cruiser with one heavy rifled gun on board, having descended by the Richelieu, could lie off beyond the effective range of the guns mounted there and dismount them one at a time. This would not be possible if there was a chain of torpedoes arranged at particular points with sufficient guns to form an adequate defence. There are many such places on the St. Lawrence which could be named as affording special advantages for their arrangement.

Their necessity in British Columbia has been pointed out by General Sir. E. Selby Smyth, Commanding the Militia, in his report for 1877, page XX. "Booms and Torpedoes would of course be an additional protection, * * * because in the absence of a man-of-war from the anchorage in Esquimaux harbor, which sometimes happens, there is no kind of protection for the valuable naval stores in the dockyard, nor for the city of Victoria," etc., etc.

Range Finding for Field Guns.

By Lieut. G. F. Cole, N. B. B. G. A., Quebec School of Gunnery.

One of the practical lessons, taught by the retrospect of the late wars and which has been taken to heart by the home authorities, impresses us with the powerful effect of modern infantry rifle fire, over that of our present imperfect system of field artillery, for, while the killing capacity of the former weapon has been developed, in the last few years, to an enormous extent and practically, as far as our present knowledge of military

appliances extend, reached a maximum of perfection, rifled guns for field purposes have on the other hand lagged far behind the race of progress. But a few years ago, the power of smooth bore case fire was far greater in comparison, than that of the Brown-Bass, (the effective range of which was about 300 yards) and decided the fate of many a great battle, by its deadly assault, when hurled against infantry in close formation, (as was then the rule), at a little over the above distance. The scale however been turned and the balances of power now rests with the Henry-Martini, the rapidity, ease and range, (1) of fire from this rifle, enabling it to hold field artillery in check, at such distances as to render shrapnel shells almost ineffective belonging to existing batteries, necessitating close quarters for satisfactory development of this particular description of projectile. the modern, "long range case shot." The Germans their late war were well aware of this weakness, (low muzzle velocity) which causes a large cone of dispersion on shell firing, and invariably pressed their artillery forward to short ranges, using large masses of guns and men, caring little for the wholesale sacrifice of their gunners, so long as they effected their purpose.

(3) The problem then being worked out, is to produce field guns of about the same weight and calibre as the existing ones which firing heavier shells at high muzzle velocities and with trajectories, shall once more place artillery foremost on the field of battle.

There being, then, little doubt, that long range infantry will not only exercise a considerable influence on future artillery tactics, but also on future artillery manufacture, it becomes a matter of the greatest and most vital importance that a simple accurate and rapid method of ascertaining the actual range of an enemy, should be introduced and practised by field batteries without the aid of which, the best artillery that could be possibly placed in the field, would be worse than useless, as apparent power would only tend to mislead and in decisive moments might be found wanting.

The various plans, which have from time to time been introduced, for effecting this purpose, all suffer more or less from main defect, viz. delicacy, both of manufacture and of manipulation, rendering the appliances useless, where rapid and exposed positions and uneven ground, places anything but scientific surveying out of the question. A range finder, to the requirement of the service, should combine the following points:

1st. The base should be as short as possible, never more than the length of a battery at full intervals, say 100 yards.

2nd. No instrument of any delicacy should be used.

3rd. Any N. C. officer or gunner should be able to use without special training.

The base should be as short as possible, as it is almost a certainty, that smoke, dust, passing of troops, irregularities of ground, or the intervention of trees, one or all, would prevent the base points from seeing each other if the distance between them be very great.

No instrument of any delicacy should be used, for apart from the liability of derangement the steady and careful handling and manipulation, would hardly be found in the heat of action.

Any N. C. officer or gunner should be able to use it, and the gun should be furnished with a separate arrangement, and the mean range of the whole taken, men specially trained in firing, would no doubt be employed when permanent occupation position was decided upon.

(1) At Plevna, the Russians began to suffer loss at 1000 yards. The Turks being armed with rifles similar to our own.—Major Peabody.

(2) The Germans however only fired a common shell which is somewhat like our segment.

(3) The new 13 pr. gun of 8 cwt. which has just been made at which fires a common shell of about 15 lbs. with a muzzle velocity of 1530 F. S.

Sir W. Armstrong has also just constructed a breech-loader of 12 lb. calibre, which fires a 7 lb. shell, at a m. v. of 2000 F. S.

The French likewise have a breech-loader, The Lahitolo, which fires a 13 lb. shell at a m. v. of 1530 F. S.