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AND OF THE

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IN THE ARMY,

During the Year ending 31st March 1863.

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REGULATIONS

FOR CONDUCTING THE

MUSKETRY INSTRUCTION OF THE ARMY.

ADJUTANT-GENERAL'S OFFICE, HORSE GUARDS,
1st February 1859.

WITH APPENDIX AND ADDENDA
To November 1863.



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GENERAL ORDER.

Horse Guards, 1st February 1859.

THE experience gained since the present system of rifle instruction was introduced by order of the late Field Marshal Viscount Hardinge having enabled the General Commanding-in-chief to authorize a modification of the existing code, by which the training of the soldier will be expedited without in any way interfering with the efficient instruction of the troops in the use of the rifle, His Royal Highness has directed the annexed revision of the "Instruction of Musketry," and of the appendix thereto, (dated respectively 1st January 1856, and 1st January 1857,) to be circulated for general use in the army.

All the orders issued on the subject since the last edition was published have been embodied in the present regulations; the returns have been simplified and reduced in number; the diagrams, except for the platoon and skirmishing practices, have been dispensed with; and by the modification now sanctioned, the training of the infantry recruit in this branch of his duty, which at present requires twenty-four days, will be completed in sixteen, and the annual course for each company, at present occupying eighteen, will be performed in twelve days.

His Royal Highness will accordingly henceforth admit of no excuse for any deviation from the musketry regulations, which form part of the standing orders of the army, and will look to General officers to make such a disposition of the forces under their orders as shall ensure the prescribed annual course of instruction being carried on without interruption.

With a view to compensate for the short time devoted to the execution of the preliminary drill *as a part of the yearly course*, the General Commanding-in-chief desires that the position drill, particularly the first and third practices, may be frequently performed under close supervision, in order, by strengthening the left arm, to give the soldier a perfect command of the rifle with his left hand, and to establish that union between hand and eye, which is indispensable for good rifle shooting, but which can only be attained by constant practice.

By command of His Royal Highness the
General Commanding-in-chief,
G. A. WETHERALL,
Adjutant General.

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INSTRUCTION OF MUSKETRY.

PART I.

Duties, Instructors, &c.

1. In every battalion the rifle training, like all other exercises, is placed under the responsibility of the commanding officer, who is to make himself acquainted with this most important part of a soldier's duty, by careful study of the following regulations, by giving his personal superintendence to the drill and practice of the companies under instruction, and by availing himself of the assistance and information to be derived on the subject from inspectors of musketry, at their periodical visits.

2. All correspondence is to be conducted by commanding officers, who are accountable for the accuracy of all returns, &c., and are to afford every information and explanation on the subject which may be required of them by the Inspector-general of Musketry.

3. The field officers are also to render themselves acquainted with the theory and practice of musketry; and captains and subalterns are to attend the rifle drill and practice with their companies, to make themselves equally conversant with the "instruction of musketry" as with the battalion and company drill, of which indeed it is a component part; as also with the proficiency of every man of their company in shooting, and judging distance.

4. In every battalion armed with the rifle or rifle-carbine, there is to be an "*officer-instructor of musketry*,"

Commanding Officer.

Field Officers and Captains.

Officer-Instructors.

charged with the entire musketry training of the young officers and recruits, as well as with the theoretical and preliminary instruction of the other officers and soldiers of the battalion annually. He is also to be responsible that the target and judging distance practices are conducted with uniformity by the several companies, and strictly according to these regulations. He must have received a *first-class certificate* from the head-quarter establishment at Hythe;—is to be exempted from all regimental and garrison duties;—and to be considered as one of the regimental staff. In depôt battalions, the officers holding the permanent appointment of instructors of musketry are to be allowed an overslaugh on the roster for duty with the service companies, which they are not to be required to join without special orders from the Commander-in-Chief.

Assistant
Officer-In-
structor.

5. In every battalion a subaltern is to be appointed to act as "*assistant officer-instructor*," who is to be exempt from all regimental and garrison duties while the annual course of rifle instruction is proceeding. An officer who has received a certificate of qualification from Hythe should, when available, be selected for this office. Whenever the officer-instructor is absent for upwards of fourteen days, the allowance for the whole period of such absence is to be issued to the assistant instructor. Commanding officers, when forwarding an application for leave in favor of an instructor, are to specify the name of the officer to do the duty during his absence.

6. The words "*gazetted instructor*," "*provisional instructor*," or "*assistant instructor of musketry*," are to be inserted in the regimental and depôt battalion returns against the names of the officers employed in the above capacities.

Serjeant
Instructor.

7. One or more serjeants will be appointed to every battalion from the corps of permanent instructors of musketry. These serjeants,—who are to be employed exclusively in the rifle instruction of the battalion under the officer instructor, assisting him in all his duties, attending all target drills and practices, and superintending the company instructors,—are to be exempt

from all regimental, garrison, and barrack duties ; and are not to be subject to the orders of any non-commissioned officer, except as regards discipline. Second-class serjeant instructors take rank next to the quartermaster-serjeant (in the Guards, with the drill serjeants, according to seniority) ; third-class serjeant instructors next to the colour-serjeants.

8. In every troop or company of a battalion, the colour-serjeant, or company serjeant-major, or in his absence the next senior serjeant, is to be appointed *company instructor*. He is to attend with his company when at target and judging distance drills, to assist the officer and serjeant instructors in their duties, and is also to be charged, under the orders of his captain and of the officer and battalion serjeant instructors, with the instruction of the men in the cleaning and management of their arms, and in the target and judging distance practices.

Company
Instructor.

PART II.

General Course of Instruction.

1. When the recruit has attained a knowledge of the "platoon" exercise, which is to be taught by the adjutant and serjeant-major, his course of musketry drill and practice is to be proceeded with according to the following system.

2. To this great object too much care and attention cannot be devoted. The rifle is placed in the soldier's hands for the destruction of his enemy ; his own safety depends upon his efficient use of it ; it cannot, therefore, be too strongly inculcated, that every man who has no defect in his eyes, may be made a good shot ; and that no degree of perfection he may have attained in the other parts of his drill, can upon service remedy any want of proficiency in this ; in fact, all his other instructions in marching and manœuvring can do no more than place him in the best possible situation for using his weapon with effect. A soldier who cannot shoot is useless, and an incumbrance to the battalion.

3. The Instruction in Musketry is divided into two parts ; viz., PRELIMINARY DRILL, and PRACTICE.

4. Under the head of "*Preliminary Drill*" are comprised the following subjects :

1. Cleaning arms.
2. Theoretical principles.
3. Aiming drill.
4. Position drill.
5. Snapping caps.
6. Blank firing.
7. Judging distance drill.
8. Manufacture of cartridges.

5. The "*Practice*" consists of—

1. Firing singly.
2. Firing by files.
3. Firing in volleys.
4. Firing in skirmishing order.
5. Judging distance practice.
6. Firing without using the back-sight.

PART III.

Preliminary Drill.

1. CLEANING ARMS.

Every soldier is to be taught the names of the different parts of the lock and rifle, and the rules for cleaning and keeping them in proper order. Too much pains cannot be taken to impress upon the minds of the men the necessity of preserving their rifles at all times in the highest condition, and the impossibility of producing accurate shooting with them when dirty. This is the first exercise in which the soldier is to be instructed, and the order in which it is to be communicated is as follows :—

FIRST LESSON.

Name the limbs of the lock, and the other principal parts of the rifle ; as also, explain how to dismount the lock.

The Lock.

The limbs to be named in the order in which they are removed ; viz.—

Mainspring.
Sear-spring.
Sear.
Bridle.
Hammer.
Tumbler.
Swivel.
Lock-plate.
Nails { Tumbler.
or { Sear-spring.
Pins. { Sear.
 { Bridle.

The Rifle.

<i>Stock.</i>	<i>Barrel.</i>
Nose-cap.	Muzzle.
Bands - { Upper. { Middle. { Lower.	Front, or fore-sight.
Swell.	Back, or elevating Sight. { Flanges. { Flap. { Slider. { Spring. { Bed.
Projections.	Nipple-lump.
Lock-side.	Nipple { Cone. { Square. { Shoulder. { Touch-hole.
Head.	Breech.
Small.	Breech-pin. { Face. { Tang. { Breech nail-hole.
Trigger-guard.	
Trigger-plate.	
Trigger.	
Breech-nail.	
Side-nails.	
Butt - { Toe. { Heel.	
Heel-plate.	

Dismount the Lock.

- 1st. Unscrew and remove tumbler pin.
- 2d. Put the lock at full cock, then place the cramp on the mainspring, and, after letting the hammer down, remove it.
- 3d. Partly unscrew the sear-spring pin, then place the edge of the turnscrew between the bend of the sear-spring and lock-plate, to raise the former from the latter, after which unscrew the sear-spring pin, and remove the sear-spring.
- 4th. Unscrew the sear-pin, and remove sear.
- 5th. Unscrew the bridle-pin, and remove bridle.
- 6th. Remove the hammer (which is to rest in the hollow of the hand) by a few smart taps,—as near the lock-plate as possible,—with something softer than itself.
- 7th. Remove the tumbler.
- 8th. Remove the swivel from the tumbler.

SECOND LESSON.

Names of the various parts of the limbs of the lock.

1st. *Mainspring.*

- | | | |
|-----------|------------|-----------|
| 1. Catch. | 2. Return. | 3. Stud. |
| 4. Bend. | 5. Spring. | 6. Claws. |

2d. *Sear-spring.*

- | | | |
|----------|------------|----------|
| 1. Eye. | 2. Return. | 3. Stud. |
| 4. Bend. | 5. Spring. | 6. Toe. |

3d. *Sear.*

- | | | |
|----------|----------|---------|
| 1. Arm. | 2. Body. | 3. Eye. |
| 4. Neck. | 5. Nose. | |

4th. *Bridle.*

- | | | |
|------------------------|-------------------|---------------------|
| 1. Stud. | 2. Foot. | 3. Bridle-pin hole. |
| 4. Tumbler pivot hole. | 5. Sear-pin hole. | |

5th. *Hammer.*

- | | | |
|-----------|----------|--------------------------------|
| 1. Mouth. | 2. Head. | 3. Comb. |
| 4. Neck. | 5. Body. | 6. Hole for square of tumbler. |

6th. *Tumbler.*

- | | | |
|------------------------|---------------|----------------------|
| 1. Pivot. | 2. Bearer. | 3. Shaft. |
| 4. Swivel pivot-holes. | 5. Half bent. | 6. Full bent. |
| 7. Axle. | 8. Squares. | 9. Tumbler-pin hole. |

7th. *Swivel.*

- | | |
|----------|------------|
| 1. Body. | 2. Pivots. |
|----------|------------|

Lock-plate.

- | | | |
|--------------------------|--------------------------|---------------------------|
| 1. Front side nail hole. | 2. Mainspring-stud hole. | 3. Fore stud. |
| 4. Bridle-stud hole. | 5. Bridle-pin hole. | 6. Hind stud. |
| 7. Hind side nail hole. | 8. Sear-spring pin hole. | 9. Sear-spring stud hole. |
| 10. Sear-pin hole. | 11. Tumbler axle hole. | |

THIRD LESSON.

Instructions to clean the lock and rifle, and to keep them in proper order :—

1. When the lock is dismantled, wipe the several limbs, first with an oiled rag, and afterwards with a rag quite dry.

2. If any specks of rust are seen, either on the lock (more particularly the tumbler axle hole) or any of the limbs, they are to be removed with an oiled rag. No brick-dust, or powder of any kind, is to be used for this purpose, as such would have the effect of removing the case hardening from those parts that are not steel, and thus render them much more liable to rust,

3. In remounting the lock the threads of the several pins, as also the pivot and axle of tumbler, and pivots of swivel, should be oiled before putting them in their respective places, in order that they may work easily.

4. The other frictional parts of the lock to which it is essential to apply oil (which should be animal and not vegetable) are the nose of the sear, and between the sear and sear-spring. Only a very small quantity of oil should be used, and applied either with a feather, or the point of the pricker, as too much is likely to clog the parts.

Rifle.

5. Place the rifle at full cock and draw the ramrod.

6. Put a piece of rag, woollen if possible, or tow into the jag, and twist it round so as to cover it.

7. Hold the rifle in the left hand, at the full extent of the arm, barrel downwards, with the forefinger and thumb in line with, and round the muzzle, heel of the butt resting on the ground to the rear.

8. Pour about a quarter of a pint of water into the barrel with care, so as to prevent any of it getting between stock and barrel, or into the lock through the

tumbler axle hole; immediately afterwards put the ramrod into the barrel, and sponge or rub it carefully up and down to remove the dirt or fouling, forcing the water through the nipple to clear the touch-hole. Repeat this process until the barrel is quite clean.

9. Wipe the barrel well out with rag or tow until it is perfectly dry, and afterwards with an oiled rag; then put the muzzle stopper in the barrel, and the snap cap on the nipple. Care should be taken to keep the snap cap dry when washing out the barrel, and to wipe the mouth of the hammer before letting it down on the snap cap.

10. On the following morning, and on every occasion before using the rifle, wipe the barrel out perfectly clean and dry.

11. The fouling which settles on the stock near the nipple lump when firing should, if possible, be removed without using water or a damp rag. On no account is a knife or sharp instrument of any description to be used to remove the dirt near the nipple lump or trigger plate.

12. By the foregoing mode of cleaning, the liability of the barrel to become rusty will be very much reduced, and the frequent necessity for removing it from the stock, which is always objectionable, be obviated.

13. In order to prevent water soaking into the stock, and at the same time to give it a smooth and polished appearance, rub it over well with oil, and apply a little bees-wax between it and the barrel, and between the lock plate and stock, to prevent water getting under the barrel or into the lock.

FOURTH LESSON.

Remount the lock.

1. Attach the swivel to the tumbler.
2. Place the tumbler in the axle hole of lock-plate with its bearer against the hind stud.

3. Fix the bridle on the pivot of tumbler, and its stud in the lock-plate; then screw home the bridle-pin, which differs from the other pins (which are rounded off) by being flat at the end.

4. Place the sear between the bridle and the lock-plate, with its nose against the tumbler, and screw home the sear-pin.

5. Partly screw the sear-spring to the lock-plate, then with the thumb of the left hand press the spring against the body of the sear until the stud enters the stud-hole, and screw home the sear-spring pin.

6. Fix the hammer on the squares of the tumbler in a position as if on the nipple, and screw home the tumbler-pin.

7. Attach the swivel by its pivots to the claws of the mainspring, then put on the mainspring, by placing the stud in the lock-plate, and its catch against the fore stud; after which place the lock at full-cock to remove the cramp; this being done, ease the lock to half-cock.

FIFTH LESSON.

Explain the uses of the different parts of the lock, in two lessons.

1. *Mainspring*.—This spring acts upon the tumbler to draw the hammer down upon the nipple. The stud which is attached to the return is required to keep the spring in its place, and, together with the fore stud that secures the catch to the lock-plate, offers such a resistance as ensures the action of the mainspring.

2. *Sear-spring*.—This spring acts upon the sear; the toe of the spring bears against the body of the sear, and presses it outwards whenever the tumbler is revolved, by drawing the hammer backwards, thereby causing the nose of the sear to enter the half and full bents. The stud which is attached to the return is necessary to keep the sear-spring in its place, and, together with the

sear-spring pin, secures it to the lock-plate, and offers such a resistance as ensures the action of the spring.

3. *Sear*.—The sear acts as a stop on the movement of the tumbler, into the half and full bents of which the sear-nose enters to keep the lock at half and full cock; the nose of the sear should be so constructed as to fit the bents exactly. The arm of the sear is that part on which the trigger acts to raise the sear-nose out of the full bent of tumbler, thereby releasing it to the action of the mainspring.

SIXTH LESSON.

4. *Bridle*.—The bridle secures the tumbler and sear in their proper places on the lock-plate; the bridle-stud, which fits into the lock-plate, together with the sear and bridle-pins, keeps the bridle in its place.

5. *Hammer*.—The hammer is fixed to the tumbler to explode the cap.

6. *Tumbler*.—This is a most important part of the lock; it holds the hammer and revolves in the lock-plate and bridle; and is made very strong to sustain the force of the mainspring. The notches in its side, termed "bents," are to retain the hammer in a position to place the cap on the nipple and to explode it. The half bent in its construction has two angles, one acute, the other obtuse; such a formation is essential to prevent the possibility of the sear-nose being released by the action of the trigger,—for whatever amount of pressure is applied thereto could only have the effect of breaking away either the half bent or sear-nose; the full bent is so formed as to allow the sear-nose to be withdrawn from it with the least resistance,—these parts, consequently, must coincide. The edges of the full and half bents should be in the same arc of a circle, to ensure the proper action of the tumbler; if the edge of the latter protrudes, the sear-nose when released from the full bent to allow the hammer to fall will catch in the half bent; and if it is cut away the position of half-cock is not secure. The shaft is for the purpose of connecting the mainspring with the tumbler by means of the swivel.

7. *Lock-plate*.—This is the foundation of the lock, on which the several parts are fixed; the fore stud, as before stated, is to secure the catch of the mainspring and to offer a resistance to ensure its action; the hind stud acts as a break to prevent the tumbler revolving beyond what is necessary when put in motion by the mainspring, whose action is also thereby stopped.

SEVENTH LESSON.

Explain how the rifle and ammunition may get out of order, and how this may be prevented, in two lessons.

1. In order to ensure a true and easy action of the lock the several pins, pivots, &c. should be perpendicular (or upright) to the lock-plate, which is, or should be, a perfect plane.

2. *Pull off*.—It is erroneous to suppose that by loosening the sear or any other pin an easier or lighter pull off is obtained; such a measure is only calculated to impair the lock, by causing an increased wear and tear of the parts, which are thereby thrown out of truth. When the pull off is too great, either the full bent and sear-nose are not well adapted to each other, or the sear-spring is too strong; these defects, which cause an alteration of the aim when firing, are easily rectified by the armourer when necessary, but must never be attempted by the soldier.

3. *Wood-bound*.—The lock is said to be wood-bound when the parts are embedded in the wood work of the stock, and are thereby prevented from exercising their proper functions. This defect, while it may arise from the swelling of the wood in damp weather, or if exposed to wet, is often occasioned by screwing the lock too tightly to the stock. The side nails, as also the pins of the lock when screwed home, should not protrude beyond the outer side of the lock-plate. The ends of said nails and pins (except the bridle-pin, which, being flat, should be flush) are rounded off to the lock-plate, and present no edges.

4. *Miss-fires*.—The non-explosion of the percussion cap is often attributed to the weakness of the main-spring; this may sometimes be the case. In the majority of instances, however, the defect may be traced to the dirty or rusty state of the tumbler axle hole, and axle of tumbler, which necessarily impedes the fall of the hammer, and consequently reduces the force of the blow that is essential to explode the cap;—and frequently from the cap not being pressed firmly home on the nipple, which prevents the hammer acting with full effect.

5. The non-ignition of the charge by the cap, very often arises from an accumulation of dirt at the base of the touch-hole.

6. These causes of miss-fire point to the necessity of great care being taken in cleaning the rifle, to prevent dirt remaining in the touch-hole, or water entering the lock by the axle hole; and of attention being paid to the instructions in the fifth motion for capping.

7. *Miss-fires* may be occasioned by the communication hole (that is, the hole by which the detonating spark is conveyed to the charge,) not being of sufficient size;—or by the nipple screw being too long, the consequence of which would be that, when screwed down, it would shut up a part of the communication hole, and prevent the powder from getting into the chamber;—or from the nipple being too large for the cap. These defects should be remedied by the armourer.

8. The soldier should be careful to see that his nipple is in good order, as the instructor will naturally attribute “miss-fires” to a dirty rifle, which marks the inattentive soldier, and exposes him to punishment.

EIGHTH LESSON.

9. *The barrel*.—The soldier cannot be too careful of the barrel of his rifle to prevent its being bent or dented, either of which defects are very serious as regards accurate shooting, and seldom occur except from carelessness; if he suspects that his barrel is either bent or dented he should report the circumstance immediately.

10. The soldier is on no account whatever to use his rifle for carrying any weight, or for any purpose for which it is not intended, as the barrel is bent very easily.

11. Placing arms forcibly in a rack, or piling them carelessly, in consequence of which they often fall down, will frequently set or crook the barrel, more particularly at the muzzle, where it is the thinnest; and this being the point of delivery, the arm becomes irreparably damaged.

12. Care should be taken to protect the fore-sight from being bent, blunted, or injured in any way.

13. If the interior of the barrel be allowed to become rusty, the increased resistance to the passage of the bullet will probably cause the latter to "strip" (or pass out of the grooving) or else the wood plug may be driven through the bullet, and the arm for the time rendered useless. Rust in the barrel will also prevent the proper expansion of the bullet, and impair its rotation, which is essential to produce accurate shooting; it will likewise render the rifle difficult to load. If a soldier cannot prevent this, by keeping his barrel clean, he is not fit to be intrusted with a rifle. Rust is caused by the joint effects of moisture and air, the surest way, therefore, of preventing rust in the barrel is to keep the bore perfectly dry, and invariably to have the muzzle stopper in it, and the snap cap on the nipple, so as to exclude all air.

14. The soldier should be enjoined to be careful, when skirmishing, not to run the muzzle of the barrel into the ground; should he accidentally do so, he is to ask permission to fall out to remove the dirt, for, if the rifle be fired, the obstruction in the muzzle is liable to burst the barrel: If not loaded, the dirt should be carefully removed and the barrel wiped out, for if rammed down with a charge, it would tear the barrel and destroy the surface of the bore.

15. *Ammunition.*—The greatest attention must be paid to the cleanliness of the inside of the pouches, so that no dirt or dust may adhere to the greased part of the cartridge.

16. Whenever there are any loose cartridges in the pouch, they should be folded in paper, in order that they may not shake about and become damaged. To preserve the ammunition in an efficient condition, the pouch should always be well packed, and no vacant space allowed to remain in it.

17. As powder when damp will not send a bullet so far as when perfectly dry, and as it is also more difficult to ignite by the detonating spark from the percussion cap, the cartridges and percussion caps are always to be kept as dry as possible.

18. When on picquet, or whenever the rifle is likely to be exposed to rain when loaded (which should never be allowed, if it can be avoided,) the soldier should remove the percussion cap and place the snap cap on the nipple instead. In the absence of the snap cap, stop up the nipple with grease, easing the spring in either case; if there be no grease at hand, drive a peg of soft wood into the nipple and put the cap on. Neither the grease nor the peg will in any way impede the action of the percussion cap if properly pressed home on the nipple, as both will disappear on the explosion.

19. No non-commissioned officer or private is on any account whatever to be allowed to remove his lock from the stock, and take it to pieces, until he is thoroughly acquainted with the foregoing instructions in detail, and has been officially certified by the officer-instructor to be capable of doing so accurately and efficiently. As the barrel seldom needs removing from the stock, this service, which requires great care in its execution to prevent the head of the rifle from being broken, is invariably to be performed by the regimental armourer or his assistant, more particularly as the ordinary turncrew is not adapted either to remove the breech pin, or to screw it home again.

20. The armourer-serjeant will assist in the instruction of the soldier in the mechanism and construction of his rifle.

2. THEORETICAL PRINCIPLES.

1. This branch of the instruction is specially confided to the officer-instructor, who is to explain the principles thereof in the following order, in a clear and concise manner, and in language suited to the capacity of the men, as it is most important they should well understand the reasons for all those rules which have to be attended to in practice.

2. A black-board and a piece of chalk are made use of to describe the figures.

FIRST LESSON.

1. The instructor is first to explain the construction of the barrel as far as is necessary to show that the upper surface does not lie in the same direction as the inside or bore, with a view hereafter to show that the barrel thus constituted gives elevation in itself. Construction of the barrel.

2. That the "axis of the piece" is an imaginary line along the centre of the barrel, which denotes the course taken by the centre of the bullet whilst under the influence of the exploded powder, and the distance and direction in which it is guided in its flight. *Having drawn upon the board a section of the rifle,* describe the axis laid horizontally. A B, fig. 1, plate 1.* Axis of the piece.

3. That the "line of fire" is the direction in which the bullet would fly, and with uniform velocity, were it not impeded by the resistance of the atmosphere, and drawn from it by the force of gravity. *Here describe the line of fire, BC, fig. 1, in continuation of the axis.* Line of fire. Laws influencing the course of the bullet.

* N.B. The section of the rifle may be cut in card, tin, or zinc, and fastened to the board by a pivot at the breech, on which it can easily be turned in any required direction.

SECOND LESSON.

Resistance of the air.

4. The instructor will now proceed to explain that the atmosphere is an elastic fluid, consisting of a multitude of small particles which cannot be moved or set aside by the bullet, without imparting to it some degree of reactionary force, and thereby reducing at every moment the velocity of its flight; and that the greater the velocity with which the bullet is proceeding, the greater is the resistance it meets.

Force of gravity.

5. That the "force of gravity,"—a power which draws all unsupported bodies to the earth,—commencing to act upon the bullet as soon as it quits the muzzle, draws it towards the ground with greater velocity in proportion to the time it is exposed to its influence.

Trajectory.

6. That these two distinct motions,—the one increasing as the other diminishes,—cause the bullet to move in a curved line called the "trajectory;" that for a short distance, in consequence of the great velocity of the bullet in its forward motion, and the comparatively short time that gravity has had to act, the course of the bullet scarcely deviates from the line of fire; and that the curve increases more and more in proportion as the bullet becomes more distant from the muzzle. *Here describe the "trajectory." BD, fig. 1.*

THIRD LESSON.

Initial direction to be given to a bullet to cause it to hit a mark.

7. The instructor will next proceed to show how a knowledge of the laws referred to in the last lesson can be applied in practice. He will first cause the men to observe that if the "axis of the piece" is directed upon an object the bullet will never hit it, but, for the reasons before explained, will always pass below it. As therefore it has been found by experiment that in the first 100 yards the bullet falls about 1 foot 5 inches, it will be necessary that the line of fire should be directed to a point 1 foot 5 inches above the mark it is desired to hit; in which case the "trajectory," conforming to the movement of the line of fire, will also be raised 1 foot 5 inches, and the bullet will strike the mark. *Here*

change the direction of the axis, and draw the new line of fire AF , and the new trajectory passing through C , fig. 1, continuing it to any distance that may be deemed necessary; and in order that the men may not be confused by too many lines, rub out the old line of fire and trajectory marked in dotted lines in fig. 1.

8. In the second place, clearly explain that to fire with accuracy it is necessary the sights should be carefully aligned between the eye and the mark; that if, however, the sights on the upper surface of the barrel were so constructed as to be in the same direction, or in other words, parallel to the axis, or if the barrel were as thick at the muzzle as at the breech, it would then be necessary, at 100 yards, to aim 1 foot 5 inches above the mark; but that by doing so, the firer would lose sight of said mark, and consequently be uncertain of his correct elevation. That, to obviate this difficulty and drawback to accurate shooting, the height of the lowest back-sight of the rifle is so arranged, that (together with the difference in thickness of metal of barrel between the breech and muzzle) when aim is taken straight upon an object at 100 yards the "axis of the piece" receives the necessary degree of elevation. *Here draw the line of sight, CGH , fig. 1, from the mark C to the top of the fore-sight, and continue it through the bottom of the notch of the back-sight, the height of which is to be arranged accordingly.*

9. Proceed to show that if the 100 yards sight were used to fire at a mark 200 yards off (aim being taken straight on the object) the bullet would pass below it,—with a view to prove that the 100 yards sight does not give a sufficient elevation for the increased distance. (*Here continue the line of sight to K , fig. 1, and assign to it a distance of 200 yards.*) Then explain that as at the distance of 100 yards, so at all other greater distances, the "line of fire" must be directed as much above the object as the bullet passes below the said line *when laid horizontally* at those distances; and that in order to enable the firer to aim straight at the mark at all distances, the back-sight is made capable of adjustment by means of a flap and sliding bar, and thus becomes available for all ranges from 100 to 900 yards; so that

"Line of sight" and arrangement of sight for 100 yards.

Arrangement of sight for different distances.

if the firer is certain of his distance, and adjusts his sight accordingly, he need not trouble himself about the elevation, which is arranged for him in the construction of the sights. Explain further that, for distances beyond 900 yards, the firer must determine the elevation by raising his eye as much above the back-sight as he may think necessary, always keeping the fore-sight in line with the object; and if under 100 yards (*vide M, fig. 1*), that allowance must be made for the slight rise of the "trajectory" above the "line of sight," by aiming a few inches under the mark; viz., about 8 inches will be sufficient at 50 yards, and about 4 inches at 30 yards.

How to illustrate the principles on which the back-sight is adjusted.

10. A simple method of practically illustrating the principles which regulate the adjustment and position of the sights is by means of a model gun, having a small spring in the barrel to project a dart, or pointed wooden bullet, with sufficient force to penetrate a target at a short distance, and a folding back-sight with sliding bar on the barrel, to afford three "lines of sight;" viz., one on the surface of the barrel parallel to the axis, one for the distance of about four feet, and one for about eight feet. Put a stopper in the muzzle, with a string tied to the centre to represent the "line of fire," and have another string to show the "line of sight;" first place the gun at the distance of about four feet from the target, and direct the "line of fire" upon a bull's-eye marked on the target, on the same level as the axis of the gun or muzzle; this being done, remove the muzzle stopper and fire the gun, when it will be seen that the bullet or dart will strike the target below the mark; then measure the fall of the bullet, and place a spot upon the target as much above the bull's-eye to be struck as the bullet has fallen below it, and direct the "line of fire" upon said spot; again fire the gun, when the bull's-eye will be struck. Here make the soldier look along the sight which is parallel to the axis, and he will observe that the muzzle hides the bull's-eye from view; thus, he will see that by directing the "line of fire" on a spot as much above the object to be hit as the bullet falls below it, he has no security that the sight is properly directed, nor has he any guide to the elevation, except the previous measurement, which would of course be impracticable when firing with a musket. After this

raise the folding sight and the eye, without altering the position of the gun, until the fore-sight is in a line with the bull's-eye; then raise the sliding bar to the height of the eye, and make a mark on the flap to show the elevation due to the distance of four feet, so that when it is again intended to fire at this distance, the firer has only to raise the sliding bar to the mark on the flap, and aim straight at the object. Let the gun now be removed to a distance of about eight feet, and make use of the same sight that has been previously adjusted for four feet, when it will be seen that the bullet or dart will strike low, thereby showing the necessity of using a higher back-sight for this distance, and the importance of knowing correctly the distance from the mark, in order to regulate the sight accordingly. The stand on which the gun is fixed (*vide fig. 10. plate 2.*) should have a hinge at A, to enable the instructor to demonstrate the effect of inclining the sights to one side; to be treated of in the following lesson.

FOURTH LESSON.

11. In order to explain the foregoing sections on the "line of sight" more thoroughly, the instructor will cause the breech-pin to be taken out of a barrel, and a plug of wood, with a hole bored in the centre, substituted in its place, and put on the muzzle a cap or ring fitted with cross wires; he will then place a barrel on a traversing rest, and cause the men to aim with the 900 yards sight at a spot on the wall or black-board, and afterwards to look through the barrel, with a view to observe the angle formed by the "line of fire" and "line of sight."

Show relative position of "line of fire" and "line of sight" by removing the breech-pin.

12. Whilst the barrel is still upon the traversing rest, the instructor will explain to the men the importance of holding the sights upright; that the bullet, instead of hitting the mark aimed at, will invariably strike on that side to which the sight is inclined, and that the greater the distance the greater will be the error due to any inattention in this particular. To make this subject clear, let a vertical line be drawn on the black-board and a spot made thereon to aim at, and cause the men to aim at said spot with the 900 yards sight, which must be

Necessity of holding the sights upright.

Error of direction.

perfectly upright, and afterwards to look through the barrel, directing their attention to the fact of the cross wires cutting the vertical line above the mark aimed at ; then cause them to aim at the same spot with the same sight, *but inclined to one side*, and to look through the barrel again, when they will see that the "line of fire," instead of being directed upon the same vertical line as before, is directed to that side to which the sight is inclined ; and, as the "trajectory" always conforms to the "line of fire," the bullet, instead of hitting the mark, would strike on that side. *Vide fig. 3. plate 1.*

Error of elevation.

13. Further explain that not only is the direction affected by the inclination of the sight, but the elevation also, which is thereby lessened. This will be made very clear by placing a card, with lines drawn upon it (*vide fig. 4.*), to represent the proper height of the back-sight, at each distance, vertically at the back of the sight, when the men will observe what amount of elevation is lost by any degree of inclination of the back-sight.

How the error of direction and elevation, caused by the inclination of back-sight, may be shown.

14. Both the error of direction and elevation caused by the inclination of back-sight may also be shown by a small model gun (*fig. 5.*) with wires affixed to it to represent the "line of fire," the "line of sight," and "trajectory ;" the "trajectory" is made to hinge upon the "line of fire" to show the exact course the bullet will pursue at any degree of inclination of back-sight ; as also that the "trajectory" always preserves the same relative position below the "line of fire." *The model gun described in paragraph 10 will likewise illustrate the defects herein referred to, in a very forcible manner.*

FIFTH LESSON.

Height of trajectory at the several ranges.

15. Here explain the height of the trajectory at the several ranges, and the distance at which cavalry and infantry are under the power of the rifle when fired with the several elevations marked on the back-sight, in order to impress upon the men the great importance of training themselves to judge distance. It has already

been shown how necessary it is that the back-sight of the rifle should be adjusted to the correct distance ; but the soldier cannot do this if he is not thoroughly trained to judge distance by the eye. It is of no use his being a good shot at a fixed mark if he cannot hit the enemy in the field ; this is the object of all his training.

16. It has been ascertained by experiment that if the rifled musket, pattern 1853, be fired with the elevation due to 600 yards at an object 570 yards off, the bullet will strike 2' 38 feet above the mark ; if the rifle be fired with the same elevation at the distance of 630 yards, the bullet will strike 2' 54 feet below the mark, showing that any error of 30 yards in the appreciation of distance would, at this range, cause the soldier to strike the figure of a man either in the head or feet, according as the error of appreciation was under or over the correct distance (*fig. 11. plate 3.*) When firing with the 300 yards' sight, the bullet will, in passing over a distance of about 70 yards, fall half the height of a man, owing to the trajectory of 300 yards being less incurvated than that of 600 yards. At 800 and 900 yards, the curve being greater than at either of the above-mentioned distances, the same fall would take place in passing over a much shorter distance ; consequently the greater the distance the greater the necessity of knowing it accurately. It is for this reason that none but well-trained soldiers should ever be allowed to fire at such distances as 800, 900, and 1,000 yards, at smaller objects than columns of troops, whose depth would make up, in some degree, for the malappreciation of distance. Thus, in firing at a column (*fig. 12.*) whose depth is 100 yards, if the soldier over estimates the distance of the front rank by 100 yards, (although such an error would cause him to miss the front rank,) he would, if the ground were level, strike the column in its rear. As the soldier, however well trained, cannot always be certain of his distance, it is preferable when in the field, to give the first shot an elevation rather under than over the correct one ; the shot will then strike the ground before reaching the object, and may possibly hit in its bound or ricochet, as it is called. He should be taught to watch the effect of his shot, which may generally be ascertained by observing the dust thrown up when the bullet strikes

the ground ; he can then adjust his sliding bar according as his first shot strikes before or beyond the object.

SIXTH LESSON.

17. The instructor will now proceed to explain the effect of the wind, sun, &c. when firing.

Wind.

18. Wind, being air in motion, when blowing from the right will carry the bullet towards the left of the mark, and vice versa ; when from the front it will slightly reduce the speed of the bullet, and when from the rear increase it—causing in the former instance a reduction, and in the latter an increase, in the range in proportion to its force and the distance of the object fired at. The soldier is to be informed that a wind from the front or rear does not produce so much effect as a side wind ; and that he must be guided entirely by experience in making an allowance for wind, as no fixed rules can be laid down for his guidance, further than that if the wind, for instance, is blowing from the left he must aim a little to the left of the mark ; if he finds that the bullet still strikes to the right, he must make a little more allowance in firing the next shot.

Sun.

19. When the sun is shining from the left it lightens up the left side of the fore-sight and the right side of the notch of the back-sight ; the firer, in taking aim, is apt to be guided by those brilliant spots instead of the real centres of the notches, and the result is that the axis is directed to the right ; when, on the other hand, the sun is on the right, he will be liable to aim too much to the left.

Defect of sighting.

20. It may sometimes occur that the rifle is not accurately sighted as to elevation, and consequently may carry a little high or low. As the marks on the flap, denoting the height to which the sliding bar should be raised for different distances, are not always exactly in the right place, (the sights being all made in the manufactory to one pattern,) the soldier should be cautioned to pay attention to each shot, having only a few to fire at a distance ; if it goes low, he must raise his sliding bar a little ; if high, the reverse. The sights are not always

in the proper line. If the back-sight is to the right the rifle will carry to the right; if the fore-sight is to the right, it will carry to the left, and vice versâ; this defect should be remedied by aiming in the contrary direction.

21. If an object fired at be moving, whether it be a man walking or a horse at a gallop, it is obvious that it will pass over a certain distance between the moment of discharge and the time that the bullet reaches it; if the body is moving across from left to right, or from right to left, the soldier must aim a little to the front of it; but how much, must depend, first, on the pace it is going, and secondly, on the distance of the object from the firer and the consequent time the bullet will have to travel. The firer must exercise his own judgment in this matter, as no fixed rule can be laid down for his guidance.

Firing at a moving object.

22. If, in loading, the soldier observes that there is not sufficient powder in the cartridge, or should he accidentally spill a portion of it, he must in firing, aim a little high, otherwise the bullet will fall short of the mark.

Inexact measurement of charge.

23. The necessity of always loading standing, when practicable, and of keeping the barrel perfectly upright, should also be inculcated; for when the barrel is inclined, as in loading on the knee, a great portion of the powder sticks in the fouling on the sides of the barrel, and may cause difficulty in loading.

Pouring in the charge.

24. Whenever the lubricating material round the bullet appears to be melted away, or otherwise removed from the cartridge, the soldier is to be instructed that the sides of the bullet should be wetted in the mouth before putting it into the barrel, as the saliva will serve the purpose of grease for the time being.

Lubricating mixture.

25. The rifle may not have a proper bore; if the soldier finds that his cartridge invariably rams down hard, or is very loose in the barrel, he should not fail to report the circumstance immediately.

Imperfect bore.

SEVENTH LESSON.

26. In this lesson the instructor will explain the advantages of a rifled barrel, by pointing out the causes of uncertain fire in the smooth-bore musket and the means by which they have been obviated.

Causes of uncertain fire in the smooth-bore musket.

27. The chief cause of error in the smooth-bore musket was the excess of windage, which is the difference of size between the bore and the bullet. *Here the instructor will draw a section of the barrel, with the round bullet resting on its lower surface in contact with the powder (vide fig. 6. plate 2.)* A great amount of windage was necessary with the old musket, otherwise, when the barrel became foul after firing, the bullet would not enter. When the musket is held up to the "present" the ball will rest on the lower surface of the barrel, consequently the whole of the windage will be above. During the explosion of the powder a portion of the gas will escape by the windage, and force the ball down on the lower surface of the barrel at the same time that it forces it out of it. The ball, bounding from the lower surface of the barrel, will strike against the top, and so continue to rebound from the upper surface to the lower, or from side to side, in a zigzag direction, instead of passing evenly along the barrel, the result of which is that on whatever side the ball last strikes the barrel it will receive a reactionary force tending to send it in an opposite direction, and so divert it from the course it is intended to pursue.

Excess of windage.

Error due to excess of windage rectified by the expanding ball.

28. The bullet now used with the rifle musket, besides being elongated, and therefore better shaped for passing through the air, is so contrived that in its passage out of the barrel all windage is done away with. This bullet enters the barrel easily, but on the explosion of the powder taking place, the pressure of the air in front, and the force of the explosion behind, have the effect of dilating or enlarging its cylindrical portion so as to make it fit the barrel tightly, precisely in the same way that compressing an orange or an india-rubber ball at its opposite ends would widen its other diameter, and so enlarge its lateral circumference. Thus windage is completely done away with, and the whole force of

the explosion acts upon the bullet in the same direction, giving it increased velocity, and obviating those irregularities which have been described as taking place during the passage of the spherical ball through the smooth-bore barrel.

29. But, besides the irregularities above described, which tend to give the spherical ball a wrong direction, there is also another cause calculated to influence it during its flight: Suppose a ball (*fig* 8.) to be passing through the air in the direction of the arrow A, and that by some accident it had a hollow or unevenness on one side, at B, this will receive the pressure of the atmosphere in the direction of the arrow C, which would tend to divert the ball from its true course and send it in the direction of the arrow D. The elongated bullet would be equally, if not more, affected by any such unevenness of its surface if fired out of a smooth barrel; the error, however, arising from this cause is corrected by the barrel being rifled in the manner described in the next section.

Error due to a defective figure.

EIGHTH LESSON.

30. A barrel that has any number of grooves cut down the inside of it, is said to be rifled. These grooves are cut in a spiral direction with a view to cause the bullet to turn or spin on its longer axis. Here cause the men to look through the rifle barrel, to see the grooves and the degree of turn or twist given to them, and direct their attention to the fact that, when the grooves make half a turn in the length of the barrel, the groove which is at the one side at the breech turns, and appears on the opposite side at the muzzle, passing over like a female screw from left to right.

The rifled barrel.

31. When the bullet is expanded by the explosion of the powder, &c. as before described, it is not only made to fit the barrel tightly, but its cylindrical surface is moulded into the grooves in such a way that during its passage through the barrel it is constrained to turn with the grooves, and thus it receives a spinning movement around its longer axis, which continues during the

Error due to defective figure rectified by the rifled barrel.

remainder of its flight ; this not only prevents a rotation in any other direction, but is in itself a rotation calculated to ensure accuracy of flight, by constantly presenting any imperfection of surface to the air in opposite directions. The object, therefore, of spiral grooves is to correct by the means which have been detailed, the flight of the bullet, and to cause it to spin or rotate in a direction coincident with its flight, thus keeping its point foremost.

Describing the motions of a rifle bullet through the air.

32. The best way of describing the motions of a rifle projectile in its passage through the air is by means of a bent arrow, *fig. 9*. Suppose the arrow was shot from the point A, with a view to hit the mark C, and no spinning motion was given to it, if the bent point of the arrow were placed upwards, the greater pressure of the air being on its convex side would tend to carry it in the direction D ; but if it had previously received a spinning motion, then, by the time it reached E the point would have turned in an opposite direction and have proceeded downwards, descending as far beneath the true "trajectory" in so doing, as it had at first risen above it ; thus the arrow would continue throughout its course to move in a spiral direction round the true "trajectory," constantly correcting the error due to its imperfect figure, and ultimately it would strike much nearer the mark than if it had received no spinning motion.

Imperfection in the form of bullet.

33. After describing the bad effect that any unevenness on the surface of the bullet would produce, point out to the men, that nothing is more likely to cause this than hard ramming in loading, which, besides indenting the bullet, injures the powder, and should consequently be avoided as much as possible.

Necessity of keeping the rifle and ammunition in order.

34. In the foregoing part of the theoretical instruction, the soldier will have formed some idea of the laws which regulate the flight of the bullet in the air, and he will also have been rendered thoroughly conversant with the arrangement of the sights and of the barrel, and complete master of all the rules which have been laid down for his guidance at the moment of firing. The instructor must now impress upon his mind that the accuracy of shooting is not dependent on these causes

alone, but also on the attention that he pays to the preservation of his rifle and ammunition, as inculcated in his instruction in cleaning arms.

35. The commanding officer is to assemble the officers of the battalion at least once in each half year, and to cause the non-commissioned officers and men to be assembled occasionally by squads or companies, at other times than when the annual course is proceeding, when the officer-instructor, having previously explained the theoretical principles detailed in the foregoing lessons, will be at liberty to advance deeper into the subject, developing, to a degree proportionate to the rank and intelligence of his auditors, the whole history of small arms, from the first invention of gunpowder, and the successive steps by which the rifle-musket has attained its present efficiency; in order that the officers and soldiers, by acquiring a thorough knowledge of the subject theoretically, may take greater interest in the practical part of this most important branch of their duty.

36. In the event of there being no room set apart as a "Musketry lecture room," school rooms, not used for the purpose of Divine service, may be appropriated for the purpose of theoretical instruction in rifle practice for two hours a day; provided the time required for the instruction of children and adults, the primary object of such buildings,—viz., from four to six hours daily—is not encroached upon; a clear quarter of an hour being allowed to intervene between the periods of the occupation of the room for school and rifle instruction. The precise time of the day at which the school room should be allotted respectively for scholastic and musketry purposes, is to be fixed by the commanding officers of battalions; who, together with the general officers of divisions and stations, are strictly responsible that the requirements of the troops *under each head of service* are in all cases duly provided for.

3. AIMING DRILL.

1. In this exercise the recruit is to be instructed how to aim, and to adjust the back-sight of his rifle ; and his progress is to be tested by making him aim at the different distances by means of a rest. If traversing rests are not available, a tripod formed of three stakes tied or looped near the top, or piled arms with bayonets fixed (sheathed), supporting a bag of sand about $4\frac{1}{2}$ feet from the ground, will answer the purpose.

2. The squads, which should never exceed ten men each, are to be formed in single rank at each rest, every man having his own rifle ; and the instructor is first to explain the principles of aligning the sights of the rifle on an object, confining the attention of the recruit to the following simple rules :—

- 1st. That the sights should not incline to the right or left.
- 2d. That the line of sight should be taken along the centre of the notch of the back-sight and the top of the fore-sight, which should cover the middle of the mark aimed at.
- 3d. That the eye should be fixed steadfastly on the mark aimed at, and not on the barrel or foresight, which latter will be easily brought into the alignment if the eye is fixed as directed. Particular attention is to be paid to this rule, for beginners are apt to fix the eye on the fore-sight instead of the mark, in which case the latter can never be distinctly seen, and the difficulty of aiming is greatly increased.
- 4th. That in aiming the left eye should be closed. If a recruit is not able to do this at the outset, he will soon succeed by tying a handkerchief over the left eye.

3. The instructor will also explain the difference between fine, full, and half-sight in aiming, as follows, viz. :—

- 1st. *Fine-sight* is when the line of sight is taken along

Fig. 1



the bottom of the notch of the back-sight, the fine point of the fore-sight being only seen in the alignment ; as *A, fig. 1.*

2d. *Full-sight* is when the point of the fore-sight is taken in alignment with the shoulder of the notch of the back-sight; as *B*,

Fig. 2



of the notch of the back-sight; as *B*,
fig. 2.

3d. *Half-sight* is when the point of the fore-sight is aligned midway between the shoulder and bottom of back-sight; as *C*,

Fig. 3



and bottom of back-sight; as *C*,
fig. 3.

4. As the two methods of aiming first named cause a slight difference in the angle of elevation, it is necessary the recruit should understand that the ordinary rules for aiming are intended to apply to the half-sight, and that as some of the rifles may carry high and others low, allowance must be made for such defects, by aiming with fine-sight when the rifle carries high, and with full-sight when it carries low.

5. After the foregoing rules have been clearly explained, the instructor is to cause each man to align his rifle with the sight for 100 yards, on a mark that distance from him; having done so, he will leave his rifle on the rest and step aside, in order that the instructor may take his place to see if the aim is correctly laid; and should he discover any error, he is to call another recruit, who is to look along the sights, and to state the defects; on which the instructor will offer some remark as to what the consequence would be if actually firing at an object, and cause the recruit to aim again. This method has the effect of sharpening the attention of the recruit, and of inducing him to avoid, when aiming himself, the errors he may have witnessed in his comrade's aim.

6. The foregoing proceeding is to be carried out, at every distance of 50 yards, from 100 to 900 yards, (according to the sighting of the rifle) at "bulls-eyes" of the following dimensions, viz.; from 100 to 300 yards, eight inches in diameter; from 350 to 900 yards, two feet in diameter; in order that the recruit may acquire a knowledge of his sights,

and become perfect in aiming ; for it must be borne in mind that the difficulty of aligning the fore-sight accurately increases as the distance increases. The instructor is thus enabled to ascertain the progress the recruit is making, and if he has any defect in his eyesight.

7. This exercise is well calculated to strengthen the vision ; and it cannot be too strongly impressed on the mind of the soldier that, to shoot well at long ranges, he must train, and strengthen his eye by looking at small objects at distances beyond those at which he will have to fire in practice.

4. POSITION DRILL.

1. In this exercise the recruit, as well as the drilled soldier, is to be put through all the motions of firing standing and kneeling, with the same accuracy as if actually firing ball, close attention being paid to each movement.

2. With the view of habituating him to the correct position, and to the natural connexion that should exist between the hand and the eye,—the eye being the regulator of every action of the hand,—constant practice is required to enable them so to act together that the hand will readily raise the rifle to any object the eye is fixed upon, and that the forefinger may act upon the trigger at the proper moment.

3. The "*position drill*" differs from the *platoon exercise*; the latter comprehending the positions of loading and firing in the ranks, in which the soldier is to be instructed by the adjutant and serjeant-major; the former, the essentials of good independent firing, to which the instructor of musketry is exclusively to confine his attention.

4. This exercise is always to be executed in marching order, and with fixed bayonets,* when standing, and unfixed bayonets when kneeling. The squads, which are not to consist of more than ten men to each instructor, are to be formed in single rank, the men at one pace apart, and placed at any convenient distance from the target or mark.

5. Before commencing this important drill, of which there cannot be too much if well executed, the instructor is to point out to each man an object to aim at; for this purpose small "bulls-eyes" are to be marked on the barrack walls, the painting of which is to be done by the troops, who will be furnished, on requisition to the

* In corps armed with short rifles, it is only the *recruits* who go through the position drill with fixed swords.

barrack-master, with the necessary tools and prepared black and white paint. The bulls-eyes are to be white, of the size of a crown piece, and having a black centre of the size of a shilling. They are to be placed *two* feet and *four* feet from the ground, one above the other, and at lateral distances of *three* feet.

FIRST PRACTICE.

Words of Command.

Explanations.

Position Drill, First Practice, as a front or rear rank standing or kneeling, as may be ordered -

A caution.

At *yards,*
Ready.

As per regulation from shouldered arms.

The instructor is to be most particular in this and the following practices, to see that every man holds his rifle firmly with the left hand, at the place where it is to be held when at the "present," but in every case behind the lower band, and not nearer the nipple than the projection in front of the lock-plate; that the fingers of the right hand are behind the trigger guard; that the body is erect, the left side being perpendicular, with the left breast over the left foot; that the shoulders are at the half face, and the feet at right angles; and that the eyes are fixed on the mark, or object in front, with the head in the same direction, and erect. When kneeling, the right foot and knee are to be in the proper position, and the body is to rest firmly on the right heel.

Present. Without moving the body, head, eye, or hand in the slightest degree, throw the rifle smartly to the front of the right shoulder to the full extent of the left arm (the arms moving close in to the body), raising the rifle in so doing, with the muzzle a little low and keeping the sight upright; the top part of the heel plate to be in a line with the top part of the shoulder, the muzzle to be a few inches below the mark the eyes are fixed upon, the forefinger to be extended along the outside of the trigger guard, and both elbows to be inclined downwards.

Two. Bring the rifle smartly into the hollow of right shoulder, pressing it thereto with the left hand, and at the same instant bring the left elbow well under the rifle and the right elbow nearly square with the right shoulder and to the front of it, so as to form a bed for the butt, but without moving the body, head, hand, or eye, still keeping the forefinger outside the trigger guard. When kneeling, place the left elbow over the left knee.

Three. Bring the rifle down smartly to the capping position close in to the body, without altering the position of the body, head, hand, or eye, placing the forefinger at the same time behind the trigger guard.

<i>Ease springs.</i>	}	As per regulation.
<i>Order arms.</i>		
<i>Stand at ease.</i>		

When the men of the squad are established in the positions enjoined by the foregoing instructions, they are to be exercised in the first practice, judging their own

time, after coming to the "ready;" the commands being,—

*First practice,
judging your own
time.* }

A caution.

Present.

Proceed with the motions consecutively, observing a pause of slow time between each.

Steady.

At this command the squad, when it returns to the capping position, will cease the practice.

*Ease springs.
Order arms.
Stand at ease.* }

As per regulation.

N.B.—The foregoing practice is intended to accustom the recruit to handle his rifle expertly, and by strengthening the left arm, to give him a perfect command of it with his left hand; also to habituate him to raise it to the shoulder horizontally without moving his body. It is therefore to be continued until these points are accomplished. No defect, however trivial, is to be overlooked, and the instructor should explain the errors and their bad effects, when the squad is standing at ease.

SECOND PRACTICE.

Position Drill, Second Practice, as a front or rear rank standing or kneeling, as may be ordered. }

A caution.

*At yards,
Ready.*

As per regulation from shouldered arms.

The instructor is to direct his attention to the points alluded to under this head in the first practice.

Present.

Combine 1st and 2d motions of the first practice (and as per platoon exercise), and look at the object through the bottom of the notch of the back-sight.

Two. Place the forefinger round the trigger like a hook, that part of it between the 1st and 2d joints resting flat on the trigger, and restrain the breathing.

Three. Raise the muzzle until the top of the fore-sight is brought in a line with the object through the bottom of the notch of the back-sight.

Four. Press the trigger, without the least jerk or motion of the hand, eye, or arm, until the hammer falls upon the snap-cap, which is always to be on the nipple, *still keeping the eye steadfastly fixed upon the object.*

Five. Bring the rifle to the capping position and "full cock;" repeating the practice several times.

*Ease springs.
Order arms.
Stand at ease.*

} As per regulation.

THIRD PRACTICE.

*Position Drill, Third
Practice, as a front
or rear rank stand-
ing* }
Load.

A caution.

Proceed with the loading (standing in all cases) in quick time, as per regulation, from shouldered, advanced, or ordered arms. After returning the ramrod, count a pause of the slow time, and, taking the time from the right, come to the capping position together, and proceed at once to cap. The instructor to see that every man is in a proper position before he proceeds any further.

At } *yards.*
*Ready, or as a
front or rear rank
kneeling, at
yards. Ready.*

After getting into position, adjust the sight, full cock the rifle, and fix the eye on an object in front, as per regulation. When kneeling, the instructor is to see that the position of each man is correct.

*Independent
practice from both
flanks.* }

A caution.

Commence.

Each man will come to the "present" in the order of file firing for the first time, and perform the motions regularly (without hurry) in his own time; afterwards, independently of his right or left hand man;—immediately the butt touches the shoulder the forefinger is to be placed round the trigger, and, after snapping in each instance, come to the position of "prepare to load" from the capping position, and proceed to load standing.

Cease firing.

After each man has completed his loading, he will "order arms."

The squad having been well grounded in the foregoing practices standing, will afterwards be similarly exercised on the knee.

N.B.—The most minute attention is to be given to each man's position when at "the present," more especially to see that the sights are upright,—that the rifle is pressed firmly to the shoulder with the left hand,—and that the trigger is pressed steadily without the slightest motion of the hand or arm until the hammer falls upon the nipple; as also that the eye is fixed upon the mark during and after snapping. The instructor is to scrutinize each man of his squad in succession, all the time it is practising, pointing out and correcting the errors he may discover in any man's position; and he is also occasionally to place himself in front of each man, and cause him to aim at his eye, with a view to ascertain that he obtains the alignment quickly and readily, and that his aim is not lost by pulling the trigger. Whenever the instructor discovers a fault in a man's position when the rifle is at the shoulder, he is to cause him to come to the "present" three or four times in succession, without loading, to correct the defect noticed.

5. SNAPPING CAPS.

1. This exercise is to accustom the recruit to the report caused by the explosion of the percussion cap, and to give him steadiness. The instructor is to watch the recruit minutely in this practice, which must be continued until the tendency to wink is overcome, and he becomes so perfectly indifferent to the report, that the composure of the countenance is not in the slightest degree disturbed.

5 caps to be fired singly,	} Standing.
2 by files, and	
3 in volleys.	
5 singly, and	} Kneeling.
5 in volleys.	

2. Should the instructor meet with difficulty in teaching any of the recruits to aim correctly, or should he find any of them snapping in a manner to destroy their aim, he is to cause them to snap caps, aiming at the wick of a lighted candle, placed about a yard from the muzzle of the rifle; when, if the aim is perfectly directed, the candle will be blown out.

6. BLANK FIRING.

1. Before the recruit is permitted to fire with ball, he is, after the preceding exercise, to be practised to fire blank cartridge, with a view to further the object for which he is exercised to snap caps, and to accustom him to the recoil which takes place on the explosion of the powder.

5 rounds to be fired singly	} Standing.
2 „ by files, and	
3 „ in volleys.	
5 „ singly, and	} Kneeling.
5 „ in volleys.	

2. The position of the body, arms, and hands, and the manner of pressing the trigger, as also the position

of the head when taking aim, are to be duly watched both in this and the former exercise, in order to discover and correct those errors which are fatal to good shooting, and which cannot be so successfully corrected when firing ball.

3. The instructor is here to explain to the recruit that the explosion of the powder, at the same time that it sends the bullet out of the barrel, communicates a force backwards, which is called "recoil," and that by pressing the butt firmly into the hollow of the shoulder, he may control the consequent "kick" of the rifle, which will otherwise take place. This is of great importance, as the more confidently a man stands up to his rifle, the less likelihood there is of random shooting, and the better will be the results of platoon firing.

4. With a view to make the recruit understand the reason for his being taught "to press the centre of the heel plate to the hollow of the shoulder," and not the "toe" of the butt, when at the "present," the instructor is to remind him, that the bullet quits the barrel in the direction of the "line of fire" (as already explained), and, that the recoil takes place in the opposite direction; and explain that the stock is bent downwards, in order to enable the firer to look along the barrel, and consequently, that the point of resistance, viz., the shoulder of the firer, is beneath the line of recoil; the result of which is, that the explosion of the charge has a tendency to throw the muzzle up, and thereby send the bullet high. The soldier has only to take his rifle, and imagine the "line of fire" or "axis of the piece" produced backwards, when he will observe that it will pass far above the heel of the butt.

7. JUDGING DISTANCE DRILL.

1. In this drill the recruit is to be instructed to take note of the size and appearance of men and objects at different distances.

2. In firing for instruction, the target is generally placed at known and measured distances, but before an enemy the distance is unknown ; it is therefore necessary, in order to apply the rules laid down for shooting, that he should know how to judge quickly, and with tolerable accuracy, the distance which separates him from the object he is firing at, so as to regulate the elevation of the rifle.

3. In order to teach the recruit, as well as the drilled soldier, to estimate distances by the eye, he is to be instructed in the following manner before he is allowed to engage in the judging distance *practices*.

4. Men are to be placed as "points for observation" at the distances of 50, 100, 150, 200, 250, and 300 yards, facing the squad or party, standing at ease, looking to their front, and remaining in an erect position, unless ordered to the contrary.

5. These "fixed points" are to be thrown out in the following manner. The instructor is first to select a tree, house, or any other conspicuous object in the distance, and align two men thereon, twenty yards apart and facing each other, and place ten paces to the right or left (as he may think proper) of the nearest man and in the same line, another man as a point for covering ; after which he is to march a squad of six men, formed two deep, on the alignment chosen, and halt it at 50 yards distance, when No. 3 of the rear rank will face about and cover the two men already aligned ; the man 20 yards off will now be removed. The squad is then to make a half face to the right or left, and march in an oblique direction for a distance of $50\frac{1}{2}$ yards or 61 paces, when it is again to halt, and No. 3. of the front rank face about three quarters, either to the right or left, and cover diagonally, moving to the right or left by the side step, as may be required, preserving his shoulders square to his present front. The squad is to continue so to march in an oblique direction, leaving a man at every distance of 61 paces or $50\frac{1}{2}$ yards, who is to act as before detailed,

until every man is placed. When the "points of observation" are aligned diagonally, the covering point is no longer required. *Vide plate 4.*

6. It will be observed that each man in the above formation is placed at a greater distance from the line first marched upon, in proportion as he is distant from the point where the squad commences its instruction, in order that each soldier may serve, in turn, as a distance point for the men of the squad to make observations on.

7. An officer or non-commissioned officer, as assistant or squad instructor, (if there is a sufficient number,) is to be placed opposite the several "points for observation," and the squad or party formed to the left of the squad instructor placed opposite the point 50 yards off.

8. The instructor should direct the men to notice the position of the sun, the state of the atmosphere, and the background at the time they are making their observations, in order that they may be accustomed to the changes made in the appearance of the several objects under their altered condition.

9. The squad instructor opposite the 50 yards point is then to proceed to indicate to each man in succession the different parts of the figure, arms, accoutrements, and dress, which can still be distinctly perceived on the soldier before him, as also those parts that can no longer be perceived clearly at 50 yards; after which he will question him on the observations made on what he can see, and enjoin him to try and impress upon his mind the appearance of a man at this distance, and pass him on to the next station.

10. The squad instructor opposite the 100 yards point is to proceed in the same manner, and cause each man to make observations of the same kind as he did on the man at 50 yards, and desire him to make comparisons between the two men placed at this and the former distance, and then pass him on to the next squad instructor, and so continue until every man has made his observations on all the points.

11. The squad instructor opposite the point 300 yards off should endeavour, above all, to point out to each man, according to the observations he may make, the differences that exist between the men placed at the six

distances comprised in the sub-divisions of 300 yards, as also what parts of the figure, dress, and equipments are distinctly perceptible, those that are seen less clearly, and those that are no longer visible, at each distance.

12. The instructor must not expect that the answers and observations should be the same from every man, since the eyesight is not the same in all.

13. The men who are placed as "points" are to be relieved by others who have made their observations at the several distances, for which purpose the squad is to consist of at least double the number of men employed as "points."

14. Should the party be very large, points may be thrown out right and left; and in order to afford a view of the men at the several distances in two aspects, points may be thrown out in the opposite directions. *Vide plate 4.*

15. When all the men of the squad, or party, have made their observations on the different points, they will proceed to estimate the distances of men within the limits of 300 yards in the following manner:— After having marched the squad on to a different ground from that on which the appreciation of distances has before taken place, the instructor is to place a man at any unknown distance, unobserved if possible, by the squad, formed opposite said man, who is to stand at ease. He is then to order the men to observe the soldier facing them, and to estimate the distance, cautioning them at the same time to recollect the appearance of the men just seen at known distances.

16. The squad instructors having formed three paces to the front of the right of their squads, are to call each man separately to the front and question him, noting down in a register his answer, which must be given in a low tone of voice, in order that those following him may not be influenced by his opinion. No talking is to be allowed while the answers are being given. Every man will adjust the sight of his rifle for the distance he judged.

17. When all the men have given their answers, which are to be read over to them by the squad instructor, in order to ascertain if they are correctly recorded, the squad will proceed to pace the distance, by marching

towards the man judged from ; the instructor placing himself in the centre, and counting the number of paces aloud, the men only counting them to themselves.

18. The men should be taught to record the distance as follows :—At every 120 paces they will double up one finger of the right hand, to mark 100 yards ; commencing again 1, 2, 3, and so on. When at the end of any division of 100 yards the remaining distance appears to be within 100 yards, they will commence to count by *tens of yards*, by doubling up a finger at every 12 paces. The correct distance, which is to be promulgated will, in every instance, however, be ascertained by actual measurement with a cord, chain, or pace-stick, by men following immediately in rear of the squad.

19. The recruits, after they have been drilled four different days to 300 yards, in the manner before detailed, are to be exercised for four days more up to 600 yards, first at known distances, in every respect as laid down for exercising to 300 yards, the “points for observation” being two or more men, placed at every 50 yards from 350 to 600 yards inclusive, after first measuring 300 yards on the alignment chosen.

20. When estimating unknown distances beyond 300 yards, the party, with a view to save time and walking, is to be separated into two equal portions, moved in different directions, and when halted, facing each other, with a file thrown out on the flanks a few paces off. After every man has judged the distance which separates the parties, and the answers have been recorded, they are to advance towards each other, counting the paces as before ; each party measuring half the distance, and the two added together will give the correct distance.

21. The instructor, in repeating these exercises, is to take care that they are conducted, as much as possible, in different directions, and under different states of the atmosphere, in order that the soldier may become habituated to the diversity of circumstances in which he may have to act.

22. It is to be observed that every judging distance drill is to consist of making observations on men placed at known distances, and of giving three answers on men placed at unknown distances in different situations immediately afterwards.

8. MANUFACTURE OF CARTRIDGES.

1. Every recruit is to be instructed in the method of manufacturing cartridges for his rifle in the following manner :—

2. Having cut the paper according to the size and patterns shown in plate 5, for cartridges for the rifle-musket or carbine,—

1. *Form the powder case.* Roll the stiff paper, pattern No. 1, tightly about $2\frac{1}{2}$ times round the “mandrel,” which is to be laid on the side opposite the acute angle, or AB, with its base coincident with the broader side, or AD; then place the “inner envelope” paper, pattern No. 2, on the top of the stiff paper, with the side opposite the acute angle, or AB, of the former about $\frac{3}{4}$ of an inch from the acute angle, or CD of the latter, and roll said envelope tightly on the stiff paper and mandrel; after which slightly twist the end that overlaps about $\frac{7}{8}$ of an inch, or AC, and fold it into the hollow at the base of the mandrel, making use of the point of the “former,” to close the folds and adapt the paper to the cavity, which is to receive the point of the bullet, being careful to secure the bottom of powder-case, so that no powder can escape therefrom.
2. *Unite the bullet with the powder-case.* Put the point of the bullet well into the cavity of the powder-case, and place both so fixed on the side of “outer envelope” paper, pattern No. 3, opposite the acute angle, or AB, and about $\frac{1}{2}$ an inch from the broader side, or AC; roll the “outer envelope” tightly round bullet and powder-case, with the mandrel still in it, then twist or fold the paper that overlaps, and tie it as close as possible to the base of the bullet; after which place the base of the cartridge on the table, and withdraw the mandrel with care, by pressing the powder-case with one hand while raising the mandrel with the

D

other, so as not to separate the powder-case from the bullet, both of which must be kept as close as possible to prevent any play at the juncture, which would soon render the cartridge unserviceable.

3. *Charge the powder-case.*—Place a funnel into the mouth of the powder-case and pour $2\frac{1}{2}$ drams of powder (represented by sand) or a less quantity, according to the arm used, into it; remove the funnel, being careful that none of the powder or sand escapes between the inner and outer envelopes; and secure the charge by squeezing the tops of the two envelopes close to the stiff paper of powder-case, and giving them a slight twist with a pressure inwards, laying the ends on the side of the cartridge.

The slits in the outer envelope are made to facilitate its detachment from the bullet when fired.

4. *Lubricate the cartridge.*—The cartridge being completed, dip the base up to the shoulder of the bullet, in a mixture composed of 5 parts of bees-wax and 1 part of tallow.

3. The articles necessary for the instruction of soldiers in the manufacture of cartridges, as per Schedule, page 97, will be supplied to battalions on application to the barrack-master.

4. Twelve men per company, at least, are to be practised annually in making cartridges.

PART IV.

Practice.

TARGET PRACTICE.

1. Target practice affords proof of the attention bestowed on the preliminary drills ; the more carefully the latter have been performed, the better will be the result of the ball firing.

2. The targets are to be six feet in height and two in breadth, constructed of iron of sufficient thickness to be rifle-bullet proof, having squares of six inches cut on the face to facilitate the marking off of the hits in the diagrams provided for the purpose, as also circular rings of eight inches and two feet in the centre, to serve as guides in painting the "bull's-eye" and "centre." *Vide plate 6.*

3. The targets are to be coloured *white* with a mixture of whiting, water, and size; and the "bull's-eye," and circle describing the "centre," *black* with lamp-black, water, and size. Pots of these mixtures should be kept in rear of the targets.

4. The targets are to be rested on a stone or wooden platform, twenty feet by nine inches, which is to be laid at right angles to the line of pegs denoting the several distances, and when in use they are to be as perpendicular as possible.

5. The greatest care is to be taken when lowering or raising the targets, to prevent their being damaged; they are on no account to be allowed to fall by removing the props, but are, in every instance, to be carefully let down on the ground.

6. When the targets are laid on the ground they should be placed at an incline to prevent the rain lodging on them; and, with a view to preserve them from the effects of exposure, they should be painted periodically.

7. When a target becomes unserviceable, a board of officers, of which the barrack-master is to be a member, is to be assembled to inquire into the cause of damage; and should it appear that the target has been broken through carelessness and rough usage, more especially when lowering it, the cost will be charged against the troops. The proceedings of the board are to be sent to the barrack-master.

8. In all cases, where the nature of the ground admits of it, a trench is to be dug for the "markers," of the dimensions given in plate 7, about fifteen yards to the front, and to one side of the targets, and in such a position that the markers may easily see the face of the target from it; the earth excavated should be thrown up on the side of the firing; there should also be two epaulments, so as to screen the men, not only from the shots themselves, but from any stones that may be thrown up by them. The only fitment required for the marker's butt is a seat. About eighty yards in rear of the marker's butt, a smaller butt, capable of holding two men, is to be made on every practice range, for the purpose of signalling ricochets that may hit the target. Should the ground be such as to render it impossible, except at a considerable expense, to erect marker's and ricochet butts, iron mantlets or screens will be supplied on application to the barrack-master.

9. All work in the formation of practice ranges, &c., such as the throwing up of butts for the targets to rest against, and levelling irregularities in the ground, is to be executed by fatigue labour of the troops, whenever the soil is such that it can be turned and moved with the ordinary entrenching tools furnished by the engineer department.

10. The butts, ranges, &c. are also to be maintained and kept in repair by fatigue parties; and regiments and battalions on quitting a station are to leave the same in a complete condition;—all damages arising from carelessness and neglect are chargeable against the troops.

11. Every range is to be carefully and accurately measured by an officer of the engineer department, and the distances defined, at intervals of fifty yards, com-

mencing at 100 yards from the target and continuing to 900 yards, or the extremity of the range, if under that distance.

12. A fatigue party of at least six men (one of whom is to be a pioneer) in charge of a non-commissioned officer, is to be detailed daily for duties on the practice-ground, and placed under the orders of the instructor of musketry for the purpose of fixing and cleaning the targets, assisting to signal shots, and as look-out men to warn persons from crossing the range while firing is going on, &c. &c. as may be required. Watch cloaks or coats will be provided at all stations for the use of the fatigue men employed for the assistance of instructors *during the winter*.

13. The shots that strike the target are to be denoted by flags of different colours raised above the butt. These flags, together with the number of points fixed as the value of the shots, are as follows:—

	Shots.	Flags.	Value in points.
In the practices to 300 yards inclusive.	Outer	- White or yellow	- 1
	Centre	- Dark blue	- 2
	Bull's-eye	- Red and white	- 3
	Ricochet	- Red flag waved in front of the butt	- } R
	Miss	- - -	- 0
In the practices at distances beyond 300 yards.	Outer	- White or yellow	- 1
	Centre	- Dark blue	- 2
	Ricochet	- Red flag waved in front of the butt	- } R
	Miss	- - -	- 0.

14. Ricochets, or shots which strike the ground before hitting the target, are to be signalled by waving the red flag twice, to and fro, in front of the target, and are to be counted as misses in individual firing, but noted in the register by the letter R. The men in the ricochet butt are to keep a sharp look out, and to call out to the non-commissioned officer in the marker's butt "*ricochet*" when such is the case.

15. The signal for "danger," or "cease firing," is in all cases to be a *red flag*. This will be hoisted when-

ever it is necessary to cease firing to re-colour the targets, or for any other purpose. No man is on any account to leave the marker's butt until the "cease fire" has been sounded, or the danger flag raised at the firing point in answer to the danger signal. The red flag is always to be kept up as long as the markers are out of the butt, or any person is in the line of range. Whenever the "cease fire" is sounded from the firing point, it is to be immediately answered from the marker's butt by raising the danger flag; and in like manner the "commence firing" is to be answered by lowering it.

16. Whenever a shot strikes to the right, the flag denoting its value is to be inclined to the right, and vice versâ. When the shot strikes high, the flag is to be raised as high as possible, and when low, it is only to be raised high enough to be easily visible above the butt.

17. The bullet will be found to make a very distinct mark on striking the face of the target, so that the correct position of each shot is easily seen at a short distance. Whenever a bullet strikes the target, so that the circumference of the mark made by it cuts within the outèr edge of the bull's-eye or centre, such shot is to be counted, in all practices, as hitting the bull's-eye or centre, as the case may be. No shot is to be counted in any practice where the mark of the bullet, part or whole, is not seen on the face of the target.

18. The marker in the butt, as also one of the men in the ricochet butt, is invariably to be a non-commissioned officer of a different company from that engaged in firing; the former is to be responsible for the correct signals being given to the several shots which strike the target, and is also to keep a memorandum of each shot fired, under the head of bull's-eyes, centres, outers, ricochets, and misses. This will facilitate the marking, and ensure each man's shot receiving the correct signal.

19. The recruits, as also the drilled soldiers of the company, are to be marched to the practice ground by squads or sections of not more than twenty men each,

and not in a greater number at a time than one section or squad for each range available ; such detailed arrangement being made as will ensure the relieving squads, or sections, arriving on the practice ground by the time the parties firing have finished their practice, and thus prevent delay. When exercising by classes, if there is a choice of time for practice, the senior class is always to have the advantage.

20. The men's names are to be entered in a register of the form marked C, before the party goes out to the practice ground for individual firing, in the same order as they appear in the "Musketry Drill and Practice Return," and according to which they will stand in the ranks for firing. One register will answer for each section or squad, and suffice to record the performances at two distances.

21. The company instructor, or non-commissioned officer acting in his stead, is to keep the register of practice, and note therein opposite each man's name the value or number of points he has obtained by each shot fired, whether 1, 2, 3, R, or O.

22. All entries are invariably to be made *in ink* on the practice ground ; should any alteration become necessary, a fine line is to be drawn through the figure or letter, and the correction made, the initials of the officer of the company being immediately attached to it (*thus* : 3, 1 : A.L.) to verify the circumstance. Inattention to this regulation, or an erasure (which is prohibited), will invalidate the register.

23. The section or squad is always to load by word of command. When everything is ready to commence, the bugler, who is to be placed on the right of the firing point, is to sound the "commence firing," and as soon as the danger flag is lowered the officer is to order the practice to go on. The right-hand man of the front rank will then take a pace to his front, come to the capping position, and fire ; after which he will come to the shoulder from the capping position, and form three paces to the rear of the point he previously occupied ; the next man of the front rank will then move to the

front and fire (not, however, until the preceding man's shot, if a hit, has been signalled), when he will fall to the rear, and form on the left of his right-hand man. In like manner every man of the front rank will fire in succession; after which the rear rank will commence from the right, and after firing they will form in rear of the front rank; so that by the time the whole section has fired one round, it will have re-formed three paces in rear of its original position, to which it is to be moved, by the non-commissioned officer of the section, to load.

24. The instructor is to be cautious not to check a man for any error he may observe at the time he is firing, as it would have the effect of distracting his attention from the object he is aiming at; but is to watch attentively the position of each soldier, and correct him, if necessary, after he has fired.

25. Whenever the hits on the target become too numerous to distinguish quite easily the new ones as they strike, the target is to be coloured afresh; before which, however, the captain, or officer of the section, company instructor, and "marker" are carefully to compare the register with the target to see that they agree, and the officer is to satisfy himself that the target is properly cleaned, and the old shots all obliterated, before the practice is resumed.

26. At the conclusion of the practice at each distance the bugler is to sound the "cease fire" and "advance," when the captain, or officer of the section, and the company instructor are to proceed to the target, and with the "marker," compare the register therewith, adding or deducting from the "total points" any difference that may be discovered, and afterwards dividing the result by the number of men who have fired, carrying the quotient to two places of decimals to determine the average or merit of the shooting of the practice.

27. The register is then to be signed by the "marker" and company instructor, or non-commissioned officer who kept the register in his stead, and countersigned by the captain or officer of the company; after which the

"duplicate total points," when initialed by the officer-instructor or his assistant, to verify its agreement with the column of "total points," is to be torn off and handed to the battalion sergeant instructor on the practice ground. The officer-instructor is responsible that this order is regularly attended to in all cases.

28. In the practice of recruits the registers are to be signed by the battalion or squad instructor and "marker," and countersigned by the officer-instructor, or his assistant, one or other of whom is invariably to superintend the firing. The "duplicate total points," in this case, are not to be torn off.

29. If there are any men, whose names are in the register, that have not practised, the cause of absence is to be briefly stated in the columns "total points" and "duplicate total points."

30. The company instructor, immediately on his return to barracks after every practice, is to enter the total points obtained by each man, per register, opposite his name in the proper column of the company "Musketry Drill and Practice Return." The total points obtained by recruits to be entered in like manner by the battalion sergeant instructor.

31. The section or squad is never to fire at more than two distances in one day.

32. If a man fires one or more distances in a "period," and is unable to finish it with his party or company, he is to be considered as having finished such period, and to be classified according to the number of points he may have obtained, which are to be included in the total points of the company, the man being also counted among the number by which the total points are divided to determine the merit of the shooting in the "period" in question.

33. Should a man, after having fired one or more rounds at a distance, be unable to finish the practice on account of sudden illness, he is to be considered as not having fired at the said distance.

34. The officer-instructor is to examine the "Musketry Drill and Practice Return," and compare the entries therein with the "duplicate total points" at the conclusion of every "period," and to satisfy himself that the classification is correct.

35. All persons who desire to watch the practice are to stand to the right of the firing point. They are to be kept clear of the section that is firing; and on no account is any noise, or talking with the men, to be allowed.

36. Every recruit is to expend in his training, and every drilled soldier in his annual course of practice, (except in the cases herein-after specified), 90 rounds of ball ammunition, in the following manner; viz.—

60 in individual firing,
10 by files,
10 in volleys, and
10 in skirmishing order.

37. The number of rounds to be expended at each distance, the distances and number of targets to be fired at by the several classes in individual firing, and the size of the bull's-eye and centre for each class, are as follows:—

	Yards.	-	Rounds.	-		-		
3d class	{	150	-	5	} two	} targets	{ having a bull's-eye	
		200	-	5				} eight inches in dia-
		250	-	5				} meter, and a black
		300	-	5				} circle two feet in
							} diameter.	
2d class	{	400	-	5	} four	} targets	{ having a black centre	
		500	-	5				} two feet in dia-
		550	-	5				} meter.
		600	-	5				} diameter.
1st class	{	650	-	5	} six	} targets	{ having a black centre	
		700	-	5				} three feet in dia-
		800	-	5				} meter.
		900	-	5				} diameter.

38. Target practice is invariably to take place in marching order; and all practices up to 300 yards

are to be performed standing ; beyond that distance, kneeling.

39. The practice of *individual firing* for *recruits* comprises "preliminary ball practice" and "first" and "second periods;" and for the *drilled soldier*, as his annual course, "first," "second," and "third periods," in each of which twenty rounds are to be fired.

40. Young officers and recruits are on no account to be permitted to fire ball until they have been exercised in all the subjects embraced under the head of "preliminary drill;" and the drilled soldiers of the battalion are not to be allowed to fire their annual allowance of practice ammunition until they have been first similarly exercised.

41. Should a young officer, recruit, or drilled soldier become a casual when proceeding with the preliminary drills, he is to be considered as not having been exercised therein.

1. FIRING SINGLY.

42. In this practice the young officer and recruit are to fire five rounds at 100, 150, 200, and 250 yards at two targets, standing, with fixed bayonets; one round at each distance to be fired off a stand or rest. Preliminary
Ball Prac-
tice.

43. The result of each shot is to be recorded in a register, and the total points obtained at each distance, per recruit, are to be entered opposite his name in the recruits' "Musketry Drill and Practice Return," *form A*.

44. In this branch of individual firing every man, *recruit or otherwise*, is to practice at every fifty yards from 150 to 300 yards inclusive. First
Period.

45. When the party or company has performed this "period," the points obtained individually at the several distances are to be added together, and the sum entered in the column "total points" of the period in the "Musketry Drill and Practice Return," to show the

value of the performances of each man, from which column a classification is to be made;—all those men who have obtained fifteen points and upwards passing into the second class, and those who have not obtained this number being formed into a third class.

46. The names of men who have passed into the second class, and the number of points they have each obtained, are to be read over by the captain, or officer commanding, to the company on parade, before commencing the “second period.”

Second
Period.

47. In the second period of individual firing the party or company is to practice in two classes, viz., second and third.

48. In the practice of the second class the centre is to be painted black, and the points allowed to reckon for a bull's-eye are to be discontinued.

49. At the conclusion of the practices in this period, the points obtained by each man at the several distances are to be added together, and the sum entered in the columns “total points,” from which a second classification is to be made, when all men of the second class who have obtained twelve points and upwards are to pass into the first class; and all men of the third class who have obtained fifteen points and upwards into the second class. Those men who have not obtained the number of points specified will remain in the second and third classes respectively.

50. In the case of troops armed with rifles or carbines sighted only to three hundred yards, the second class, in this period, is to repeat the practice of the third class, firing however at a single target, six feet by two feet, at every distance, and those men who obtain fourteen points and upwards will pass into the first class.

Third
Period.

51. In the third period of individual firing the party or company is to practice in three classes, viz., first, second and third.

52. In the practice of the first class the centre is to be increased to three feet in diameter, and coloured black; all shots hitting it being counted two.

53. At the conclusion of the practices in this period the points obtained by each man are to be added together, and the sum entered in the columns "total points," from which a final classification is to be made.

54. The company instructor is then to make out a final classification in which the men are to be entered in order as to merit, having affixed to their names the number of points obtained in each period of individual firing, as per Form L, which list is to be posted up in a conspicuous part of the company's barrack rooms.

55. All men who have obtained seven points and upwards, in the first class, are to be exempted from aiming drill at distances under six hundred yards in the succeeding annual course of musketry instruction.

2. FILE FIRING.

56. In this practice ten rounds of ball ammunition are to be expended by the recruit, and by the drilled soldiers of every company annually, at three hundred yards, in the order of file firing detailed in the "Infantry Manual."

57. The mark for this practice, and also for volley firing, is to consist of eight targets placed close together, each having a separate bull's-eye and centre of the dimensions detailed for the third class.

58. The bullets striking the target in this practice will have the same value in points as in the third class.

59. The strength of the squad or section firing in this and the following exercise is not on any account to exceed ten files.

3. VOLLEY FIRING.

60. In this practice ten rounds of ball ammunition are to be expended by the recruit as also by the drilled

soldiers of every company annually, at four hundred yards, both ranks kneeling. The hits are to be counted as in the second class, bull's-eyes being reckoned only as centres; and in this, and the skirmishing practice, care is to be taken that the men of the third class, who have not fired beyond three hundred yards, adjust their sights to the proper elevation.

61. This and the following exercise are to be omitted in the training of the recruits of the Royal Artillery, as also in the yearly course of practice, their carbines being only sighted to three hundred yards.

4. SKIRMISHING.

62. Ten rounds of ball ammunition are to be expended by the recruit, and also by the drilled soldiers of every company annually, in skirmishing order, as per "Infantry Manual," advancing and retiring between four hundred and two hundred yards, each man judging his own distance, and arranging his sight accordingly.

63. Eight targets, each having its bull's-eye and centre of the dimensions detailed for the third class, are to be placed with intervals of six paces between them. Every file is to have its own target, and the hits are to be counted as in volley firing; bull's-eyes being only valued as centres.

64. In firing advancing, the men may fire kneeling,—rising to load,—which may be executed at the halt, running up to the file leaders after returning their ramrods, and capping after giving the word "ready."

65. A sentry (one of the fatigue party) is to be placed on each flank of the extended targets, about forty or fifty yards off, to prevent any person approaching within said distance.

66. At the conclusion of the firing of each squad or section in this practice, as well as by files and in volleys, the company instructor, and a non-commissioned officer of another company, are to go up to the targets and mark off the hits in a diagram (*Form E.*) to which they

are to affix their names as soon as it is completed, in proof of its correctness, which is also to be confirmed by the signature of the captain or officer of the company, who is to witness both the practice and the examination of the targets.

67. The diagrams of the performances of each squad or section are, as soon as completed, to be handed over to the officer-instructor, or battalion sergeant instructor, the company instructor taking a memorandum of the points obtained by each section, to be inserted in the columns set apart for the purpose in the "Musketry Drill and Practice Return."

68. All men who remain in the third class at the final classification are to be exercised, after the yearly course of practice is concluded, through a course of aiming and position drills, snapping-caps, and blank firing, in every respect as recruits; and afterwards to fire through the "first period." Those men who obtain fifteen points are not to be further exercised; those, however, who do not, are to be again put through the course of drill detailed in this paragraph. The performances of such men to be entered in a recruit's practice return, set apart for the purpose, and headed "3d class shots at final classification."

69. The average points obtained in the "skirmishing practice," added to the averages obtained in the "first period," and in the practices of "file and volley firing" will denote the "*merit*" of the shooting of the squad, company, or battalion.

70. No man, recruit, or otherwise, is to be exercised in the practices by files, volleys, or skirmishing, who has not completed a period of individual firing; nor is a man to be allowed to practise in the "third period" until he has been exercised in the "first and second periods" respectively.

71. The following table details the practices that are to be performed when the ranges available do not extend to nine hundred yards.

When the ranges only extend to	Practices to be performed.						Total number of rounds to be fired.	REMARKS.
	1st Period.	2d Period.	3d Period.	File firing.	Volley firing.	Skirmishing.		
300 yards	1	1	-	1	1	1	70	The second class to repeat the practice of the third class; firing at a single target. Volleys to be fired at 300 yards standing, and skirmishing between 300 and 200 yards.
400 "	1	1	-	1	1	1	70	The second class to fire ten rounds at 350 and ten at 400 yards,—one distance a day.
450 "	1	1	-	1	1	1	70	The second class to fire five rounds at 350, five at 400, and ten at 450 yards; but not more than ten rounds a day.
500 "	1	1	-	1	1	1	70	The second class to fire five rounds at 400, five at 450, and ten at 500 yards; but not more than ten rounds a day.
550 "	1	1	*	1	1	1	*70	The second class to fire five rounds at 400, five at 500, and ten at 550 yards; but not more than ten rounds a day. * Should a range of the full extent become available the third period to be executed in this instance only, and 90 rounds expended.
600, and under 900 yards.	1	1	1	1	1	1	90	The first-class men are not to fire at any distance until an opportunity of a range to 900 yards offers.

72. Troops armed with rifles or carbines sighted only to six hundred yards are to omit the third period, and expend ninety rounds in the training of recruits, but only seventy in the yearly course of practice.

73. When the practice range does not extend to three hundred yards no ammunition is to be demanded for the annual course of *practice*; the course of *musketry drill* is, however, to be executed.

5. JUDGING DISTANCE PRACTICE.

1. The following course of judging distance practice is to be gone through by each recruit, and by every drilled soldier of the battalion annually, with a view to test the proficiency of the several companies of the battalion in this important and essential exercise.

2. In the absence of an instrument, a cord or chain of the length required for the practice, divided into parts of five yards each, with the distance of each division from the end so marked as to be distinguished only on close inspection, is to be stretched in any direction that may be found convenient, care being taken to vary the ground as much as possible for the several practices.

3. One or more men, when judging to 300 yards only, but beyond that distance a section of not less than eight or ten file, are to be stationed at the end, or any other part of the chain that may be directed to serve as objects to estimate from.

4. The answers of each man are to be recorded in a register, Form D, which is to be invariably kept by a serjeant or corporal, under the superintendence of an officer. The strictest silence is to be observed throughout the practice; the men are to be prevented from consulting together in judging their distance; and the answers are to be given in a low tone of voice, so as not to influence in any way the judgment of each other.

5. The commander is to select a division of five yards at which to halt the party or class, and caution the men to complete a division of five yards in giving their answers.

6. When judging distance with two or more classes, and when the ground is sufficiently level to lay down a cord or chain, much time may be saved,—the practice made more effective, by precluding the possibility of obtaining a clue to the correct distance,—and a greater number of men exercised at a time,—by the following simple arrangement :—

E

7. The instructor is to send forward a party of one of the classes (say the 3d class), with a non-commissioned officer-instructor, as "points" from which the said class, as well as the others, are to judge their distance; the men of the party sent forward as points at the same time estimating their distance from the class to which they belong. The non-commissioned officer-instructor in charge of the "points" and the commander of each class are to be furnished, by the officer-instructor on the practice ground, with a memorandum specifying the distance at which the points are to stand from the end of the chain for each judgment, in order that they may each determine the correct distance, which is ascertained by deducting the distance at which the "points" are stationed from that at which the class is standing from the end of the chain. Care must be taken that the several classes are so situated as not to prevent those in rear of them from seeing the "points."

8. When the ground is so irregular or hilly as to prevent a chain or cord being laid down, the correct distance, in the absence of an instrument, is to be ascertained by triangulation.

9. The commander having marched his party or class to the place that he intends to judge from, is to halt it about ten paces to the right of the chain or cord facing the object or points, and arrange the non-commissioned officers who are to keep the registers three paces in front of the right of the several sections, to prevent the answers, when given, being heard by those in rear. These non-commissioned officers, after recording their own answers, will call each man of their respective sections to the front to give his answer in yards as to the distance that separates him from the "points," which is to be immediately noted down in the register.

10. When the answers of every man of the section or class have been taken down, they are to be read over to the men, so that any error as regards entry which may be discovered, may at once be corrected. After this has been done, the commander is to state aloud to the men the correct distance, which is to be noted at once at the

top of the column, and the number of points obtained by each man registered at the side of his answer, and made known to him.

11. In each practice the men are to be exercised at six different stations. When the party or class has exercised at one station, it is to be moved to another, so as to prevent any clue to the actual distance being gained.

12. At the conclusion of a practice, the number of points obtained by each man is to be read over to the class or party, and inserted in the column "total points," which, being added together, and the sum divided by the number of men exercising, will determine the merit of the practice; the register is then to be signed by the non-commissioned officer who kept it, and countersigned by the officer who superintended the exercise, to verify its correctness. The register being thus completed, which is always to be done on the practice ground, the officer-instructor is to initial the "duplicate total points," and tear this column from the register, and keep it to check the entries made in the "Musketry Drill and Practice Return" from the registers, the "total points" of which are to be transcribed into the return mentioned, by the company-instructor immediately on his return to barracks after each practice.

13. The register, in the case of recruits, is to be signed by the squad instructor, and countersigned by the officer-instructor or his assistant, the column "duplicate points" of which is not to be torn off.

14. No erasure is to be made in the registers of judging distance practice; and all corrections necessary are to be initialed by the officer superintending the practice. A neglect of this order will invalidate the register.

15. The "judging distance," like the "target practice," is to be divided into three periods, each consisting of two practices or twelve answers.

16. The 3d class is to practice as far as 300 yards, the 2d class to 600 yards, and the 1st class as far as 900 yards.

17. The value of the men's answers, by points, in the several classes, are as follows :—

3d class :	} Within 5 yards - 3 points.
Or when judging distance between 100 and 300 yards -	
2d class :	} Within 20 yards - 2 points.
Or when judging distance between 300 and 600 yards -	
1st class :	} Within 30 yards - 2 points.
Or when judging distance between 600 and 900 yards -	

18. When the first or second class is brought to judge within the distance of an inferior class (which, in order to test the proficiency of the men, ought to be occasionally done,) the answers are to be valued as detailed for the inferior class in the preceding paragraph.

First
Period.

19. In this period every man, recruit or otherwise, is to be exercised in judging distance between 100 and 300 yards.

20. At the conclusion of the period, the points obtained are to be added together, and the sum entered in the column "total points" of the "Musketry Drill and Practice Return," from which a classification is to be made, when all those men who have obtained fourteen points and upwards will pass into the second class, and those men who have not obtained this number will be formed into a third class.

Second
Period.

21. In this period the recruits, or company, are to practise in two classes, viz., second and third.

22. At the conclusion of the period, the points obtained therein being added together, and the sum entered opposite each man's name in the column "total

points" of the prescribed return, a second classification is to be made, when all those men of the second class who, having exercised as such, have obtained fourteen points and upwards, will pass into the first class; and all those men of the third class who have obtained fourteen points and upwards will pass into the second class. Those who have not obtained the number of points herein specified will remain in the second and third classes respectively.

23. In the third period the recruits, or company, are to be exercised in three classes, viz., first, second, and third. Third
Period.

24. At the conclusion of this period the points obtained are to be added, and the sum entered opposite each man's name, in the columns "total points" of the respective classes, from which a final classification is to be made. The man who, in the practice of the first class, obtains the greatest number of points will be the "best judge of distance" of the battalion.

25. Should two or more men obtain the same number of points in the first class, then the best judge of distance will be that man who obtained the greatest number of points in the three periods of practice.

26. In addition to the three periods of judging distance practice before detailed, which are to be executed concurrently with the corresponding periods of target practice, the men are to be taken into the country by companies, under their respective captains, at least once a month after the annual course of musketry instruction has terminated, to be exercised in judging distance, with a view to develop their powers in this essential particular. They will also be exercised in this practice on marching-out days, for which purpose the halts may be prolonged if necessary. The names of the best judges of distance are to be taken down, and delivered to the adjutant on the return to the barracks, and such of them as may deserve it may be permitted to be absent from afternoon parade, or receive some other trifling indulgence. When those extra practices take place (which are to be recorded in a register) the same is to be notified in the monthly progress return.

1. The following table specifies the number of drills, lessons, and practices to be gone through by every non-commissioned officer and soldier of the battalion annually, —by every young officer before he is dismissed from drill ; and by every recruit before he is allowed to join in the practices of his company, with the exceptions before detailed.

PRELIMINARY DRILLS.	Young Officers and Recruits.		Drilled Soldiers' Annual Course.		REMARKS.
	Number of Lessons, Drills, and Practices.	Number of Rounds.	Number of Lessons, Drills, and Practices.	Number of Rounds.	
Cleaning arms	3	—	4	—	
Theoretical principles	3	—	4	—	
Aiming drills	6	—	4	—	
Position drills	16	—	3	—	
Snapping caps	2	20 caps	—	—	
Blank firing	2	20 rounds	—	—	
Judging distance drill	3	—	4	—	
Manufacture of cartridges	2	—	—	—	
<i>Practices.</i>					
Preliminary ball-firing	4	20	—	—	Corps armed with rifles sighted only to 600 yards omit the 3d Period of target practice: and the Royal Artillery are not to execute the volley and skirmishing practices.
1st Period	4	20	4	20	
2d Period	4	20	4	20	
3d Period	—	—	4	20	
File-firing	1	10	1	10	
Volley-firing	1	10	1	10	
Skirmishing	1	10	1	10	
Judging	2	—	2	—	
Distance Practice. { 1st Period	2	—	2	—	
{ 2d Period	2	—	2	—	
{ 3d Period	2	—	2	—	
TOTAL	—	90	—	90	

2. The above table only specifies the minimum number of drills through which the recruit is to be exercised before he is allowed to fire ball ammunition. Should any recruit, after having been exercised through the number stated, be found unfit to proceed to practice,

he is to be put back to another squad to commence again.

3. Men who conclude practice as recruits *after* the target practice of their company has commenced, are not to fire in the prescribed annual course until the ensuing year.

6. FIRING WITHOUT USING THE BACK-SIGHT.

1. After the annual course of target practice has been gone through, the first and second class men (if there is any spare ammunition), should be trained to fire at 300 and 400 yards with the flap of back-sight down, judging for themselves the proper elevation of their rifles.

PART V.

PRIZES FOR GOOD SHOOTING.

1. With a view to stimulate individual exertion, and to reward the proficiency of soldiers in the use and management of the rifle-musket, a system of prizes has been adopted, and the following rules for the award thereof are to be strictly observed:—

2. The regimental prizes for good shooting are to be three; viz.:

1st Prize.—To the best shot of a battalion consisting of not less than four companies (all of which must have been exercised through the yearly course of musketry drill and practice) a badge of *cross muskets and crown* worked in gold, and entitling the wearer to extra pay at the rate of *two-pence* per day. This prize not issued to depôt battalions.

2d Prize.—To the best shot of each company, in which forty rank and file at least (not including recruits in a musketry sense) have practised through the yearly course of instruction, a badge of *cross muskets* worked in gold, and carrying with it extra pay, at the rate of *one penny* per day.

3d Prize.—To certain of the first-class shots to be styled "*marksmen*," at the rate of ten per cent. of the number of men exercised through the yearly course, but not to exceed 100 per battalion, a badge of *cross muskets* worked in worsted, with *one penny* per day additional pay to each wearer. The badges referred to under the head of 1st, 2d, and 3d prize are to be worn on the *left arm* immediately above the slashed flap of the sleeve.

3. The "best shot of the battalion," and "the best shot of the company," are to be allowed, in addition to the reward as such, the extra pay as "marksman," when eligible for the position; but no soldier is entitled to a reward for shooting who is not in the first class in the final classification of the judging distance practice. It is to be clearly understood that the maximum reward for the best shot of the battalion is three-pence per diem.

4. In order to ensure, on the one hand, a high rate of efficiency, and, on the other, to guard against the public being called upon to pay for a lower standard of merit than is necessary, as well as to secure the utmost impartiality in the distribution of the rewards, the practice registers and returns are to be the data upon which the proficiency of the men's shooting is to be estimated.

5. Accordingly, the best shot of the battalion will be that soldier who, in the practice of the first class, firing between 600 and 900 yards, obtains the greatest number of points over seven.

6. The best shot of the company will be that soldier who, in the practice of the first class of his company, firing between 600 and 900 yards, obtains the greatest number of points over seven.

7. To qualify a soldier for the position of marksman, and the rewards attaching thereto, he must, in the yearly course of practice, have obtained at least seven points in the first class, firing between 600 and 900 yards,—must have displayed the requisite skill in judging distances, being at least in the first class at the final classification of the judging distance practice,—and possess a competent knowledge of the laws affecting the flight of the bullet, and the rules to be attended to in maintaining the efficiency of the rifle under all circumstances and conditions; which is to be ascertained by examination, conducted, in the presence of the commanding officer, by an Inspector of Musketry, when his services can be obtained, and if not, by the officer-instructor of the battalion.

8. If more than 100 men in the battalion (including the best battalion shot, and the best shot of each company, if eligible) come under the conditions specified in paragraph 7, then those men who have obtained the greatest number of points are to be first selected for the reward and distinction. Should two or more men have obtained the same number of points (not less than seven) in the first class, and be otherwise eligible for the reward, reference is to be made to their respective performances in the first and second periods of individual shooting, and those selected who have obtained the greatest number of points therein. Should there still be a tie, reference is then to be made to their performances in the judging distance practice, and the preference given to those who are the best judges of distances.

9. All men who may undergo a course of instruction at the School of Musketry, Hythe, are, if qualified, eligible for the rewards for good shooting in their respective battalions, provided they have not been exercised in the yearly course of practice before joining the said establishment, which is to be duly notified. Practice returns of men instructed at Hythe will be sent to the officers commanding battalions.

10. If the number of paid marksmen in a battalion be reduced by casualties during the year, the number may be completed from those men eligible for the reward (if there are any), under the conditions prescribed in paragraph six.

11. As a further inducement to all ranks to vie with each other in this essential part of the soldier's instruction, and in order that every man may feel that though he may not himself succeed in obtaining a prize, he can assist in obtaining one for his company, a *Supplementary Prize of cross muskets and crown worked in gold, but unaccompanied by any pecuniary allowance*, will be worn on the *right arm* by the serjeants of the best shooting company of every battalion. When a serjeant who is the holder of this supplementary prize leaves his company, he is to resign it.

12. Should a serjeant of the best shooting company be either "the best shot of the battalion," the "best

shot of his company," or a "marksman," he is to wear the distinguishing badge of that position in addition to the badge sanctioned in the foregoing paragraph.

13. With a view to ensure strict impartiality, the several companies of a battalion are to be kept as much intact as possible; they are, therefore, to be equalized before the annual course of drill and practice commences, and no transfers be made, except such as are indispensable, until the period for commencing the practice in the following year.

14. Although *the best shooting company* can be established, and the company badge be issued accordingly, wherever a range of 300 yards can be obtained, no rewards are to be granted to *battalions* unless they have been practised in the three periods of individual firing; and under no circumstances is the limit of *one* best shot per battalion, one for each company, and one hundred "marksmen," *including the two former*, ever to be exceeded. Further, both the badges and their attendant allowance will invariably have to be surrendered by all who fail, in the next annual course, to fulfil the conditions and maintain the superiority by which these rewards were earned; and should the shooting of any battalion fall below the average, the prizes will be wholly withdrawn, and the issue of the additional pay suspended.

15. Should it be ascertained, either through the reports received from the Inspector of Musketry, or through any other source, that any undue advantage has been taken by a battalion in the execution of the several exercises in target and judging distance practices,—such, for instance, as counting ricochets—placing marks to aim at, to denote the allowance to be made for wind, &c., whereby the attainment of practical skill by the soldier would be defeated—firing at distances shorter than those enjoined by the regulations—or at a greater number of targets than are prescribed for the several distances,—departing in any way from the rules clearly defined for conducting the platoon and skirmishing practices,—or otherwise deviating from the spirit of the regulations published to ensure a uniformity of procedure in this

particular throughout the army, and by which alone a fair comparative merit can be arrived at,—such battalion will not be eligible for the rewards granted by these regulations.

16. As it is of the utmost importance, in order to ensure a faithful record of the soldier's performances, and to protect the public from paying for merit undeserved, that the registers and company practice returns should be correctly kept, and be always forthcoming until authority has been received to dispose of them—if any irregularity should come under the notice of the Inspector of Musketry, whereby the integrity of the returns may be questioned,—such as erasures, corrections not initialed by an officer, absence of the signature either of the marker, or company-instructor, or serjeant acting in his stead, or loss of documents,—the battalion will be subject to forfeit the rewards herein prescribed.

17. Each portion of a regiment is allowed its proper proportion of company prizes, and the hundred prize-holding "marksmen" are to be distributed between service and depôt companies in the following manner ; viz. :

10 service companies	- 90	} 100
2 depôt companies	- 10	

18. The extra pay is to be drawn, and the distinguishing badges are to be worn, for one year, commencing on the first day of the quarter succeeding that in which the annual report of practice is required to be made up, or as soon as the necessary authority is received.

19. When a battalion is on active service in the field, or at a station where no range is available, the rewards are to be continued to those men in possession of them, until an opportunity occurs of their being challenged by another yearly course of instruction. A certificate from the commanding officer, verified by the general officer under whose command the battalion is serving, to the effect that under the circumstances above detailed (for under no other is the allowance to be continued beyond one year), the battalion has been prevented

undergoing the prescribed annual course of rifle instruction for the year 18 , is to be forwarded to the Inspector-General of Musketry, for transmission to the Adjutant-General of the Forces, for the information of the General Commanding-in-Chief.

20. Recommendations for prizes are to be transmitted in triplicate according to the prescribed form with the annual musketry practice return sent to the Inspector-General of Musketry, by whom, after due examination, they will be forwarded, with his recommendation, to the Adjutant-General to the Forces. When a notification of the General Commanding-in-Chief's approval is received the prizes are to be presented on parade, and the names of the prize-holders are to be published in regimental orders, and inserted in the "Final Classification Returns" (Form L.) kept in the companies' barrack-rooms.

21. In the event of a soldier who is in possession of the prize either as the "best shot of the battalion," or the "best shot of the company," becoming non-effective, the said prize is not to be awarded to another soldier.

22. The additional pay attaching to the prizes for good shooting is not to be drawn for a soldier when in confinement; but forfeitures under Clauses 28 and 29 of the Mutiny Act are not to deprive a man of the advantages attending a prize which he may gain in a subsequent year's course of instruction.

23. Badges of distinction, which are to be worked on cloth the colour of the facings of the battalion, will be supplied on application in the usual annual requisition for clothing. They are not to be issued from the quartermaster's store until authority is received for the award of the prizes.

PART VI.

Returns.

1. The following forms are to be made use of in the different branches of instruction; and will be issued on application to the War Department, except Forms L. and M. which are to be prepared in manuscript.

FOR RECRUITS.

FORM A.

 Musketry
 Drill and
 Practice
 Return of
 Recruits.

2. This return is to contain the names of young officers and recruits, in order as they join.

3. In depôt battalions there will be a separate return for the recruits of each depôt forming the battalion.

4. When men cease to belong to the battalion, a fine line is to be ruled through their names and performances, and the date and cause, whether by death, desertion, discharge, or joining service companies, &c., specified in the remarks.

5. This return is to be kept by the officer-instructor, assisted by the battalion serjeant instructor, and is to show the day and month when the several preliminary drills were executed—thus, $\frac{31}{10}$ —and to contain a correct entry of the points obtained in the several practices by every recruit during the year.

6. It is to be closed to the 31st March in each year, showing the distribution of the recruits, and the “figure of merit,” and explaining in the remarks, in a clear and concise manner, the cause which prevented the training of any man named therein who appears not to have been exercised, and immediately afterwards transmitted to the Inspector-General of Musketry; the names of the men who have not completed the course on that date being transcribed into a new return.

COMPANY RETURNS.

7. This return is to contain the name of every man borne on the strength of the company, without reference to where he is, or how employed, except the regimental staff serjeants, and drummers,—and recruits in a musketry sense. They are to be entered by squads or sections, the non-commissioned officers being inserted at the head of their respective squads or sections.

FORM B.
Musketry
Drill and
Practice
Return of
the Com-
pany.

8. It is to show the day and month on which each man performed his preliminary drills—thus, $\frac{3^0}{4}$ —and to contain a correct entry of the points obtained at the several distances.

9. When men cease to be borne on the strength of the company, a fine line is to be ruled through their names and performances, and the date and cause specified opposite each in the remarks.

10. As the individual performances in file, volley, and skirmishing practices cannot be represented otherwise than by a “mean average of points,” this mean, multiplied by the number of non-effective men who have performed these exercises, will determine the number of points to be deducted on their account in the recapitulation table, and leave unaltered the figure of merit of the practice in question.

11. The totals at the foot of the return, and in the recapitulation table, are not to be inserted in ink until the annual practice returns are to be prepared, when the information there given will apply to the effectives on that date.

12. The captain of the company is held responsible that this return is correctly kept, as it is the record showing the progress and efficiency of every soldier of the company, and is liable to be called for at any moment.

13. When men are transferred from one company to another,—which, except in the removal of men between the depôt and service companies, is to be avoided as

much as possible while the annual course is proceeding, —a memorandum, signed by the captain of the company, detailing their performances, is to accompany them, to be inserted in the practice return of their new company at the foot of the squad to which posted. This rule is to apply in the case of all men (not musketry recruits) joining a company after the course has commenced.

14. In closing this, and the Recruits' Practice Return it is to be observed that, when a man does not practice, the several columns opposite his name are to be dotted through ; when he has practised and has not obtained any points, a cypher is to be entered. The class in which a man is not to practise in the second and third periods is invariably to be ruled through.

FORM C.
—
Target
Practice
Register.

15. One of these forms to be used to record the result of each shot fired by every man of a squad or section, at two distances.

16. The men's names are to be entered successively as they appear in the "Musketry Drill and Practice Return," having prefixed to each the succession number of said return, and the same rule is to be observed in the register for casuals.

17. This register is to bear the signatures of the "marker," the company instructor, or non-commissioned officer acting in his stead, and the captain or officer of the company, who is to certify that the practices were conducted according to regulation, and that the points recorded were obtained by the men opposite whose names they appear.

18. The cause of absence of those men of the squad who have not practised is to be specified as briefly as possible in the columns "Total Points" and "Duplicate Total Points," and when the practice of the day is performed, the register is to be endorsed and filed.

19. The captain of the company is responsible for the safe keeping of the practice registers, which are not to be made away with without reference to the Inspector-General of Musketry.

20. The columns "duplicate total points" attached to this register are to be initialed by the officer-instructor, or his assistant, on the practice-ground, to verify their correctness, and afterwards to be torn off and retained in his possession, to check the entries made in the "Musketry Drill and Practice Return," until examined by an Inspector of Musketry.

21. One of these forms is to be used for each section or squad for a "period" of practice.

FORM D.
Register of
Judging
Distance
Practice.

22. This return is to be signed by the non-commissioned officers who keep it, and by the captain or officer of the company attending the exercise, who is to certify that he was present during the practice, and that the answers recorded were those given by the men.

23. The instructions respecting names, causes of absence, safe keeping, &c. &c. laid down for the target practice register will apply to this form also.

24. The foregoing documents are to be sent to the officer-instructor whenever required, and are to be produced with the following diagrams for the examination of the Inspector of Musketry at his periodical visits. Any carelessness or irregularity observed in them is to be brought to the notice of the commanding officer.

25. This diagram is to record the results of the performances of squads or sections in the file, volley, and skirmishing practices. The names of men exercising are to be entered on the back of each form, except in the skirmishing practice, when they are to be entered at the foot of the target of diagram recording their respective performances.

FORM E.
Diagrams
for platoon
and skir-
mishing
practices.

26. The diagrams are, at the conclusion of the practice of each section, and when completed, to be signed by the company instructor, a non-commissioned officer of another company, and by the captain or officer of the company, who is to certify that he was present at the practice and saw the hits taken off on to the diagrams; which are to be handed over to the officer-

F

instructor or battalion serjeant instructor on the practice ground (the company instructor first making a memorandum of the number of men firing, and points obtained by them, for entry in the "Musketry Drill and Practice Return"), to be retained until the annual musketry practice returns are rendered, when instructions will be given for their disposal.

FORM L.
in manu-
script.
Final Classi-
fication.

27. This return is to contain the name of every man of the company under five different headings; viz., Fired in the 1st class:—Passed into the 1st class, 3d period:—Remaining in the 2d class, 3d period:—Passed into the 2d class, 3d period:—Remaining in the 3d class, 3d period; entered in order as to merit at the conclusion of 3d period, and to show the "total points" obtained by each man in the several "periods" of individual firing. It is to be prepared in manuscript by the company instructor, signed by the captain of company, and hung up in a conspicuous part of the company's barrack rooms.

BATTALION RETURNS.

FORM F.
Monthly
Progress
Return.

28. This return is to be prepared by the officer-instructor, assisted by the serjeant instructor, and, after being signed by the commanding officer and himself, is to be transmitted in duplicate to the Inspector-General of Musketry, through the Inspector of Musketry, on or before the fourth day of every month. The duplicate will be returned to the officer commanding the battalion, with the remarks of the Inspector-General of Musketry, to be retained and inserted in the return book of the battalion for future guidance and reference. The progress return is merely a recapitulation of the recruits' and companies' "Musketry Drill and Practice Returns," and is to be made out strictly in accordance with the following rules:—

1st. *Strength, &c.*—Under this head are to be shown the effectives of each company,—that is, every man of the company, whether present or absent, on the last day of the month, minus regimental staff-serjeants, drummers, and recruits in a musketry sense, as hereafter explained.

2d. *Number of Recruits in the Battalion.*—Under this head is to be shown the number of men effective on the last day of the month who, on the date when their company commenced the annual course, had not concluded the prescribed drills and practices, as also all men who have joined the battalion, as recruits, after that date ; such men, however, being considered recruits only with reference to their musketry training. When a battalion commences its first course of instruction, the recruits, in a musketry sense, are all effective men, who, on the date when the instruction of the company to which they belong commenced, had not joined the battalion one month, and all such as may join after that date.

3d. *Number under Instruction.*—Three lines are circumflexed for each company, and four for recruits. Here is to be shown the number of the effective men of the companies, and recruits who have been under instruction since the annual course commenced (whether instructed with the battalion or elsewhere), specifying, opposite, the practices in which exercised. When a company or squad of recruits, &c. has not concluded the “preliminary drills,” “period,” or “practice,” in which it is exercising on the last day of the month, the words “in progress” are to be inserted under said exercise, opposite the company or squad, to intimate the practice in which it is engaged, showing on the uppermost line, in all cases, those furthest advanced in their training. When two or more men of a company, or squad of recruits, have exercised in the same practice at different times, the mean average points obtained by the whole of the company, or recruits, in such practice (and not the separate average of an individual, section, or squad) are to be shown in the proper column.

4th. *Absentees.*—In the first column are to be shown the number of men in hospital and in prison,—the pioneers, lads incapable of bearing arms, and trained bandmen, (not to exceed the authorized number,) as well as all on detachment, command, or otherwise absent from head-quarters, by companies, and recruits on the last day of each month, whether exercised or not ; and in the adjoining column the number of such men as have not been under instruction during the progress of the yearly course. The totals of columns absentees

by companies, and recruits, and the total of the table in explanation of said columns, are to agree. The stations of companies detached are to be specified in the column of remarks.

5th. "*Number in each class.*"—In this table is to be shown the classification of the effective men of the companies, and recruits who have concluded any of the periods of practice. The number of men classified should agree with the number shown in the body of the return to have been exercised in the "periods" to which such classification refers; if they do not, the cause of the discrepancy is to be explained in as brief a manner as possible in the column of remarks of the table.

6th. "*Remarks.*"—When men proceed from the *depôt* to the service companies, or *vice versa*, or are transferred from one battalion to another, or become non-effective, their number, and the extent to which exercised in the current year's course of instruction, are to be briefly stated in this column, in which are also to be inserted such observations as may be deemed necessary to elucidate any of the statements contained in the body of the return.

7th. "*Diary of Progress.*"—In this column is to be stated the company or squad employed each day at drill, and practice, and the cause of suspension of the instruction when such is the case.

8th. "*Names of Battalion and Company Non-commissioned Officer-Instructors.*"—When a serjeant is appointed to the office of company instructor, the cause of absence of the colour-serjeant or company serjeant-major, is to be specified; and when a serjeant, who does not belong to the corps of instructors of musketry, is acting as battalion non-commissioned officer-instructor, it is to be stated whether he has been trained at Hythe or not.

29. When the annual Musket Practice Return has been rendered, the number instructed in the annual course, and their performances, may be omitted in subsequent progress returns, which are then only to record the strength, and absentees of the several companies, and the number of casuals and third class shots (with their performances) who have been exercised since the

annual course terminated. The information respecting recruits is to continue to be furnished without alteration until their practice returns are closed for the year.

30. This return is to be prepared in duplicate by the officer-instructor, assisted by the battalion serjeant instructor, from the company's "Musketry Drill and Practice Returns," and is to refer only to those men who are effective on the date it is made out. Besides showing the numbers exercised in the several periods, &c. of target and judging distance practices, and detailing the merit of the performances therein, it is to contain the names of all men who have obtained seven points and upwards, firing in the first class, specifying the number of points obtained in each "period" of target and judging distance practice, and the causes which may render any soldier named therein ineligible for the reward as "marksman,"—as also a nominal roll of the non-exercised men, with the reasons which prevented their instruction. In the cases of men returned as recruiting, in hospital, prison, &c., the period of their absence (from _____ to _____) is to be specified. One copy of this return is to be given to the general officer making the half-yearly inspection, which is to accompany his confidential report, and the other is to be transmitted, through the Inspector of Musketry, where there is one, to the Inspector-General of Musketry, as soon as the inspection is made, or in the case of battalions abroad, on the 1st of April, together with a separate nominal return of "marksmen" in triplicate (as per Form H.), merely specifying the company, regimental number, rank, and name of each man, and leaving a space for remarks.

FORM G.
Musketry
Practice
Return.

FORM H.
Return of
men eligible
for prizes.

31. The annual practice return transmitted to the Inspector-General of Musketry is to be accompanied with a certificate from the Inspector of Musketry, or in his absence from the commanding officer, to the effect that the registers have been carefully compared with the practice returns, and that the entries in the latter agree with those in the former, when instructions will be given for the disposal of the registers.

32. When men leave a depôt battalion to join the service companies, or vice versa, a return of this form

FORM M.
in manu-
script.
—
Practice
Return of

Men leaving is to be prepared by the officer-instructor, and signed by the commanding officer, showing the performances of each man in the current year's course of drill and practice; and transmitted to the commanding officer, in order that the men named therein may receive credit in the practice return of their new company, for the "points" they have severally obtained, and their instruction may be resumed, if not completed.

FORM J.

Inspector of Musketry's monthly Return and Report for Home Stations.

33. To be transmitted to the Inspector-General of Musketry on or before the tenth of each month, accompanied with the battalion "Progress returns" in duplicate.

FORM K.

Inspector of Musketry's monthly Return and Report for Stations abroad.

34. To be transmitted to the Inspector-General of Musketry by the first conveyance after the tenth of each month.

35. The following number of Musketry Forms being considered ample for the rifle training of a battalion annually, commanding officers will be guided accordingly in making requisition for the said forms :

For each battalion, or depôt of a depôt battalion.	}	2 musketry drill and practice returns for recruits. (<i>Form A.</i>)
For a company of 100 men, or for every 100 recruits.		}
	60 target practice registers. (<i>Form C.</i>)	
	50 judging distance practice registers. (<i>Form D.</i>)	
	30 diagrams. (<i>Form E.</i>)	
	36 progress returns. (<i>Form F.</i>)	
For each battalion.	}	4 annual musketry practice returns. (<i>Form G.</i>)
		4 returns of marksmen. (<i>Form H.</i>)

APPENDIX.

1. To establish uniformity in the mode of proceeding with the musketry training, and to ensure the instruction being carried out in the shortest time, the following regulations are to be strictly observed. The annual course of instruction is always to be commenced in the companies at home, and other temperate climates, on the 1st April; and in tropical climates on the 1st October, *or at the beginning of the cold season*; and in order that the same may be got through in the prescribed period, and the annual practice return rendered at the appointed time, general officers are to take care that it is proceeded with regularly by companies, without interruption, until completed.

2. Previously to the commencement of every annual course of instruction of a battalion, the commanding officer is to hand over to the instructor the full non-commissioned officers by one fourth at a time, to be exercised through a course of preliminary drills, and practised to drill one another. While under instruction they are to be struck off all duty. Should it be impossible, on account of the severity of the duties, to strike one fourth of the non-commissioned officers off duty, then one eighth of their number is to be handed over; but in such case arrangements are to be made by the commanding officer to prevent the commencement of the instruction of the *companies* being delayed beyond the date specified in the preceding paragraph.

3. When all the serjeants and corporals have been exercised through the preliminary drills (which can be well effected in four days per squad, *and which is never under any circumstances to be dispensed with,*) they are

to be employed to assist in the instruction of their respective companies, which is to be proceeded with in the following manner:—

4. A company with its officers and non-commissioned officers, is to be struck off all duty and handed over to the officer-instructor, who will first exercise it in the preliminary drills, which can be executed in four days; the men performing the exercises daily, as specified in the subjoined table:—

	Cleaning Arms.		Theoretical Principles.		Aiming Drill.		Position Drill.		Judging Distance Drill.		
	Time to be occupied.	Lessons to be gone through.	Time to be occupied.	Lessons to be gone through.	Probable Time to be occupied.	Distances to be aimed at.	Time to be occupied.	No. of Drills.	Probable Time to be occupied.	No. of Drill.	
1st Day	A.M.	—	† hour	1st & 2d	1½ hours	yards. 150, 200, 250, 300	† hour	1	—	—	
	P.M.	† hour	—	—	—	—	† hour	1	1½ hours	Known and unknown distances to 800 yards. do.	
2nd Day	A.M.	—	† hour	3d & 4th	—	—	† hour	1	1½ hours		do.
	P.M.	† hour	—	—	1½ hours	350, 400, 450, 500	† hour	1	—		
3rd Day	A.M.	—	† hour	5th & 6th	1½ hours	550, 600, 650, 700	† hour	1	—	Known and unknown distances to 600 yards. do.	
	P.M.	† hour	—	—	—	—	† hour	1	1½ hours		
4th Day	A.M.	—	† hour	7th & 8th	—	—	† hour	1	1½ hours	do.	
	P.M.	† hour	—	—	1½ hours	750, 800, 850, 900	† hour	1	—		
Total number of drills and lessons in each subject		—	4	—	4	—	4	—	8	—	4

REMARKS.—When at Aiming Drill, those men not actually engaged in aiming are to be exercised in "Position Drill," with the sight for the actual distance, so as to employ the time profitably.
Men of Royal Artillery to aim at one distance daily.

* In addition to the time here specified, wet days are to be taken advantage of, to ascertain the proficiency of the men in those subjects.

5. After the company has gone through the preliminary drills, it is to proceed immediately to target and judging distance practice, when, in six days more it is to be exercised in the first, second, and third periods of individual firing (each man expending sixty rounds of ball ammunition), and to the end of the third period of the judging distance practice, and then be returned to duty. Every man is to fire at two distances daily

(except when the range is limited in extent as provided for in paragraph 71, page 63), and to perform one practice in judging distance, alternately morning and evening.

6. Two days after the company proceeds to target practice, &c., another company, with its officers and non-commissioned officers, is to be struck off duty and exercised in the preliminary drills, as per table, so as to be prepared to take the place of the company at practice, by the time it has completed the third period; the instruction is to be continued in like manner by companies until the whole battalion has been similarly exercised, which, in moderate weather, can be accomplished in eleven weeks, as shown in the following statement, by which it will be seen that a company is only kept off duty for eleven days, weather permitting.

—	Preliminary Drills.		Target and Judging Distance Practices to the end of 3d Period.	
	From	To	From	To
A Company	1st April	4th April	6th April	11th April.
"	8th "	11th "	13th "	18th "
"	15th "	18th "	20th "	25th "
"	22nd "	25th "	27th "	2nd May.
"	29th "	2nd May	4th May	9th "
"	6th May	9th "	11th "	16th "
"	13th "	16th "	18th "	23rd "
"	20th "	23rd "	25th "	30th "
"	27th "	30th "	1st June	6th June.
"	3rd June	6th June	8th "	13th "

7. When every company of the battalion has been exercised to the end of the third period of target and judging distance practices, two companies with their officers and non-commissioned officers, are again to be struck off duty to be exercised in the file and volley firing in one day, and the skirmishing practice in another, so that in ten more days the battalion will have concluded.

8. By the foregoing arrangement a battalion of ten companies should complete in an efficient manner its annual course of musketry drill and practice, as prescribed in the "Musketry Regulations," in about twelve

weeks, each man firing ninety rounds of ammunition systematically.*

9. There are few stations at which the foregoing directions cannot be carried into effect. When the men have only three nights in bed, (which, however, can seldom happen if all are included in the duty-states who are not exempted from guard-mounting by the regulations of the service), then only one company is to be struck off duty for instruction. Until every company at head-quarters has been exercised to the end of the third period, no further advance is to be made in the yearly course of instruction.

10. Depôt battalions composed of more than five depôts are to proceed with the annual course of musketry instruction in the same manner as detailed for a battalion, except that two companies are to be engaged at preliminary drills, and two at practice at the same time, instead of one as before detailed.

11. Depôt battalions composed of five or a less number of depôts are, after the non-commissioned officers have been exercised as detailed in paragraph 2, to have two companies engaged at a time at preliminary drills, and afterwards exercised to the end of the third period, when they are to return to duty; two more companies are to replace them, and so continue until all the companies of the battalion are similarly exercised, after which the file and volley firing and skirmishing practices are to be executed, two companies being handed over at a time for that purpose.

12. In depôt battalions, only one company of each depôt is to be under rifle instruction at a time.

13. When companies are detached from head-quarters to stations where there are no ranges, they are to be regularly relieved, for the purpose of instruction, by companies that have previously gone through the year's

* All these calculations have reference to working days, no deduction being made for the suspension of instruction on Wednesdays, as sanctioned for the assembly of corps entire for battalion and brigade drill, &c. It is to be clearly understood, that should the weather on Wednesdays not prove fine, the rifle instruction is not to be suspended on any other day instead.

practice. If a range, however, is available, the officer-instructor is to be sent to instruct the detached companies after those at head-quarters have completed their course of drill and practice. When companies are detached for the express purpose of rifle practice, and expense is incurred in their movement to and fro, they are, under such circumstances (and no other) to complete the course of drill and practice before returning to duty, which can be accomplished in twelve working days.

14. Every company is to be as complete as possible when handed over for musketry instruction, to prevent the delay and inconvenience arising from casuals; and no man is to be withheld or withdrawn from this important branch of his duty. Those men who, from being in hospital, in prison, on command, or for any valid cause of absence, are unable to attend for rifle instruction with their company, are, so soon as available, to be exercised with the company next furnished for instruction. Their performances, however, are to be recorded in separate registers.

15. When every company of the battalion has been exercised to the end of the third period, those men who may not until then become available are, if exceeding five, to be taken through a course of preliminary drills, in a squad by themselves, and practised to the end of the third period. Those men who have exercised to the end of the third period, and are not present with their company when it is performing the file, volley, and skirmishing practices, are, as soon as available, to be exercised with the next company engaged in said practices, —or as a squad by themselves, should every company of the battalion present have concluded.

16. In the case of men who practice in file and volleys in a squad formed of men of different companies, their performances in these exercises (which are to be executed apart from the company to which attached for training) are to be recorded in separate diagrams, and each man credited in the company "Musketry Drill and Practice Return," with the "average points" obtained by the squad in each practice.

17. In skirmishing, although one diagram may do for the squad, the men of different companies are to fire at

separate targets, in order that the "points" they obtain may be secured for the company to which they belong.

18. By attending to the foregoing proceeding the non-exercised men need be very few indeed. The rule is, that every soldier for whom a rifle is issued shall go through a course of musketry instruction *annually*. No excuse will be admitted either as regards servants, batmen, mess-waiters, hospital orderlies, assistants in the orderly-room, paymaster's office, or school, tailors, shoemakers, barrack or regimental police, or any other class of men not in the ranks, most of whom should be periodically changed in the same manner as the dismounted men in the cavalry; and the only exception allowed will be in favour of men who, being unfit for the service, are to be brought forward for discharge at the ensuing inspection.

19. The practice of exempting soldiers who are effective, and doing duty in the ranks, from rifle instruction on pleas which, if really valid, would tend to prove the men unfit for the service, is strictly forbidden, as calculated to lead to malingering, and other evils detrimental to the efficiency of the troops.

20. Bandsmen, when once fully trained to the use of the rifle, may be exempted from exercising in the prescribed annual course of drill and practice.

21. Should, however, any men not be available for rifle instruction until after the annual practice return is rendered, and consequently appear therein as "not exercised," they, as well as the third-class shots, are to be exercised during the winter months; in tropical countries early in the morning, and late in the afternoon during the hot seasons; the former are to be struck off duty for instruction, the latter are not, but are to be exercised whenever they are not on duty. The performances of casuals are to be recorded in a company's practice return set apart for the purpose, and headed "Casuals after the termination of annual course."

22. The regulations detailing the proceedings to be pursued in the training of battalions of infantry will also apply to regiments of cavalry armed with the rifle-carbine, except that the instruction in this case is to be conducted by half troops, two being engaged at drill,

and two at practice, thus leaving half of each troop available to attend on the sick and untrained horses.

23. At the several head-quarter stations of the Royal Artillery, and at places where detachments of 500 men and upwards are quartered, there is to be a duly qualified officer-instructor ; and two half batteries are to be struck off duty at a time to be exercised in the prescribed annual course of rifle instruction, which can be accomplished efficiently in nine working days. The recruits are to be handed over for rifle-carbine training (which will only occupy fifteen working days) as soon as possible after they have learned their elementary marching and carbine drill ; viz., about six weeks after joining the head-quarters of the regiment. The number to be handed over must be regulated according to circumstances ; the party, however, is never to exceed two hundred and forty, and not to be less than twenty, half being employed at drill, and half at practice.

24. At the head-quarters of the Royal Engineers one company is to be engaged at a time at rifle instruction ; and such arrangements are to be made as will ensure all the duty-men being exercised in the yearly course before proceeding on detachment.

25. The annual course of rifle practice of batteries of Royal Artillery and Companies of Royal Engineers detached from their respective head-quarters, is to be conducted by the non-commissioned officers thereof, under the superintendence of the captains and officers of said companies if a qualified instructor is not available, or they are to be relieved in the manner prescribed in paragraph 13. Not less than one fourth, and not more than one half, of the entire strength is to be under instruction at a time.

26. Squads of recruits are to be handed over entirely to the officer-instructor for about three weeks ; in which time, weather permitting, every man with few exceptions, ought to be well grounded in the preliminary drills, and to have completed the course of practice, which they are to do before being returned to the battalion ; they are to be employed daily, as follows :—

PRELIMINARY DRILLS.

Days.	Cleaning Arms. Theoretical Principles.	Aiming Drill.		Position Drills.	Snapping Caps.	Blank Firing.	Judging Distance Drills.		Manufacture of Cartridges.	REMARKS.			
		No.	Distances to be aimed at each Drill.				No.	Description.					
1st	A.M.	1	Explain sights and aim at 100 and 150 yds.	1	-	-	-	-	-	Each lesson on cleaning arms, theoretical principles and manufacture of cartridges, and each position drill, to occupy half an hour.			
	P.M.	1		1	-	-	1	Known and unknown distances to 300 yards - do.					
2d	A.M.	1	200, 250, and 300 yards -	1	-	-	1		-	-	When at aiming drill, those not actually engaged in aiming to be exercised in position drill, with their sights adjusted to the actual distance from the targets.		
	P.M.	1		1	-	-	1	do.					
3d	A.M.	1	350, 400, and 450 yards -	1	-	-	1	-	-	The recruits of Royal Artillery to aim at one distance a day, repeating the same at 300 yards on the sixth day.			
	P.M.	1		1	-	-	1	Known and unknown distances to 300 yards - do.					
4th	A.M.	1	500, 550, and 600 yards -	1	-	-	1		-	-	Cavalry recruits to aim to the extent to which their carbines are sighted, so regulating the distances to be aimed at daily, as to execute them in six days.		
	P.M.	1		1	-	-	1	do.					
5th	A.M.	1	650, 700, and 750 yards -	1	-	-	1	-	-				
	P.M.	1		1	-	-	1	Known and unknown distances to 600 yards - do.					
6th	A.M.	1	800, 850, and 900 yards -	1	-	-	1		-	-			
	P.M.	1		1	-	-	1	do.					
7th	A.M.	1	-	1	10 caps	-	-	-	1				
	P.M.	1	-	1	-	10 rounds	1	Known and unknown distances to 600 yards - do.	-				
8th	A.M.	1	-	1	10 caps	-	1		-	-			
	P.M.	1	-	1	-	10 rounds	-	-	1				
Total of Lessons & Drills		8	8	6	-	-	16	2 20 caps	2 20 rounds	8	-	-	2 or more, if necessary.

PRACTICES.

	Target Practices.							Judging Distance Practice.			REMARKS.		
	Preliminary ball firing.		1st Period.		2d Period.		File firing. No. of Rounds.	Volley firing. No. of Rounds.	Skirmishing. No. of Rounds.	1st Period.		2d Period.	3d Period.
	Distances	No. of Rounds.	Distances	No. of Rounds.	Distances	No. of Rounds.							
9th		10											
10th		10											
11th													
12th				10									
13th				10									
14th						10							
15th							10						
16th								10					

27. As it is important that the recruit should be able to handle his arms with freedom before he is handed over to the officer-instructor, he is to be under the instruction of the adjutant for a month or six weeks after he joins the battalion, in which time he is to be instructed in all the motions of loading, standing and kneeling.

28. To expedite the musketry training of recruits, one party is to be at preliminary drill and another at practice at the same time, in addition to the companies exercising. When the number of recruits in a battalion exceeds sixty, the party is to consist of not less than twenty ; if under sixty, the squad is to consist of ten.

29. The three preceding paragraphs, having reference to the training of recruits, will also apply to the corps of Royal Engineers.

30. No recruit is to leave a depôt battalion to join the service companies until he has completed a course of rifle training.

31. When battalions proceed on foreign service, commanding officers are to transmit to the Inspector-General of Musketry the annual Musketry Practice Return completed to the date on which the instruction ceased; which, however, should not be until within a few days of embarkation. The instruction of the battalion is to be resumed immediately on arrival at its new quarters.

32. As a means of profitable occupation of the time of both officers and men while at sea, lecture-room models, &c. are furnished for the use of the instructor of musketry actually embarked with a regiment proceeding on or returning from foreign service, or removing from one foreign station to another. Commanding officers are accordingly to make requisition for those articles in time to admit of their being put on board ship ; they are held responsible for their care and preservation, and that they are handed over, on arrival at the port of disembarkation, to the proper authority, for the purpose of being issued to other regiments by which they may be relieved or replaced both at home and abroad.

33. When a regiment embarks in more vessels than one, and has a qualified assistant instructor of musketry, a second set of models is to be provided for that officer, in addition to those furnished for the regimental instructor, who is always to embark in the head-quarter ship. General and other officers at the port of embarkation are to take care that this service is duly provided for.

34. General officers are expected to bring to notice any instance which they may observe of continued neglect in the musketry instruction of troops in their division or command, to which they will be pleased to give their special attention. They are to require the inspectors of musketry to accompany them, when practicable, in their tours of inspection, for the purpose of catechising officers of companies, indiscriminately taken, with a view of ascertaining that they are acquainted with the theory and practice of musketry, and the system of rifle training as laid down in this book ; and to furnish any information on this subject they may wish for, to enable them to reply to the several questions, in their confidential reports, in regard to the "instruction of officers and men," and the "exercise of arms."

35. Whenever the annual course of instruction is on any account suspended, the circumstance, and the cause of it, are to be specially reported to the Adjutant-General, for the information and orders of the Commander-in-Chief. When the suspension is owing to the troops having less than three nights in bed, correct duty-states, specifying the posts of sentries, and the numbers furnished for guard, are to accompany the report.

36. The Inspector-General of Musketry, being held responsible that the rifle training is conducted efficiently and according to regulation, is to report any and every deviation therefrom which may come under his notice, for the information of the Commander-in-Chief.

By command,

G. A. WETHERALL,
Adjutant-General.

SCHEDULE of ARTICLES authorized for the Musketry Instruction of a Battalion, which are to be obtained, on application to the Barrack-master at the several Stations, and the amount to be charged for any of the said articles lost, damaged, or destroyed through wilfulness or neglect on the part of the Troops.

ARTICLES REQUIRED.		No. of each required.	Cost of each Article.	REMARKS.	
For the Practice Ground.	Iron targets 6 ft. x 2 ft. complete	10	£ s. d. 2 5 0	Target, 1l. 17s. 4d.; staves for do., 5s. 7d.; bolts and nuts, 2s. 1d.	
	Red - - - 6 feet square	1	0 3 0		
	Flags {	Red - - - 2½ "	4	0 1 8	
		Red and White - 2½ "	2	0 1 8	
		Dark blue - - - 2½ "	2	0 1 8	
		White - - - 2½ "	2	0 1 8	
	Poles, lance 10 feet long	11	0 2 4	Cord. Chain.	
	900 yards length of Gunter's chain or cord labelled every 5 yards, and numbered from 1 to 900, divided into 18 equal parts	1	3 3 0		
	Pins of stout wire, 12 inches long	18	0 0 2	*Sufficient for the annual supply of a battalion 1,000 or 1,200 strong, to be demanded from the barrack-master in small quantities.	
	Tripod rests with rings	12	0 1 6		
	Sand bags (bushel)	12	0 1 0		
	Large brushes for colouring targets (1 lb. brushes)	2	0 1 6½		
	Small " " " (sash tools)	2	0 1 3		
	Whiting " " " " cwt.	*	0 1 6		
Lamp black " " " "	0 14 6				
Glue to make size " " " "	2 4 0				
Black-board 6 ft. x 4 ft. and easels	1	2 0 9	{ Black-board, 18s. 6d.; easels, 1l. 2s. 3d.		
Cap with cross wires to fit muzzle of rifle musket, pattern 1853	1	0 0 4			
Wooden plug with hole through the centre, to fit into breech end of rifle musket, pattern 1853	1	0 0 2	{ Without cocks, 7s. 0d.; cocks for locks, 1s. 6d. Without cramp, &c., 11½d.		
Wooden model with suspended wires to illustrate the necessity of holding the sights upright when taking aim	1	0 10 0			
Common flat ruler - - - 3 feet long	1	0 0 8			
Rifle musket barrel, pattern 1853	1	0 19 0			
Waster locks with cocks complete, swivel pattern	6	0 8 6			
Improved turnkey with cramp, worm, &c. attached	6	0 2 0			
Implements for making cartridges - set	1	-			
Set to consist of—					
5 tin measures, containing each 2½ drams	—	0 0 8		The set.	
5 tin funnels with long narrow spouts	—	0 0 6½		"	
12 formers of hard wood for car- tridges for rifle musket, pattern 1853	—	0 0 3	Each.		
12 forming plugs " for " do. do.	—	0 0 3	"		
1 set of tin patterns showing shape of paper for cartridges	—	0 0 2	The set.		
1 iron straight edge	—	0 1 0			
1 large knife	—	0 1 6			
20 quires of white paper for inner and outer envelope of cartridge	—	1 13 0	Per ream.		
6 quires of cartridge paper for cylinder of cartridge	—	0 1 2½	Per quire.		
½ bushel of fine sand	—	0 0 6	Per bushel.		
50 bullets for rifle musket 1853	—	0 3 2	Per 100.		
12 files to retain documents (common)	—	0 0 0½	Each.		
Sponge	2 oz.	0 1 1½			
Chalk, common	1 lb.	0 1 6	Per cwt.		
Compasses with holder to contain chalk	1	0 3 6			
Boxes, wooden, for models	—	0 9 0			
	Required annually.				

The foregoing Articles will be in charge of the Officer-Instructor, who will deliver them over to the Quartermaster, to be returned to the Barrack-master, when the regiment is about to leave the station.

INSTRUCTIONS

FOR INSPECTORS OF MUSKETRY,

*Or other Officers charged with the Supervision of the
Musketry Training of the Troops,*

AT HOME AND ABROAD.

1. The inspectors of musketry, or officers charged with the supervision of the musketry instruction, are to be subject to, and in communication with, the Inspector-General of Musketry in all matters appertaining to their peculiar duties.

2. They are responsible that the authorized system is rigidly adhered to in all its details, and they are to make every arrangement for the efficient carrying out of the same in the several corps within the circuit of their supervision.

3. They are to be well acquainted with the facilities afforded at the several military posts in their districts or stations for conducting the instruction.

4. Any want of ranges is to be immediately brought to the notice of the general officer commanding, in order that the necessary steps may be taken to procure them. No ground is ever to be selected for practice which does not afford a range of at least three hundred yards. Ranges are to be established, when practicable, by pairs, having an interval of forty or fifty yards between them.

5. When quartered where several battalions or dépôts are assembled, either in camp or garrison, the Inspectors are to visit the men of each battalion under instruction, both at drill and practice, *daily*, to see the manner in which these exercises are executed ; and they are to examine closely, at least once a month, the Musketry Drill and Practice Returns, to ascertain that the entries therein agree with the duplicate total points of the registers which record in detail the several target and judging distance practices.

6. The troops stationed within a reasonable distance of the place where they are quartered are to be visited

once a month, on which occasions they will see the men both at drill and practice, and closely examine the returns to ascertain their correctness.

7. The troops quartered at long distances from the station where the Inspector resides are to be visited once in every three months.

8. The Inspectors are never to leave their posts without authority from the general officer commanding, to whom they are to afford every information on the subject of their special duties, and to render every assistance in giving effect to their orders. They are to signify to him their desire to make their prescribed visits to out-stations, and receive his orders to do so.

9. Should the Inspectors, in their periodical visits, discover any infraction of the orders on the subject of musketry training, they are to report the circumstance at once to the general officer commanding, and notify to the Inspector-General of Musketry having done so, in their next monthly report.

10. They are at once to report to the general officer anything which may impede or retard the annual course, and they are also to bring to the notice of officers commanding battalions any want of care in keeping the company musketry returns, or neglect on the part of the officer or serjeant instructors, notifying having done so in their next monthly report.

11. The Inspectors in their visits are to ascertain by a few well-directed questions the proficiency of the men in the theory of musketry, and the knowledge they possess of the method of keeping their rifles in an efficient condition; on which subjects also they are to examine, in the presence of the commanding officer, all men who in the yearly course obtain seven points and upwards in the first class, to ascertain their eligibility for the rewards granted to "marksmen."

12. Inspectors abroad are to avail themselves of any public conveyance which may offer to make their visits to battalions detached from the station where they are quartered.

13. They are, by the 10th of each month, to render a return and report according to the prescribed Forms J

or **K**, to the general officer commanding the station, district, or division, to show the progress of the musketry training of the troops under their command, and to the Inspector-General of Musketry. When the circuit to which an Inspector is appointed embraces more than one district, division, or station, the return rendered to the respective general officers is only to refer to the troops under their command. That rendered to the Inspector-General of Musketry is to contain every regiment and depôt in the circuit of their supervision.

14. Inspectors at home are to forward the Monthly Progress Returns in duplicate, with their monthly return and report, to the Inspector-General of Musketry, accompanied by a memorandum detailing any and every error which they may have discovered therein.

15. Inspectors abroad are not to send the Monthly Progress Returns to the Inspector-General of Musketry; these returns are to be examined by them, and the duplicates returned to the several battalions, with any remarks they may call forth.

16. In their report, which is to be drawn up under separate headings, viz., instruction, returns, ranges, condition of the arms, &c. &c., they are to detail the corps they have visited during the month for which it is rendered, stating the number they found under instruction, as also the nature of the instruction in which the men were employed, with the figure representing the merit of their target and judging distance practices. They will also remark on the proficiency of the men in the several musketry exercises, and notice any reports they may have made during the month.

17. Inspectors of musketry are, when practicable, to accompany the general officers of divisions, stations, or commands in their half-yearly inspections, to examine the officers on the theory and practice of musketry, and the system of conducting the musketry instruction of recruits and drilled soldiers of their respective companies.

By command,
G. A. WETHERALL,
Adjutant-General.

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E.H.

GENERAL ORDER.

No. 763.

*Horse Guards, S.W., 27th August 1860.*Instruction of Musketry.

3—(1860).

THE General Commanding-in-Chief having intimated to the Secretary of State for War his opinion, that, in consideration of the men of regiments of cavalry armed with Sharpe's breech-loading carbines being required, in addition to their special duties as cavalry, to be instructed in the theory and practice of musketry, and of their having much more labour than other branches of the service, they should receive the rewards allowed for good shooting in the same manner as infantry soldiers, and Mr. Sidney Herbert having been pleased, in concurrence with Sir Charles Wood and the Lords Commissioners of the Treasury, to signify his assent to the proposed arrangement,

His Royal Highness accordingly desires, that the 1st and 2nd pecuniary rewards, and the supplementary prize for the serjeants of the best shooting troop, be granted to regiments armed with breech-loading carbines sighted up to 600 yards, subject to the conditions contained in the existing regulations, modified as follows, viz. :—

1st. That the best shot of the regiment shall be that dragoon who, in the practice of the 2nd class, firing between 400 and 600 yards, both distances inclusive, obtains the greatest number of points over 12.

2nd. That the best shot of the troop will be the dragoon, who, in the practice of the 2nd class of his troop, firing between 400 and 600 yards, both distances inclusive, obtains the greatest number of points over 12.

Should cavalry regiments hereafter be armed with carbines sighted up to 900 yards, they will then be allowed to contend for prizes according to the regulations heretofore applicable to infantry only.

By Command of His Royal Highness
The General Commanding-in-Chief;
JAMES YORKE SCARLETT,
Adjutant-General.

GENERAL ORDER.

Horse Guards, S.W., 2nd May 1861.

Instruction of Musketry.
3—(1861).

HIS ROYAL HIGHNESS the General Commanding-in-Chief having had under his consideration the results of the firing of troops armed with the rifled musket during the late wars, has observed that the destructive powers of that weapon have not been developed to the full extent.

His Royal Highness has, however, satisfied himself that the failure is not in the rifle, but has arisen from the want of a dexterous and skilful use of it.

To render the rifle as efficient as possible, a back-sight has been affixed thereto, so graduated as to furnish the required elevation for all distances from 100 to 900 yards. The correct adjustment of this sight entails a knowledge of distances which is not difficult to acquire, although considerable practice is required to keep it up; and the rifle, when the sight is correctly arranged, may be used with the fullest confidence of success by troops carefully trained, if calm and steady in their fire, and judiciously manœuvred.

As, however, much allowance must be made for the hurry and excitement consequent on close action, it is deemed expedient to lay down rules for general information, and for the guidance of officers of all grades in command of troops before an enemy, in order to insure the file and volley firing being, in future, effectively and rapidly executed.

It is, therefore, to be understood that, when firing in line or in square, at and under 300 yards, the flap of the back-sight is not to be raised at all, but aim is to be taken through the flanges which protect it. This will be found at once to ensure sufficient accuracy of direction, and practically to give adequate elevation, while the difficulty, under the circumstances, of getting the eye down to the bottom of the notch in the back-sight will be obviated.

When firing, in the open, *at ranges beyond 300 yards*,—and at *all distances* when firing from behind parapets, or under cover of any sort,—the back-sight is to be carefully adjusted ; a true alignment, taken through the notch of the back-sight, on the object aimed at, and a correct elevation for the estimated distance, being essential to *accurate* shooting.

His Royal Highness directs that these rules be carefully explained to the non-commissioned officers and privates by Captains and officers of companies, and that they be observed at all division, brigade, and battalion evolutions ; also that officers generally make themselves proficient in a knowledge of distances, and thoroughly acquainted with the powers of the rifle.

Officers commanding divisions, brigades, and garrisons are to ascertain by frequent inspections and close examinations that the Field and Company Officers possess a correct knowledge of distances, and of the theory and practice of rifle shooting, as the effective use of the rifle on service depends, in a very great measure, on their efficiency on these points.

If the instructions herein detailed are attended to, His Royal Highness is satisfied that the rifle will be found to be a weapon of terrible efficiency in close action, and, when dexterously used, of equal value against bodies of troops, and in silencing artillery at distances up to 900 yards.

By command of His Royal Highness,
The General Commanding-in-Chief.
JAMES YORKE SCARLETT,
Adjutant-General.

CIRCULAR MEMORANDUM, ADDRESSED TO THE ARMY
AT HOME AND ABROAD.

Genl. No. 149.

Horse Guards, S.W., 21st August 1861.

Instruction in Musketry

4—(1861).—

THE General Commanding-in-Chief having approved of the adoption of a Stadia in place of the chain or cord now employed in the judging distance practice of the troops, the following Instructions have been drawn up for information and guidance in using the instruments in question. His Royal Highness has recommended that these Stadia be considered as barrack stores, and that two complete sets shall be supplied for each battalion at the several military stations.

By command,

JAMES YORKE SCARLETT,
Adjutant-General.

INSTRUCTIONS.

To ascertain the correct distance when *men* are employed as “points of observation.”

1st. The instructor will fix a flag *a* (*vide* diagram No. 1) at the place at which the party or squad is to estimate the distance from the men standing as “points of observation.”

2ndly. A non-commissioned officer (if practicable, the serjeant-instructor) will fix the staff *b* perpendicularly in the ground in any situation and at any distance that may be determined by the instructor, and align it by means of the vertical pointer *c* attached thereto, on the flag *a* at the judging distance point.

3rdly. At 40 yards from the staff, and to the left of it, align another flag *d* by means of the horizontal pointer *e* attached to the staff, and fix the said flag perpendicularly in the ground.

The staff and flag thus arranged from the base, at the right of which the men intended for "points of observation" are to stand.

4thly. So place the stadia at the first mentioned flag *a* that the foresight *f* on the shaft of the stadia will be aligned on the centre of the staff *b*, looking through the bottom of the notch of the slider or moveable backsight *g*.

5thly. Push the slider *g* backward or forward without in any way moving the shaft until the foresight *h* on the arm of the stadia is aligned on the flag *d* to the left of the staff *b*; then fix the said slider.

6thly. Look at the index or scale on the shaft of the stadia for the distance, which will be shown by the number immediately behind the slider or moveable backsight *g*.

Note.—The foresight on the arm of the stadia is moveable, in order that it may be adjusted according to the scale to be used; for example, if the small scale is to be used, the foresight must be placed at the line marked 1,000 yards on arm of the stadia; if the large scale, at the line marked 600 yards. Every four inches on the shaft per large index or scale represent 40 yards; and every $2\frac{4}{10}$ inches per small index represent the same distance; the distance between the points of the two foresights (which are always to be upright) being respectively 2·4 and 4 inches, according to the position of the moveable foresight.

When a class is divided with a view to judge the distance from each other, the following method will be observed to signal the correct distance to the party or squad opposite to that with which the stadia is, viz. :— a flag lowered to the right, will signify *hundreds* of yards; to the left, *tens*; and to the front, *five*. Thus, for example, if the flag be lowered 4 times to the right, 5 times to the left, and once to the front, the distance signalled is 455 yards.

To ascertain the correct distance from an object, such as a house or tree, which is to be practised when judging distances, during route marching, or at times other than during the annual course of instruction.

1st. Fix the staff *a* (*vide* diagram No. 2) perpendicularly in the ground, and align it by means of the vertical pointer *b*, attached thereto, on a given point *c* of the house, or other object, the distance of which from the said staff is required.

2ndly. At 40 yards from the staff, and to the left of it, place the stadia, the arm of which *d* is to be aligned by means of the horizontal pointer *e* attached to the staff.

3rdly. Push the slider or backsight backward or forward until the moveable foresight *g* is aligned on the same point *c* of the house or other object on which the staff has already been aligned.

4thly. Look at the index or scale on the shaft of the stadia for, and read off, the distance.

N.B.—The stadia can be used on any ground, as there is no necessity for the men judging the distance, and the object of observation, being on the same level.

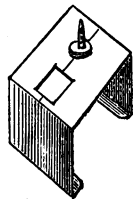
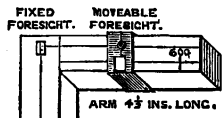
The stadia complete consists of :—

- 1 Index shaft.
- 1 Tripod.
- 1 Staff.
- 1 Reel, with 40 yards of measuring tape.

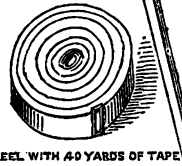
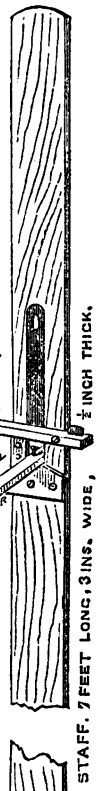
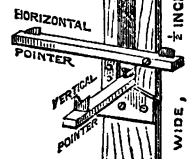
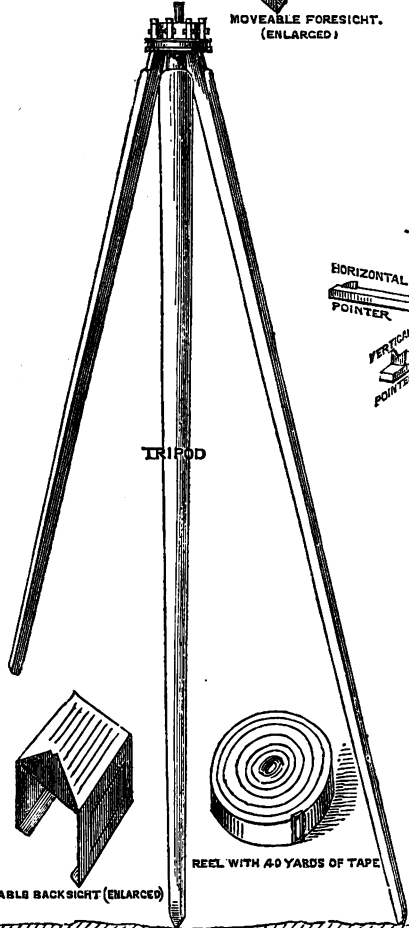
By command,

J. YORKE SCARLETT,
Adjutant-General.

STADIA FOR ASCERTAINING DISTANCES.



SHAFT, 5. OF LONG. 1/2 INCH WIDE, 1 INCH THICK.



SLIDER OR MOVEABLE BACKSIGHT.

MEM.—Scale same as on Shaft of Stadia.

DIAGRAM NO. 1.

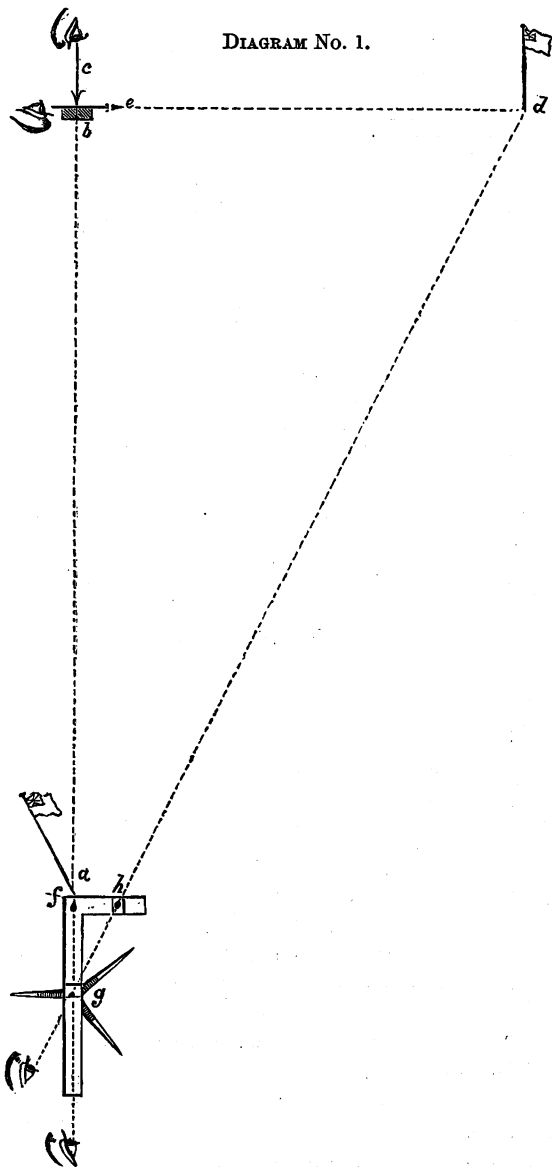
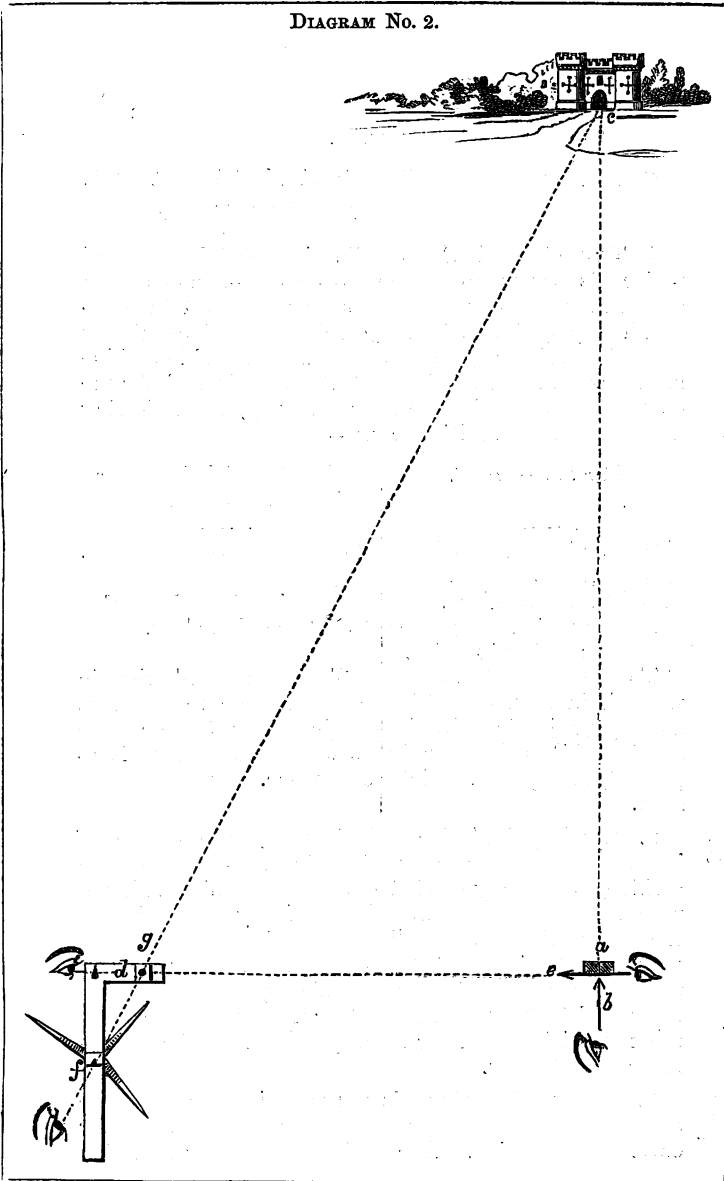


DIAGRAM No. 2.



CIRCULAR MEMORANDUM, ADDRESSED TO THE
CAVALRY.

Gen. No. 154. *Horse Guards, S.W., 5th Sept. 1861.*

Instruction of Musketry.
5—(1861).

1. THE General Commanding-in-Chief having had under his consideration the proportions of ammunition allowed for Cavalry Regiments, as prescribed in paragraph 1, page 112, of the Queen's Regulations, directs that all Cavalry regiments armed with the rifle carbine shall receive for the training of the recruit, and for the exercise of the drilled soldier annually, the following quantities of ammunition, viz.:—

For the Recruit.

70 Rounds Ball Cartridge.
20 " Blank "
100 Percussion Caps.
20 Percussion Caps for
 Snapping Practice.

To be applied for as wanted, in such quantities as may be justified by the number of Recruits actually present, or expected to join soon.

*For the drilled Soldier
annually.*

70 Rounds Ball Cartridge.
50 " Blank "
132 Percussion Caps.

To be applied for in sufficient time to insure its receipt prior to the date on which the practice is to commence.

Duties, in-
structions,
&c.

2. His Royal Highness desires that the course of instruction for the cavalry soldier in the use of the rifle carbine, be strictly carried out in conformity with the regulations for conducting the musketry instruction of the army, with such modification only as the different nature of the duties of the two services requires; and that commanding officers, field officers, captains, subalterns, and instructors, in all other respects conform to the rules laid down for their guidance in the above-named regulations.

Period of
the day for
instruction.

3. The cavalry soldier is never, if it can possibly be avoided, to be withdrawn from his stable duties for carbine instruction. The period of the day in which

these will be least interfered with, is from 2 p.m. until it is time to prepare for evening stables.

4. The cavalry recruit to be instructed in the use of the rifle carbine in all respects as the infantry recruit, omitting the platoon practices, which are not considered necessary in his rifle training. Cavalry Recruits.

5. The "course" of carbine instruction through which the *drilled* cavalry soldier is to be exercised annually, is to consist of the following number of drills and practices, which can be executed easily, and in an efficient manner, in the period of the day already specified. Annual course for drilled cavalry soldiers.

Preliminary Drills.	{	4 Lessons in cleaning arms instruction,	}	$\frac{1}{2}$ an hour.
		each - - - - -		
		4 Lessons in theoretical instruction,		
		each - - - - -		
		4 Aiming drills from 150 to 600 yards		
		each - - - - -		$\frac{3}{4}$ an hour.
		4 Position drills, each - - - - -		$\frac{3}{4}$ an hour.
		4 Judging distance drills, 2 to 300 yards,	}	$\frac{3}{4}$ an hour.
		and 2 to 600 yards each - - - - -		

Total hours' instruction daily, $3\frac{1}{4}$ for 4 days.

Practice.	{	1st Period of target and judging distance practice, 20 rounds and 12 answers	}	2 days.
		2nd Period of target and judging distance practice, 20 rounds and 12 answers		
		3rd Period of target and judging distance practice, 20 rounds and 12 answers		
		Skirmishing from 400 to 200 yards, 10 rounds		
		- - - - -		
		- - - - -		1 day.

Total number of days, of a maximum of 4 hours, to be occupied annually in musketry drill and practice } 11 days.

6. The foregoing course of instruction (which is a modification of the infantry course, in consequence of the time of the cavalry soldier being so fully occupied with stable and other duties) must be strictly and fully carried out to ensure efficiency in the use of the cavalry rifle carbine. Course of instruction to be fully carried out.

7. It is of great importance that the carbine instruction of the cavalry should take place at the same time of the year as the musketry instruction of the infantry ; Period of the year for instruction

commanding officers will therefore take care that this is fully attended to, and that the course be, if possible, continued without interruption, until completed.

8. In the case of cavalry regiments which are armed with rifled carbines not sighted to 900 yards, or are quartered at stations where a range to the full extent is not available, the practices to be executed, and the quantity of ammunition to be expended under such circumstances, are detailed in the following table :—

When the Rifle Carbine is sighted to, or the range only extends to	Practice to be performed				Total Number of rounds to be fired.	
	1st period—20 rounds to be expended.	2d period—20 rounds to be expended.	3d period—20 rounds to be expended.	Skirmishing—10 rounds to be expended.		
300 yards	1	1	—	1	50	The second class in the <i>second period</i> to repeat the practice of the third class, firing at a single target standing; the skirmishing to be between 300 and 200 yards.
400 yards	1	1	—	1	50	The second class to fire 10 rounds at 350, and 10 at 400 yards, one distance a day.
450 yards	1	1	—	1	50	The second class to fire five rounds at 350, five at 400, and 10 at 450 yards, but not more than 10 rounds a day.
500 yards	1	1	—	1	50	The second class to fire five rounds at 400, five at 450, and 10 at 500 yards, but not more than 10 rounds a day.
550 yards	1	1	*	1	50	The second class to fire five rounds at 400, five at 500, and 10 at 550 yards, but not more than 10 rounds a day. * The <i>third period</i> to be executed in this instance, should a range of the full extent become available after the practices mentioned have been performed.
600 and under 900 yards	1	1	1	1	70	The first class men are not to fire unless a range to 900 yards is available.

By Command of His Royal Highness
The General Commanding-in-Chief;
JAMES YORKE SCARLETT,
Adjutant-General.

E.H.

CIRCULAR MEMORANDUM ADDRESSED TO OFFICERS COMMANDING REGIMENTS AND DEPÔT BATTALIONS ; AND TO INSTRUCTORS OF MUSKETRY THERETO.

Genl. No. 194.

Horse Guards, S.W., 3rd April 1862.

Instruction of Musketry.

2—(1862).

As a want of uniformity appears to exist in the manner of keeping the Company Musketry Drill and Practice Return and the Practice Registers and Diagrams, the following instructions on the subject are published for the information and guidance of all concerned, and commanding officers are held responsible that the same be carried into effect ; such instructions being necessary, not only to ensure uniformity, but also economy in the expenditure of registers, &c., and to facilitate the checking of the practice records.

1. In this return the names are to be entered by squads, or sections, leaving two lines between each. All men who join the company after its annual course has commenced, are to be entered after the last section or squad, with an interval of two lines. Company
Practice
Return.

2. All entries in the table recording the file, volley, and skirmishing practices, are to be vouched by a separate diagram.

3. Before deductions are made in this table on account of non-effective men, preparatory to the preparation of the annual practice return, the original entries are to be totalled, from which totals the required deductions are to be made.

4. The points to be deducted on account of non-effective men in the file and volley practices, are to be

H 2

the averages of the section with which they practised ; and, in the skirmishing practice, the average of the target under which their names are entered in the diagram.

5. When men are transferred from one company to another, or from one corps to another, they are to be credited in form M, Musketry Regulations, under the head of file, volley, and skirmishing practices, with the average points per rule detailed in the preceding paragraph.

Practice
Registers.

6. The names are always to be entered in these documents in the order they appear in the Company Practice Return, with the succession number in said return prefixed.

7. The registers for the 1st period are to contain the names of every man of the squad or section, per Company Practice Return. The cause of absence of the men not forthcoming for practice in 1st period with the company, is to be stated in the columns "*total points*" and "*duplicate total points.*"

8. In the other "periods," the names of the men of a class of two or more sections are to be entered in one register, when the number of men in the sections does not exceed 20. In no case are the names of a squad or section to be part in one register and part in another.

9. When the number of men in the 1st, 2nd, or 3rd class of a company is 20 or under, their names are to be entered in one register.

10. The casualties of two companies are on no account to be entered in the same register, it being of the greatest importance that the registers of each company be kept separately, and in the possession of the Captain or officer commanding the company.

11. When the number of casualties practising with another company, or otherwise, does not exceed 5, one Target Practice Register is to record the results of a period, the duplicate total points being, of course, removed at the conclusion of the practice at each distance

12. It appears that in some cases the practice registers are kept by the officer instructor, or are sent for by him to check the entries in company return ; such practice being irregular and unnecessary, is to be discontinued, as that officer should examine the company practice returns at the conclusion of each "period," from the "duplicate total points" in his possession.

13. The succession number is to be prefixed to the Diagrams, names of men entered in diagrams.

14. When a squad of casuals consists of men of different companies, the men composing the squad are to execute the file, volley, and skirmishing practices together, and not separately by companies.

15. The diagrams of casuals are to be headed consecutively 1st, 2nd, or 3rd squad of casuals, with the companies and depôts of the men composing the squad, which number is to be entered in the first column of the table recording the platoon and skirmishing practices.

16. Captains or officers commanding companies, with their company instructors, are invariably to be present whenever Inspectors of Musketry examine their musketry practice return and registers, the Captain alone being responsible for their correctness and safe keeping.

By Command,

JAMES YORKE SCARLETT,
Adjutant-General.

E.H.

CIRCULAR MEMORANDUM, ADDRESSED TO GENERAL OFFICERS COMMANDING DIVISIONS, DISTRICTS, AND STATIONS, AT HOME AND ABROAD, AND TO DISTRICT INSPECTORS OF MUSKETRY.

Gen^l. No. 195.

Horse Guards, S.W., 4th April 1862.

Instruction of Musketry.
3—(1862).

WITH a view to establish uniformity, and to bring under the notice of the General officers commanding stations, districts, and divisions, and of the Inspector General of Musketry, for the information of His Royal Highness the General Commanding-in-Chief, the progress, deficiencies, &c., in musketry instruction in a clear, concise, and systematic form, Inspectors of Musketry, and other officers charged with the supervision of the musketry training of the troops, will, in future, draw up their monthly A, or quarterly reports under separate general headings, and not by corps, and supply the information on each subject herein mentioned, in the following order,—

**HEADINGS
OF REPORT.**

Corps visited during the month.

1. In a tabular form, show the corps visited during the month, with the stations at which quartered, the number of men of each corps found under instruction in preliminary drills, and at practice, the merit of the shooting witnessed, with the distance, and the merit of the judging-distance practice, with the class to which it refers.

2. When no corps has been visited, it is to be so stated, with the cause of the omission.

Non-commissioned Officers employed as Musketry Drills.

3. Notice the proficiency or otherwise, of the company instructors, and non-commissioned officers generally as musketry *drills*, mentioning, in cases of inefficiency,

the corps concerned, and the branches of instruction in which they are deficient.

4. State if the instruction in the several subjects embraced under this head is carefully conducted; and if, from the position of the men, and the answers given in the examination on the theoretical principles, and cleaning arms instruction—the questions being invariably put by the Inspector and not by the Instructor—attention has been paid to the “position drill,” and other subjects of the preliminary drills, by the officers, non-commissioned officers, and privates. When such is not the case, name the corps, and detail the particulars. Preliminary Drills.

5. It is to be borne in mind that the results in practice afford unerring evidence of the goodness or otherwise, of the position of the men, &c.

6. Notice irregularities that have been discovered in the execution of these exercises, mentioning in each case the corps, company, and name of company officer attending the practice. Target and judging distance practice.

No departure from the Musketry Regulations, however trivial the circumstance may be, is to be allowed, it being of the utmost importance that one system should prevail everywhere.

Inspectors are to satisfy themselves that the men are in marching order when at target practice, except at those stations where the knapsack has been dispensed with; that the knapsack is worn as detailed in the “Queen’s Regulations;” that the targets are coloured per orders on the subject; that the file firing takes place per instructions in the book of “Field Exercises;”—and that the skirmishing practice is executed in advancing from 400 to 200 yards, and retiring from 200 to 400 yards, until the ammunition allowed for the practice is expended. All irregularities in any of the points mentioned in this paragraph are to be noticed, specifying the corps, company, and company officer concerned.

7. Notice in general terms if these returns in the several corps and battalions are neatly kept, and if the entries therein agree with the registers and diagrams; Company, and Recruits Musketry Drill and Practice Returns.

and mention the battalion, and company, with name of Captain or officer commanding company in exceptional instances.

8. In cases in which the total number of points recorded against a man's name in the practice return is greater than in the registers, and the man has, in consequence, practised in a higher class than he should have done, the corps, company, regimental number, rank, and name of the soldier is to be mentioned, with the particulars of the mistake, and whether a "marksman" or not.

9. Notice whether these records have been correctly kept, and are complete in every particular.

Practice
Registers
and Dia-
grams.

When it is discovered that corrections are not initialed by the *company officer* attending the practice, in the case of duty men, mention the corps, and company concerned, and in the case of marksmen, the regimental number, rank, and name, with the distance at which firing, or the practice and period of judging distance, and the number of points obtained in the period, with and without the value of hits altered and not initialed.

10. Copies of remarks on the company practice returns sent to commanding officers are not to accompany the report ; they are to be retained by the Inspector, so that they may be forthcoming should they be required. A synopsis of the said remarks, so far as relates to irregularities affecting the claims to rewards for good shooting, arranged by companies, is to accompany the Annual Practice Return, and, on the removal of battalions, is invariably to be forwarded to the Inspector of their new district.

11. The condition of the ranges is invariably to be noticed, and any alteration in their number or direction. Under this head reference is also to be made to the condition and economical use of articles sanctioned for musketry training, which are on no account to exceed, without authority, the number authorized by the "Musketry Regulations." Inspectors of Musketry are held responsible, so far as lies in their power, that every

arrangement is made to prevent the suspension of rifle instruction on account of the want of ranges, or the deficiency of musketry articles.

12. Notice the state of the arms, whether clean, serviceable, properly browned, and if they possess the regulation "pull off" of trigger. Arms.

Too much attention cannot be paid to this subject, in order that by timely interference the arms may be kept ready for service.

Under this head notice is to be taken of the caps and ammunition issued for practice.

13. Whenever trials of arms or ammunition are made, in consequence of reports as to their being defective, the "mean radial deviation" of each trial is to be notified, specifying the number of rounds from which calculated, number of hits and misses, the size of targets used, and the allowance made as the absolute deviation for misses, with remarks as to fouling, and other points of importance, in a tabular form.

14. Notice the date and purport of communications, and officers to whom addressed, with the result. Inspectors of Musketry are to carry on as little correspondence as possible with corps; and, except in cases which require immediate attention, they are to represent to *General Officers*, in their monthly reports, all irregularities discovered. In no case are copies of correspondence to accompany the monthly report, it being sufficient to give a *resumé* of such in the said report. Correspondence.

15. Inspectors of Musketry, or officers charged with the supervision of musketry instruction, are to forward all their communications and returns to the Inspector-General of Musketry, through the Deputy-Assistant Adjutant-General of the School of Musketry.

16. Notice the manner in which the officers perform their duties, and whether they convey the instructions in the theoretical principles in a lucid and methodical way, naming those who appear indifferent to their duties, and those who deserve special notice for their zeal and Instructors.

efficiency ; also notice the efficiency of the Serjeant, Instructors of Musketry.

17. Serjeant Instructors are not to be employed in the preparation of the Company Practice Returns, but are to take an active part in the instruction of the men. Inspectors are to satisfy themselves by personal examination and inquiry, that they are improving themselves, that they are efficient "drills," and that they are upholding their high and responsible situation by conduct and soldierlike bearing, naming those of the School of Musketry attached to dépôt battalions, whom they consider worthy of promotion for conduct, efficiency, and educational acquirements.

By Command,

JAMES YORKE SCARLETT,
Adjutant-General.

E. H.

CIRCULAR MEMORANDUM ADDRESSED TO THE ARMY,
AT HOME AND ABROAD.

General No. 229.

Horse Guards, S.W., 30th October 1862.

Instruction of Musketry,

5—(1862).

It has been brought to the notice of the General Commanding-in-Chief that the file-firing and skirmishing practices, as prescribed by the Musketry Regulations, are not always executed agreeably to the instructions contained in the book of Field Exercises of the Army, notwithstanding the stringent certificate which the company officers superintending the said practices are required to sign.

It appears that in *file-firing* the men are allowed to occupy more space in the ranks than they would do if at company drill, and to fire slowly, as in individual firing, thereby defeating the object sought, viz., to test the efficiency of rapid fire, by files, in the ranks in line.

And in *skirmishing*, the men are permitted to expend the greater portion of their ammunition in practice between 200 and 300 yards, instead of firing, advancing and retiring, between 200 and 400 yards, as directed.

In order to check the irregular proceedings above alluded to, His Royal Highness desires that henceforth the platoon and skirmishing practices be invariably executed under the personal superintendence of a Field Officer, who is to furnish a certificate (to be appended to the Annual Musketry Returns) that the said practices took place in his presence, and were conducted in strict accordance with all orders and regulations on the subject.

By Command,
JAMES YORKE SCARLETT,
Adjutant-General.

3050.
Instrs.
 G. S.

Horse Guards, S.W., 12th August 1863.

SIR,

WITH reference to the letter addressed from this department on the 6th of March last, to officers commanding regiments of Cavalry, I have it now in command to acquaint you that His Royal Highness the Field Marshal Commanding in Chief has been pleased to order that the following be substituted for paragraph seven of the Circular Memorandum No. 154, dated 5th September 1861, viz. :—

7. The annual course of rifle carbine instruction and practice in regiments and depôts of Cavalry in the United Kingdom, is to commence on the 1st October in each year, (the non-commissioned officers being *previously* trained to assist in the instruction of the men of their respective troops, as enjoined in the Appendix to the Musketry Regulations,) and to be continued by one complete troop at a time, until the whole regiment shall have gone through the course. Officers will be present with their troops, to superintend, and to see that these regulations are strictly complied with. The Annual Musketry Practice Return is to be rendered by regiments of Cavalry on the 1st April.

I have, &c.

A. HORSFORD,
 Deputy Adjutant-General.

To General Officers Commanding
 Divisions and Districts, and to
 Commanding Officers of Cavalry
 on Home Service.

CIRCULAR MEMORANDUM ADDRESSED TO THE ARMY AT
HOME AND ABROAD.

Gen^l No. 276.

HORSE GUARDS, S. W.

6 October 1863.

Musketry.
3—(1863).

HIS ROYAL HIGHNESS THE FIELD MARSHAL COMMANDING-IN-CHIEF has desired the annexed rules for conducting experiments with small arms, and for the inspection of rifle ranges, (as extracted from a "Text Book" about to be published for the use of officers proposing to go to the Schools of musketry,) to be at once published for general information and guidance, and directs that the same be inserted in the copies of the Musketry Regulations in possession of all regiments and depôts.

By Command, &c.

JAMES YORKE SCARLETT,
Adjutant-General.

EXPERIMENTS WITH SMALL ARMS.

1. The quality of arms, projectiles, and gunpowder is now represented by a figure showing the degree of concentration of a certain number of rounds fired, which is called by any of the following terms "mean deviation," "mean absolute deviation," or "mean radial deviation."

2. To determine the "mean deviation," the following rules are to be observed :—

1st. Measure the distance of the centre of each hit from the left of the target ;—this is called the *horizontal measurement*.

2nd. Measure the distance of the centre of each hit from the bottom of the target ;—this is called the *vertical measurement*.

3rd. Add together the horizontal and vertical measurements separately, and divide each sum by the number of HITS ;—the results are called the *mean horizontal* and *mean vertical measurements*, which furnish the "*point of mean impact*."

4th. Having marked the point of mean impact on the diagram (which is merely the intersection of the lines indicating the mean horizontal and mean vertical measurements), measure the distance of the centre of each shot from this point ;—this gives the *absolute deviation* : and for all misses allow as the "absolute deviation" half the diagonal of the target.

5th. Add together the "absolute deviations," and divide the sum by the number of ROUNDS fired ;—the quotient taken to two places of decimals will be the "*mean deviation*."

3. The distance from the "point of mean impact" to the point aimed at denotes the error due to wind, defective sighting, &c.

4. In conducting experiments, or in testing the accuracy of fire of rifles supposed to be defective, the following course should invariably be observed :—

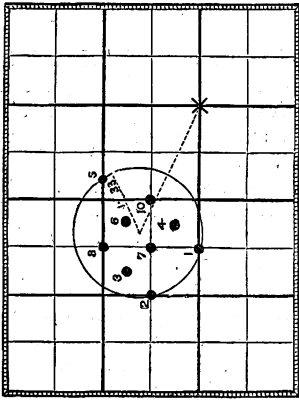
1st. The arms are to be previously examined and cleaned by an armourer serjeant, if available ; if not, by some careful soldier.

2nd. One of the best and steadiest shots in a battalion is to be selected to fire the arms for experiment, or under examination.

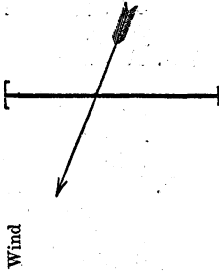
- 3rd. The charges of powder are to be carefully weighed, and the ammunition properly examined.
- 4th. The firing is to be from the shoulder, with the aid of a table or other such rest.
- 5th. The firing is to take place at 500 yards, when trying the accuracy of rifles supposed to be defective, at which distance " a *mean deviation* of over " 3 feet is to be considered a sufficient inaccuracy " to condemn a rifle." When the trial is to determine the relative value of two or more rifles, projectiles, or descriptions of powder, then the shooting should take place at least at three distances.
- 6th. The size of the target is to be 6 ft. \times 8 ft. (2nd class) if shooting at and under 600 yards, and 6 ft. \times 12 ft. (1st class) if shooting beyond 600 yards.
- 7th. A few shots are to be fired as " trial shots," to determine the correct elevation, and the position for the bull's-eye, which should be so placed for aiming as to ensure all the shots, or as many as possible, being on the target.
- 8th. Each diagram is to record the result of the shooting of not less than 10 or more than 20 shots, aim being taken for each shot on the bull's-eye fixed upon by the trial shots.
- 9th. Great care is to be taken in transferring the hits from the target to the diagram in order that they may be shown in their correct positions. All the shots fired for a diagram are to be numbered consecutively from 1, not including the trial shots ; the hits on the diagram are to be denoted by their respective numbers, and the shots which miss the target shown as such opposite their number in the table of calculation.
- 10th. In the diagram is to be recorded the name of the firer ; the distance fired at ; the number of rounds fired ; the object of the trial ; the description of arm, projectile, or powder under trial ; the weight of charge ; the weight of bullet ; the strength and direction of the wind ; the state of the thermometer and barometer, if these instruments are available ; and the state of the loading as affected by fouling ; with any other information which may be considered desirable to elucidate the diagram.

DIAGRAM OF THE PRACTICE.

Date..... Thermometer..... Barometer..... Atmosphere.....



Each of the above squares represent a foot.



Fired by.....
 Distance.....
 No. of shots.....
 Object of practice.....
 Description of arm.....
 Musket, weight of.....
 Barrel, weight of.....
 Charge, weight of.....
 Bullet, do.

State if Circulars, Genl. Nos. }
 109 and 236, Hse. Gds., 25 }
 Feb., 1861, and 3 Dec., 1862, }
 have been carried out.

General Remarks }.....

N.B.— x point aimed at.

..... Officer conducting Experiments.

No. of Shot.	Measured from bottom and left of target.		Absolute Deviation Measured from point of Mean Impact.	REMARKS.
	Horizontal Measurement.	Vertical Measurement.		
1	3'00	2'00	1'30	
2	2'00	3'00	1'30	
3	2'50	3'65	0'80	
4	3'60	2'50	0'65	
5	4'50	4'00	2'00	
6	3'65	3'65	0'45	
7	3'00	3'00	0'35	
8	3'00	4'00	0'75	
9	—	—	5'00	Miss.
10	4'00	3'00	0'75	
Total	29'25	28'80	13'35	
Mean	3'25	3'20	1'33	
Mark aimed at	6'00	2'00	3'00	

THE SELECTION, INSPECTION, AND LAYING-DOWN OF RIFLE RANGES.

1. Too much pains cannot be bestowed by officers in the survey of ground proposed for rifle ranges, in order to protect the public from danger, to facilitate the acquisition of sites for the purpose, and to prevent unnecessary expense. While it is impossible to lay down precise rules for every feature of country, the following instructions will be found sufficient to guide the judgment under ordinary circumstances.

2. No ground is to be selected for rifle practice which does not afford space for a range of at least 300 yards.

3. In selecting ground for ranges, it is most important that the ground behind the targets should be thoroughly commanded from certain points sufficiently clear of the line of fire to ensure safety to the look-out men, in order that the firing might be easily stopped when necessary ; hence it is manifest that a range down hill is generally to be preferred, as being more easily commanded than one up hill. See figs. 1 and 2.

4. Ranges are to be established by pairs, with an interval of not less than 10 yards between each range, and with a margin, for a single pair, of at least 40 yards at the sides ; the minimum breadth of ground for a pair of ranges to be 90 yards ; vide fig. 3.

5. When two or more pairs of ranges are to be established on the same ground, the targets are to be in the same line, a space of 90 yards is to be allowed between the centre of one pair and that of another, and 40 yards at the sides of the outer ranges (vide fig. 4), in order that the men on each pair of ranges may fire independently.

6. When the number to be exercised in rifle practice is large, and the breadth of ground available for the purpose limited, three or four ranges may be established with an interval of 10 yards between each, to be worked or used as if a pair, with a margin at the sides of the outer ranges of at least 40 yards ; vide fig. 5.

7. The breadth of ground in rear of the targets at each side of the outer ranges should gradually increase from 40 to 80 yards, when the ranges are parallel; but when they converge towards the targets the breadth, due to the distance between the lines of fire, may, or may not, be required, according to the degree to which the ranges are made to converge (fig. 6). It must be borne in mind that the distances at the targets, between ranges in pairs, and between pairs of ranges, must never be less than 10 yards in the former and 80 yards in the latter case, whether they are laid out parallel to each other, or to converge towards the targets.

8. The space behind the targets, on level ground, should be about 1,500 yards. A less distance may, however, answer if a steep hill rises in rear of the targets. Before steps are taken to procure ground for ranges, it is essential to secure the right to fire over the land behind the targets to the extent required, should it not be desirable to purchase it.

9. The height of butt against which the targets are to rest must differ according to the nature of the back ground. If the range be on a plain, then the butt should be from 45 to 50 feet high, provided the distance behind the target is less than 1,500 yards. Under ordinary circumstances the height of butt need not be more than 20 feet, and when firing seaward, a butt of 12 feet in height will be sufficient.

10. On some ground there are found natural butts for the targets to rest against. To be of use in stopping stray bullets, and thereby ensure the safety of the public, the hill should be at an angle of 45° at least; if at a smaller angle than this it would, instead of acting as a stop butt, increase the chance of ricochet, and therefore be unsafe.

11. The length of butt for a pair of ranges should not be less than 45 feet measured along the top.

12. Platforms of stone or iron, 20 ft. \times 9 in., are always to be laid down in front of the butts to rest the targets upon, to ensure their being at right angles to the line of range, which is to be measured and marked every 50 yards from 100 to 900 yards, or to the extent of ground if of a less length than 900 yards.

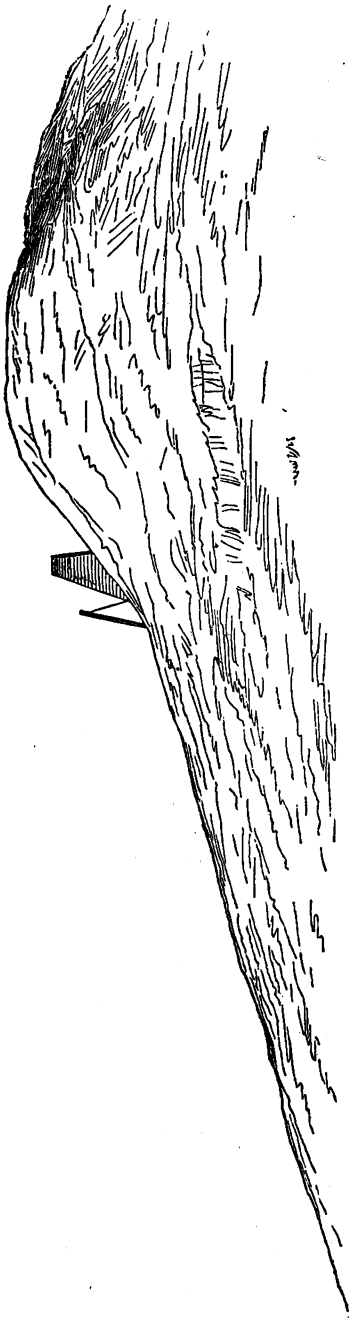


Fig. 1.—RANGE UP-HILL.

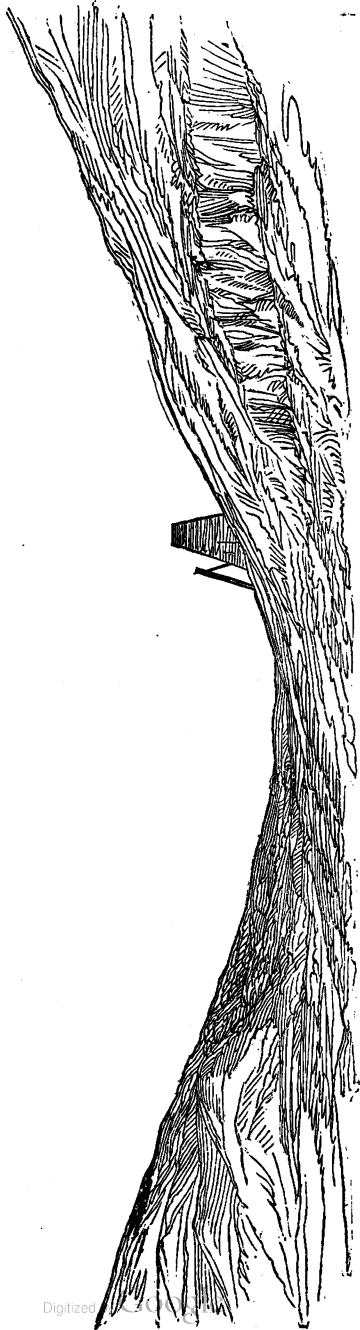


Fig. 2.—RANGE DOWN-HILL.

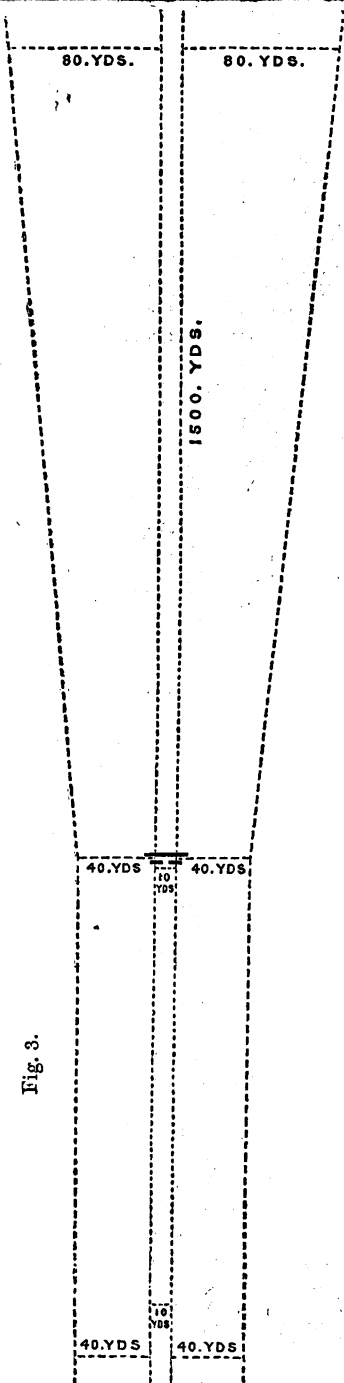


Fig. 3.

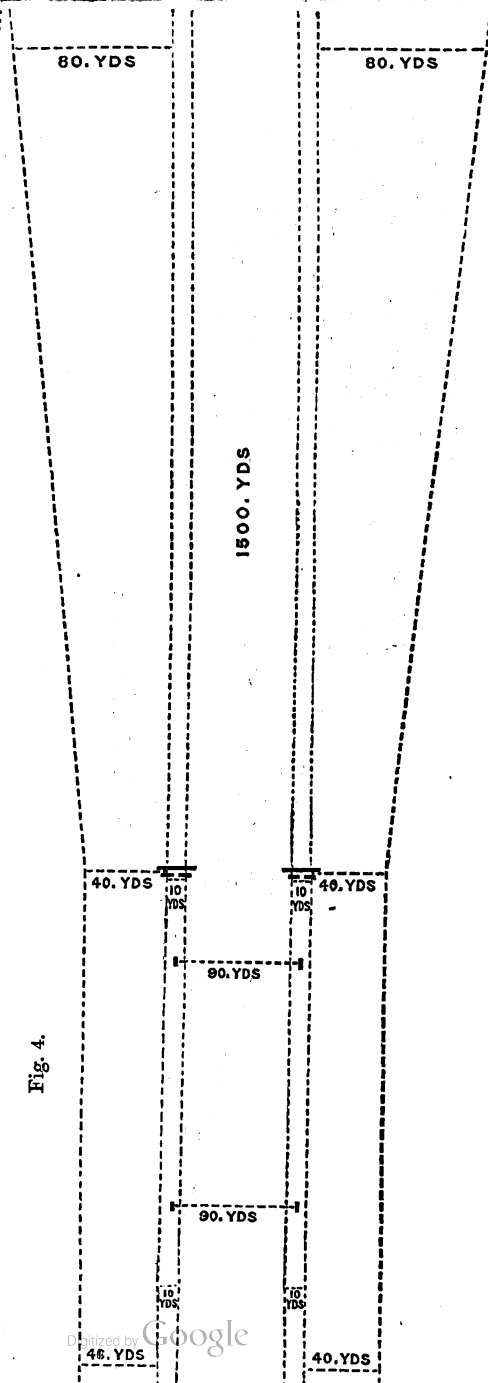


Fig. 4.

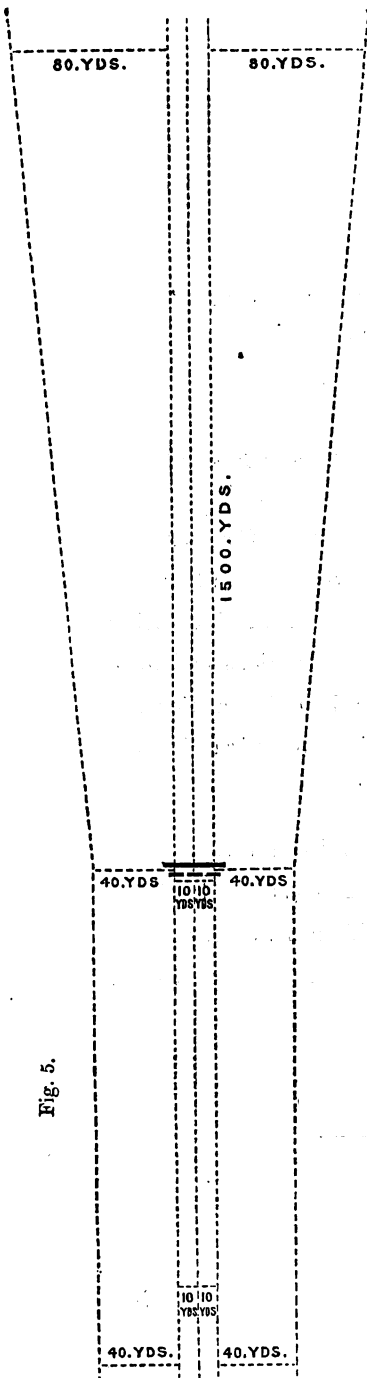


Fig. 5.

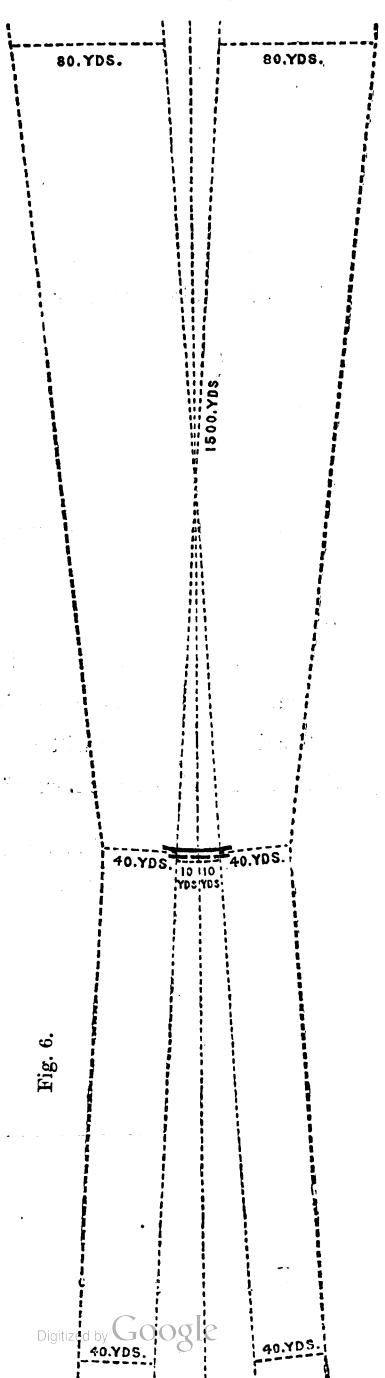


Fig. 6.

CIRCULAR MEMORANDUM ADDRESSED TO THE ARMY
AT HOME AND ABROAD.

General No. 278.

Horse Guards, S.W., 30th October 1863.

Musketry,
4—(1863).

HIS Royal Highness the Field Marshal Commanding-in-Chief, in concurrence with the Secretary of State for War, is pleased to approve of Marksmen's Badges being issued to all soldiers who fulfil the conditions laid down in paragraph 7, Part 5, of the Musketry Regulations.

Good Shooting *Pay* will continue to be issued under the same restrictions as heretofore.

By Command of His Royal Highness
The Field Marshal Commanding-in-Chief;
JAMES YORKE SCARLETT,
Adjutant-General.

CIRCULAR MEMORANDUM ADDRESSED TO THE ARMY
AT HOME AND ABROAD.

Genl. No. 279.

Horse Guards, S.W., 31st October 1863.

Musketry,
5—(1863).

REFERRING to the directions in paragraph 1 of the Appendix to the Musketry Regulations, and to the Orders contained in the letter from this department of the 22nd July last, No. ³⁰⁵⁰ Ins. His Royal Highness the Field Marshal Commanding-in-Chief has now been pleased to desire, that, on home stations, the annual course of Musketry Instruction shall henceforth commence on the 12th of March, in each year, the non-commissioned Officers being trained during the previous month, in the prescribed manner, for the purpose of assisting in the instruction of their respective companies.

By Command of His Royal Highness

The Field Marshal Commanding-in-Chief ;

JAMES YORKE SCARLETT,

Adjutant-General.

CIRCULAR MEMORANDUM ADDRESSED TO THE ARMY
AT HOME AND ABROAD.

General No. 281.

Horse Guards, S.W., 9th November 1863.

Musketry,
6—(1861).

THE Field Marshal Commanding-in-Chief finds it necessary to call the attention of Officers Commanding Troops and Companies to the necessity of the several Musketry practices being carried on strictly according to the Regulations of the Service, and of the Returns being made out and preserved in the prescribed manner, several instances having been brought to notice, in which, on account of irregularities under the above heads, the Good Shooting Pay of the Soldiers has been forfeited.

Should any future cases occur of loss to the men from like causes, His Royal Highness will hold Troop and Company Officers responsible for disallowances made by the War Office.

By Command,

JAMES YORKE SCARLETT
Adjutant-General.

FORMS, &c.

TABLE showing the performances of the several Sections in Platoon Skirmishing Practices.

No. of Section, Squad, or Party.	File firing at 300 Yards.			Volley firing at 400 Yards.			Skirmishing between 400 & 200 Yards.		
	No. of Men.	Total Points ob- tained.	Ave- rage Points.	No. of Men.	Total Points ob- tained.	Ave- rage Points.	No. of Men.	Total Points ob- tained.	Ave- rage Points.
Total Men, Points, and Averages ..									

RECAPITULATION showing the Merit of the Shooting of the Recruits exercised during the Year.

Average Points obtained in the 1st Period		
Do., do. in File firing		
Do., do. in Volleys		
Do., do. in Skirmishing		
TOTAL OF } " Figure of Merit" }		

..... Officer-Instructor.

DEPÔT

MUSKETRY Drill and Practice Return of Recruits of the above Corps

Commenced

PRELIMINARY DRILLS.

Make & Cartridges.	Judging Distance Drill.	Snapping caps & blank firing.	Position drill.	Aiming drill.	Theoretical principles.	Cleaning arms.	Succession Number.	Regimental Number.	Names of Recruits to be entered in the order they join the Depôt or Battalion, Recruit Officers included.															
									Rank and Names.															
<p><i>Least number of drills or exercises to be performed by each Recruit before he is to be allowed to proceed to practice; specifying in the several columns the date when performed; thus, 1st.</i></p>																								
2	1	8	7	6	5	4	3	2	1	6	5	4	3	2	1	8	7	6	5	4	3	2	1	
									1															
									2															
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									41															
									42															
									43															
									44															

Totals

RECAPITULATION of the Number of Men entered in this Return, and their distribution from to 18 ..

	DISTRIBUTION.						Totals *
	Of the Number in the adjoining Column, Number						
No. *	Proceeded to join Service Companies.	Discharged.	Died.	Deserted.	Transferred.	Now serving with the Battalion.	
Concluded Preliminary Drills only							
Exercised to the end of Preliminary ball firing							
Do., 1st Period....							
Do., 2d Period ...							
Do., File firing ...							
Do., Volley firing..							
Do., Skirmishing..							
Not exercised							
Totals							

* These Columns to agree.

Depôt of Regiment,
 belonging to
 Depôt Battalion.

MUSKETRY DRILL
 AND
 PRACTICE RETURN
 OF
 RECRUITS
 For the Year

Commenced.....
 Concluded.....

Dated at
 18

.....
 Commanding Officer.

.....
 Officer-Instructor.

TABLE showing the performances of the several Sections in Platoon and Skirmishing Practices.

Section, Squad, or Party.	File firing.			Volley firing.			Skirmishing.		
	No. of Men.	Total Points obtained.	Average Points.	No. of Men.	Total Points obtained.	Average Points.	No. of Men.	Total Points obtained.	Average Points.
Total Men, Points, and Averages ..									

RECAPITULATION showing the Merit of the Shooting of the effective men of the Company on the _____, the date to which this Return is closed.

Average Points obtained in the 1st Period.....	
Do., do. in File firing.....	
Do., do. in Volleys.....	
Do., do. in Skirmishing.....	
TOTAL OF } "Figure of Merit" }	

..... Captain No. Company.

..... Officer-Instructor.

COMPANY

MUSKETRY Drill and Practice Return of the

Commenced

PRELIMINARY DRILLS:								Succession Number.	Regimental Number.	Names of men to be entered by Sections or Squads, each headed by its own Non-commissioned Officer. Every effective man to be included, except Staff Serjeants, Drummers, and Recruits in a musketry sense. Rank and Names.	TARGET													
Making Cartridges.	Judging distance drill.	Position drill.	Aiming drill.	Theoretical principles.	Cleaning arms.	1st Period.					2d Period,													
						Dis- tances.	3d Class.				2d Class.													
							150				200	250	150	200	250	300	400	500	550	600	Total points.			
Number of drills or exercises to be performed by each Soldier annually before he is to be allowed to proceed to practice; specifying in the several columns the date when performed, thus= $\frac{1}{2}$.						Rounds.	Rounds.	Rounds.	Rounds.	Rounds.	Rounds.	Rounds.	Total points.	Total points.										
Points.	Points.	Points.	Points.	Points.	Points.	5	1	5	1	5	5	1	5	1	5	5	1	5	1	5	Points.	Points.		
1	4	3	2	1	3	7	6	5	4	3	2	1	4	3	2	1	4	3	2	1				
2																								
3																								
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36																								
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38																								
39																								
40																								
41																								
42																								
43																								
44																								
											Totals													

RECAPITULATION of the Number of Men entered in this Return, and their distribution.

.....Regiment.

No.Company.

MUSKETRY DRILL

AND

PRACTICE RETURN

For the Year

18____.

Instruction for the Year.

Commenced.....

Concluded.....

	DISTRIBUTION.						Totals *
	Of the number in the adjoining Column, Number						
	No. *	Proceeded to Join Depot Companies.	Discharged.	Dead.	Deserted.	Transferred.	Now serving with the Company.
Concluded Preliminary Drills only							
Exercised to the end of 1st Period } Do., 2d Period....							
Do., 3d Period....							
Do., File firing...							
Do., Volley firing.							
Do., Skirmishing.							
Not exercised....							
Totals.....							

* These Columns to agree.

.....
Captain No.....Company.

FORM C.

REGISTER OF TARGET PRACTICE. Regiment, No. Company.
Squad or Section. Period. Class.

Targets. Date,

Distance : Yards.

Points obtained per shot.						No.	Rank and Names.	Points obtained per shot.					Total Points.				
5	4	3	2	1	1			1	2	3	4	5					
.....
Totals.								Totals									
Average.								Average									

(Signed)..... *Colour-Sergeant, Company Instructor.*

(Signed)..... *No. Company Marker.*

I certify that these practices were conducted strictly in accordance with the Musketry Regulations; that the targets were examined before and after the firing at each distance took place; and that the points recorded were obtained by the men opposite whose names they appear.

(Signed)..... *Captain,*
or *Officer of No. Company.*

T.P.R.
Regiment.
Company.
Section.
Period.
yards.

Duplicate
Total Points.

TARGET.
PRACTICE REGISTER.

Regiment.

No. Company.

Section.

Period.

and Yards.

Dated at

FORM D.

Regiment, No. Company. Squad.
 REGISTER OF JUDGING DISTANCE PRACTICE.
 Period. Class.

State of Atmosphere, . Object, . Object,
 Date, . Date,

J.D.P.R.
 Regt.
 Company.
 Section.
 Period.
 Class.
 Duplicate
 Total
 Points.

Correct distance in yards.						Correct distance in yards.						Rank and Name.	Total Points.				
Ans.	g.	d.	Ans.	g.	d.	Ans.	g.	d.	Ans.	g.	d.						
6			5			4			3			2			1		

Totals. (Signed) { Non-com. Officer keeping Register. }
 Average. (Signed) { Non-com. Officer keeping Register. }
 Totals Average

I certify that I was present during the performance of the practice above recorded, which was conducted strictly in accordance with the musketry regulations, and that the answers given by each man are those specified against his name.
 (Signed) Captain, or Officer of No. Company.

I certify that I was present during the performance of the practice above recorded, which was conducted strictly in accordance with the musketry regulations, and that the answers given by each man are those specified against his name.
 (Signed) Captain, or Officer of No. Company.

**JUDGING DISTANCE
PRACTICE REGISTER.**

Regiment.

No. Company.

Section.

Period.
Class.

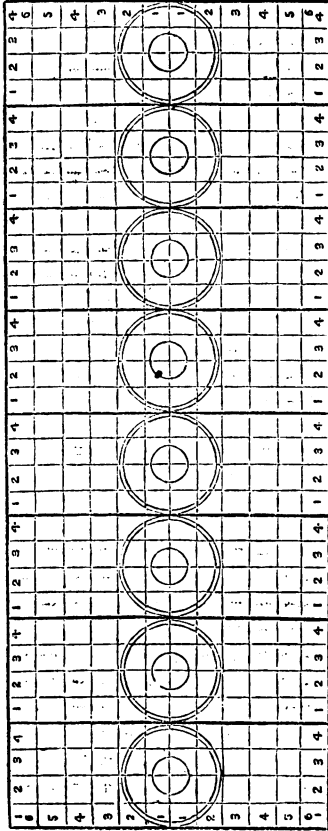
Dated at

.....

FORM E.

Regiment Company, Section.

DIAGRAM recording the Result of the Practice yards, which took place
at Date IS



POINTS	

Bull's eyes
Centres
Cuters
Total Hits & Points
" Misses
" Rounds fired }
& average Points }

No of Men firing
Signatures {
I certify that I was present during the performance of this practice, which was conducted strictly in accordance with the Musketry Regulations, and that I witnessed the taking off of the hits recorded in this Diagram, which is correct.

Rounds fired per man,
Colour Serjeant, Company Inst'.
N° Company, Marker.

Captain N° Company.

..... Regt.
No.....Company.

..... Section.



DIAGRAM

OF

PRACTICE

..... Yards.

Dated at.....

..... 18.....

Form F. W. D. No.

Batt'n

Reg't

PROGRESS RETURN of the Instruction in Musketry in the above Battalion for the

month of 18..... Dated at 18.....

Effective strength of each Company on the last day of the month, not including Recruits.	Officers. Sergeants. Rank and File.	Number under instruction, as also the number who have concluded any of the practices of the men effective.			Preliminary Drills.		Target Practice.								Judging Distance Practice.				Explanation of Column "Absentees."	Absentees.		Absentees not yet exercised.							
		Officers.	Sergeants.	Rank and File.	Theoretical Principles.	Cleaning of Arms.	Aiming Drill.	Position Drill.	Judging Distance Drill.	1st Period.	2d Class.	3d Class.	1st Period.	2d Class.	3d Class.	2d Class.	3d Class.	1st Period.		2d Class.	3d Class.	1st Class.	Officers.	Sergeants.	Rank & File.	Officers.	Sergeants.	Rank & File.	
																													Average points per Man in each Class and in the following "practice."
		Stages of Instruction through which the men have been exercised since the annual course commenced.		Target Practice.		Average Points per Man in each Class and in the following "practice."								Average Points per Man in each Class.				Remarks.		Absentees by Companies.		Absentees not yet exercised.							
Totals		Mean average points				1st Period		2d Class.		3d Class.		1st Period		2d Class.		3d Class.		1st Period.		2d Class.		3d Class.		Total		Total		-	
No. in Battalion on last day of the month.		Recruits		3d Class shots		Average number furnished for guard duty during the month.....		Number of men in each Class at the conclusion of the Periods herein named.								Extent of range available for Target and Judging Distance Practices				Yards		Totals							
Officers.		Sergeants.		Rank and File.		Total.		1st Class.		2d Class.		3d Class.		Total.		1st Class.		2d Class.		3d Class.		Total.		Officers.		Sergeants.		Rank & File.	
1st Period		2d Period		3d Period		Total.		1st Class.		2d Class.		3d Class.		Total.		1st Class.		2d Class.		3d Class.		Total.		Officers.		Sergeants.		Rank & File.	

Officer Commanding.....

Instructor of Musketry.

Form G. W.O. No.

Regiment
ANNUAL TARGET PRACTICE RETURN of the above Corps for the Year 18

Commenced Concluded Dated at

18

COMPANIES.	Practices by Companies.				Total average points per man, obtained in the foregoing practices Nos. 1 to 4.	Practices by Classes.				Total strength including non-commissioned officers, exclusive of recruits.	Number of He- exercised.	Not exercised.	REMARKS.
	1st Period. Each man firing 20 rounds standing.	File firing. 10 rounds per man firing 20 rounds standing.	Volley firing. 10 rounds per man kneeling.	Skirmishing. 10 rounds per man advancing and retiring between 400 & 200 yards.		2d Period. Each man firing 20 rounds.	3d Period. Each man firing 20 rounds.	1st Class. Men effective.	2d Class. Men effective.				
	Men effective. Points. Average.	Men effective. Points. Average.	Men effective. Points. Average.	Men effective. Points. Average.									
	Men effective. Points. Average.	Men effective. Points. Average.	Men effective. Points. Average.	Men effective. Points. Average.									
	Men effective. Points. Average.	Men effective. Points. Average.	Men effective. Points. Average.	Men effective. Points. Average.									
	Men effective. Points. Average.	Men effective. Points. Average.	Men effective. Points. Average.	Men effective. Points. Average.									
Total men, Points, and non-aver- age													
Average points per man of the Battalion in 1st Period	File firing	Total				Average Points				Average Points
" "	" "					Average Points				Average Points
" "	" "					Average Points				Average Points
" "	" "					Average Points				Average Points
Number of rounds per man, fired to complete the annual course of practice												
Extent of range												
Name of the best shot of the Battalion, specifying opposite the number of points obtained												
.....												

* These figures denote the merit of the Battalion.

.....Regiment.

Return of the Men now effective, who, in the Annual Course of Rifle Practice for the year 18 , obtained 7 points and upwards in shooting in the 1st Class between 600 and 900 yards.

Dated at 18 .

Number.	Company.	Regimental Number.	Rank and Names of men effective, who obtained 7 points and upwards in the 1st Class, to be inserted in the order of merit.	Points obtained by each man in Target practice in the				Points obtained by each man in Judging Distance in the			Remarks specifying who is the best shot of Battalion, and best shot of each Company.
				1st Period.	2d Period Class.	3d Period 1st Class.	Total obtained out of the 60 rounds fired.	1st Period. Points.	2d Period. Points.	3d Period. Points.	

We certify that this Return has been carefully compared with the Registers of Practice, and presence, in the Theoretical principles, and Cleaning Arms instruction, and that they are

N.B.—The Inspector of Musketry, when available, is to examine the men ; if not, the officer-instructor.

Number.	Company.	Regimental Number.	Rank and Names. (continued.)	Points obtained by each man in Target practice in the				Points obtained by each man in Judging Distance in the			Remarks.
				1st Period	2d Period 2d Class.	3d Period 1st Class.	Total obtained out of the 60 round fired.	1st	2d	3d	
								Period.	Period.	Period.	
Points.	Class.	Points.	Class.	Points.							

that the foregoing statements are correct; that the men herein named were examined in our eligible for the rewards as "Marksmen," except as stated in the Remarks.

..... Commanding Battalion.

..... Instructor of Musketry.

..... Inspector of Musketry

(when available).

Regiment.....
ANNUAL JUDGING DISTANCE PRACTICE RETURN of the above Corps for the
 Year 18

Commenced..... *Concluded*..... *Dated at*..... 18....

Companies.	1st Period.			2d Period.			3d Period.			Number of men in each Class at the conclusion of the practice.	Total strength, including Non-commissioned Officers exclusive of Recruits.	Number of Recruits.		REMARKS.			
	Men.	Points.	Average.	Men.	Points.	Average.	Men.	Points.	Average.			Men.	Points.		Average.	Not Exercised.	Exercised.
Total Men and Points and Mean Averages.																	

Name of the best judge of distance specifying *Points.* **Officer Commanding.**
 opposite the number of points obtained . . . } **Officer-Instructor.**

Recruiting) during) the entire) period of) the) Annual) Course) (in Hospital) Do - Do.) In Prison) Do. - Do.) On Corn-) mand) Do. - Do.) Total -	No.) of) R. & F.)	Reapitulation) of the) Non-Exercised) men.)	<i>Dated at</i>) 18)	Annual) Musketry) Practice) Return for) the year) 18)	Regt.))					
						<i>Points.</i> Officer Commanding.				
					 Officer-Instructor.				

Company.	Rank and Name.	Causes which prevented instruction. In the case of men being in hospital, &c., the period to be specified.	Company.	Rank and Name.	Causes which prevented instruction. In the case of men being in hospital, &c., the period to be specified.	Names of the Non-Exercised Men, specifying opposite each man's name the cause which has prevented his being instructed.	Dated at 18

Commanding Officer.

To accompany in triplicate the Annual }
 Practice Return sent to Inspector-Ge- }
 neral of Musketry.

Form H. W. O. No.

..... REGIMENT.

RETURN of MEN now effective who, in the annual course of Rifle practice for the year ended 18.... obtained seven points, and upwards, in shooting in the 1st Class between 600 and 900 yards.

Dated 18 .. .

No.	Company.	Regi- mental No.	Rank and Names.	To be filled up by the Inspector-General of Musketry.	
				Each Man to receive	Remarks.

.....
 Officer-Instructor

.....
 Commanding Officer.

..... men recommended for rewards for good shooting : viz. at three pence, at two pence, and at one penny per diem ; and the Serjeants of No. Company for the supplementary prize *without pay*. Submitted for the approval of Commander-in-Chief.

.....
 Inspector-General of Musketry.

App^d { Horse Guards, }
 { 18 }

..... REGIMENT.
 =====

NOMINAL RETURN of Men of the
 above Corps recommended for
 Rewards for good Shooting for
 the Year

Voucher for Pay List for Quarter
 ending

N.B.—This return is to be prepared monthly by Inspectors, or Officers superintending the Musketry Instruction, and to be transmitted by the 10th of the month following that to which it refers; viz., one copy to the General Officer commanding each District, Station, or Division, showing the progress of the Musketry Instruction of the several Regiments under his command; and one copy containing all the Regiments under supervision, to the Inspector-General of Musketry, accompanied with the Regimental Progress Returns in Duplicate.

DISTRICT MUSKETRY REPORT.

Home Stations.

RETURN showing the progress of Instruction in Musketry among the Troops in

MONTHLY REPORT.

For 18

Transmitted 18

Received 18

W. O. form.....

N.B.—This return to be prepared monthly by Inspectors or Officers superintending the Musketry Instruction, and to be transmitted by the 10th of the month following that to which it refers; viz., one copy to the General Officer commanding each Station or Division, showing the progress of the Musketry Instruction of the troops under his command; and one copy containing all the regiments under supervision, to the Inspector-General of Musketry—prepaid.

The monthly Progress Returns of regiments abroad are not to be forwarded to Hythe; but are to be examined by the Inspector, who is to return the duplicate copy to the regiment, with any remarks it calls for, retaining the original himself.

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Stations abroad.

RETURN showing the progress of the
Instruction in Musketry amongst
the Troops in

MONTHLY REPORT.

For 18 .

Transmitted 18

Received 18

W O. form.....

FORM M.

Regiment.

RETURN showing the extent to which the under-named men have been instructed in the current year's course of Musketry Drill and Practice, and who proceeded to join the Companies, on 18.

Dated at 18

Regimental No.	Rank and Names.	Preliminary Drills, con- cluded or otherwise.	Target Practice.							Judging Distance Practice.				REMARKS.		
			No. of Points obtained in							No. of Points obtained in						
			1st Period.		2d Period.		3d Period.		File firing.	Volleys.	Skirmishing.	1st Period.			3d Period.	
			Class.	Points.	Class.	Points.	Class.	Points.				Class.	Points.		Class.	Points.

Officer-Instructor.

Commanding Officer.

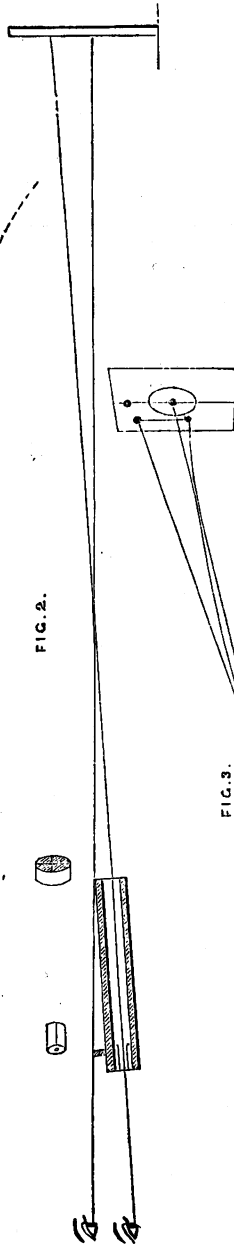
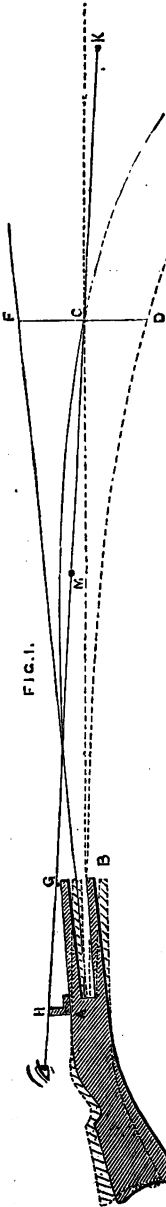


FIG. 3.

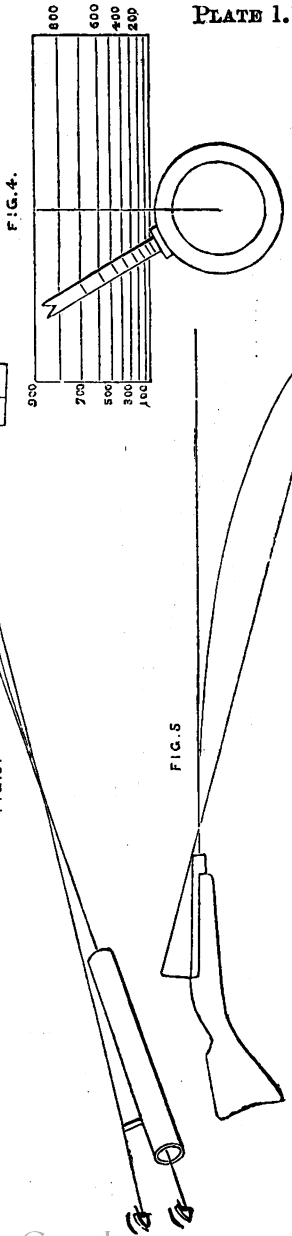


FIG. 5.

PLATE 2.

FIG. 6.



FIG. 7.

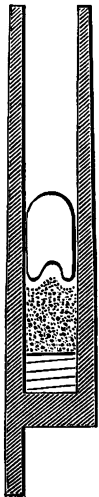


FIG. 9.

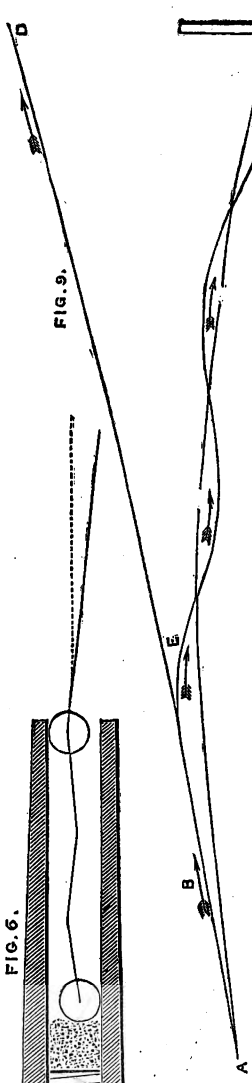


FIG. 10.

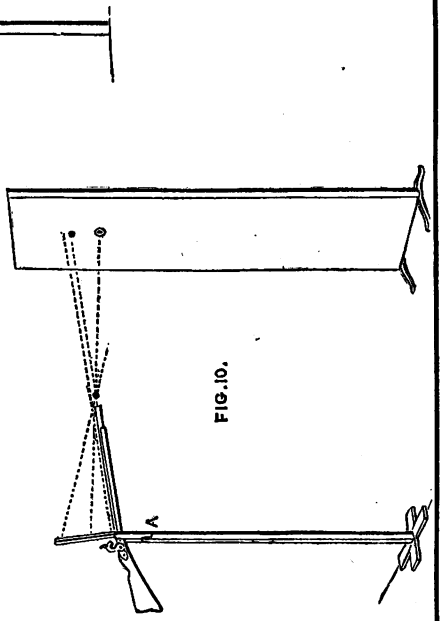


FIG. 8.

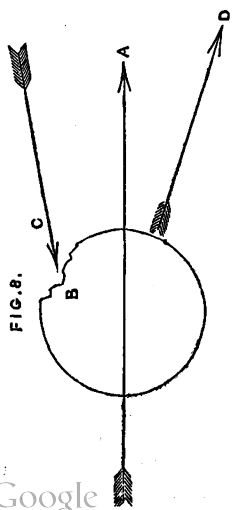


PLATE 3.

Fig. 11.

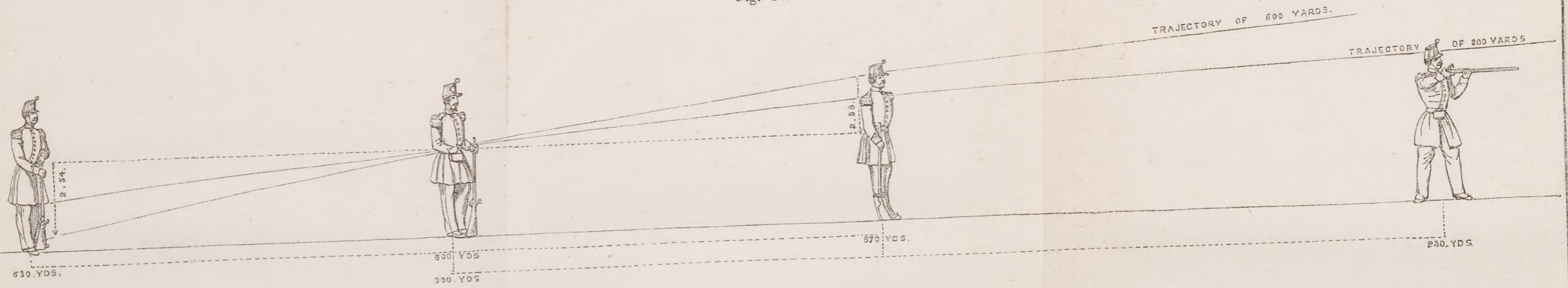
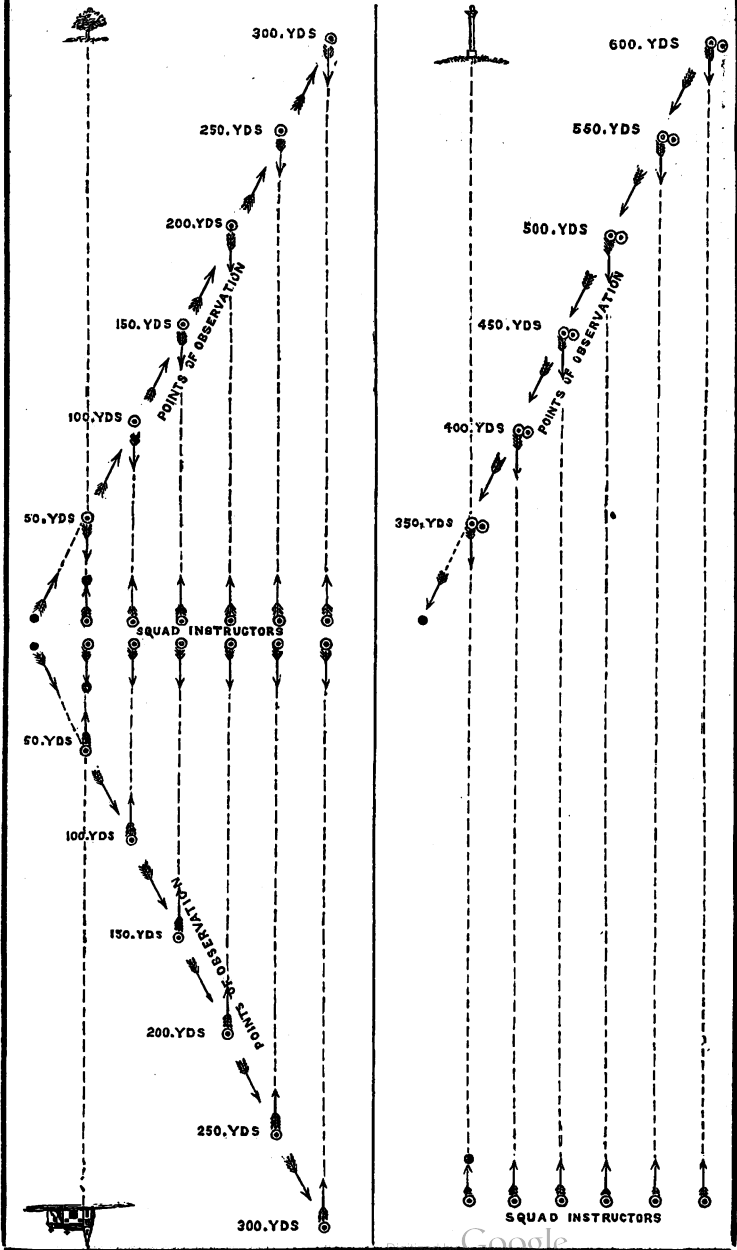


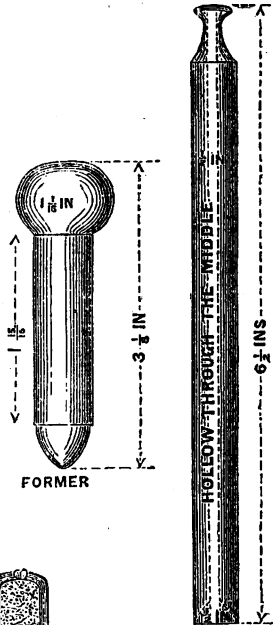
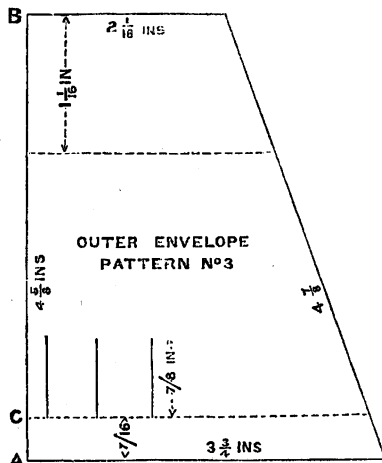
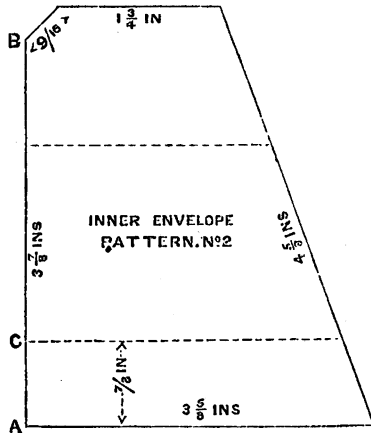
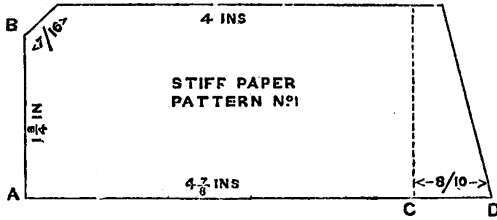
Fig. 12.





N.B.—Men represented thus . to be removed.

PLATE 5.



SCALE $\frac{1}{2}$ FULL SIZE

PLATE 6.

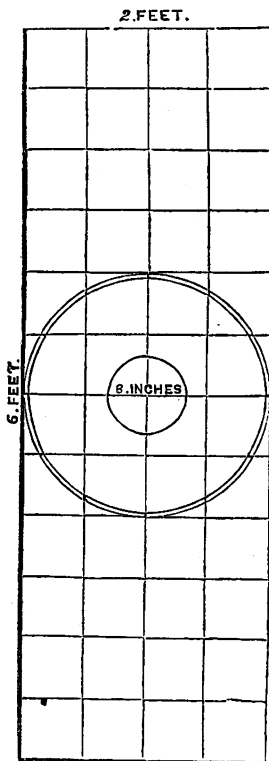
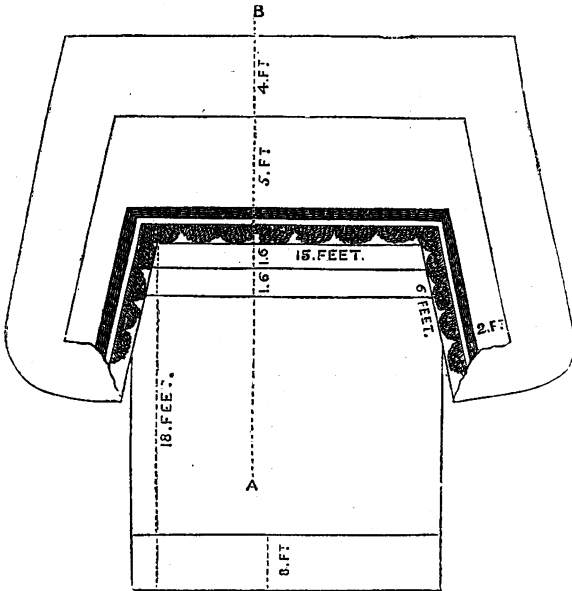
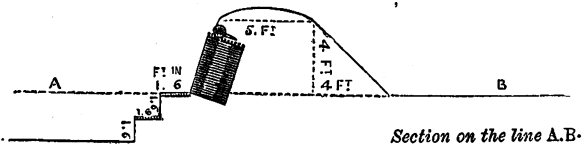


PLATE 7.



N.B.—This is the smallest description of Butt that ought ever to be made, and the markers must always sit on the upper banquette close to the interior slope.



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