

Having during the last few years adopted a system based on those already in use by other powers, we have avoided many of the errors inseparable from the inception and development of new methods and our drill books presents a more or less complete scheme to our notice. That this scheme is perfect it is impossible to affirm, and many officers give their constant care and attention to its improvement, but the very fact of our having stepped into a full-blown scheme has deprived us of the experience to be gained in working it out, and thus many of the improvements that have been suggested are based upon principles that have already been tried and found wanting by those gunners abroad who initiated the modern system and have brought it to its present state.

It is my intention then in the following pages to deal generally with the principles upon which a system of fire-discipline should be based, to recount some of the attempts that have been made and the reasons for their failure, in order to place at the disposal of my brother officers materials for the perfection of our own system and to show them what exploded errors to avoid. The methods laid down in our own text books deal only with results and a study of them does not often reveal the principles upon which they are based, but this has been inseparable from the fact of our having taken advantage of the experience of others; at least, the principles could not have been enunciated without greatly exceeding the bulk of a "hand" book.

By fire-discipline must be understood the possession by the battery as a whole, of a combination of those qualities which enable its commander, in the shortest possible time, to turn fire, of any desired nature and rate, upon any portion of the field at will.

That is, the battery must be so trained that its fire may respond smoothly and quickly as a machine, to the slightest touch of the guiding hand. To attain this pitch of perfection something more than mere mechanical excellence, such as that induced by a strict drill discipline, is required; and yet a strict drill discipline is the first step towards it, for by it men are taught to perform certain of their duties pseudo-mechanically, even under the greatest stress of excitement. It is necessary to be able to direct the mechanical process called "drill" in such a manner that the same causes shall produce varying effects at will. In short, to produce good practice it is necessary to be able to command, and that is the point upon which this most important subject of fire-discipline hinges.

To explain more fully. Unless we know who to command it will be impossible to take advantage of the state of mechanical perfection to which the battery may have been trained. The laying and the service of the pieces may be perfect, but we must be able to immediately indicate the target and ensure, by good observation, that the fire is properly applied.

We must be able to change, with the utmost rapidity, from one target, or from one nature or rate of fire to another. All this is understood by the word fire-discipline.

The battery commander being, so to speak, the motive power, it is of the first importance that all his orders should be conveyed intact to those portions of the machine that he wishes to set in motion. For this purpose the experience of many years has led foreign artillerymen to formulate an axiom that: "All orders from the battery commander are to be repeated and not interpreted."

In the early days of the modern system of fire discipline many schemes were propounded, some of which will be noticed in due course, that depended for their successful carrying out on the correct interpretation by the sectional officers of their commanders' orders. Some of these schemes worked out in a satisfactory manner on paper and on the drill ground, some even partially survived the more searching ordeal of the ranges, but all have failed when tried by the standard of active service. Sooner or later one of the interpreters makes a mistake or is replaced by a less skilled one, and then the whole scheme falls to pieces, whereas when all orders from the battery commander are carefully repeated the mental strain upon the personnel is greatly reduced and the working of the battery remains most completely in the hands of its commander.

The better to enable these orders, as given by the battery commander and repeated by the sectional officers, to be heard by all concerned, a system of silent drill has been introduced (vide "instructions for practice, 1861") which, by the suppression of unnecessary noise has had the effect of greatly improving the service of the guns and the rapidity with which orders are grasped and carried out; the reason for this being that all recipients have to be much more on the alert to catch a signal than they had formerly to be when they might trust to having their faculties stimulated by the voice of the commander. Should it ever be necessary to send an order this applies especially to brigade practice—the best protection from mistakes is to send it in writing; but, as this is not always possible on service, it should be re-

sorted to as seldom as possible and the message sent verbally. It should be made a rule that every orderly, as well as every recipient of an order, should be educated to repeat the message "verbatim;" thus only can mistakes be avoided. This habit of repeating messages is a matter of education, and cannot be acquired on the spur of the moment. The correct delivery of the delivery can be best ensured if officers make it a rule only to send short messages, omitting all that is self-evident or best left to the discretion of the recipient.

It is perhaps needless to say that no system can succeed if orders, however correctly given and conveyed, are not punctually obeyed, and it was this point which produced some little friction when modern systems were first introduced into our service. It was hard to induce the old generation of gun-layers to give up what they considered their vested right, which was fostered by the late system of competitive practice, to observe the effect of the shooting and to modify sights and laying according to their own observation rather than submit unreservedly to the orders of the battery commander. It is impossible at service practice for the laying of each gun to be verified at every round by an officer on account of the delay that would ensue, and some of the range reports of not so very long ago show that gun-layers are in the habit, unless very carefully trained, of altering the sights or laying in accordance with their own judgement. The following is a case in point which occurred as lately as 1890. The battery was being ranged from one gun (which was wrong in itself).

Round.	Elevation.	Result	
		As judged by C.O.	As judged by Range Party.
1.	2,500		Target.
2.	2,700		Target.
3.	2,800		Target.
4.	2,750		Target.
5.	2,725		Target.

Here the battery commander, following his own observation, which was bad, proceeded perfectly correctly with the ranging process, but it is perfectly obvious also, that the gun-layer did not put up the elevation ordered, otherwise he could not have succeeded in hitting the target five times running with elevations differing as much as by 300 yards. It is most probable that what happened was that the gun-layer, who was perhaps brought up under the old regime, saw the effect of his first shot, and receiving orders to alter his elevation did not obey them, or, if he did, he must have layed off the target, which is an offence equally heinous.

To be continued.