

INSTRUCTION
FOR
FIELD ARTILLERY.

PREPARED BY A
BOARD OF ARTILLERY OFFICERS,

CONSISTING OF
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TO WHICH IS ADDED

THE EVOLUTIONS OF BATTERIES,

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ARTICLE THIRD.

MANUAL OF THE PIECE.

93. THE instructor should bear in mind that, in every change of numbers at the gun, each recruit has to learn different duties, and to handle different implements from those he was previously engaged with; and these, again, vary with the several natures of ordnance and machines which an artilleryman must use. It is impossible that such a variety of exercises can be well executed, or even remembered, unless the recruit is made to comprehend the object of the various duties he is called upon to perform.

For the purpose of instructing the recruit, each detachment is to be formed in front of the piece, unlimbered, and the different numbers are to be called upon, successively, to perform their respective duties *in detail*; while the rest of the detachment look on and observe their motions. When it is found difficult to make the recruit sensible of the defect of his position, etc., the instructor will place himself, or another recruit, in the correct position.

94. Nine men, including the gunner, are necessary for the service of a field-piece. When, from necessity, the detachment consists of less than nine, the higher numbers are struck out, and additional duties are imposed upon those remaining.

POSTS OF THE CANNONEERS.—PIECE UNLIMBERED.

95. The gunner is at the end of the trail handspike; Nos. 1 and 2 are about 2 feet outside the wheels, No. 1 on the right, and No. 2 on the left; with howitzers, rather in rear of the muzzle; with guns, in line with the front part of the wheels; Nos. 3 and 4 are in line with the knob of the cascabel, covering Nos. 1 and 2; No. 5 is 5 yards in rear of the left wheel; No. 6 in rear of the limber, and No. 7 on his left, covering No. 5; No. 8, the chief of the caisson, is 4 yards in rear of the limber, and on its left; all face to the front.

The chief of the piece is opposite the middle of the trail handspike, outside and near the left cannoneers. In actual firing he takes his place on the right or left, where he can best observe the effect of the shot.

LOADING AND FIRING.

96. The piece is taken at the drill ground, unlimbered, and prepared for action; the limber in position behind the piece, and facing towards it; the end of the pole 6 yards from the end of the trail handspike.

97. COMMANDING AND POINTING.—The gunner gives all executive commands in action. He is answerable that all the numbers perform their duties correctly. He communicates the orders which he receives for the kind of ammunition to be fired; sending to No. 6 the time or distance for each round, when firing shells or spherical case shot. He should, when the firing is slow, see that each fuze is properly prepared, and make such corrections as are necessary; for this purpose he, as well as No. 6, should be provided with a fuze-gouge.

On receiving the command or signal to commence firing, he gives the command **LOAD**; takes hold of the handspike at the end with his right hand, and at the centre with his left; places his left knee against the left hand, bending over it, the right knee being slightly bent; looks over the top of the piece, and gives the direction. He then steps to the breech to give the elevation, which he does by placing the hausse on its seat, taking hold of a handle of the elevating screw, drawing back his right foot, bending over his left knee, and sighting through the slit in the hausse. In the drill of recruits, the gunner should be made to name the elevation and range before stepping up to the breech.

When the piece is loaded and pointed, he removes the hausse, gives the command **READY**, and, stepping clear of the wheel to that side where he can best observe the effect of his shot, gives the command **FIRE**. As soon as the piece has been fired, he causes it to be run up to its former place, if necessary.

When the instructor, instead of giving the command **COMMENCE FIRING**, gives that of **LOAD**, the gunner repeats it, and performs the same duties as before, except that he does not command **FIRE** until the firing is ordered to commence. After the command **COMMENCE FIRING** is given, the action is continued by the gunner, without further commands from the instructor, until the firing is ordered to cease. When the commands are all given by the instructor, as in *loading by detail*, the gunner performs the same duties, but without repeating the commands.

98. The detachment being formed in front of and facing the piece, the instructor commences by giving the following explanations:

The term **CANNON** embraces all kinds of heavy ordnance, **GUNS**, **HOWITZERS**, **MORTARS**; each is mounted on a *carriage*, and each field carriage has a *limber*.

The term **PIECE** is applied to the *cannon*, and is also used to designate it in union with its carriage, with or without the limber attached.

The *front* of a piece, when *limbered*, or prepared for moving, is the direction in which the pole points; when *unlimbered*, or prepared for action, it is the direction in which the gun points; the *right* and *left* are in each case determined accordingly.

He then repeats the names of the following objects, indicating each of them.

The **LIMBER**: *ammunition chest, lid, handles*; **POLE**: *pole-yoke, branches, sliding ring, pole-prop, and chain*; **WHEEL**: *spokes, felloes, nave, tire*; **PINTLE-HOOK**, and *key*.

The **GUN-CARRIAGE**: *handspike, pointing rings, elevating screw, handles, sponge-hook*.

The **GUN** or **HOWITZER**, giving explanations of the parts:

The *bore* is the interior hollow cylinder, which receives the charge.

The *muzzle* is the entrance of the bore.

The *face* is the front plane terminating the piece.

The *vent* is the hole through which fire is communicated to the charge.

The *trunnions* are the projecting cylinders which support the gun.

The instructor then calls No. 1 to the right side of the piece, and indicates the following parts with his hand, after naming them. The **SPONGE** and **RAMMER**: *staff, sponge, rammer-head, ferrules*. **GUN**: *bore, muzzle, face, vent*. He then commands:

TO YOUR POSTS.

99. **SPONGING AND RAMMING**.—Under the command **LOAD**, No. 1 stands square to the front, in line with the front part of the wheels, holding

the sponge about the middle of the staff in his right hand, and trailing it an angle of 45° , sponge-head up. The instructor commands:

By detail—LOAD.

3 pauses; 4 motions.

At this command No. 1 faces to the left, steps obliquely to the right with his right foot, without moving his left, and at the same time brings the sponge smartly to a perpendicular position by drawing his right hand up in line with the elbow. The sponge is grasped firmly in the hand, and the rammer-head kept just over the right toe, the elbow close to the side.

TWO. He steps obliquely to the left with his left foot, planting it about half-way between the piece and the wheel, and opposite the muzzle; bringing the sponge at the same time across his body to the left, so that his right hand may be opposite the middle of the body, the sponge-staff being inclined at an angle of 45° across the front of it.

THREE. He takes a side step to the right of 30 inches, and bending his right knee, brings the sponge to a horizontal position, extending the hands to the ends of the staff, the sponge-head to the left, the back of his right hand up, and that of his left down, the sponge-head against the face of the piece.

FOUR. He inserts the sponge-head, drops his left hand behind his thigh, shoulders square, feet equally turned out, straightens the right knee, and, bending over the left, forces the sponge home.

SPONGE.

3 pauses; 4 motions.

100. At this command No. 1 fixes his eye on the vent to see that it is closed, gives two turns to the sponge, taking great care to press it at the same time against the bottom of the bore.

TWO. He draws out the sponge, at the same time straightening his left knee, and bending his right; seizes the staff near the sponge-head with his left hand, back of the hand down, and places the sponge against the face of the piece.

THREE. He turns the sponge by bringing his hands together in the middle of the staff, giving it a cant with each hand, throwing the sponge-head over, at the same time turning his wrist, which brings the staff horizontal, and extending his hands to the ends of the staff, back of the left up, that of the other down.

During the whole time of sponging, No. 1 keeps his eye on the vent. If at any time it is not closed, he will discontinue the manœuvre, and command STOP VENT.

FOUR. He introduces the rammer-head into the muzzle as soon as No. 2 has inserted the charge, and joins his left hand to his right, casting his eyes to the front.

RAM.

2 pauses; 3 motions.

101. At this command No. 1 rams home, throwing the weight of his body with the rammer; bending over his left knee, and passing his left arm, with the elbow slightly bent, and back of the hand up, in a horizontal position over the piece, until it points in the direction of the left trunnion; the right shoulder thrown back, and the eyes cast towards the front until the cart-ridge is home.

Two. He jerks the sponge out with his right hand, allowing it to slide through the hand as far as the middle of the staff, when he grasps it firmly, and seizing it close to the rammer-head with the left hand, back of the hand up, places the rammer-head against the face of the piece; both knees straight; eyes to his own front.

THREE. He then draws the sponge close to his body, and immediately steps back outside the wheel, first with the right, then with the left foot, so that when the right foot is brought to it, the right hip may be on a line with the front of the wheel. In drawing the right foot to the left, he gives the sponge a cant with his left hand, at the same time quitting it, and brings the sponge to a perpendicular position in the right hand, the rammer-head resting on the right toe.

102. READY.—At this command, which is given as soon as the piece is loaded, or the firing about to commence, No. 1 breaks well off to his left with the left foot, bending the left knee, and straightening the right leg, drops the end of the sponge-staff into the left hand, back of the hand down, and fixes his eyes on the muzzle.

The heels should be parallel to the wheel, the body erect on the haunches, and the sponge and rammer held in both hands in a horizontal position, sponge-head to the left.

The piece having been fired, No. 1 rises on his right knee, and returns to his position, as in the third motion of **RAM**.

At the command **LOAD**, he steps in and performs his duties in the same manner as before.

103. When the loading is not *by detail*, No. 1 goes through all his duties at the command **LOAD**; returns to his position outside the wheel, as given in the third motion of **RAM**; breaks off at the command **READY**, and at the flash of the gun rises, steps in and performs his duties in the same manner as before. This he continues until the command **CEASE FIRING** is given, at which command he resumes the position: **TO YOUR POSTS**. If the sponging has been commenced when the command **CEASE FIRING** is given, it is completed before No. 1 resumes his post.

In sponging and ramming, if the length of the piece requires it, the sponge and rammer are to be pressed home in two motions, No. 1 extending his right hand to the end of the staff as soon as it reaches the muzzle.

In sponging *howitzers*, No. 1 presses the sponge to the bottom of the chamber, which should be well sponged out. He wipes the bore by rubbing its whole surface, without allowing the sponge to turn in his hands.

REMARKS ON THE DUTIES OF NO. 1.

104. The position of the left foot will not be considered as absolute; it is given as the usual one, and may be modified according to the calibre of the piece and height of the man. The same remarks will apply to the distance between the feet. They will be placed in such position, and at such distance from each other, as will enable the man to perform his duties with the most ease and steadiness, and at the same time exert his full strength, which will always be required after firing a few rounds, especially when a new sponge is used.

One object of joining the left hand to the right, and casting the eyes to the front whilst ramming, is to refuse the right shoulder, and to secure this object the left hand, when it passes over the piece, is not carried further back than the direction indicated. This will keep the shoulders in a line parallel with their position at the commencement of the movement, until the cartridge is set home, and thus guard against fatal results in case of a premature discharge.

105. **LOADING.**—The instructor places No. 2 on the left of the piece, repeats the nomenclature as for No. 1, indicates the following named objects, and explains their uses; **STRAPPED SHOT:** *Cartridge, ball, sabot*; **CANISTER SHOT:** *cartridge, canister*; **SHELL, or SPHERICAL CASE SHOT:** *cartridge, case shot, or shell, fuze*. He then commands:

TO YOUR POSTS.

Until the command **LOAD** is given, as for No. 1, No. 2 remains in his position. On this command being given, he faces to his right, and by two oblique steps, corresponding to those of No. 1, the first with the left, the second at the command **TWO**, with the right foot, he places himself near the muzzle of the piece. At the command **THREE**, he brings up his left foot to the side of the right, and faces to his right, bringing his hands together to receive the ammunition from No. 5, the cartridge in the right, the shot in the left hand. As soon as the sponge is withdrawn, he faces to his left, and puts the ammunition into the muzzle, taking care that the seam of the cartridge does not come under the vent, and then steps back, commencing with his left foot, to his position outside the wheel, in the same manner that No. 1 does.

At the command **READY**, he breaks well off to his right with the right foot, bending the right knee, and straightening the left leg, the body erect on the haunches, and fixes his eyes on the muzzle.

The piece having been fired, No. 2 rises on his left leg, remains facing the piece until he hears the command **LOAD**, or observes the flash of the gun, then steps in and performs his duty as before. At the command **CEASE FIRING** he takes his position outside the wheel and faces to the front.

With the *howitzer*, No. 2 puts in the charge so that the fuze may rest against the rammer-head, and No. 1 sets it home carefully.

106. **SERVING THE VENT.**—The instructor places No. 3 on the right of the piece, indicates the following objects, and explains their uses:

TUBE-POUCH; THUMBSTALL; PRIMING WIRE; GUNNERS' GIMLET; FRICTION PRIMER; LANYARD: *lanyard hook*; **VENT:** *vent field*; **BREECH:** *cascabel, knob, and neck of cascabel*. He then commands:

TO YOUR POSTS.

No. 3 stands in line with the knob of the cascabel, covering No. 1, the priming wire in his right hand, thumb through the ring, the thumbstall on the left thumb, the tube-pouch fastened to the waist.

LOAD.—At this command he steps to his left, wipes the vent-field with the thumbstall, which he then holds pressed upon the vent, keeping his elbow raised; his fingers on the left side of the piece, so as to allow the gunner to point over his thumb; the right hand on the tube-pouch. When the piece is sponged, and the charge inserted by No. 2, he jumps to the end of the trail handspike, and, seizing it with both hands, prepares to move it to the right or left, on a signal from the gunner, who taps the right of the trail for a movement to the left, and the left of the trail for a movement to the right. As soon as the piece is pointed, the gunner raises both hands as a signal to No. 3, who then resumes the position **TO YOUR POSTS**.

READY.—At this command, he steps in to the piece, pricks the cartridge, taking care not to move the charge, and covers the vent with his left hand as soon as the tube is inserted. At the command **FIRE**, he steps to his right, clear of the wheel, and at the flash of the gun, or at the command **LOAD**, serves vent as before.

No. 3 should be careful to keep the vent closed from the time the sponge enters the muzzle until the charge is inserted by No. 2.

107. **FIRING.**—The instructor places No. 4 on the left of the piece, equips him with a tube-pouch, and repeats the nomenclature as for No. 3. He then commands:

TO YOUR POSTS.

No. 4 stands in line with the knob of the cascabel, and covering No. 2.

LOAD.—At this command, No. 4 inserts the lanyard hook into the ring of a primer, and stands fast.

READY.—At this command, he steps in with the right foot, drops the tube in the vent, takes the lanyard in his right hand, moves to the rear so far as to keep the lanyard slack, but capable of being stretched, without altering his position, which should be clear of the wheel, left foot broken to the left and rear.

FIRE.—As soon as No. 3 is clear of the wheel, No. 4 pulls the lanyard briskly and firmly, passing the hand, back up, in a downward direction to the rear, so as to keep the lanyard hook from flying back in the direction of the face. Should the tube fail to explode the charge, the gunner immediately commands, *Don't advance, the primer has failed.* Upon which No. 2 steps inside the wheel, close to the axletree, receives from No. 3 over the wheel a priming wire, and from No. 4 a prepared primer, pricks, primes, and resumes his post. At the command **CEASE FIRING**, No. 4 secures his lanyards.

108. No. 3, as well as No. 4, should be equipped with a tube-pouch, furnished with friction primers and lanyards. In the absence of No. 4, immediately after pricking the cartridge, he prepares and inserts a tube, steps to his post, faces the vent, breaks to his rear with the left foot, and at the command **FIRE**, discharges the piece. He then resumes his post, and tends the vent as before.

109. **SERVING AMMUNITION.**—The instructor stations No. 5, covering the left wheel, 5 yards in rear of it, and No. 7 in rear of and near the left limber wheel; No. 6 is stationed in rear of the limber chest, and issues the ammunition. He is provided with a fuze-gouge, and prepares the shell and spherical case shot according to the distance or time ordered, before delivering it to No. 5.

TO CUT THE FUZE.—Place the projectile between the knees, fuze uppermost, and support it with the left hand. Holding the fuze-gouge in the right hand, place the left corner of its edge close to, and on the right of, the graduated mark indicating the time desired; then cut away gradually until the composition is exposed for a length about equal to the width of the gouge. Great care must be taken not to expose the composition to the left of the proper graduation mark, and, to this end, particularly avoid *commencing to cut* too close to the desired mark; for after the composition is once exposed it is very easy to pare away to the left, if the time has not been accurately cut. When time permits, it is well to expose the composition fully, either by cutting the opening larger, *towards the right*, or (with shells only) by cutting another opening to the right of the first. It is in all cases better to enlarge the first opening, and always by extending it towards the right.

Care must be taken not to cut the fuzes more rapidly than the demand for shells and shrapnell shot requires.

At the command **LOAD**, No. 5 runs to the ammunition chest, receives from No. 7 or No. 6 a single round, the shot in the right hand, the cartridge in his left; takes it to the piece and delivers it to No. 2; returns immediately for another round, and then halts at his post until the piece is fired. In firing shells or spherical case, he exhibits the fuze to the gunner before delivering the charge to No. 2.

When ammunition pouches are used they are worn by Nos. 5 and 7, hung from the left shoulder to the right side; the round is placed in the pouch by

No. 6 or No. 7, so that the cartridge will be to the front. When it is brought up No. 5 holds open the pouch, and No. 2 takes out the round with both hands. In rapid firing with round shot and canister, Nos. 5 and 7 may alternate in delivering the charges to No. 2, especially when the ammunition is issued direct from the caisson. At the command **CEASE FIRING**, No. 5 carries the round back to No. 6.

No. 6 will be careful not to raise the lid unnecessarily. It should be kept closed when possible. In firing shells and spherical case, he prepares each fuze as directed, assisted, when necessary, by No. 7. He gives No. 5 the *time* or *distance* of the fuze with each round issued, who reports to the gunner before delivering it to No. 2. At the command **CEASE FIRING**, he carefully replaces the ammunition in the chest and secures the lid.

110. LOADING BY DETAIL.—For the instruction of recruits united for the service of the gun, the exercise is conducted by detail, the instructor giving all the commands. His commands are: *Load by detail*—**LOAD; TWO, THREE, FOUR: SPONGE; TWO, THREE, FOUR: RAM; TWO, THREE: READY; FIRE; CEASE FIRING.**

When the men are sufficiently instructed to go through the manual without detail, the commands of the instructor for that purpose, are: **LOAD; COMMENCE FIRING; CEASE FIRING; or simply COMMENCE FIRING and CEASE FIRING.** After the command **COMMENCE FIRING**, the action is continued as laid down for loading without detail, until the command **CEASE FIRING** is given, which is repeated by the chief of the piece and the gunner.

MOVING THE PIECE BY HAND.—PIECE UNLIMBERED.

111. TO THE FRONT.—The instructor commands:

1. *By hand to the front.* 2. **MARCH.** 3. **HALT.**

At the first command the gunner seizes the end of the handspike, and Nos. 1, 2, 3, and 4, the spokes of the wheels—No. 1 with his left hand; Nos. 2, 3, and 4, with both hands; No. 1 holds the sponge with his right hand, the staff resting upon his right shoulder, sponge-head down. At the second command they move the piece forward, the gunner raising the trail until the command **HALT** is given, when all resume their posts.

112. TO THE REAR.—The instructor commands:

1. *By hand to the rear.* 2. **MARCH.** 3. **HALT.**

At the first command, the gunner, facing to the rear, seizes the handspike with his right hand: Nos. 1, 2, 3, and 4, seize the wheels as before, except that No. 1 holding the sponge in his left hand, uses his right at the wheel. At the command **MARCH**, they move the piece to the rear, the gunner raising the trail until the command **HALT** is given, when all resume their posts.

CHANGING POSTS.

113. In order to instruct the men in all the duties at the piece, the instructor causes them to change posts.

For this purpose he commands:

1. *Change posts.* 2. **MARCH.**

At the command *Change posts*, the men on the right of the piece face to the rear; those who have equipments lay them down; No. 1 resting the

sponge-head on the nave of the wheel. At the command **MARCH**, each man takes the place and equipments of the man in his front.

No. 1	takes the place of	No. 3.
No. 3	"	" of No. 8.
No. 8	"	" of No. 6.
No. 6	"	" of No. 7.
No. 7	"	" of No. 5.
No. 5	"	" of No. 4.
No. 4	"	" of No. 2.
No. 2	"	" of No. 1.

The gunner changes with one of the numbers by special direction of the instructor. A sufficient number of the most intelligent cannoneers must be kept instructed to serve as gunners.

114. **EQUIPMENTS.**—The gunner who is responsible for the equipments, either distributes them from the limber chest, or they may be hung on the neck of the cascabel, and distributed by him to the proper numbers, at the command **TAKE EQUIPMENTS**, from the instructor. He receives them again at the command **REPLACE EQUIPMENTS**, making such disposition of them as may be directed.

LIMBERING.

115. **TO THE FRONT.**—The instructor designates the following parts of the carriage: *STOCK: trail, trail handles, trail-plate, lunette, washer-hook for handspike, large pointing ring, small pointing ring, sponge and rammer stop, sponge-chain and hasp, ear-plate for sponge-chain hasp, handspike ring, sponge-hook.*

He then commands:

LIMBER TO THE FRONT.

At this command, No. 1 steps up between the muzzle and the wheel, by the oblique steps indicated for loading; turns the staff, seizing it with the left hand, at the same time shifting his right, the back of the right up, that of the left down, and passes the sponge on its hook, rammer-head to the rear, to No. 3, who receives the head, secures it against the stop, and keys it up. The piece is then brought about by the cannoneers, and the limber, inclining to the right, passes to its place in front of it, being drawn, when it is not horsed, by Nos. 6 and 7, who take hold at the end of the pole for the purpose.

To bring the piece about, the gunner and No. 5 pass to the right of the handspike, and, facing towards the left, seize it, the gunner near the end, and No. 5 at the middle, and on his right, raise the trail and carry it round to the left; Nos. 1 and 2 bear down upon the muzzle, and Nos. 3 and 4, each using both hands, bring the wheels round; No. 3 turning the right wheel to the rear, and No. 4 the left wheel to the front. When the piece is brought about, the trail is lowered; Nos. 3 and 4 step within the wheels to avoid the limber; Nos. 1 and 2 remain at the muzzle, and the gunner and No. 5 step between Nos. 3 and 4 and the trail, the gunner first taking out the handspike, and passing it to No. 4, by whom it is put up.

As soon as the limber is in front of the piece, the gunner commands: **HALT—LIMBER UP**; upon which the limber halts, the gunner and No. 5 raise the trail by means of the handles, and, assisted by Nos. 3 and 4 at the wheels, and Nos. 1 and 2 at the head of the carriage, run the piece forward,

and place the lunette upon the pintle; the gunner then puts in the key, and all take their posts; when necessary, Nos. 6 and 7 assist at the trail in bringing the piece about, and in limbering up.

116. **TO THE RIGHT, (or LEFT.)**—The instructor commands:

LIMBER TO THE RIGHT, (or LEFT.)

The trail is turned to the right, (or left,) and the piece limbered up as before; the limber inclining to the right, (or left,) and taking its place by a right (or left) wheel.

117. **TO THE REAR.**—The instructor commands:

LIMBER TO THE REAR.

The limber inclines to the right, and takes its place by wheeling about to the left, and the piece is then limbered up as before.

POSTS OF THE CANNONEERS.—PIECE LIMBERED.

118. Nos. 1 and 2 are opposite the muzzle; Nos. 3 and 4 opposite the knob of the cascabel; the gunner and No. 5 opposite the rear, and Nos. 6 and 7 opposite the front parts of the limber wheels: No. 8 is on the left, and opposite the limber chest of the caisson. All face to the front, and cover each other in lines 1 yard from the wheels, the even numbers on the right, the odd numbers on the left. The chief of the piece is on the left, and, if not mounted, opposite the end of the pole; if mounted, he is near the leading driver, and on his left.

TO FORM THE DETACHMENT.

119. **TO THE FRONT.**—The instructor commands:

DETACHMENT—FRONT.

The gunner commands: *Cannoneers, forward—MARCH*; the even numbers move directly to the front; the odd numbers closing on them when clear of the piece. The gunner files them to the left, and fronts the detachment at the proper distance. No. 8 moves directly forward and takes his place in the detachment.

TO THE REAR. The instructor commands:

DETACHMENT—REAR.

The gunner commands: *Cannoneers, rear FACE—MARCH*. At the command **MARCH**, the odd numbers move directly to the rear, the even numbers closing on them, and the detachment is filed to the left, halted at a proper distance by the gunner, and faced to the front; No. 8 taking his proper place in the detachment.

In forming detachments in line, they are always, after halting, dressed to the right by the gunner.

POSTS OF THE DETACHMENTS AT THEIR PIECES.

120. **IN FRONT.**—The detachment is in line facing to the front, two yards from the end of the pole or the lead horses.

IN REAR.—The centre of the detachment is two yards behind the muzzle and facing to it.

ON THE RIGHT OR LEFT.—The detachment is in line opposite the limber

axletree and three yards from it. In *horse artillery* it is in line with and three yards from the leading horses. In all cases it faces to the front.

CHANGE OF POSTS OF DETACHMENTS AT THEIR PIECES.

121. FROM FRONT TO REAR.—The detachments being in line in front of their pieces, to post them in rear, the instructor commands:

DETACHMENTS—REAR.

The gunner commands: *Cannoneers, rear FACE, MARCH.* At the command *MARCH*, Nos. 1, 2, 3, and 4 oblique sufficiently to the left, and Nos. 5, 6, 7, and 8 to the right, move along the sides of the piece, reunite as soon as they have passed it, and are halted at the proper distance, faced to the front, and aligned to the right by the gunner.

FROM REAR TO FRONT. The instructor commands:

DETACHMENTS—FRONT.

The gunner repeats the command, and adds *MARCH.* At this command the cannoneers oblique, Nos. 1, 2, 3, and 4 to the left, Nos. 5, 6, 7, and 8 to the right, pass their piece, reunite in front, and are halted and aligned to the right by the gunner.

FROM REAR TO RIGHT (or LEFT.)—The instructor commands:

DETACHMENTS—RIGHT, (or LEFT.)

The gunner commands *right (or left) oblique, MARCH*, and afterwards *FORWARD* and *HALT*, in time to bring the detachment to its post on the right or left. He then aligns it to the right.

122. IN HORSE ARTILLERY, to change from front to rear, the gunners command: *Left reverse, MARCH; FORWARD. Left reverse, MARCH; HALT*

FROM REAR TO FRONT.—The gunners command: *Right oblique, MARCH; FORWARD. Left oblique, MARCH; FORWARD; HALT.*

FROM REAR TO RIGHT, (or LEFT.)—The gunners command: *Right (or left) oblique, MARCH; FORWARD; HALT.*

FROM RIGHT (or LEFT) TO REAR.—The gunners command: *Right (or left) reverse, MARCH; FORWARD. Right (or left) reverse, MARCH; HALT.*

If the piece is moving when the change of post is ordered, the gunner halts or slackens the pace until it passes, and then commands: *Left (or right) oblique, MARCH; FORWARD.*

The commands of the instructor are the same as in foot artillery. The movements are executed in the same manner when the detachments are dismounted.

TO POST THE CANNONEERS AT THE PIECES LIMBERED.

123. The detachment being formed in line in front or rear, on the right or left, the instructor commands:

CANNONEERS, TO YOUR POSTS.

FROM THE FRONT.—The gunner faces the detachment to the right, and commands: *To your posts, MARCH.* At this command, the cannoneers, Nos. 1 and 2, turning to the right, and opening out, file to their posts, halt at their proper places, and face to the front.

FROM THE REAR, RIGHT OR LEFT.—At the command *CANNONEERS, TO YOUR POSTS*, the gunner, in each case, faces the detachment to the left, and marches the cannoneers by that flank to their posts.

MOVING THE PIECE BY HAND. PIECE LIMBERED.

124. TO THE FRONT.—The instructor commands :

1. FORWARD. 2. MARCH. 3. HALT.

At the first command, Nos. 6 and 7 seize the end of the pole with both hands ; the gunner and No. 5, facing towards the pole, seize the splinter bar with one hand and the pole with the other ; Nos. 3 and 4 seize the spokes of the hind wheels with both hands ; and Nos. 1 and 2 apply both hands at the head of the carriage. At the second command, all acting together, urge the piece forward until the command HALT is given, when all resume their posts.

125. TO THE REAR.—The instructor commands :

1. BACKWARD. 2. MARCH. 3. HALT.

At the first command all face to the rear ; Nos. 6 and 7 seize the end of the pole with both hands ; No. 5 and the gunner seize the spokes of the limber, and Nos. 1, 2, 3, and 4 those of the hind wheels. At the command MARCH, all moving together, move the piece to the rear, Nos. 6 and 7 keeping it straight by the use of the pole. At the command HALT, all resume their posts.

UNLIMBERING AND COMING INTO ACTION.

126. TO THE FRONT.—The instructor commands :

ACTION FRONT.

At this command the gunner takes out the key, and, assisted by No. 5, raises the trail from the pintle, and then commands DRIVE ON, upon which Nos. 6 and 7 reverse the limber to the left, and proceed with it to the rear ; again reverse to the left, and halt so that the limber shall cover the piece, with the end of the pole 6 yards from the end of the trail handspike. At the same time that the limber moves off the piece is brought about in all respects as in limbering to the front, except that the gunner and No. 5, without lowering the trail, carry it about, each by means of the handle on his own side. Nos. 6 and 7, when necessary, assist at the trail, after placing the limber in position.

As soon as the piece is brought about and the trail lowered, No. 4 takes out the handspike and passes it to the gunner, who fixes it in the trail. No. 1 takes out the sponge, No. 3 unkeying it, and No. 4 prepares his lanyard. All then resume their posts.

127. TO THE RIGHT, (or LEFT.)—The instructor commands :

ACTION RIGHT, (or LEFT.)

The piece is unlimbered and placed in the required direction, and the limber wheels to the left, (or right,) and takes its place in rear, by reversing to the left, (or right.)

128. TO THE REAR.—The instructor commands :

1. *Fire to the rear.* 2. IN BATTERY.

At the command IN BATTERY, the piece is unlimbered, as before, the trail immediately lowered, and the gun prepared for action ; the limber moves directly forward at the command DRIVE ON from the gunner, and takes its place by coming to the left about.

SERVICE OF THE GUN WITH DIMINISHED NUMBERS.

129. The men should be frequently exercised in serving pieces with diminished numbers, that each may know the duties he has to perform in such cases.

Disabled men are replaced as soon as possible by the highest numbers, or, if men are selected to replace them, the highest numbers will be reduced to fill the vacancies thus created. During action Nos. 1 and 2 may occasionally change places and numbers, as the duties of No. 1 are very severe.

130. SERVICE OF THE GUN BY TWO MEN.—The gunner commands, points, serves the vent, and fires; No. 1 sponges, loads, and serves ammunition.

THREE MEN.—The gunner commands, points, serves the vent, and fires; No. 1 sponges; No. 2 loads and serves ammunition.

FOUR MEN.—The gunner commands and points; No. 1 sponges; No. 2 loads and serves ammunition; No. 3 serves the vent and fires.

FIVE MEN.—The gunner commands and points; No. 1 sponges; No. 2 loads; No. 3 serves the vent and fires; No. 4 serves ammunition.

SIX MEN.—The gunner commands and points; No. 1 sponges; No. 2 loads; No. 3 serves the vent and fires; Nos. 4 and 5 serve ammunition.

SEVEN MEN.—The gunner commands and points; No. 1 sponges; No. 2 loads; No. 3 serves the vent and attends to the trail; No. 4 fires; No. 6 is at the limber, serves ammunition to No. 5, and occasionally changes with him.

EIGHT MEN.—No. 7 assists No. 6; the other numbers as before.

Table for the exercise with diminished numbers.

Nos. retained.	Distribution of duties.							
	Gunner.	1	2	3	4	5	6	7
G. 1.....	G. 3, 4	1, 2, 5	.....	.....	.....	.....	.....	.....
G. 1, 2.....	G. 3, 4	1	2, 5	.....	.....	.....	.....	.....
G. 1, 2, 3.....	G.	1	2, 5	3, 4	.....	.....	.....	.....
G. 1, 2, 3, 4.....	G.	1	2	3, 4	5	.....	.....	.....
G. 1, 2, 3, 4, 5.....	G.	1	2	3, 4	6	5	.....	.....
G. 1, 2, 3, 4, 5, 6.....	G.	1	2	3	4	5	6	.....
G. 1, 2, 3, 4, 5, 6, 7.....	G.	1	2	3	4	5	6	7

SUPPLY OF AMMUNITION IN ACTION.

131. When it is likely that movements must take place on the field, or the firing is slow, and it can be done without inconvenience, ammunition will be served direct from the rear chest of the caisson, No. 8 performing the duties prescribed for No. 6 at the limber chest. At convenient moments the ammunition served out by No 6 will be replaced from the rear caisson chest. If the ammunition chest at the piece is exhausted, the limber is replaced by that of the caisson, and the empty chest exchanged for the centre one of the caisson.

As a rule, the limber chests, and especially that of the piece, will be kept full at the expense of the others, so that in case of a sudden movement on the field there shall always be a sufficient supply of ammunition at hand.