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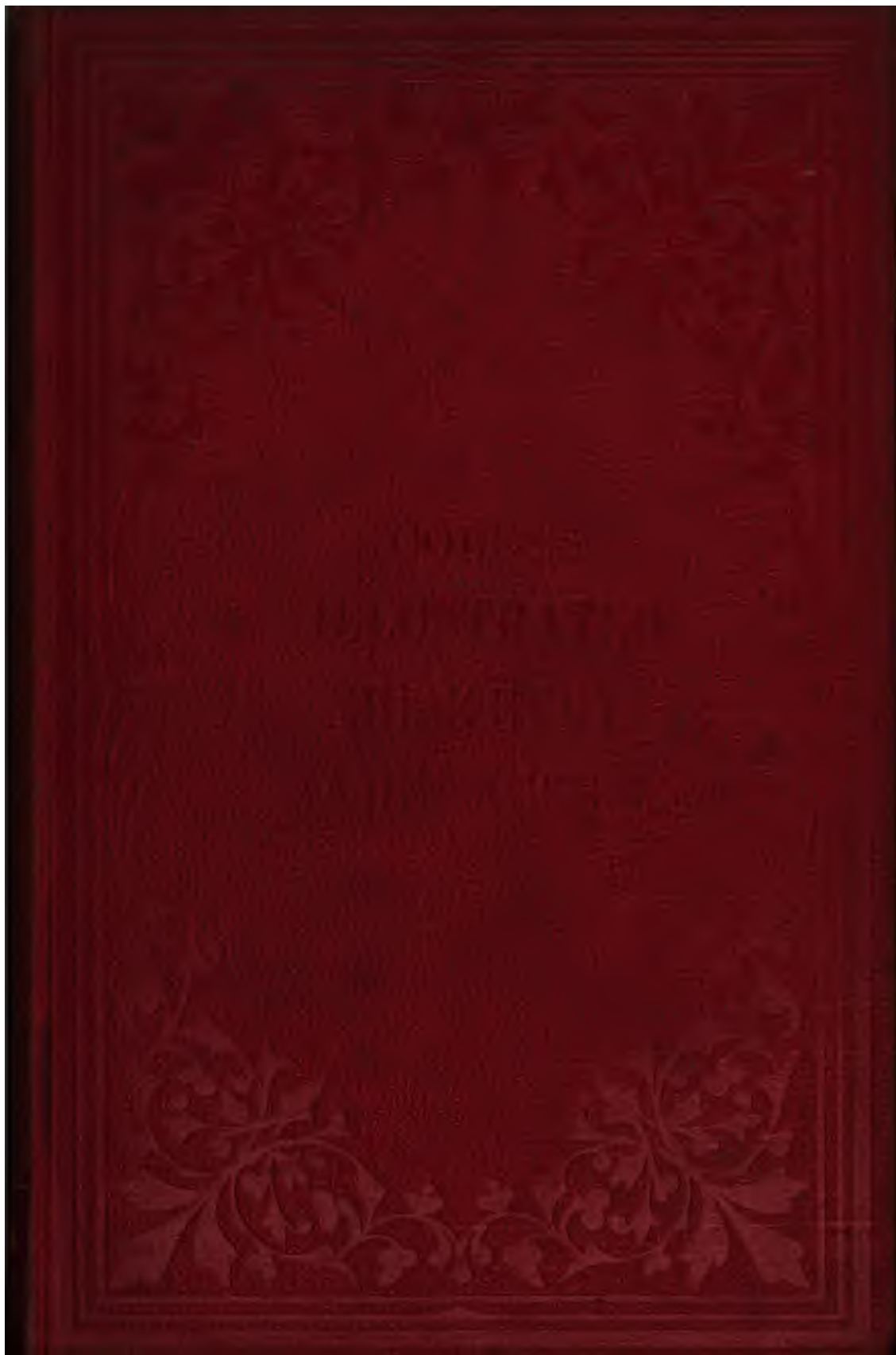
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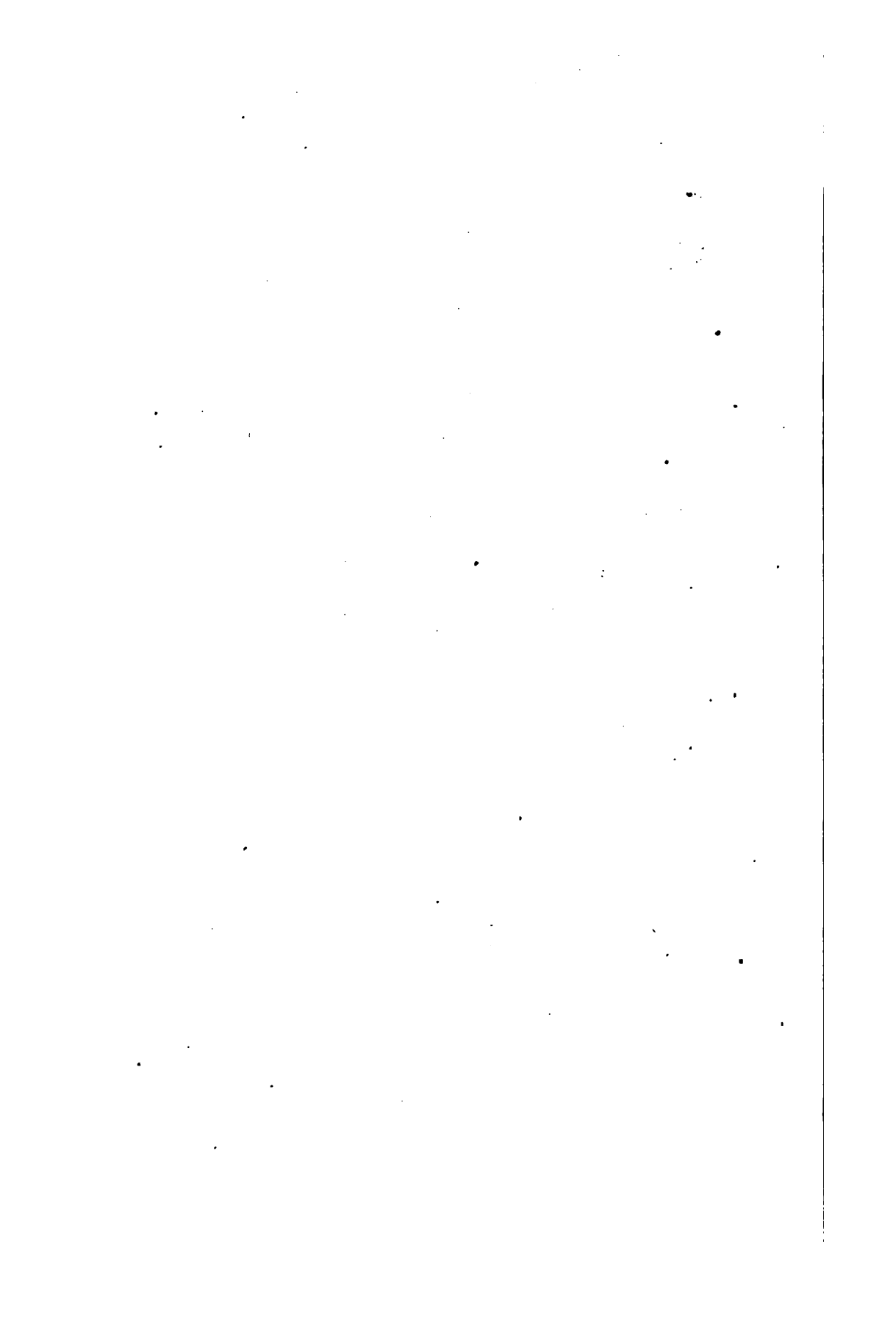


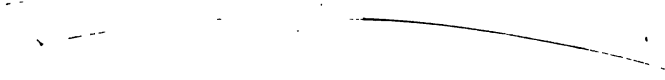


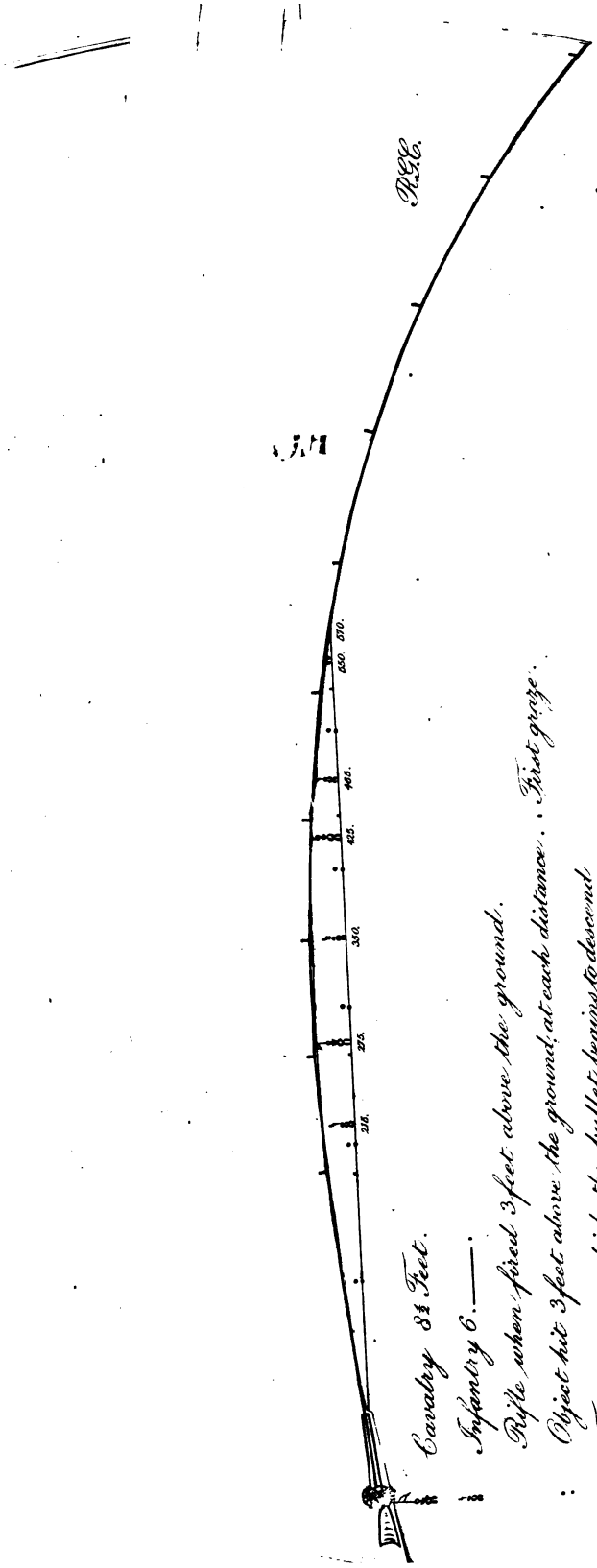
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Cavalry 84 Feet.

Infantry 6. —

Rifle when fired 3 feet above the ground.

Object hit 3 feet above the ground at each distance. First graze.

The point at which the bullet begins to descend

is between $\frac{1}{2}$ and $\frac{2}{3}$ of the distance.

ILLUSTRATED
MUSKETRY VADE MECUM.

BY

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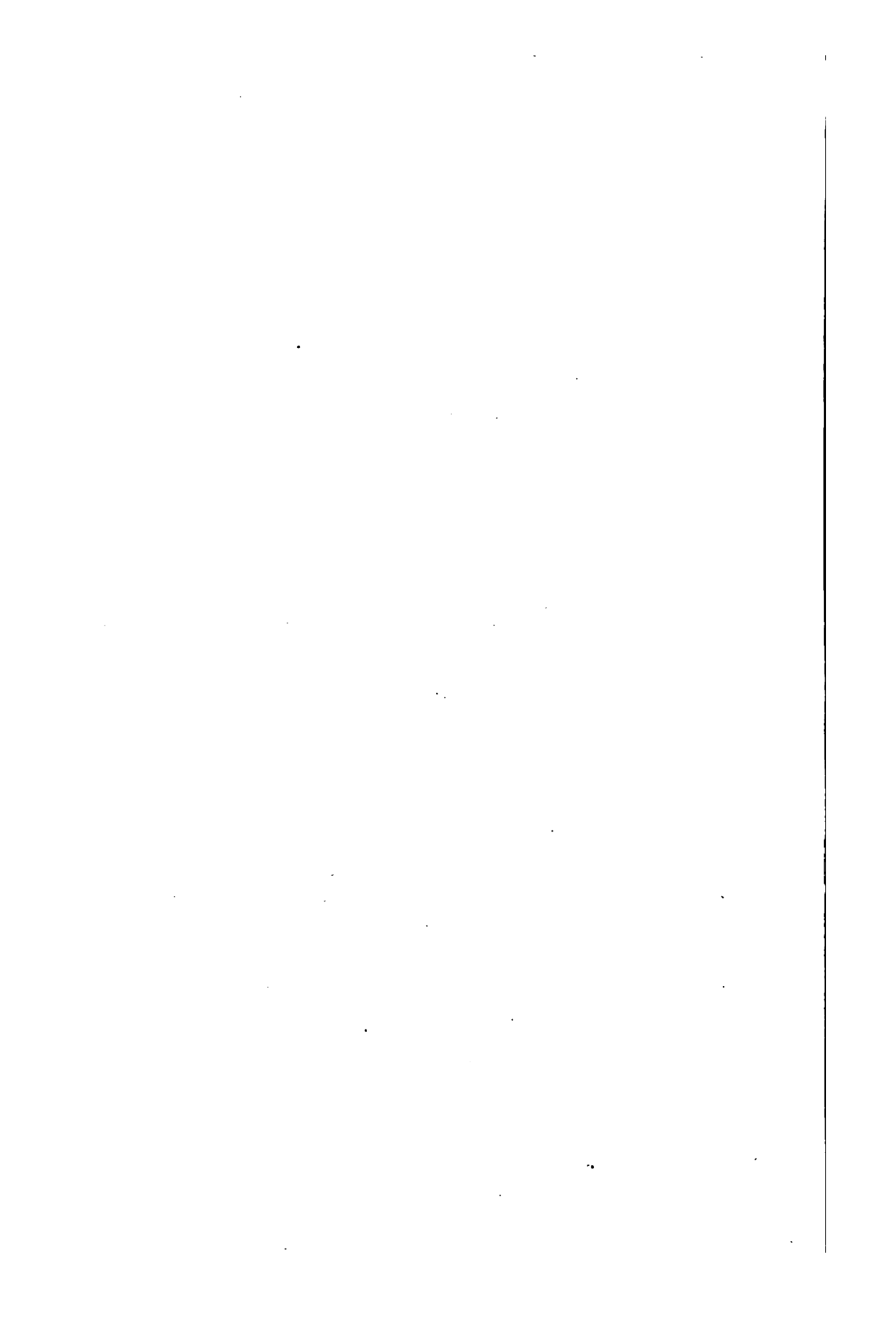
PREFACE.

FOUR years' experience in the training of Officers, Non-commissioned Officers, and Privates at the Schools of Musketry, has given the author a knowledge of the most effectual method of imparting instruction in the "Drill and Practice of Musketry," and induced him to publish an "*Illustrated Musketry Vade Mecum*," which he feels assured will prove of great service to those whose duty it is to make themselves thoroughly acquainted with the book of "Instruction in Musketry."

The Paragraphs, *Nota Benes*, Tabular Forms, etc., in the several Parts of the book of "Instruction in Musketry," to which the questions refer, are quoted thus: P. — N.B. — Tabular Form.

The "Cleaning Arms Instruction," "Manufacture of Cartridges," and the questions on the "Theory" are intended for the *vivâ voce* examinations of officers, non-commissioned officers, and privates.

The answers to questions on the "Theoretical Principles" have been carefully arranged so as to form a concise and short lecture on each lesson, in "language suitable to the capacity of the men."



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ERRATA.

(A)—ANSWERS Column. (Q)—QUESTIONS Column.

Page	1, last line but 5	(A) for	musketry;	read musketry."
"	2, line 15	(A) "	and with	" the supervision of
"	2, " 17	(A) "	will	" to
"	2, " 25	(A)	omit;	
"	4, " 19	(A) for;		
"	29, last line but 4	(A) "	lighting	"ighting
"	32, lines 3, 10, and 21	(A) "	1 foot 5 inches	" about 10 inches
"	35, line 3	(Q) "	30 and 50 yards	" 50 yards
"	36, last line but 10	"	It is not the	" It is not of the
"	39, line 4	(Q) "	musket pattern, 1853	" musket, pattern 1853
"	39, last line	(A) "	place	" place as
"	42, line 14	(A) "	torrid	" torrid
"	44, " 12	(Q) "	was	" is
"	47, " 23	(A) "	that	" as
"	48, (diagram) arrow C	should be drawn parallel to A B		
"	52, " 1	(Q) for	distance	"distances
"	53, " 8	(Q) "	he	" the instructor
"	64, last line but 1	(A) omit,	after candle	
"	83, line 17	(A) "	65	" 650
"	83, last line but 1	(A) for	except	" when
"	90, line 11	(A) "	company (witness),	" company, company instructor,
"	94, " 10	(A) "	these judge	" subdivisions judging
"	95, " 2	(A) "	answer	" answers
"	99, last line but 2	(A) "	until bar alider	" bar until it
"	100, line 1	(Q) omit	Read	
"	100, " 1	(A) insert	read before off	
"	102, " 17	(A) "	first and after the	
"	105, " 4	(A) for	80	" 79
"	105, " 7	(A) "	91	" 90
"	106, " 4	(A) "	10 service companies	" service companies 90
"	106, " 5	(A) "	3 depôt companies	" depôt companies 10
"	109, line 10	(A) "	they	" men
"	109, " 11	(A) omit	when annual practice returns are to be prepared;	
"	109, " 15	(Q) for	performances of the above men? read their performances shown in these tables?	
"	113, " 12	(A) "	instructors	" read instructor
"	114, last line but 10	(A) insert	on before first	
"	114, last line but 3	(A) omit	1 available, column " remarks;"	
"	114, last line,	(A) after	exercised." insert — One.	
"	115, in tabular form,	for	8. in second column read 8.	
"	116, line 15	"	fourthly	" thirdly
"	116, " 16	"	fifthly	" fourthly
"	116, " 17	"	sixthly	" fifthly
"	121, " 3	(A) omit	the training of companies detached are to be trained	
"	127, " 2	(A) for	9 ft.	" read 9 inches

VADE MECUM.

PART I.

DUTIES, INSTRUCTORS, ETC.

QUESTIONS.

What is comprised under the head "Musketry Training;"—under whose responsibility is it placed;—and how is he to make himself acquainted with it? P. 1.

What is further required of him with regard to musketry instruction? P. 1

What is required of majors of battalions? P. 2.

ANSWERS.

Target and judging distance drills and practices;—commanding officer of battalion;—by careful study of regulations, giving his personal superintendence to companies under instruction, and by availing himself of the assistance and information to be derived from inspectors of musketry.

To conduct all correspondence, the accuracy of all returns, etc., and to afford every information and explanation called for by the Inspector-General of Musketry.

To render themselves acquainted with the "theory and practice of musketry, and, under the orders of their commanding officer, to visit *daily* the men engaged at drill and practice, and to see that the instructions and orders referring thereto are observed.

QUESTIONS.

When there is only one major present, by whom is he to be assisted? P. 2.

What is required of captains of companies;—and why? P. 3.

Who is responsible that the target and judging distance practices are conducted with uniformity by the several companies;—what are his duties;—and what part of the instruction is especially confided to him;—and by whom assisted? P. 4.

What duties exempted from;—when is he to perform the duties of an ordinary officer, and what steps are to be taken in the event of his being required to do so? P. 4.

State, since 1863, what qualification an officer must hold to enable him to fill the appointment of captain instructor to a depot battalion;—what in ordinary cases;—what are the advantages

ANSWERS.

By senior captain, who, in turn with the major, is to take this duty.

To make themselves conversant with the instruction of musketry; to be present at the musketry drills and practices of their companies, and to be acquainted with the proficiency of their men in “shooting” and “judging distance;”—because it is a component part of company and battalion drill.

Officer instructor.—Entire training of young officers and recruits, and with the preliminary drills of the other officers and soldiers of the battalion annually, and will act as umpire in the case of disputed hits;—“theoretical principles;”—assistant officer instructor, sergeant, and company instructors.

All regimental and garrison duties;—when prevented from carrying on those of his special appointment;—the cases are to be exceptional, and reported to the general officer commanding on the spot, and notified in Monthly Progress Return to Inspector-General of Musketry.

First class extra;—first class certificate;—an overslaugh on the roster for foreign service, and not required to join without special orders from the Commander-in-Chief;—captain in-

QUESTIONS.

accruing from these appointments;—and when are they required to vacate them? P. 5 & 6.

State what commanding officers are required to do concerning these appointments? P. 5 & 6.

What officer is to be appointed assistant officer instructor;—from what duties is he exempted, and how long;—and what certificate must he hold? P. 7.

Mention briefly the orders concerning the leave of officer instructors;—when assistant may receive his senior's pay;—what information accompanies the application for leave, and what inserted in Progress, Annual, Monthly Regimental, and Depot Battalion Returns? P. 8 and 9.

For whose assistance are musketry instructors appointed;—who does the Commander-in-Chief hold responsible for musketry training;—and what are they ordered to report concerning any neglect? P. 10.

By whom are applications to attend the Schools of Musketry recommended;—when made, the applicants being on leave;—under what conditions are officers permitted to attend the Schools of Musketry a second time;—

ANSWERS.

structors after three years;—subalterns two years, whether or not they have received the overslaugh.

To make such arrangements as shall ensure qualified officers being always available to fill them when they become vacant.

A subaltern;—regimental and garrison duties while annual course is proceeding;—certificate of qualification signed by Inspector-General of Musketry.

Except in urgent cases, officer instructors are not to be recommended for leave during annual course;—when officer instructor is absent fourteen days;—name of officer selected to take duty, and whether gazetted provisional or assistant.

The commanding officer;—the commanding officer;—officers who neglect to attain a thorough knowledge of their duty, and thereby disqualify themselves for their position as instructors or as company officers.

Commanding officers;—in sufficient time to enable them to go through the course, and to join their corps at the expiration of their original leave;—when they have satisfactorily performed the

QUESTIONS.

and what officers are not granted this indulgence? P. 11.

What sergeant is to be appointed sergeant instructor in musketry;—mention briefly his duties, and the duties he is exempted from;—and whether subject to the orders of other non-commissioned officers? P. 12.

How do sergeant instructors, second and third class, rank respectively? P. 13.

What sergeant is to be appointed company instructor;—and mention briefly his duties? P. 14.

As regards musketry, mention duties of non-commissioned officers of the company? P. 15.

ANSWERS.

duties of "assistant;"—those who fail to obtain any certificate.

One who has obtained a certificate of qualification signed by the Inspector-General of Musketry;—employed exclusively in the training of the men of the battalion, to assist officer instructor in *all* his duties, to attend target and judging distance drills and practices, and superintend the company instructors;—all regimental, garrison, and barrack duties;—no, except as regards discipline.

Next to quarter-master-sergeant (in the Guards, with the drill sergeants, according to seniority), third class, next to colour-sergeants.

Colour-sergeant, or troop sergeant-major, in their absence the next senior;—to attend with company when under musketry instruction, to assist officer and sergeant-instructors in their duties, — and specially charged under the orders of his captain, the officer and sergeant instructors, with the instruction of the men in the cleaning and management of their arms, and the manufacture of cartridges.

To assist as "drills" in the instruction of the men of their companies.

PART II.

GENERAL COURSE OF INSTRUCTION.

QUESTIONS.

What branch of the recruit's training is to be proceeded with after he has attained a thorough knowledge of his platoon exercise? P. 1.

Can too much care and attention be devoted to this great object, and why? P. 2.

As regards musketry training, what are we to impress upon the mind of the soldier? P. 2.

What does his instruction in marching and manœuvering do for him? P. 2.

Into how many parts is the instruction of musketry divided? P. 3.

What is comprised under the head "Preliminary Drill," and state number of drills and lessons for the soldier and recruit respectively? P. 4.

ANSWERS.

His course of musketry drill and practice.

No, because the rifle is placed in the soldier's hands for the destruction of his enemy, and his own safety depends upon his efficient use of it.

That every man who has no defect in his eyes can be made a good shot.

It places him in the best possible position for using his rifle with effect.

Two, preliminary drill and practice.

	For the soldier.	For the recruit.	Cavalry.
Cleaning Arms	4	8	4
Theoretical principles...	4	8	4
Aiming drill	4	6	4
Position drill	8	16	4
Snapping caps	2		
Blank firing	2		
Judging distance drill...	4	8	4
Manufacture of cartridges {	12 men per Company.	2 or more.	

QUESTIONS.

What under the head "Practice?" P. 5.

In what is the drill of the soldier and recruit recorded? P. 6.

How many headings are there in the company index? P. 6.

How many in that for recruits? P. 6.

What is the *first* heading in each of these?

Mention briefly the several headings under which the practice of recruits, officers, and drilled soldiers is recorded? P. 6.

Show in juxtaposition the number of practices in each period;—number of rounds expended by the recruit,—infantry and cavalry officer and soldier annually;—and state total number expended by cavalry and infantry? P. 6.

ANSWERS.

Firing singly.

Firing volleys.

Rapid file firing.

Firing in skirmishing order.

Judging distance practice.

A preliminary index.

Six.

Eight.

Cleaning arms.

Preliminary ball firing.

1st period.

2nd "

3rd "

Volleys.

Rapid file firing.

Skirmishing.

Judging distance practice.

1st period.

2nd "

3rd "

	Infantry.		Cavalry.	
	Practices.	Rounds.	Practices.	Rounds.
Preliminary .	4	20		
1st period ...	4	20	4	20
2nd ,, ...	4	20	4	20
3rd ,, ...	4	20	4	20
[Omitted by cavalry and infantry recruits.]				
Volley	1	10		
Rapid F.F. ...	1	10		
Skirmishing...	1	10	1	10
Total number of rounds for				

For Recruits

For Recruits

Cavalry recruits, officers, & drilled soldiers of cavalry.

QUESTION.

Give an instance when a recruit is to perform double the number of drills;—and mention course pursued. P. 7.

ANSWERS.

recruit, officer, and soldier, 90;—
recruits, officers, and soldiers of
cavalry, 70.

When found unfit to proceed to
practice;—put back to another
squad to commence again.

PART III.

PRELIMINARY DRILL.

CLEANING ARMS.

QUESTIONS.

What is taught the soldier and recruit in this *important* part of the musketry instruction?

Why the first drill for soldiers?

What are you to impress upon the minds of the men?

ANSWERS.

The names of the different parts of the lock and rifle, the rules for cleaning and keeping them in proper order, and how to keep the ammunition in an efficient condition.

Because it is impossible to produce accurate shooting with a dirty rifle, or with damaged ammunition.

The necessity of preserving their rifles and ammunition at all times in the highest condition.

FIRST LESSON.

What is taught in this lesson?

How many limbs are there in the lock?

In what order are they to be named?

Why in that order?

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

Eight.

In the order of removal.

To assist the memory of the soldier, and to ensure uniformity of system throughout the army.

QUESTIONS.

What are the names of the eight limbs?

ANSWERS.

- 1. Main Spring.
- 2. Sear Spring.
- 3. Sear.
- 4. Bridle.
- 5. Hammer.
- 6. Tumbler.
- 7. Swivel.
- 8. Lock Plate.
- 9. Tumbler Pin.
- 10. Sear Spring Pin.
- 11. Sear Pin.
- 12. Bridle Pin.



R.G.C.

QUESTION.

ANSWER.

1. Nose Cap.
2. Bands. { Upper.
Middle.
Lower.
3. Swell.
4. Projections.
5. Lock Side.
6. Head.
7. Small.
8. Trigger-guard.
9. Trigger-plate.
10. Trigger.
11. Breech-nail.
12. Side-nails.
13. Butt. { Toe A.
Heel B.
14. Heel-plate.

What are the principal parts of the stock ?

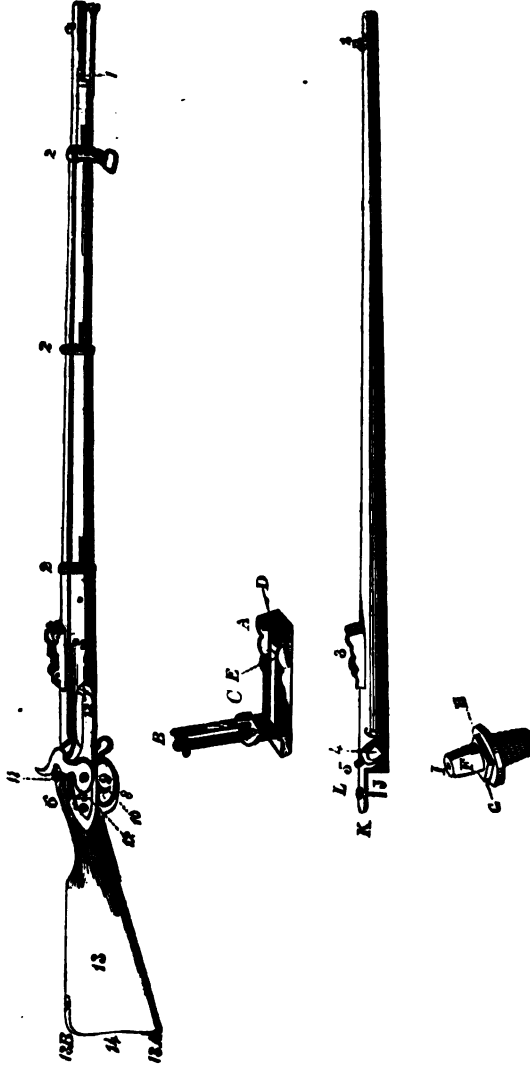
QUESTION.

ANSWER.

1. Muzzle.
2. Fore Sight. { Flanges A.
Flap B.
Slider C.
Spring D.
Bed E.
3. Elevating Sight.
4. Nipple Lump.
5. Nipple. { Cone F.
Square G.
Shoulder H.
Touch-hole I.
6. Breech.
7. Breechpin { Face J.
Tang K.
Breech Nail-hole L.

What are the principal parts of the barrel ?

THE RIFLE.



R.G.C.

QUESTIONS.

What is the first pin you remove in dismantling the lock?

The first limb dismantled?

Explain how?

The second limb dismantled?

Explain how?

The third dismantled?

Explain how?

The fourth dismantled?

Explain how?

The fifth dismantled?

Explain how?

ANSWERS.

The tumbler pin.

The mainspring.

Put the lock at full cock, then place the cramp on the mainspring, and after letting the hammer down, remove the spring.

The sear spring.

Partly unscrew the sear spring pin, place the edge of the turn screw between the bend of the spring and the lock plate, to raise the former from the latter, after which, unscrew the sear spring pin and remove sear spring.

Sear.

Unscrew the sear pin and remove sear.

Bridle.

Unscrew bridle pin and remove bridle.

Hammer.

Rest it in the hollow of the hand, and then remove it by a few smart taps with a piece of wood, as near the lock plate as possible.

SECOND LESSON.

What is taught in this lesson?

The names of the various parts of the limbs.

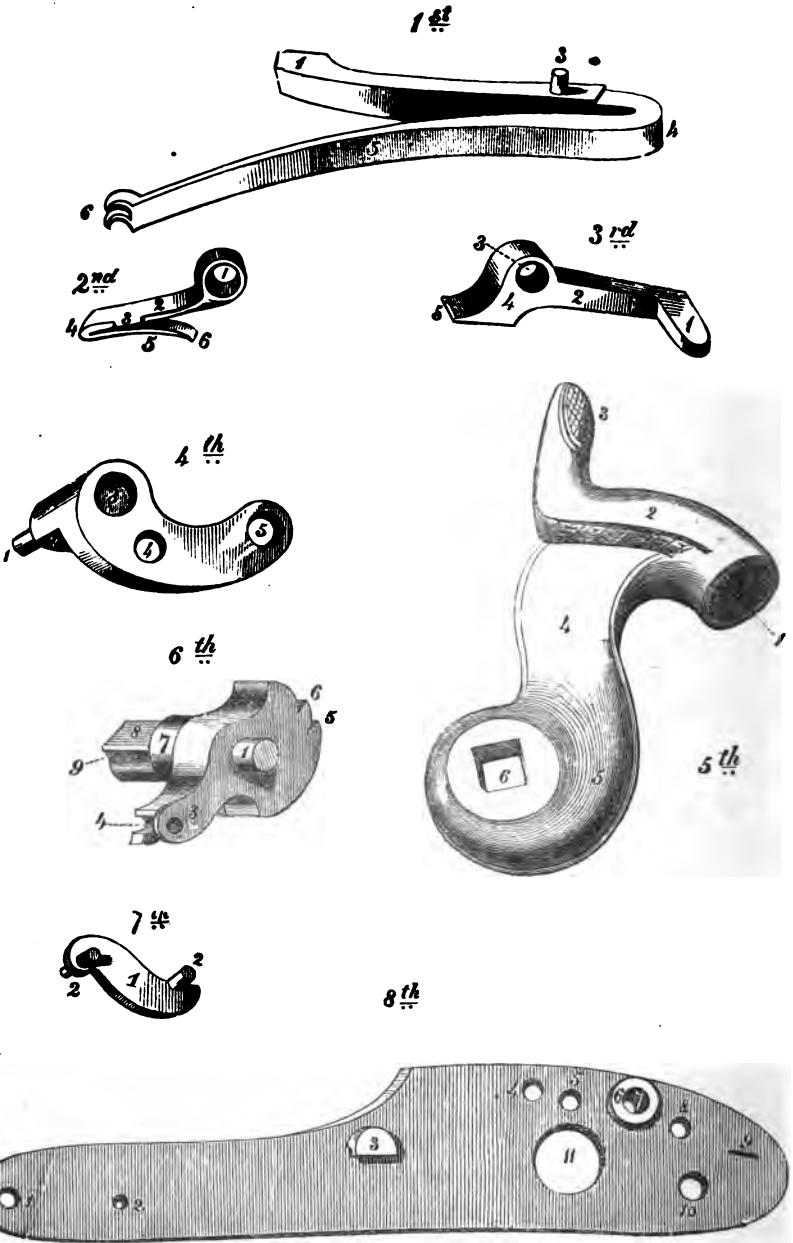
What is the first limb?

The Mainspring.

How many parts in it?

Six.

NOTES.



QUESTIONS.

Name them?

What is the 2nd?

How many parts in it?

Name them?

What is the 3rd?

How many parts in it?

Name them?

What is the 4th?

How many parts in it?

Name them?

What is the 5th?

How many parts in it?

Name them?

What is the 6th?

How many parts in it?

Name them?

What is the 7th?

How many parts in it?

Name them?

What is the 8th?

How many parts in it?

Name them?

ANSWERS.

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

The Sear spring.

Six.

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

The Sear.

Five.

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

The Bridle.

Five.

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

The Hammer.

Six.

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

The Tumbler.

Nine.

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

The Swivel.

Two.

1. Body. 2. Pivots.

The Lock-plate.

Eleven.

1. Front side nail-hole. 2.
Main spring stud hole. 3. Fore
stud. 4. Bridle stud hole. 5.
Bridle pin hole. 6. Hind stud.
7. Hind side nail hole. 8. Sear

QUESTIONS.

ANSWERS.

spring pin hole. 9. Sear spring stud hole. 10. Sear pin hole. 11. Tumbler axle hole.

 THIRD LESSON.

What is taught in this lesson?

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

How are you to clean the several limbs of your lock? P. 1.

Wipe them with an oiled rag and afterwards with a dry one.

What part of the lock plate are you more particularly to keep free from rust? P. 2.

The tumbler axle hole.

How are spots of rust to be removed? P. 2.

By an oiled rag.

Why not with brick-dust or sand-paper? P. 2.

Because it would remove the case-hardening, and render the several parts which are not steel more liable to rust.

What is case-hardening? P. 2.

A thin coating of steel over the iron.

How are locks case-hardened?

By inserting them in a sheet iron case in the midst of bone dust, the lid being secured with iron wire, and the joints luted with clay. It is left in a furnace of red heat, and then the locks are suddenly dipped in cold water.

What are the parts of the lock to which it is actually necessary to apply oil? P. 3.

The frictional parts, and the threads of the pins.

What are the frictional parts? P. 3 and 4.

Pivot and axle of tumbler, pivots of swivel, nose of the sear, toe of the sear spring.

QUESTIONS.

What oil is used and how applied? P. 4.

Why is only a very small quantity to be applied? P. 4.

ANSWERS.

Rangoon oil, with a feather or the point of the pricker.

Because, if too much is used it is likely to clog the parts.

CLEANING RIFLE.

Before commencing to wash out the rifle, what are you to do? P. 5 and 6.

How are you to hold the rifle when sponging out the barrel? P. 7.

How much water at a time are you to pour into the barrel? P. 8.

What are you to be careful to prevent? P. 8.

How is the dirt or fouling to be removed from the bore of the gun? P. 8.

How long is this process to be continued? P. 8.

How are you to dry the bore of the gun? P. 9.

After the bore is perfectly dry what are you to do? P. 9.

Place the lock at full cock. Draw the rod, put a piece of woollen rag or tow into the jag, and twist it round so as to cover the head.

In the left hand, at the full extent of the left arm, barrel downwards, with fore finger and thumb in line with and round muzzle, the heel of the butt resting on the ground to the rear.

Sufficient nearly to fill the barrel.

Any water running down between stock and barrel, or entering the lock plate through the tumbler axle hole.

By carefully moving the rod up and down the barrel, forcing the water through the nipple to clear the touch hole.

Until the water which passes through the nipple is observed to be quite clean.

By wiping it out thoroughly with dry rag or tow.

Wipe it out with an oiled rag.

QUESTIONS.

After you have finished cleaning the bore, what are you to do? P. 9.

What are you to be careful to attend to during and after cleaning? P. 9.

When and how is the rifle to be again cleaned? P. 10.

How is the fouling which accumulates on the stock, breech, nipple lump, and trigger plate, to be removed? P. 11.

What will this mode of cleaning in a great measure prevent? P. 12.

What is it advisable to do to prevent water soaking into the stock and other parts? P. 13.

What is the greatest enemy we have to contend with in the use of a rifle by soldiers?

ANSWERS.

Place the stopper in muzzle, and snap cap on the nipple.

That no water runs down the outside of the barrel, that the snap cap is kept dry. The mouth of the hammer to be wiped out before letting it down on the nipple.

The following morning, and on every occasion before using the rifle, by wiping the bore out perfectly clean and dry.

By a piece of dry rag or tow, or soft wood; if possible without using water or a damp rag, and on no account is a knife or sharp instrument to be used.

The liability of the barrel to become rusty, also the frequent necessity for removing it from the stock.

Rub the stock over with oil, smearing a little bees' wax between it and the barrel, and between the lock plate and stock.

Dirt; and its delicate sensibility to this its weak point.

FOR BREECH LOADING RIFLE.

Explain first operation in cleaning? P. 5.

Open breech.

Second operation? P. 6.

Pass damp rag or flannel down the barrel a few times, or until

QUESTIONS.

Third operation? P. 7.

Fourth operation? P. 8.

Fifth operation? P. 9.

ANSWERS.

clean; then dry with dry rag, or pass oil rag through barrel.

Wipe with damp rag inside of flap, and plunger of ditto, and the box; dry parts and then rub them with an oiled rag.

Little oil on flap or lever where spring works, and upon joint of lever.

Wipe nipple and mouth of hammer before letting it down.

FOURTH LESSON.

What is taught in this lesson?

How to remount the limbs of the lock.

What is the first limb you remount? P. 1.

The Swivel

Which end is to be placed in shaft of tumbler?

The end which is not rounded off.

How can you be certain of placing it correctly in shaft of tumbler?

By observing the flat part of small projection, and placing it on the straight cutting in shaft of tumbler.

The second? P. 2.

The Tumbler.

How remounted? P. 2.

Place its axle in axle hole of lock plate, with its bearer against the hind stud.

The third? P. 3.

The Bridle.

How remounted? P. 3.

Fix bridle on pivot of tumbler and its stud in the lock plate; then screw home the bridle pin.

The fourth? P. 4.

The Sear.

How remounted? P. 4.

Place the sear between the bridle and lock plate, with its

QUESTIONS.

The fifth? P. 5.

How remounted? P. 5.

The sixth? P. 6.

How remounted? P. 6.

The seventh? P. 7.

How remounted? P. 7.

ANSWERS.

nose against the tumbler, and screw home the sear pin.

Sear spring.

Partly screw the sear spring pin 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.

The Hammer.

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

The Mainspring.

Place the claws on the pivots of swivel, its stud in the lock plate and catch against fore stud; after which place the lock at full cock and remove the cramp, then ease the lock to half-cock.

 FIFTH LESSON.

What is taught in this lesson?

The use of the mainspring, sear spring, and sear.

On what does the mainspring act? P. 1.

On the tumbler, to draw the hammer down upon the nipple.

How is the action of the spring ensured? P. 1.

By stud on the return entering the mainspring stud hole, and the catch bearing against the fore stud of the lock plate.

On what does the sear spring act? P. 2.

Upon the sear.

QUESTIONS.

What part of the sear spring presses on the sear, and how does it act? P. 2.

How is the action of the spring ensured? P. 2.

What is the use of the sear? P. 3.

Explain how? P. 3.

For what purpose? P. 3.

How should the nose of the sear be constructed? P. 3.

On what part of the sear does the blade of the trigger act? P. 3.

What is the pull of the lock without trigger?

What with trigger?

Why does the trigger make the pull-off easier?

ANSWERS.

The toe of the spring bears against the body of sear, pressing it outwards, thereby causing the nose of the sear to enter the bents when the tumbler revolves.

By stud on the return entering the sear spring stud hole, and the sear spring securing the eye to the lock plate.

It acts as a stop on the movement of the tumbler.

By its nose entering the half and full bents.

To keep the lock at half, and full cock.

So as to fit the bents exactly.

On the arm of the sear, which, when the trigger is pressed, is levered up, raising the nose of the sear out of the full bent, and thereby releasing the tumbler to the action of the mainspring.

13 to 14 lbs.

7 to 8 lbs.

Because when the trigger is pressed back, the blade of it is raised, and acts as a lever prising up the arm of the sear.

SIXTH LESSON.

QUESTIONS.

- What is taught in this lesson?
- What is the use of the bridle?
P. 4.
- How is it kept in its place?
P. 4.
- What is the use of the hammer, and how secured? P. 5.
- Which limb of the lock is considered an important one? P. 6.
- What does it revolve between?
P. 6.
- Why does it require to be made very strong? P. 6.
- What are the notches in its side termed? P. 6.
- What is the construction of the half bent? P. 6.
- Why is such a formation essential? P. 6.
- What must happen before this could be effected? P. 6.
- How ought the full bent to be constructed? P. 6.
- How must the nose of the sear be constructed? P. 6.
- What is necessary to ensure the action of the tumbler? P. 6.

ANSWERS.

The use of the bridle, hammer, tumbler, and lock plate.

It secures the tumbler and sear in their proper places on the lock plate.

By the stud which enters the lock plate, and the sear and bridle pin.

To strike the cap, and is fixed on squares of tumbler by tumbler pin.

The Tumbler.

The lock plate and bridle.

To sustain the force of the mainspring.

Half and full bent.

It has two angles, one acute and the other obtuse.

To prevent the possibility of the sear nose being released by the action of the trigger.

Either the half-bent must be broken away, or the sear nose broken off.

In such a manner as will allow the sear nose to be withdrawn from it, with the least resistance.

So as to fit the bents exactly.

That the edge of the full and half-bent should be in the same arc of a circle.

QUESTIONS.

What would be the consequence if the latter protruded? P. 6.

What will render the position of half-cock insecure? P. 6.

What is the shaft? P. 6.

What is the use of the lock plate? P. 7.

What is the use of the fore stud? P. 7.

What is the use of the hind stud? P. 7.

ANSWERS.

The sear nose, when released from the full bent, would catch in the half-bent.

The cutting away of the half-bent.

It is that part of the tumbler to which the mainspring is attached, by means of the swivel.

It is the foundation of the lock, on which the several parts are fixed.

To secure the catch of the mainspring, and offer a resistance to ensure its action.

It acts as a stop to prevent the tumbler revolving too far when put in action by the mainspring.

What is taught in the seventh and eighth lessons?

How the rifle and ammunition may get out of order, and how this may be prevented.

SEVENTH LESSON.

What are the subjects treated of in the seventh?

The true and easy action of the lock.

The pull-off.

Wood-bound.

Miss-fires.

What is necessary to ensure a true and easy action of the lock? P. 1.

That the several pins, pivots, &c., are perpendicular to the lock plate, which ought to be a perfect plane.

QUESTIONS.

Would loosening the sear or any other pins make the pull-off easier;—why? P. 2.

What would cause the pull-off to be too great? P. 2.

What would be the bad results attending this? P. 2.

By whom is the pull-off to be altered? P. 2.

When is a lock said to be wood-bound? P. 3.

What would cause a lock to be wood-bound? P. 3.

How many causes of miss-fires may be attributed to the rifle? P. 4 and 7.

What are they? P. 4 and 7.

How many to the soldier? P. 4 and 5.

What are they? P. 4 and 5.

For what do these causes point out the necessity? P. 6.

ANSWERS.

No, it would throw the limbs out of truth, and cause increased friction.

Either the full bent and sear nose not being well adapted to each other, or the sear spring being too strong.

Derangement of aim when firing.

The armourer, and never to be attempted by the soldier.

When the parts are embedded in the wood-work of the stock, and thereby prevented from exercising their proper functions.

The swelling of the wood in damp weather, water soaking in between lock plate and stock, screwing the lock too tightly to the stock.

Four.

Weakness of mainspring; communication hole too small; nipple screw too long; nipple too large for the percussion cap.

Three.

Dirty or rusty state of tumbler axle hole, and axle of tumbler; accumulation of dirt at base of the touch-hole; percussion cap not pressed home.

Great care being taken in cleaning the rifle to prevent dirt

QUESTIONS.

What ought the soldier to be careful to attend to? P. 8.

ANSWERS.

remaining in the touch-hole, or water entering the lock by the axle hole; and attention being paid to the fifth motion for capping.

That his rifle is clean, and the nipple in good order.

EIGHTH LESSON.

What is taught in this lesson?

The necessity of preventing the barrel from becoming bent or dented, and how to preserve the ammunition in an efficient condition.

What results from want of care in preserving the barrel from injury? P. 9.

Inaccurate shooting.

What is a soldier to do if he suspects that the barrel of his rifle is bent or dented? P. 9.

Report the circumstance immediately.

Why are soldiers, on no account, to use their rifles for carrying weights? P. 10.

Because the barrels being made of soft metal are easily bent.

In what other way are soldiers likely to injure their rifles? P. 11.

Placing them forcibly in a rack, or piling them carelessly, in consequence of which they often fall down.

What part of the barrel is most likely to become damaged?

The muzzle, where the metal is the thinnest.

What will be the consequence if the barrel is bent at the muzzle, —and why? P. 11.

The arm becomes irreparably damaged,—the muzzle being the point of delivery.

What other part of the rifle is

The fore sight,—because if it is bent, blunted, or injured in any

QUESTIONS.

it very necessary to protect from injury,—and why? P. 12.

What effect will rust in the bore have on the bullet? P. 13.

What would be the result of this? P. 13.

What are the other bad effects of rust in the barrel? P. 13.

What is a soldier considered who cannot prevent this? P. 13.

What is rust caused by? P. 13.

What is the surest way of preventing the barrel becoming rusty? P. 13.

What would render the rifle liable to burst? P. 14.

What would be the consequence if this dirt was rammed down with the charge? P. 14.

What are soldiers to be taught as regards the preservation of their ammunition? P. 15.

How is the possibility of loose

ANSWERS.

way, the accuracy of shooting will be impaired.

Increased friction to the passage of the bullet, causing it to strip (or pass out of the grooving), or the wood plug may be driven through the bullet.

A ring of lead might be left in the barrel, and the arm for the time would be rendered useless.

It will prevent the proper expansion of the bullet, and impair the rotation necessary to produce accurate shooting; it will also render the rifle difficult to load.

Unfit to be entrusted with a rifle.

The joint effect of moisture and air.

To keep the bore perfectly dry, and invariably to keep the muzzle stopper in it, and the snap cap on the nipple, so as to exclude the damp.

Bullet not rammed home. The muzzle being run into the ground, and becoming stopped up with dirt.

It would tear the barrel, and destroy the surface of the bore.

To keep the inside of their pouches clean, so that no dust or dirt may adhere to the lubricating mixture on the cartridges.

By carefully folding them in

QUESTIONS.

cartridges becoming damaged, to be prevented? P. 16.

How should the pouch be packed to preserve the ammunition? P. 16.

Why are soldiers to be particularly cautioned to keep their cartridges and copper caps dry? P. 17.

When the soldier is on picquet, or when his rifle is likely to be exposed to rain, what ought he to do to ensure its not missing fire? P. 18.

Will either of these methods prevent the ignition of the charge? P. 18.

Why are non-commissioned officers and privates not allowed to remove the rifle barrel from the stock? P. 19.

When is a non-commissioned officer and private to be allowed to remove his lock from the stock, and take it to pieces? P. 19.

ANSWERS.

paper, that they may not shake about in the pouch.

Quite closely, no vacant space being allowed to remain in it.

Because damp powder will not drive a bullet so far as dry powder, and is more difficult to ignite.

Remove the percussion cap and place the snap cap on the nipple. In the event of his having no snap cap, he is to stop up the nipple with grease or wax, easing the spring in either case; if he cannot procure grease or wax, he is to plug the nipple up with a peg of soft wood.

Neither the grease, nor peg of wood will in any way impede the action of the percussion cap, if properly pressed home on the nipple.

Because it requires great care in removing them, to prevent the head of the stock being broken. The ordinary turnscrew not being adapted for removing the breech-pin, or to screw it home again.

When the officer-instructor certifies officially that he is capable of doing so accurately and efficiently.

STRENGTH OF SPRINGS, ETC.

QUESTIONS.

How is the weight of main-spring, or what it draws, ascertained;—and state weight to over-balance it? P. 15.

How do you ascertain what the sear draws;—and state strength of spring? P. 15.

What power is required to release the nose of sear out of full bent (lock at full cock);—and explain how ascertained? P. 15.

How do you ascertain what amount of leverage is necessary to pull off the lock with trigger;—and mention requisite power? P. 15.

ANSWERS.

Attach weight to comb of hammer (lock being at half-cock) sufficient to release the nose of sear out of the half bent;—13 to 14 lbs.

Attach weight to arm of sear (lock at its bearings) sufficient to lift the nose of the sear spring;—about $7\frac{1}{2}$ lbs.

13 to 14 lbs;—attach weight to arm of sear sufficient to raise nose of sear clear out of full bent.

Attach weight to trigger (lock at full cock) sufficient to raise nose of sear out of full bent;—7 to 8 lbs.

THEORETICAL PRINCIPLES.

To whom is this branch of instruction specially confided? P. 1.

In what manner and what order is he to explain these principles? P. 1.

What is the object of explaining them? P. 1.

The officer instructor.

In a clear and concise manner in the order in which they appear in the book of Instruction in Musketry.

That the men may thoroughly understand the reason for all those rules which have to be attended to in practice.

QUESTIONS.	ANSWERS.
What are the headings in the first lesson on which the instructor has to lecture? P. 1, 2, and 3.	<ul style="list-style-type: none"> Construction of the barrel. Axis of the barrel. Line of fire. Laws influencing the course of the bullet.
Second lesson? P. 4, 5, and 6.	<ul style="list-style-type: none"> Resistance of the air. Force of gravity. Trajectory.
Third lesson? P. 7, 8, 9, and 10.	<ul style="list-style-type: none"> Initial direction given to a bullet to cause it to hit the mark. Line of sight and arrangement of sight for 100 yards. Arrangement of sight for different distances.
Fourth lesson? P. 11, 12, 13, and 14.	<ul style="list-style-type: none"> Show relative position of line of fire and line of sight (by removing the breechpin). Necessity of holding the sights upright. Error of direction. Error of elevation. How the error of direction and elevation caused by the inclination of the back-sight may be shown.
Fifth lesson? P. 15 and 16.	<ul style="list-style-type: none"> Height of trajectory at the several ranges. Wind.
Sixth lesson? P. 17, 18, 19, 20, 21, 22, 23, 25, 26, and 27.	<ul style="list-style-type: none"> Firing at a moving object. Objects obscured by smoke, darkness, etc. Sun. Defect of lighting. Inexact measurement of charge. Pouring in the charge. Lubricating mixture. Imperfect bore.

QUESTIONS.

ANSWERS.

Seventh lesson? P. 28, 29,
and 30.

Causes of uncertain firing in the
smooth bore musket.

Excess of windage.

Error due to excess of windage
rectified by expanding projectile.

Error due to defective figure.

The rifled barrel.

Error due to defective figure
rectified by rifled barrel.

Eighth Lesson? P. 31, 32,
33, 34, and 35.

Describing the motions of a
rifle projectile through the air.

Imperfections in the form of
projectile.

Necessity of keeping the rifle
and ammunition in order.

FIRST LECTURE.

What are you to explain con-
cerning the construction of the
barrel? P. 1.

The outside of the gun-barrel
is not parallel to the inside, or
bore, it is made thicker at the
breach than at the muzzle.

Why is such a construction
necessary? P. 1.

Where the powder explodes,
greater strength is required to
prevent the barrel being shattered
to pieces.

Name the advantages gained
by this construction? P. 1.

The three advantages arising
out of this construction are, (1st)
being made thinner towards the
muzzle, the gun is lighter for
the soldier to carry; (2nd) easier
poised in his left hand; (3rd)
gives a certain amount of eleva-
tion to the barrel itself.

What is the shape of the
bore? P. 1.

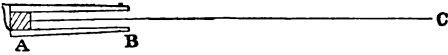
The inside or bore is a tube of
equal dimensions, the sides of

QUESTIONS.

What is this line called? P. 2.

Explain in a few words the line A B? P. 2.

What does this line shew us? P. 2.



What is the line of fire? P. 3.

ANSWERS.

which are equi-distant from a line passing up the centre.

The axis of the piece (an imaginary line).

If we stretch a thread or fine line up the centre of the bore, viz., from A to B, it will represent the axis.

This shews the course taken by the centre of the bullet during its passage up the barrel; 2nd, the distance it travels in a straight line; 3rd, the direction it takes on leaving the muzzle.

The line of fire (B C) is the axis of the piece indefinitely prolonged, and is the course the bullet would continue to take for ever and ever, were it only subservient to the force of the gunpowder.

SECOND LECTURE.

What are the laws which influence the flight of the bullet, and explain them? P. 4, 5, & 6.

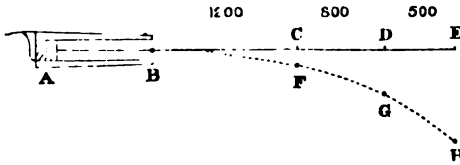
The atmosphere (or sphere of gases which surround the globe) being a resisting medium, offers a resistance to the passage of the bullet. Gravity being a uniformly accelerating force, acting instantly and immediately on all particles of matter in a direction perpendicular to the earth's surface.

What are the three forces

Gunpowder, resistance of the *air*, and the attraction of *gravity*,

QUESTIONS.

which act upon the bullet, and how do they influence its flight?



R.G.C.

How can you prove that the trajectory must be a curved line? P. 6.

ANSWERS.

compel the bullet to travel in a curved line.

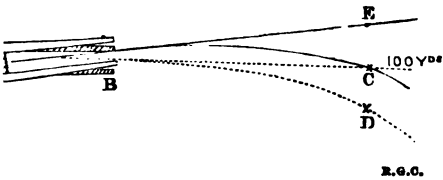
We will suppose a ball fired from a tube A B will travel in the 1st", 1200 feet to the point C, but owing to the resistance of the air in the 2nd" it would only travel 800 feet from C to D, but in the 3rd", owing to the same cause, only 500 feet from D to E. Gravity has also been acting upon it during the 3", and as all bodies fall in the 1st" 16 feet, our ball will be at the point F, 16 feet below the line of fire; in the 2nd", at the point G, $3 \times 16 + 16 = 64$ feet; and in the 3rd", at the point H, $5 \times 16 + 64 = 144$ feet; proving that the trajectory or path of the bullet must be the dotted line, B F G H. Gravity acting by time, the path of the bullet for a short distance scarcely deviates from the line of fire, but its track becomes more curved in proportion to the distance from B.

THIRD LECTURE.

What does the second lecture prove? P. 7.

The second lecture points out to us, that if the axis of the piece be directed on a mark, the bullet must pass below it; if the axis of the piece be laid on a mark

QUESTIONS.



Why does directing the axis on the point E, cause you to strike the mark? P. 7.

What does a knowledge of the foregoing facts clearly prove? P. 8.

What would be the consequence if the line of metal was parallel to the axis? P. 8.

How has this drawback to accurate shooting been remedied, and how is the initial direction given to the bullet to cause it to hit the mark? P. 8.

What is necessary to ensure accurate shooting?

ANSWERS.

100 yards distant, the bullet, on firing the gun, will strike 1 foot 5 inches below it at D, therefore, it is evident that to strike the mark C, we must direct the axis on the point E.

The trajectory conforming to the movement of the line of fire (B E,) will also be raised 1 foot 5 inches and pass through the point C.

If the upper surface of the barrel was parallel to the axis, or if the top of the fore-sight was the same distance from the axis as the upper surface of metal at the breech, then, when firing at a mark (say) at 100 yards, we should have to aim at the point E 1 foot 5 inches above the mark.

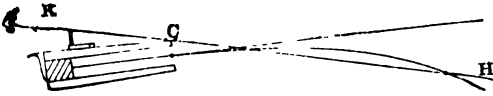
The consequence would be that the muzzle would hide the object from our view, and we should be uncertain whether we had given the axis the correct elevation.

This difficulty has been overcome by fixing a back-sight or block on the breech, which (together with the difference of thickness of metal between the breech and muzzle), when aim is taken straight on a mark distant 100 yards, gives the axis the necessary degree of elevation.

To ensure accurate shooting, the centre of the notch of the

QUESTIONS.

What do you understand by the "Line of sight"? P. 8.



How can we prove that 100 yards sight does not give sufficient elevation for 200 yards? P. 9.

R.C.C.

How has this difficulty been overcome? P. 9.

What would you do if you wished to fire at an object beyond the distance for which your rifle is sighted? P. 9.

ANSWERS.

back-sight, and the top of the fore-sight, must be accurately aligned between the eye and the mark.

The line K C H passing from the centre of the eye through the bottom of the notch of the back-sight to the mark is termed the "line of sight," it cuts the "line of fire" once near the muzzle, and the "trajectory" twice, once near the muzzle, and again at the mark.

If we use the 100 yards sight when firing at a mark, say 200 yards distant, the bullet will strike below it at the point Q, clearly proving for increased distances we require increased elevation.

A flap fitted with a sliding bar has been fixed on the block, by which means, a soldier, if he knows the distance, is enabled to raise the slider to any of the lines (marked on the flap) which indicate the distances from 100 to 900 yards.

If on active service we have occasion to fire at an object, say 1,000 yards, or any distance beyond that for which our rifle is sighted, it will be necessary to raise our eye as much above the 900 yards sight as we consider necessary, bearing in mind that the fore-sight must be always

QUESTIONS.

Explain in a few words how aim must be taken to strike a mark at 80 and 50 yards;—and why you have to aim low? P. 9.

ANSWERS.

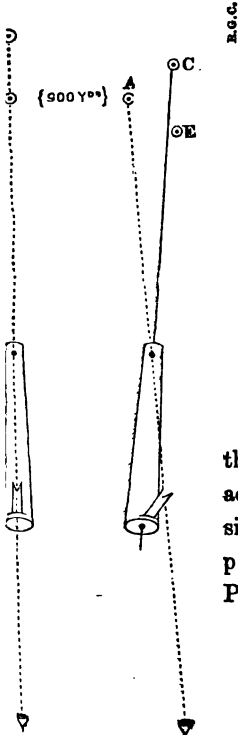
Carefully aligned between the eye and the mark.

On the other hand, to strike a mark within the distance of 100 yards, we must depress the muzzle and aim low, at 50 yards 8 inches;—the gun being over sighted for these distances, the trajectory would pass over the line of sight.

FOURTH LECTURE.

How do you show the soldier the relative position of the line of fire and line of sight? P. 11.

After having removed the breech pin, place the barrel on a traversing rest (or bag filled with sand on tripod), then take aim with the 900 yards sight perfectly upright at a spot marked on the board, and look through the barrel, when you will at once perceive the angle formed by the line of fire and the line of sight.



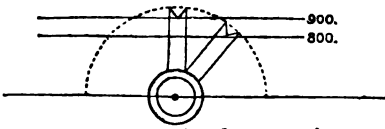
How do you prove, that in order to make accurate shooting, the sights must be kept perfectly upright? P. 12.

Incline the back-sight and take aim at the spot at which you aimed when the sights were upright; on again looking through the barrel, you will at once see the line of fire is directed to that side to which the sights are inclined, and that it is much lower than in the former instance (*vide C.*)

QUESTIONS.

Why are elevation and direction lost? P. 12.

How can you further explain that not only is the direction of the bullet affected by the inclination of the sights, but also the elevation? P. 13.



By what simple contrivance can both the error of direction and elevation be clearly shewn? P. 14.

What do you understand by the term angle of elevation?

ANSWERS.

The trajectory conforming to the line of fire will pass directly below C at the point E.

Observe the card (placed behind the back-sight) with lines graduated to correspond with those marked on the flap; on turning the barrel to either side, you will observe the loss of elevation.

A model gun with three wires affixed, one to represent the line of fire, another the line of sight, and a third the trajectory which being made to hinge on the first, will show, that unless the three lines are in the same vertical plane, there must be an error of direction, and a loss of elevation.

The angle formed by the line of fire and a horizontal plane cutting the horizon.

FIFTH LECTURE.

THE object of all the soldiers' musketry training is to teach him to hit his enemy in the field. It is not the slightest use being a good shot at a fixed mark, if he cannot, when on active service, judge the distance of any object he may wish to strike, and arrange the elevation of his rifle accordingly.

Before commencing to explain the height of the trajectory at the several ranges, I will show how an error in the appreciation of distance will either cause the soldier to miss, or only hit a man in the head or feet. You will observe that the Enfield rifle, when fired at a man 570 yards distant, with elevation for 600 yards

(aim being taken at the centre of his body), will throw the bullet near the top of his head, or about 3 feet above the spot aimed at. If it be fired with the same elevation at a man 625 yards distant (*vide* trajectory card) the bullet will strike near his feet, but if he were standing at 600 yards the bullet would pass through the centre of his body, proving that during the time the bullet is travelling from the point at 600, to the first graze at 625, it falls about half the height of a man, viz., 3 feet. Hence, if we were more than 30 yards out in the judgment of the distance, we should miss the man.

When firing the rifle with elevation for 300 yards, the track of the bullet will be less incurvated than for 600 yards. By placing the trajectory at 300 yards, we see the bullet, when it grazes at 350 yards, has fallen half the height of a man. If a man were standing at 215 yards, the bullet would pass near his head; if he were at 350, the bullet would strike near his feet; proving that its fall, during the time it is passing over a distance of 135 yards, is about 6 feet.

By placing the trajectory at 800, 900, and 1000 yards, we at once perceive that the curve is greater at these ranges, and the first graze much nearer the point fired at than at the shorter ranges; proving that as the distance increases the margin decreases, and consequently greater accuracy is required in the judgment of the distance. It would only be a waste of ammunition to allow any but well-trained soldiers to fire at small objects at 800, 900, and 1000 yards. Third and second class men might be permitted to fire at columns or large bodies of troops, the depth of which would make up in some measure for a want of skill in judging distance; for though the bullet might pass over the foremost ranks, it would probably strike those in rear. However well trained, we cannot be always certain of distance, therefore, when in the field,

it will be as well to give the first shot an elevation rather under than over that we imagine to be the correct one; then, by watching where the shot ricochets, we shall be able to ascertain how much we require to raise the sliding bar to enable us to throw the shot into the front of the column, etc.

At 100 and 200 yards, the greatest height the ball attains during its flight is not over 5 feet, therefore cavalry and infantry will be struck throughout these ranges.

At 300 yards it is 7 feet, so that cavalry will be struck throughout; infantry at 215 yards. Deduct 215 from the first graze 350, the remainder 135 yards gives us the margin or dangerous space for infantry.

On giving the gun elevation for the several distances, from 100 to 1000 yards, you will see that the height of the trajectory increases, and the margin decreases.

Distances.	Height at which the bullet begins to descend.	First Catch.		Dangerous Space.		Graze.
		Cavalry.	Infantry.	Cavalry.	Infantry.	
100 yards	feet. 4½					180
200 "	5					265
300 "	7					350
400 "	10					440
500 "	14					530
600 "	19					625
700 "	25					720
800 "	34					815
900 "	44					910
1,000 "	57					1,010
		Thro'	Throughout.	Thro'	Throughout.	
		275	215	165	135	
		425	350	105	90	
		550	465	75	65	
		680	570	60	55	
		770	680	45	40	
		875	785	35	30	
		980	885	30	25	
			990		25	

By deducting the first catch from the first graze, you can arrive at the margin or dangerous space for cavalry and infantry.

QUESTIONS.

How are you to impress on the soldier the great importance of being able to judge distance? P. 15.

If the rifle musket pattern, 1853, be fired with the elevation due for 600 yards, at a mark 570 yards distant, where will the projectile strike? P. 16.

If it be fired at a mark 630 yards distant, with the same elevation, where will the bullet strike? P. 16.

What does this prove? P. 16.

When firing with the elevation due for 300 yards, how much will the projectile fall during the time it is passing over a distance of 135 yards? P. 16.

At 600, 800, and 900 yards, will the same fall take place while the projectile is passing over the same distance? P. 16.

Why? P. 16.

ANSWERS.

By explaining to him the height of the trajectory at the several ranges, and the space within which a cavalry or foot soldier would be struck, either in the head, body, or feet (*vide plate*).

About 3 feet above the mark.

About 3 feet below the mark.

That an error of 30 yards in the appreciation of the distance, would cause the bullet to strike somewhere near to the head or feet of a man (*vide plate*, 600 yards range).

The height of a man, viz., 6 feet (*vide plate*, 300 yards range).

No.

Because the curve of the trajectory being greater at these distances, the same fall will take place during the time the pro-

QUESTIONS.

What does this prove? P. 16.

Are the third and second class men to be allowed to fire at small objects, say one or two men, or small bodies of men, at the distance of 800, 900, and 1,000 yards? P. 16.

If the soldier, when on service, is not quite certain of the distance, how would you direct him to aim when firing the first shot? P. 16.

ANSWERS.

jectile is passing over a much shorter distance.

That the greater the distance, the greater is the necessity for knowing it accurately.

No, because it would only be a waste of ammunition.

Rather short of the mark, because the shot in all probability will strike in its rebound, and by observing the dust thrown up by the bullet, he would be able to judge how much he ought to raise the sliding bar to give the axis of the gun sufficient elevation.

 SIXTH LECTURE.

As the sailor is obliged to notice the strength and direction of the wind, to enable him to trim the sails of his vessel, and steer her to a given port; so must the rifleman notice every puff and change of wind, to enable him to judge whether he must direct his aim—high—low—right or left of target, according to the direction and force with which the air in motion is moving.

When the wind is blowing from the front, it offers a greater resistance to the passage of the bullet than when blowing towards the target, causing the bullet to ricochet or strike the foot of target. You must therefore make allowance for the increased resistance, by

directing your aim high, according to strength of wind and distance of object fired at. When from the rear, it will have a contrary effect; the speed of the bullet will be increased, and consequently the trajectory will be flatter. To prevent the ball passing over the target, you must aim low, or take a very fine sight; the deviation caused depending on the proportion of the force of the wind, and the distance of mark.

A wind blowing from either flank will have a much greater effect on the flight of the bullet than one blowing from front or rear. If blowing from the right front, direct your aim to right of target, and *vice versâ*, according to proportion of force of wind and distance of object. Experience alone can teach what allowance has to be made for wind. However well you may understand the theory of rifle practice, it is of little avail without careful and constant practice. First, you have quickly to decide at what rate the object is moving, whether to, from, or across you; then judge the distance, arrange the elevation, and determine how much must be allowed for wind. Without dwelling an instant, move the rifle laterally in the direction, and to the extent required—by simply turning the body on the heels from the hips, the arms and eye being kept perfectly steady. Should the object be moving towards or from you, aim, in the first instance, low, and in the second, high.

In siege operations, or when necessary to keep up a brisk fire on any particular object obscured by "*smoke, etc., or by darkness,*" place two forked sticks into the ground in the required direction, so that when the rifle is laid on them, you may have the direction and necessary elevation. When small bodies of troops, working parties, etc., are obscured by smoke or dust, etc., establish line of aim by placing a stick into the ground a few feet from the muzzle of the gun, sufficiently high to cut the line of sight; on aiming at

the point of the stick and firing the rifle, the bullet, describing a curve in its course, will pass over the head of the stick, and strike the mark.

Let us now consider whether light and a bright sun will be likely to mislead us when taking our aim. If the sun is shining from the left, it will light up right side of back notch and left side of fore-sight, and *vice versâ*. The soldier, in taking aim, will be likely to be guided by these bright spots instead of the real centre of the sights. The result will be, that the axis of the barrel will be directed to the right, and *vice versâ*.

If the soldier has placed in his hands a rifle not accurately sighted, he will, if an intelligent rifleman, soon discover the defect, by watching where the ball strikes the butt. If the back-sight is placed on right side of breech (not directly over axis), the rifle will carry to the right, and *vice versâ*. If the fore-sight is placed to left of axis, the rifle will carry to the right. If back-sight and fore-sight are in the same vertical plane, and not directly over axis, the gun will throw—if they are on the left of barrel, to the right, and *vice versâ*.

Sufficient powder to throw the bullet home to mark is an all-important point; therefore, when loading, observe whether there appears to be a sufficient quantity in the cartridge, and be careful not to spill any in the act of tearing off the top of cartridge, or when pouring the charge into barrel. If a deficiency is observed, you must use more elevation, otherwise the ball will drop short of the mark. When loading, keep the barrel as upright as possible, so that none of the powder may adhere to the fouling, which will cause a difficulty in loading, loss of charge, and increased friction to the bullet when passing up the barrel.

Be careful to see that the lubricating mixture is not removed from base of cartridge; if it is, wet the base

in your mouth, and the saliva will serve, to some extent, the purpose of wax or grease used to soften the fouling in the grooves of the rifle. It may perchance happen that the rifle has an imperfect bore, either too large or too small; this will easily be discovered when the bullet rams down too easily or too hard.

QUESTIONS.

ANSWERS.

What is wind? P. 18.

Air in motion.

Feet per
Second.

Breeze	10
Light gale	16
Stiff gale	24
Violent squall	35
Storm wind	43 to 54
Hurricane (temperate } zone }	60
Hurricane (torid zone)	120 to 300

At what rate does it travel?

Yes, because if the wind is blowing across the range, the bullet will be drifted to that side to which the wind is blowing.

When firing, is it necessary to observe the direction of the wind, and why? P. 18.

If you direct your aim at the centre of a target, and you find the ball strikes to the right, where would you aim? P. 18.

At the opposite side to the left.

What effect has the wind blowing from the front on the bullet; and why? P. 18.

It will cause it to drop short of the mark, in proportion to its force and the distance of the mark fired at; because it offers an increased resistance to the passage of the bullet.

What effect has a wind blowing from the rear on the bullet;

The air travelling in the same direction as the bullet does not offer the same amount of re-

QUESTIONS.

and why is it necessary to aim low?

What does a knowledge of the effect of wind on the flight of the bullet prove to the soldier? P. 18.

Explain how you are to aim at a moving object; and why a fixed rule cannot be laid down for the guidance of the soldier? P. 19.

When the sun is shining brightly, is the accuracy of aim likely to be impaired, and why? P. 22.

If the sun was shining from the left, to which side of the target would you be liable to shoot? P. 22.

Explain the reason? P. 22.

ANSWERS.

sistance; consequently, the trajectory being flatter, unless some allowance be made by aiming low, the ball would pass over the mark.

That he must watch where each shot strikes to ascertain what allowance he has to make.

If moving across you, in front of it; if advancing, with less elevation than is required for the actual distance; if retiring, with more elevation: because it will depend upon the speed at which the object is travelling, and the time the bullet takes to travel the distance.

Yes, because the eye will more readily catch the bright spots on the sights of the rifle than the centre of the bottom of the notch of back-sight and the top of the fore-sight.

The right side.

Because the sun would light up the right side of the back notch, and left side of fore-sight; if these points were aligned on the mark, the axis would be directed to the right, consequently the gun must throw to the right.

QUESTIONS.

What will cause a rifle to carry a little high or low? P. 23.

If the marks on the flap which indicate the elevation are not exactly in the right place, what is the soldier to be cautioned to pay attention to; and why? P. 23.

What will cause the rifle to carry to right or left? P. 23.

If the back-sight is placed on the right or left of barrel, how will the rifle carry, and why? P. 23.

If the fore-sight is to the right or left, how? P. 23.

How are these defects to be remedied? P. 23.

If both sights are in the same vertical plane, but not directly over axis, say placed on right side of barrel, where will the axis be directed? P. 23.

How must you aim at an object if you find you have not a full charge of powder? P. 24.

Why is the soldier always to load, if possible, standing? P. 25.

What do you understand by lubricating mixture? P. 26.

What will serve the purpose of this grease for the time being? P. 26.

ANSWERS.

Not being accurately sighted as to elevation.

Where each shot strikes, whether high or low, that he may adjust the sliding bar accordingly.

The sights not being placed on the centre of the barrel.

To the right or left, because the axis will then be directed to that side to which the sight is placed.

If to the right, to the left: and if to the left, to the right.

By aiming in the contrary direction.

To the left.

High, otherwise the bullet will fall short of the mark.

Because when the barrel is upright, not so much of the powder will stick to the fouling.

The mixture in which the base of the cartridge is dipped to prevent the barrel fouling.

Wetting the base of the cartridge in the mouth.

QUESTIONS.

What may be inferred if the cartridge invariably rams down hard, or is very loose in the barrel? P. 27.

If this is the case, what ought the soldier to do;—why? P. 27.

ANSWERS.

That the rifle has not a proper bore.

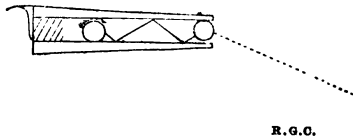
Report the circumstance immediately;—because with such an arm it would be impossible to make accurate shooting.

SEVENTH LECTURE.

What is the officer instructor to explain to the soldier in this lecture? P. 28.

Explain windage? P. 29.

Explain why it was considered necessary, and what was the advantage of windage? P. 29.



What were the disadvantages? P. 29.

The causes of uncertain firing with the old smooth-bored musket, and the means by which they have been prevented.

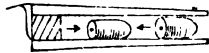
The difference between the size of the bore and bullet is termed windage.

It increased the celerity of loading; for had the bullet been made to fit the bore exactly, when the gun became foul it would have been difficult to ram the bullet home.

When the musket was held up to the "present," the bullet naturally rested on the lower surface of the barrel, consequently all the windage was above. On the explosion of the powder a great portion of the gas escaped through the windage, striking the ball on the top at the same time that it forced it out of the barrel, causing it to jump from bottom to top, or

QUESTIONS.

What invention remedied this defect? P. 29.



n. o. c.

Explain how the space termed windage is filled up. P. 29.

Explain the advantages arising from doing away with windage. P. 29.

ANSWERS.

from right to left of barrel; and where it last struck the barrel at the muzzle, it naturally received a reactionary force, which tended to drive it from its true course or the one it was intended to take.

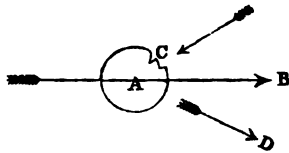
The invention of an elongated expanding projectile, which enters the barrel easily, and besides being a better shape for passing through the air, is so constructed, that, in its passage up the barrel all windage is done away with.

On the explosion of the powder the bullet is acted upon by gunpowder and air, the one striking its base, as the other offers a resistance to its exit, causes its cylindrical portion to expand and fill up the barrel, precisely in the same way, that by pressing a bar of clay between your hands its length would be shortened and its lateral circumference increased.

The whole force of the explosion acting on the bullet enables us to use $2\frac{1}{2}$ drams instead of 5, consequently the recoil is lessened; and the barrel is partially cleaned out at each discharge.

QUESTIONS.

Besides the irregularities arising from windage, was there any other cause why the spherical ball did not fly in a right direction? P. 30.



n. o. c.

How would the bullet in present use be affected by imperfection of figure when fired out of the same gun, and how has the defect been remedied? P. 30.

ANSWERS.

If there was a defect or unevenness on its surface C, the air catching or acting in that part would have a tendency to drive it in an opposite direction D, and thus divert it from its true course A, or the direction it was intended to take.

The elongated projectile, if fired out of a smooth bore, would be equally affected by any unevenness on its surface, and would naturally turn on its shorter axis. This tendency to turn on its shorter axis has been prevented by rifling the barrel.

EIGHTH LECTURE.

When is a barrel said to be rifled? P. 31.

When any number of grooves are cut down the inside or bore.

Describe the rifling of our gun. P. 31.

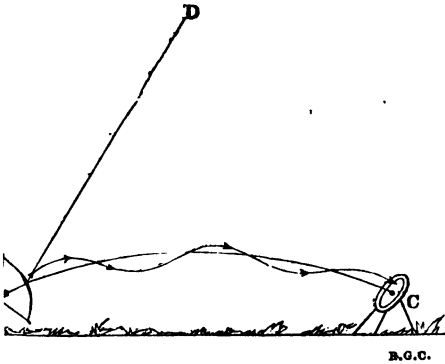
The grooves are cut in a spiral direction with a view to cause the bullet to turn or spin on its longer axis; they make half a turn in the length of the barrel. The groove, which is on the left of barrel at breech, turns, passing over like a female screw, and appears at the opposite side at the muzzle.

How is the error due to defective figure rectified? P. 32.

On the explosion of the powder, the bullet is not only expanded into the barrel, but

QUESTIONS.

Explain in a few words the object of rifling? P. 32.



How can you describe to the soldier the motions of a rifle projectile in its passage through the air? P. 33.

ANSWERS.

its cylindrical surface is also moulded into the grooves, consequently, during its passage up the barrel, it is constrained to turn with the grooves, thus it receives a spinning motion around its longer axis, which spin continues nearly the whole of its flight, not only preventing a rotation in any other direction, but is in itself a rotation calculated to ensure accuracy of flight by constantly presenting any imperfection of figure to the air in opposite directions.

The grooves cut in a spiral direction cause the projectile to turn or rotate on its longer axis, a direction coincident with its flight, and compel it to travel point foremost.

If a bent arrow be fired from a bow, say A, with the intention of striking the mark C, the air acting on its bent point would force it upwards in the direction of D, but if, when the arrow was leaving the bow, you could give it a spinning motion, then, when it had proceeded a short distance on its flight, the point would begin to turn downwards, and after the arrow had proceeded as much below its true trajectory as it had previously risen above, the point would begin to turn upwards, and so continue to travel

QUESTIONS.

What are you to explain to the soldier concerning the ramming home of the bullet;—and what besides the bullet would be injured by want of care? P. 34.

Why would a portion of it not be ignited?

What do these eight lessons impart to the mind of the soldiers? P. 34.

After the instructor has explained the eight theoretical lessons, what is he to impress upon their minds? P. 34.

What order has been issued to commanding officers to induce their officers and men to take an interest in the practical part of their duties? P. 35.

ANSWERS.

in a spiral direction round its trajectory, ultimately striking much nearer to the mark than if no spinning motion had been imparted to it.

The soldier must be careful, when loading, not to indent the point of the bullet, which would destroy its figure and balance;—the powder would be mealed, a portion of which would most likely be blown out unignited.

Because there would be no interstices between the grains for the transition of flame.

These lessons give to the soldier some idea of the laws which regulate the flight of the bullet, and make him conversant with the arrangement of the sights, and the rules for his guidance when firing.

Unless attention be paid to the preservation of the rifle and ammunition (as inculcated in the "Cleaning Arms Instruction"), it will be impossible to make accurate shooting.

To assemble the officers at least once in each half-year, and the non-commissioned officers and men by squads or companies, when the annual course is not being proceeded with; that the officer instructor may deliver

QUESTIONS.

ANSWERS.

lectures, suitable to his auditors, on 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.

AIMING DRILL.

What does aiming drill teach the soldier;—and how is his progress in aiming tested? P. 1.

To take an accurate aim and adjust the back-sight of the rifle;—by making him aim at different distances, laying his rifle on a sand bag placed on a tripod.

If tripods are not available, what will answer the purpose? P. 1.

Piled arms with bayonets fixed (sheathed) supporting a bag of sand.

Of how many men is each squad to consist? P. 2.

Never more than ten, formed in single rank in rear of each rest.

Are the men allowed to change their rifles;—and mention first duty of the instructor? P. 2.

No, every man is to aim with the rifle served out to him;—to explain to the men the principles of aligning the sights of the rifle on an object.

How is this accomplished? P. 2.

By explaining to the soldier the four rules for aiming.

What is the first rule? P. 2.

That the sights should not incline to the right or left.

The second? P. 2.

That the line of sight should be taken along the centre of the bottom of the notch of the back-sight and the top of the fore-sight, which should cover the middle of the mark aimed at.

The third? P. 2.

That the eye should be fixed

QUESTIONS.

Why is particular attention to be paid to this rule? P. 2.

The fourth? P. 2.

How many kinds of sights is the soldier taught to take? P. 3.

What are they? P. 3.

What is a fine sight? P. 3.

What is a full sight? P. 3.

What is a half-sight? P. 3.

What do the two first methods of aiming cause? P. 4.

What is it necessary the recruit should understand concerning the 4 rules for aiming? P. 4.

If the rifle carries high or low, how is the defect remedied? P. 4.

ANSWERS.

steadfastly on the mark, and not on the barrel and fore-sight, which latter can be easily brought into the alignment if the eye is fixed on the mark.

Because 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.

The left eye to be closed.

Three.

Fine, full, and half-sight.

When the line of sight is taken along the bottom of the notch of the back-sight, the fine point of the fore-sight being only seen in the alignment.

When the point of the fore-sight is taken in alignment with the shoulder of the notch of the back-sight.

When the point of the fore-sight is aligned midway between the shoulder and bottom of back-sight.

A slight difference in the angle of elevation.

That they are intended to apply to the half-sight.

By aiming with a fine sight when it carries high, and with a full sight when it carries low.

QUESTIONS.

At what distance do the recruit and the drilled soldier commence to aim? P. 5

When is he to commence? P. 5.

What is the soldier directed to do after he has aligned the sights of the rifle on the mark? P. 5.

Should he discover an error in the aim, what course is he to pursue? P. 5.

What is the instructor then to explain? P. 5.

Who is to correct the error noticed? P. 5.

What is the good resulting from this method? P. 5.

What are the distances at which the recruit and drilled soldier aim respectively;—and what is the size of the mark? P. 6.

(N.B. See distances for cavalry.)

ANSWERS.

The recruit at 100 yards, the drilled soldier at 150 yards.

After the four rules for aiming have been clearly explained.

To 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 taken.

Call out another man, who is to look along the sights, and state the defects.

What the consequence would be if actually firing at an object.

The man who laid the rifle.

It sharpens the attention of the recruit, and teaches him to avoid, when aiming himself, the error he may have noticed in his comrades aim.

Drilled Soldier.		Recruit.		
150	200	100	150	} 1st day.
250	300	200	250	} 2nd „
350	400	300	300	} 3rd „
450	500	350	400	} 4th „
550	600	450	450	} 5th „
650	700	500	550	} 6th „
750	800	600	600	} 6th „
		650	700	} 6th „
		750	750	} 6th „
		800	850	} 6th „
		900	900	} 6th „

From 100 to 300 yards “ bulls-

QUESTIONS.

At how many distances do the soldier and recruit aim respectively? P. 6.

What is the object of aiming at these distances? P. 6.

What, as regards this drill, are you to direct them to bear in mind? P. 6.

What is the object of this drill? P. 6.

What is this exercise calculated to do? P. 6.

What cannot be too strongly impressed upon the mind of the soldier? P. 7.

ANSWERS.

eyes " 6 inches ; from 300 to 900 yards and over 18 inches square.

Soldiers, 16.

Recruits, 17.

That the soldier and recruit may acquire a knowledge of the sights, and become perfect in aiming.

That the difficulty of aligning the fore-sight accurately increases with the distance.

To ascertain the progress the man is making, and whether he has any defect in his eye-sight.

To strengthen the vision.

That to shoot well at long distances, 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.

 POSITION DRILL.

What is position drill?

A drill which teaches the correct position when firing, standing, or kneeling, and the essentials of good independent practice.

What is the length of time to be occupied at each drill?

Not more than half-an-hour.

What motions are the recruits

All the motions of firing, standing, and kneeling, with the

QUESTIONS.

and drilled soldiers put through?
P. 1.

What are the instructors particularly directed to do? P. 1.

Why? P. 2.

Why is it necessary constantly to practise this drill? P. 2.

What does constant practice ensure? P. 2.

In what does the position drill differ from the platoon exercise;—and by whom are these separate drills taught?

In what order is the position drill to be executed? P. 4.

Does this rule hold good when corps are armed with the short rifle? P. 4.

Of how many men is each squad to consist, and how formed up for exercise? P. 4.

ANSWERS.

same accuracy as if actually firing ball.

Watch most minutely each movement.

To habituate the men to the correct position, and to the natural connexion that should exist between the hand and the eye.

Because the eye, being the regulator of the hand, constant practice is required to enable them to act together.

The hand readily raising the rifle to any object the eye is fixed upon, and the forefinger squeezing the trigger at the proper moment.

The platoon exercise instructs the soldier how to load and fire in the ranks; the position drill, the essentials of good independent practice;—the platoon exercise by the Adjutant and Sergeant-Major; the position drill by the Instructor of Musketry.

In marching order, with fixed bayonets when standing, and unfixed bayonets when kneeling.

No, it is only the recruits who go through the position drill with fixed swords.

Ten men, formed in single rank, at one pace apart.

QUESTIONS.

Why not more than ten? P. 4.

What is the first duty of the instructor before commencing this important drill? P. 5.

For this purpose, what are to be painted on the barrack walls;—by whom are they to be painted;—mention the articles necessary for painting them, and by whom are they furnished;—how far are the spots to be from the ground, and how far apart? P. 5.

Can a man have too much position drill;—and why? P. 6.

Mention order supporting your views? P. 6.

Under whose superintendence? P. 6.

ANSWERS.

Because it is impossible for an instructor to watch attentively more than that number.

To point out to each man a small object at which to aim.

Bulls-eyes (white) the size of a crown piece, with a black centre the size of a shilling;—by the troops;—brushes, black and white paint, furnished (on requisition) by the barrack-master;—3 feet, with a lateral distance of 3 feet between each.

No;—because constant practice is required to establish the connection that should exist between hand and eye.

The first and third practices are to be performed at least once a week by every company, in squads of 10 men, when annual course is not going on.

The close and personal supervision of the commanding officer and company officers, assisted by the regimental and company instructors.

 FIRST PRACTICE.

State object of this practice;—how long is it to be continued;—and what are the instructors particularly directed to attend to?

To accustom the men to handle their rifles expertly; strengthen left arm; give them a perfect command of their rifles with left hand; and habituate them to raise the rifle to the shoulder in the

QUESTIONS.

ANSWERS.

What are the words of command in first practice?

direction of object their eyes are fixed upon, without moving the body;—until the above points are accomplished;—not to overlook any defect, however trivial, and explain errors and their bad effects when squad is standing at ease.

Position drill by numbers; first practice as a — rank; standing or kneeling at — yards. Ready.

Present.

Two.

Three.

Ease springs; order arms; stand at ease.

What is the instructor to be most particular to observe in this, and the second, and third practices?

That every man holds his rifle firmly in the left hand at the place where it is to grasp the stock when at the “present,” and not nearer the nipple than the projection in front of the lock-plate.

Where are the fingers of the right hand to be placed?

Behind the trigger guard.

What is to be the position of the body, head, eyes, and feet?

Body erect; left side perpendicular; left breast over the left foot; shoulders at the half-face; feet at right angles; eyes fixed on the mark in front; head in the same direction, and erect.

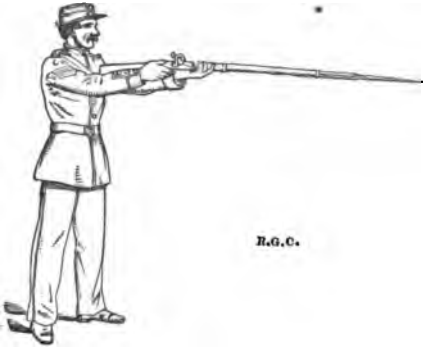
When kneeling?

That the right foot is in the proper position, and the body resting firmly on the right heel.

What explanation is the instructor to give in the first motion “present”?

Without moving the body, head, eye, or hand, in the slightest degree, throw the rifle smartly to the front of the right shoulder

QUESTIONS.



Why is the squad frequently to be brought back to the ready by the command "as you were?"

What is the second motion?



ANSWERS.

to the full extent of the left arm (arms moving close to the body), back-sight upright; top part of the heel-plate to be in line with the shoulder, the muzzle to be a few inches below the mark the eyes are fixed upon, forefinger placed outside trigger guard, and elbows inclined downwards.

To establish the men in the position of each motion of "present," point out errors; and explain subsequent motions of practice.

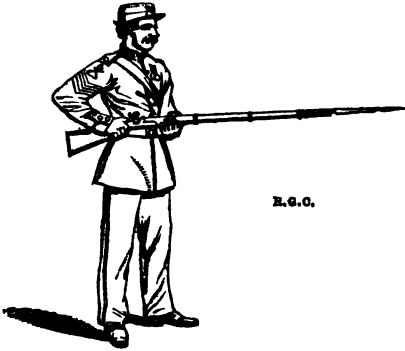
Bring the rifle smartly into the hollow of the right shoulder, pressing it thereto with the left hand, and at the same instant bring the left elbow well under the rifle, and the right elbow nearly square with the right shoulder and to the front of it, so as to form a bed for the butt, but without moving the body, head,

QUESTIONS.

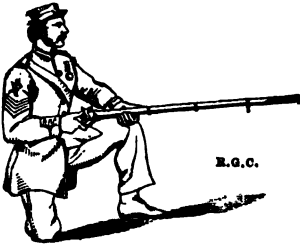


R.G.C.

What is the third?



R.G.C.



R.G.C.

ANSWERS.

hand or eye, still keeping the forefinger outside trigger guard. When kneeling, left elbow placed over left knee.

Bring the rifle smartly down to the capping position, without altering the position of the body, head, hand, or eye, and place forefinger behind trigger guard.

When are the men to be exercised in the first practice, judging their own time?

When they are established in the positions enjoined by the foregoing instructions.

QUESTIONS.

What are the words of command?

What explanation is to be given at the "present?"

What at the command "steady?"

ANSWERS.

First practice, judging your own time.

Present.

Steady.

Ease springs, etc.

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

The squad will return to the capping position, and cease the practice.

SECOND PRACTICE.

What does the second practice habituate the men to do?

What are the words of command?



Give explanation—"present?"

Give explanation—"two?"

Combine motions of "present" in regular order.

Position drill by numbers; second practice, as a rank; at — yards. Ready.

Present.

Two.

Three.

Four.

Five.

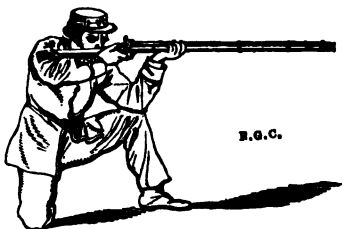
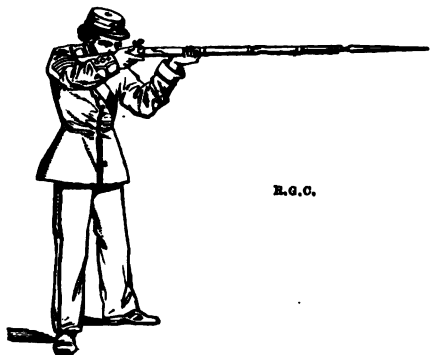
Ease springs, etc.

Combine first and second motions of the first practice (as per platoon exercise) and look at the object through the notch of the back-sight.

Place forefinger round trigger like a hook (part between first

QUESTIONS.

Give explanation—"three?"



Give explanation—"four?"

Give explanation—"five?"

What word of command are you to give after each motion;—why;—and what are you to caution the men against?

ANSWERS.

and second joint resting flat on trigger) and "restrain breathing.

Raise muzzle until top of foresight is brought in line with object through notch of back-sight.

Press trigger, without least jerk or motion of arm, hand, or eye, until hammer falls upon snap cap, still keeping eye steadfastly fixed upon object.

Bring rifle to capping position and "full cock."

(Repeat practice).

As you were;—to explain following motion;—losing the erect position of body, and moving the eye from object.

THIRD PRACTICE.

QUESTIONS.

What is the object of this practice?

Why cannot too much pains be taken to see that it is carefully and minutely carried out;—and what are the men to be encouraged to do concerning it?

Give first caution?

Give first word of command?

Give second word of command?

Give second caution?

Give third word of command?

What explanation is given at the command "load"?

What is the instructor to observe before he proceeds any further?

What explanation is given at "ready"?

What at "commence"?

ANSWERS.

To establish union between hand and eye.

Because it is indispensable to produce accurate shooting;—to engage in it at other times than when at drill, and always to aim at a specific mark.

Position drill, third practice, as a front rank, standing or kneeling.

Load.

At — yards, ready, etc.

Independent practice from both flanks.

Commence.

Proceed with the loading (standing in all cases) in quick time. After returning the rod count a pause of slow time, taking the time from the right, come to the capping position together, and proceed at once to cap.

Whether every man is in a proper position.

After getting into position, adjust the sight, full cock the rifle, and fix the eye on a mark in front.

Each man will come to the "present" in the order of file firing for the first time, performing the motions regularly (without hurry) in his own time; afterwards, independently of his

QUESTIONS.

What at "cease firing"?

What does the drilled soldier omit in this practice;—give words of command;—and state difference in explanation given to drilled soldier before "commence"?

Is the squad to be exercised in this practice on the knee, and when?

What is the instructor most particularly to attend to in this practice? N.B.

How is he enabled to ascertain that these important points are attended to;—and what is he to do

ANSWERS.

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.

Complete loading and order arms.

The loading.

{ At — yards, Ready.
Independent practice from
both flanks.
Commence.

After snapping, come to capping position, and full cock, instead of prepare to load.

Yes; when it has been well grounded in the foregoing practices standing.

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; also that the eye is fixed upon the mark during and after snapping.

By scrutinizing each man in succession all the time the squad is practising;—point out and correct any error he may discover.

QUESTIONS.

concerning each man's position?
N.B.

How can he ascertain that the men obtain the alignment quickly and readily? N.B.

What further object is there in his doing so? N.B.

What is the instructor to do if he discovers a fault in any man's position. N.B.

ANSWERS.

By making them aim at his eye.

To ascertain that they do not lose their aim in the act of pressing the trigger.

Cause him to come to the "present" three or four times, without loading, to correct the defect noticed.

SNAPPING CAPS.

What is the object of snapping caps? P. 1.

What is the instructor directed to do in this practice? P. 1.

How long is this practice to be continued? P. 1.

How many caps are to be fired by the recruit, and how expended? P. 1.

What is the instructor to do, if he experiences a difficulty in teaching the recruits to aim correctly, or finds that they are snapping caps in a manner to destroy their aim? P. 2.

To accustom the recruit to the report, and give him steadiness.

Watch the recruit minutely.

Until the tendency to wink is overcome, and the recruit becomes so perfectly indifferent to the report, that the composure of the countenance is not in the slightest degree disturbed.

Twenty, viz:—

5 singly,	}	standing.
2 by files,		
3 in volleys,		
5 singly,	}	kneeling.
5 in volleys.		

Cause them to snap caps in the barrack-room, aiming at an indicator (or the wick of a lighted candle), placed about 3 feet from the muzzle.

BLANK FIRING.

QUESTIONS.

After the recruit has concluded his snapping cap drill, what is he to be exercised in? P. 1.

With what view is the recruit practised to fire blank cartridge? P. 1.

How many rounds of blank has the recruit to fire before he is permitted to fire ball? P. 1.

What, in this, and the snapping cap drill, is the instructor most particularly to watch? P. 2.

With what object? P. 3.

What is the instructor to explain to the recruit concerning recoil? P. 3.

How may the "kick or recoil" be controlled? P. 3.

Why is attention to this particular considered of such great importance? P. 3.

ANSWERS.

Blank firing.

To further the object for which he is exercised to snap caps, and to accustom him to the recoil.

Twenty, viz. :—

5 singly,	}	standing.
2 by files,		
3 in volleys,		
5 singly,	}	kneeling.
5 in volleys,		

The position of the body, arms, hands, and the manner of pressing the trigger, as also the position of the head when taking aim.

To discover and correct those errors which are fatal to good shooting.

That the explosion of the powder at the same time it drives the bullet out of the barrel, communicates a force backwards.

By pressing the butt firmly into the hollow of the shoulder.

Because the more confidently a man stands up to his rifle, the less likelihood there is of random shooting, and the better will be the result of the firing.

QUESTIONS.

How do you explain to the recruit the reason why he is taught to press the centre of the heel plate to the hollow of the shoulder? P. 4.

Why are the men when at the "present," directed to grasp the rifle firmly with the left hand? P. 4.

How are you to explain to the soldier that the point of resistance is above the butt? P. 4.

ANSWERS.

By teaching him that the bullet must leave the barrel in the direction of the line of fire, and that the recoil takes place in the opposite direction.

Because the stock being bent downwards, the point of resistance (the shoulder) is beneath the line of recoil, consequently the explosion of the charge has a tendency to throw the muzzle up, and thereby send the bullet high.

By telling him to observe that if the axis of the piece was produced backwards, it would pass far above the heel of the butt.

 JUDGING DISTANCE DRILL.

What are the soldier and recruit instructed to do in this drill? P. 1.

What is the object of this drill? P. 2.

How are the men to be taught to estimate distances by the eye? P. 3 and 4.

To take note of the size and appearance of men and objects at different distances.

To teach the men to judge distance quickly, and with tolerable accuracy, so as to be able to regulate the elevation of the rifle.

By placing men as "points for observation," opposite the party, at 50, 100, 150, 200, 250, and 300, (350, 400, 450, 500, 550, and 600) yards.

QUESTIONS.

How are the fixed points to be thrown out? P. 5.

How, and at what distances are the points to be placed? P. 5.

Why is each man in this formation placed at a greater distance

ANSWERS.

First select a conspicuous object in the distance, and align two men thereon twenty yards apart facing each other, then place a man at right angles (covering point) 11 paces to the right or left of the base point, after which march a section of 6 men for a single line of points (11 men for a double line), on the alignment chosen, and halt it at 50 yards distance from the base point. When No. 3 of the rear rank will face about and cover on the two men already aligned, the man 20 yards from the base point will then be removed.

The party is to 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 faces about three quarters either to the right or left, and covers diagonally on the 50 yards point, and the one placed 10 paces to the right or left of base point. The squad is then to continue to march in an oblique direction, placing a man (or file of men), at every distance of 61 paces or $50\frac{1}{2}$ yards, up to 300 or 600 yards, as the case may be.

That each soldier may serve,

QUESTIONS.

from the line first marched upon, in proportion to the distance from the base point? P. 6.

Who are to be placed along the base to instruct the sections? P. 7.

How many instructors are required: how placed: and on what points are they dressed? P. 7.

On which side of the squad instructor, placed opposite the 50 yards point, is the party to be formed? P. 7.

What are these instructors to direct the men to notice;—and with what view? P. 8.

What is the instructor opposite the man at 50 yards to point out to the men? P. 9.

ANSWERS.

in turn, as a distance point for observation.

Officers, or non-commissioned officers, placed opposite the several points for observation.

Six, (eleven when the points are thrown out right and left). After they have been formed up in single rank, the left or right hand man taking the place of the base point. (Number 6 from the right when the points are thrown out right and left.) The right or left hand man (or sixth for a double line) stands fast, the remainder are faced right or left or outwards, each man taking 10 paces and dressing on the base and diagonal covering points.

To the left if the points are thrown out to the right, and to the right if to the left.

The position of the sun,—the state of the atmosphere,—the background;—that they may be accustomed to the changes which take place in the appearance of the several objects under altered conditions.

The different parts of the figure, arms, accoutrements, and dress, which can be distinctly perceived on the soldier before him, as also those parts that can be no longer clearly seen.

QUESTIONS.

How are the men to be taught to remember the appearance of the first point? P. 9.

Where are the men then to be moved? P. 9.

What is the duty of the instructor opposite the 100 yards point? P. 10.

What is the instructor opposite the 300 yards point especially to point out to each man? P. 11.

Are the answers and observations of every man likely to be the same? P. 12.

Why is the squad to consist of at least double the number of men employed as points for observation? P. 13.

How is the work to be got over in the prescribed time, when the party is very large? P. 14.

ANSWERS.

The instructor is to question the men on the observations made on what they can see, and enjoin them to try and impress upon their minds the appearance of a man at 50 yards.

The next station.

To direct 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 after questioning all the men, pass the section on to the next squad instructor.

The difference that exists between the men placed at the six distances, as also what parts of the figure, dress, and equipments are distinctly perceptible, those that are seen less clearly, and those no longer visible at each distance.

No, because the eyesight is not the same in all.

That the men placed as points may be relieved by others who have made their observations.

By throwing out a double line of points to the right and left.

QUESTIONS.

How are the men to be shown the appearance of objects in different aspects? P. 14.

After the men have made their observations on the different points, what are they to do? P. 15.

Is this to take place on the same part of the ground? P. 15.

About what is the instructor to caution the men, before they commence to estimate the distance? P. 15.

How many paces to the front are the squad instructors marched? P. 16.

With what view? P. 16.

When each man has given his answer, what is he to do? P. 16.

When all the men have given their answers, what are the squad instructors to do, and why? P. 17.

What is used to ascertain the correct distance;—and how ascertained in the absence of an instrument? P. 17.

How many days are the recruits to be drilled up to 300 and 600 yards? P. 18.

ANSWERS.

By throwing points out to the front and rear of the party.

Proceed to estimate the distances of men placed at unknown distances, within the limits of 300 yards.

No, they are to be marched to a different part of the ground.

To recollect the appearance of the men just seen at known distances.

Three paces in front of the right of their squads.

That they may call out each man separately to the front, and note down his answer, which must be given in a low tone of voice, in order that the others may not be influenced by his opinion.

Adjust the sight of his rifle for the distance he has given.

To read aloud the answers of the men, in order to ascertain if they are correctly recorded.

Stadiometer;—by pacing, the party marching on the man judged from, and the instructor placing himself in the centre of squad and counting the number of paces: $120=100$ yards.

Four days, up to 300 yards, and four up to 600 yards, at known and unknown distances.

QUESTIONS.

How are the fixed points thrown out up to 600 yards? P. 18.

How many men are to be placed at each distance? P. 18.

When do you commence throwing out the points? P. 18.

In the absence of an instrument, what is to be done with a view to save time, when estimating unknown distances beyond 300 yards. P. 19.

How is the distance to be measured? P. 20.

What is the instructor to be particular about with regard to these exercises; — why; — and what constitutes a judging distance drill? P. 20 and 21.

ANSWERS.

Precisely in the same manner as from 50 to 300 yards.

Two or more men at every 50 yards.

After having measured 300 yards in front of the party, on the alignment chosen.

The squad or party is to be divided into two equal portions, moved in different directions, and when halted faced towards each other, with a file thrown out on the flanks.

By advancing towards one another, pacing the distance as before.

That they are conducted as much as possible in different directions, and under different states of the atmosphere;—that the soldier may become habituated to the diversity of circumstances in which he may have to act;—making observations on men placed at known distances, and giving three answers on men placed at unknown distances in different situations.

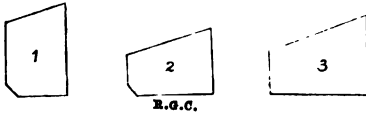
 MANUFACTURE OF CARTRIDGES.

What men are to be instructed in the manufacture of cartridges? P. 1 and 4.

Every recruit; and 12 men per company annually.

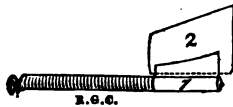
QUESTIONS.

What papers are used for making cartridges? P. 2.

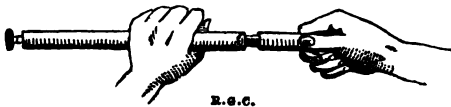


What articles are necessary for the manufacture of cartridges, and by whom are they to be supplied? P. 3.

How do you form the cylinder for powder case? First process.



How are the sides and end of the powder case to be secured? Second process.



What is to be particularly attended to in this process?

ANSWERS.

No. 1. Stiff paper.
 „ 2. Inner envelope.
 „ 3. Outer envelope.

5 Tin measures ($2\frac{1}{2}$ drams).

5 Tin funnels.

12 Formers.

12 Forming plugs.

1 Set of tin patterns.

1 Iron straight edge.

1 Large knife.

20 Quires of white paper.

6 Quires of stiff paper for powder cases.

$\frac{1}{2}$ Bushel of fine sand.

50 Bullets (pattern 1853).

By the barrack-master.

Roll the stiff paper, No. 1, tightly, about $2\frac{1}{2}$ times round the former, which is to be laid on the side opposite the acute angle. (*Vide plate.*)

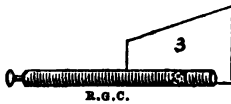
By placing No. 2 paper on the top of the end of No. 2 (*vide plate*), and roll it tightly on the stiff paper and former; after which, slightly twist the end that overlaps about $\frac{1}{8}$ of an inch into the hollow at the base of the former, making use of the forming plug to close the folds and adapt the paper to the cavity.

That the bottom of the powder case is properly secured, so that no powder can escape therefrom.

QUESTIONS.

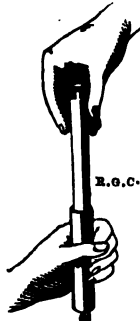
What is the fourth process ?

The fifth ?



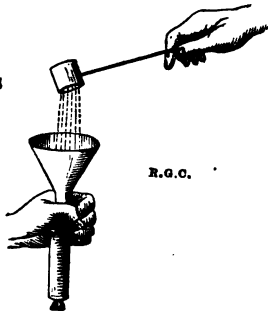
The sixth ?

The seventh ?



Why is no space to be left between the point of the bullet and the cavity in bottom of powder case ?

What is the eighth ?



ANSWERS.

Put the point of the bullet well into the cavity of the powder case. (*Vide plate.*)

Place them so fixed on paper No. 3 (*vide plate*), about $\frac{1}{2}$ an inch from the broader side ; roll paper No. 3 tightly round the powder case and bullet, taking care not to touch the bullet in so doing, which would have the effect of moving the point from the cavity in powder case, and also crease the paper.

Twist or fold the paper that overlaps, and tie it as close as possible to the base of the bullet. (*Vide plate.*)

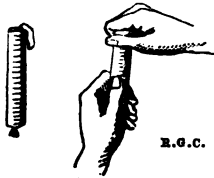
Place the base of the cartridge on the table, and withdraw the former with care, by pressing the powder case in the left hand while raising the former with the right, so as not to separate the powder case from the point of the bullet.

To prevent any play at the juncture, which would soon render the cartridge unserviceable.

Place the funnel into the mouth of the powder case and pour in the charge ; remove the funnel, being careful that none of the powder escapes between the inner and outer envelopes.

QUESTIONS.

The ninth?



The tenth?

Why is pure bees' wax now used?

ANSWERS.

Secure the charge by squeezing the tops of the two envelopes between the forefinger and thumb of the right hand, close to the mouth of the powder case, and then by a slight twist of the hands in contrary directions, choke the cartridge, laying the flat ends of the paper on the side of the cartridge. (*Vide plate.*)

Lubricate the cartridge by dipping the base up to the shoulder of bullet in bees' wax, (which should be purified by being heated over a slow fire).

Because it has little or no acidity, which caused rust of lead to form on the bullet in hot climates; which incrustation impaired the celerity of loading, and rendered the arm (as a military weapon) almost useless.

PART IV.

TARGET PRACTICE.

QUESTIONS.

What will ensure a high figure of merit and a very large proportion of prize holders? P. 2.

What is the size of a target? P. 3.

Of what metal are they made, and of what thickness should they be? P. 3.

What is the size of the squares cut on the face; and for what purpose are they cut? P. 3.

What composition is used for colouring the target? P. 4.

When practice is going on, where should the buckets containing these mixtures be kept? P. 5.

On what are the targets to be rested, and how placed with reference to line of range? P. 5.

When in use, how are the targets to be placed? P. 5.

How are they liable to be injured? P. 6.

ANSWERS.

The more carefully the men have been trained in the "Position Drill," the better will be the result of the ball firing.

Six feet in height and two in breadth.

Iron, of sufficient thickness to be rifle bullet proof.

Squares of six inches, to serve as guides for painting the bull's-eye and centre.

Whiting, water, and size. For the bull's-eye and circle describing the centre, lamp-black, water and size.

In rear of the targets.

On stone or wooden platforms (iron better), twenty feet by nine inches, and placed at right angles to the line of pegs.

As perpendicular as possible.

By want of care in lowering or raising them; allowing them to fall by removing the props.

QUESTIONS.

When not in use, where and in what position are they to be placed? P. 7.

How are they to be preserved from the effects of exposure? P. 7.

What course is to be pursued when a target becomes un-serviceable? P. 8.

Are the troops to pay for the damage done? P. 8.

To whom are the proceedings of the board forwarded;—and state information to be particularly furnished therein? P. 8.

How many men as a fatigue party are to be warned daily;—under whose orders are they placed;—and what are their duties? P. 9.

What extra clothing is to be provided for these men during the winter? P. 9.

Mention colour of flags and discs; value of points denoted by each; and mode of signalling outer with disc? P. 10.

What flag denotes a ricochet;—how used;—value of ricochet; and how noted on register? P. 11.

ANSWERS.

On the ground, at an incline, to prevent the rain lodging on them.

By painting them periodically.

A board of officers is to be assembled to inquire into the cause of damage.

Should it appear that the target has been broken through carelessness and rough usage, the cost will be charged against the troops.

Quarter-Master-General to the forces, and general commanding district;—time target has been in use.

Six (one of whom is to be a pioneer);—the instructor of musketry;—cleaning the target, assisting to signal shots, and as look-out men to warn persons from crossing the range while firing is going on, etc., etc.

Watch cloaks or great coats.

	Flags.	Points.	Discs.
Outer	White	2	Black.
Centre	Blue	3	Black.
Bull's-eye	Red & white	4	White.

Black at side of target, and then in point of hit on target.

Red;—waved to and fro in front of target;—miss O;—letter R.

QUESTIONS.

What is the duty of the men in the ricochet butt?

What is the colour of danger flag;—and when hoisted? P. 12.

When are the markers, etc., to be allowed to leave the butt? P. 12.

How long is the danger flag to be kept up? P. 12.

When the "cease fire" is sounded, what flag is raised;—and when lowered? P. 12.

How is the soldier shown by flag where his shot has struck the target;—and how by disc? P. 13.

Mention the positions of hits you can signal from an earth butt;—and from a mantlet?

ANSWERS.

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.

A red flag;—whenever it is necessary to cease firing to recolour the targets, or for any other purpose.

Not until the "cease fire" has been sounded, or the danger flag raised at the firing point in answer to the danger signal.

As long as the markers are out of the butt, or any person, etc., is in the line of range.

The red flag at firing point, and at marker's butt;—when the "commence firing" is sounded from the firing point.

By raising it from the marking butt according to the position of the shot on the target;—by raising it in front of mark made on target.

Right. Right high. Left. Left high. Good direction high (flag to be raised as high as possible). Good direction low (flag raised just above the butt).—Right high. Correct elevation. Right low. Left high. Correct elevation. Left low. Good direction high. Good direction low.

QUESTIONS.

What rule has been laid down for the counting of bull's-eyes and centres in all practices? P. 14.

Are all shots to be counted? P. 14.

What non-commissioned officers are to be the markers in the butt, and ricochet butt? P. 15.

What is this non-commissioned officer responsible for;—and what memorandum is he to keep? P. 15.

What is the object of keeping this memorandum? P. 15.

State duties of marker in ricochet butt? P. 15.

What is to be the maximum number of recruits and drilled soldiers in each squad? P. 16.

How many sections at each range;—and what arrangements are to be made for relieving them? P. 16.

When exercising by classes, which is to have the choice of time for practice? P. 16.

ANSWERS.

The circumference of the mark (not the splash) made by the bullet, must cut within the outer edge of the bull's-eye or centre.

No, only those where a part or whole of the mark of the bullet is seen on the face of the target.

Full non-commissioned officers (if possible) of a different company from that engaged in firing.

The correct signals being given to the several shots which strike the target;—a memorandum of each shot under the head of bull's-eyes, centres, outers, ricochets, and misses.

To facilitate the marking, and ensure each man's shot receiving the correct signal.

To keep a sharp look out, and call out to marker in butt ricochet, etc.

Twenty.

Not more than one. That they are marched off from the barracks at such time as will ensure their arriving on the practice ground by the time the parties firing have finished.

The senior class.

QUESTIONS.

In what are the names of the men for practice to be entered? P. 17.

When, and in what order are they to be entered? P. 17.

How many registers will answer for a section;—what is recorded in it;—who is to keep the register at the firing point;—what is noted therein;—when is he to call out each man's name;—and in what, and when are the entries to be made? P. 17, 18, and 19.

If the alteration of a figure, etc., is necessary, how is it to be made? P. 19.

What will invalidate the register? P. 19.

When is the practice to commence? P. 20.

Which man of the section is to commence the practice, and detail the manner he is to proceed with it? P. 20.

ANSWERS.

A target practice register (Form C.) or for F. V. & S. in diagram E.

Before the party goes out for practice;—in the same order as they appear in the "Musketry Drill and Practice Return," with the succession number prefixed to each man's name, and in which order they will stand in the ranks for firing.

One;—the performances at two distances;—the company officer;—the value of the points obtained by each hit, etc.;—before they fire;—in ink at the time on practice ground.

By drawing a fine line through the figure, making the correction, the initials of the officer of the company being immediately attached to it.

Inattention to this regulation, or an erasure.

When the section has loaded by word of command, the bugler has sounded the "commence firing," and the danger flag is lowered at the marking butt, everything being ready.

The right hand man of the front rank takes a pace to his front, comes to the capping position, and fires; after which he

QUESTIONS.

How is the remainder of the section to proceed with the practice? P. 20.

How many paces will the section have reformed to the rear, and by whom is it to be moved to the front to load? P. 20.

Why is the officer instructor not to check a man for an error at the time of firing; and when is he to correct him? P. 21.

When, during a practice, is the target to be coloured afresh? P. 22.

• What is to be done before the practice is resumed? P. 22.

What constitutes a practice;—state briefly what takes place at conclusion of said practice;—from or to what (if necessary) is any

ANSWERS.

will come to the shoulder from the capping position, and form three paces in rear of the point he previously occupied.

In succession, moving to the front and firing (not until the preceding man's shot, if a hit, has been signalled), when they will march to the rear and form on the left of their right hand men. The rear rank will commence in a similar manner, and form in rear of their front rank men.

Three paces. By the officer in charge of the section.

Because it would have the effect of distracting his attention from the object he is aiming at. After he has fired.

When the hits become too numerous to distinguish quite easily the new ones as they strike.

The Captain, or officer of the section, and "marker," are carefully to compare the register with the target, and the officer is to see that all the old shots are obliterated, and the target properly cleaned.

A distance;—each man's points are totalled and read out;—cease fire, and advance sounded;—Captain or officer of section

QUESTIONS.

difference added or deducted;—and how is merit of section determined? P. 23.

Give an instance when officer keeping register may credit a man with any additional number of points discovered on comparing register with target? P. 23.

After the register has been totalled and averaged, etc., by whom is it to be signed? P. 24.

Who initials the duplicate total points;—when are they to be torn off;—and who is responsible for them? P. 24.

By whom is the recruits' target practice register to be signed;—and state in what particulars the practice register for the recruits differs from those for the drilled soldier? P. 25.

How is the absence of any man to be accounted for in the register, and in what part of it? P. 26.

By whom and when are the total points obtained by the drilled soldier and the recruit, to be entered in the "Drill and Practice Return"?

At how many distances is a

ANSWERS.

proceed to target, and with marker compare register with it;—from total points;—by dividing total by number of men who fired, carrying quotient to two places of decimals.

When the total points are read over, and the man declares at the time the particular hit recorded in error. (*e. g.*)

By the marker in butt, the non-commissioned officer who kept it, countersigned by the captain or officer of the company.

The officer instructor or his assistant;—as soon as the register is made up and signed;—the officer instructor.

The marker in the butt; the battalion or squad instructor; officer instructor, or his assistant;—the *officer instructor* or his *assistant signs it*; the duplicate total points are *not torn off*.

The cause of absence is to be briefly stated in the columns "total points" and "duplicate total points."

Those of the company by the company instructor; those of the recruit by the battalion sergeant instructor, immediately on their return to barracks after the practice.

QUESTIONS.

ANSWERS.

squad to fire in one day;—and what constitutes a practice? P. 28.

What rule is laid down with regard to men who fire at only one or more distances in a "period," and are unable to finish it or them with their party or company;—and what rule is laid down concerning the continuance of practice, at individual firings, when prevented by sudden rain? P. 29 and 30.

When are the points obtained not to be added up with the total points obtained by the company in the "first period?" P. 30.

By whom;—what;—and when are the Musketry Drill and Practice Returns to be checked;—who is responsible for classification;—and what is he particularly to see has been attended to? P. 31.

Where are persons who desire to watch the practice to stand? P. 32.

How many rounds of ball ammunition are to be expended by the recruit and drilled soldier, and in what practices? P. 33.

Two distances. Ten rounds.

They are to be considered as having finished the period, and are to be classified according to the number of points they may have obtained, which points are added up with the total points divided to determine the merit of the shooting in any period;—shots fired compared, and practice completed on a future occasion.

When a man, on account of *sudden illness*, is unable to fire the number of rounds to be expended at one distance.

The officer instructor;—duplicate total points;—at the conclusion of every period;—officer instructor;—that the entries are correctly made, and that each man has been correctly classified.

On the right, and clear of the section. On no account is any noise or talking with the men to be allowed.

Ninety.

60 in individual firing.

10 by files.

10 by volleys.

10 in skirmishing order.

QUESTIONS.

ANSWERS.

Five rounds.

State number of rounds expended at each distance;—distances for recruit and drilled soldier respectively;—size of targets;—give dimensions of centre and bull's-eye for each class;—how far centres, etc., extend on face of target;—and width of line indicating same? P. 34.

Preliminary for Recruit.		1st Period 3rd C. for Soldier.
100	Bull's-eye 2×1 Centre . . 4×2 Target . . 6×4	150
150		200
200		250
250		300

2nd class. 3 targets.

	For Recruits and Co.
400	Bull's-eye 2×2 Centre . 4×4 Target . 6×6
500	
550	
600	

1st class. 4 targets.

W. Side.	For Drilled Soldier only.	.577 bore, a Cavalry Carbine
65	Bull's-eye 2×3 Centre . . 4×6 Target . . 6×8	650
700		700
800		750
900		800

Not beyond indented line;—half-an-inch.

In what order are men to turn out for rifle practice;—and mention the countries where rule does not apply? P. 35.

Marching order;—except in East and West Indies, Windward and Leeward Islands, Western coast of Africa, St. Helena, Mauritius, Ceylon and China.

Up to what distance is the practice to be performed standing;—what distances officers and men kneel to fire;—and mention who may be exempted from kneeling? P. 36.

To 300 yards;—all distances beyond 300 yards;—old officers who cannot get into the position;—soldiers of cavalry with the sanction of the commanding officer.

What rifle may officers and sergeants use.—What rule is laid down concerning such rifle.—State position at practice;—the shoulder to fire from;—and when

Long or short;—they must not change it during course.—That authorised by Musketry Regulation.—Right;—except medical officer certifies defect of vision of

QUESTIONS.

an exception may be permitted?
P. 37 and 38.

What does the individual ball firing for recruit consist of;— that for drilled soldier (annual course);—number of points entitling a man to superior class;—and those for marksman's reward?
P. 40.

Mention order concerning the performance of preliminary drills;—and that concerning casuals in drill? P. 41 and 42.

ANSWERS.

right eye, then the left shoulder (but not in platoon practices).

Preliminary ball practice and first and second periods T. P.;— first, second, and third periods T. P.

Rifle .577 bore.
Cavalry Rifle
Carbines of all
patterns.

Whitworth
Rifle.

36 . . 3rd to 2nd . . 42
30 . . 2nd to 1st . . 40
20 . . marksmen . . 32

Company officers, young officers, and recruits, are not to fire ball before they have been exercised through the prescribed course of preliminary drills;— officers, drilled soldiers and recruits becoming casuals in the drills, are to be considered as not having been exercised therein.

FIRING SINGLY.

How is the preliminary ball practice for recruits to be conducted;—number of targets;—and size of third class target?
P. 43.

What is the result of each shot to be recorded in.—And in what are the totals opposite each man's name to be entered? P. 44.

With fixed bayonets, firing standing;— two targets;— 6 ft. by 4 ft. (the first shot at each distance to be fired off a rest).

A target practice register.—In the recruits' Musketry Drill and Practice Return, Form A.

FIRST PERIOD.

QUESTIONS.

In what are the officers of companies, drilled soldiers, and recruits exercised in this period? P. 45.

What is made out at the conclusion of this period.—And where are the totals obtained by each man, individually, entered? P. 46.

What does this classification show? P. 46.

What is to be done before the second period commences? P. 47.

ANSWERS.

In individual firing at every 50 yards, from 150 to 300.

A classification from the total points gained by each man in the first period.—In the column "total points,"—Musketry Drill and Practice Return.

The second and third class shots at conclusion of period.

The names of men who have passed into the second class, and the number of points obtained by each are to be read over by the officer of the company to the men on parade.

SECOND PERIOD.

In what are the men exercised in this period? P. 48.

What are the value of the hits in the practice of the second class?

When is a second classification to take place, and what number of points entitles a man to a first and second class? P. 49.

In individual firing, the men practising in two classes, second and third.

Centre 3, outer 2, bull's-eye 4.

At the conclusion of the second period, when all men of the second class who have obtained 30 (40 W.) points and upwards are to pass into the first class; and all those men of the third class who have obtained 36 or 42 points and upwards into the second class. The others practising again in the second and third class as the case may be.

QUESTIONS.

State when the second class repeats the practice of the third class;—the size of the target;—and how many points pass a man into the first class? P. 50.

ANSWERS.

When the rifles or carbines are only sighted to 300 yards;—the size of target to be six feet by two;—36 points and upwards.

THIRD PERIOD.

Mention classes in this period;—value of hits;—the points added together;—where sum entered;—and with what object? P. 51 and 52.

First, second, third;—Centre 3, bull's-eye 4;—points obtained by each man;—in column "total points";—to classify the men.

What men are to be *styled* marksmen? P. 53.

Those who in first class firing have obtained 20 and upwards (Enfield), 32 and upwards (Whitworth), are in first class judging distance practice, and possess a satisfactory knowledge of the theory, and cleaning arms.

What return is made out by the company instructor;—what order are names to be entered;—what points entered;—and mention several headings? P. 54.

Final classification (Form L.);—order as to merit;—points obtained in each period.
 Fired in first class 3rd period.
 Passed into first class ,,
 Remained in second class ,,
 Passed into second class ,,
 Remained in third class ,,

What men are to be exempted from aiming drill;—and mention at what distances? P. 55.

Marksmen;—under 600 yards.

VOLLEY FIRING.

QUESTIONS.

What men are exercised in this practice;—at what distance;—and what position they fire in with long and short rifles. P. 56.

What value have the hits in this practice;—mention number of targets, etc.;—size of black mark;—and mention the strength of each squad? P. 57 and 58.

State briefly the rule concerning miss-fires;—men firing by themselves;—and the withdrawal of men? P. 59.

What are you enjoined to attend to concerning third class shots in this exercise;—what men are not exercised in volley and file firing? P. 60 and 61.

ANSWERS.

Drilled soldiers and recruits;—400 yards;—both ranks kneeling. (With short rifle) front rank kneeling, rear rank standing.

Shots striking black, 4 points; others 2;—six placed close together, 6 ft. by 12 ft.;—two feet wide, painted across centre of target;—not more than 10 file.

Every miss-fire is counted as a round fired;—no man allowed to fire at the target singly. No man to be withdrawn after having commenced the practice.

That they adjust their sights to the proper elevation;—cavalry soldiers.

RAPID FILE FIRING.

Who perform this practice;—state rounds expended;—distance;—and number in section?

Give size of target;—dimensions of black mark;—value of hits;—date of order, giving particular directions;—and what information is to be particularly recorded on face of diagram? P. 62.

Drilled soldiers and recruits;—ten rounds;—300 yards;—ten file.

Six feet by twelve (six targets close together);—two feet wide across centre of target;—black mark, 4 points;—remainder of target, 2 points;—General Order No. 787, 2nd May, 1861;—time taken to perform the exercise from the command “commence.”

GENERAL ORDER, No. 787.

2nd May, 1861.

QUESTIONS.

State date of general order relative to soldiers using the "back-sight" of the rifle when they are in close action;—and briefly state the pith of said order? P. 63.

State directions concerning the raising of the flap of the back-sight, and how aim is to be taken when it is and is not raised?

State what His Royal Highness has directed concerning these rules?

ANSWERS.

Second of May, 1861.—The destructive powers of the rifle have not been developed to the full extent, that the failure is not in the rifle, but has arisen from the want of a dexterous and skilful use of it.—The adjustment of back-sight entails a knowledge of distances, which is not difficult to acquire, although considerable practice is required to keep it up.

When firing in line or in square at and under 300 yards, the flap is not to be raised, but aim is to be taken through the flanges;—when firing in the open beyond 300 yards, and at all distances from behind parapets or under cover of any sort, the back-sight is to be carefully adjusted, and a true alignment taken through the notch of the back-sight.

That they be carefully explained to non-commissioned officers of companies, and that they be observed at all division, brigade, and battalion evolutions;—that officers generally make themselves proficient in a knowledge of distances, and thoroughly acquainted with the powers of the rifle.

QUESTIONS.

How is it to be ascertained that the field and company officers possess the required knowledge;—and why?

State what His Royal Highness says concerning the use of the rifle on active service?

ANSWERS.

Officers commanding divisions, brigades, and garrisons, are to ascertain by frequent inspections and close examinations, that field and company officers possess a correct knowledge of "distance," and of the theory and practice of rifle shooting;—because the effective use of the rifle on service depends, in a very great measure, on their efficiency in these points.

If the instructions are attended to, 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.

SKIRMISHING.

How many rounds are to be expended in this practice;—by whom;—and at what distances? P. 65.

What is the number of targets;—how painted;—how placed? P. 65.

Why so placed;—and what value have the hits? P. 65.

In what position are the men to fire and load;—and mention briefly mode of procedure after having loaded? P. 66.

Ten rounds;—by the drilled soldiers and recruits;—advancing and retiring, between 400 and 200 yards, each man arranging sight of rifle accordingly.

Six or eight;—as in the practice for the third class;—with an interval of six paces between them.

That each file, when in extended order, may have a separate target to fire at;—black mark 4, outer 2.

Kneeling (optional); standing.—Return rod, run up, give word "ready," and then cap.

QUESTIONS.

What precautions are to be taken to prevent any person approaching within a certain distance? P. 67.

What is used to record the practice in this, as well as by files, and in volleys? P. 68.

What is recorded on the face of the diagram;—by whom and when compared with target;—by whom signed;—where and in what return are the points entered? P. 68.

By whom are diagrams of volley firing and skirmishing retained;—what part of the diagram is removed;—by whom and for what purpose.—When is memorandum not torn off;—and why? P. 69.

When are men not allowed to perform these practices;—what is laid down concerning practice in an advanced period? P. 70.

What men are put through a second course;—to what extent;—with whom;—when;—and

ANSWERS.

A sentry (one of the fatigue party) is to be placed about 40 or 50 yards on each flank of the extended targets.

A diagram.

The position of each hit, etc., (*vide* diagrams, P. 29 and 30, "Returns;")—company officer;—when completed;—non-commissioned officer of another company (witness), and company officer;—in the columns set apart for the purpose in the Musketry Drill and Practice Return.

Captain of the company;—memorandum of the hits on the several targets, after being initialed by officer instructor and found to agree with diagram;—officer instructor;—to check entries in Company Musketry Drill and Practice Return.—In the practice of casualties of different companies and recruits;—because they are retained by officer instructor.

When they have not completed first period T. P.;—that no one be allowed to practise in second or third periods unless he has performed first or second periods.

Third class shots;—to end of first period (when not necessary to detach them from head quarters);

QUESTIONS.

mention drills and practices;—in what their performances are to be entered, and heading of same? P. 71.

What is implied by the “figure of merit;”—what practices are taken to arrive at same, and how figure will be affected by third class shots?

What is entered in Company Return when the percentage of third class exceeds percentage of first class? P. 72.

What steps are to be taken to ascertain that the men have been carefully and properly trained to fire by files;—where is result of such practice to be noted;—and what concerning same? P. 73.

ANSWERS.

—the recruits;—winter months;—aiming and position drill; snapping caps; blank firing (in every respect as recruits);—separate Recruits' Practice Return, headed “third class shots at final classification.”

The measure of the shooting of a squad, company, or battalion;—average points first period;—average points volley firing;—percentage of third class shots at final classification is deducted from the percentage of first class shots.

“Nil.”

General officers, at their half-yearly inspections, are to see a squad of at least ten file (selected indiscriminately from the several companies on parade), fire ten rounds in rapid file firing, without raising the flap of the back-sight;—in their confidential report;—in Annual Practice Return;—percentage of hits and average points;—when there is any deficiency in this practice, the Inspector-General of Musketry especially notices it in his Annual Report.

QUESTIONS.

State practices to be performed when range does not extend to 900 yards? P. 74.

At any of the above ranges, state number of rounds to be expended by second class; — in what instances the third period may be performed, and number of rounds expended, and when first class is to fire? P. 74.

What period is to be omitted when the rifles or carbines are only sighted up to 600 yards; — how many rounds are to be expended by the recruits; — how many in the annual course of practice? P. 75.

State as regards range when no ammunition is to be issued; — drills to be performed? P. 76.

When are recruits not permitted to fire with their companies; — in what return is

ANSWERS.

When the ranges only extend to	Practices to be performed.					Total number of rounds to be fired	See Remarks.
	1st Period.	2nd Period.	3rd Period.	File Firing.	Volley Firing.		
300 yards	1	1	--	1	1	1	70 a
400 ..	1	1	--	1	1	1	70 b
450 ..	1	1	--	1	1	1	70 c
500 ..	1	1	--	1	1	1	70 d
550 ..	1	1	*	1	1	1	*70 e
600, and under 900 yards.	1	1	1	1	1	1	90 f

(a) 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.

(b) The second class to fire ten rounds at 350 and ten at 400 yards,—one distance a day.

(c) 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.

(d) 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.

(e) 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.

(f) The first-class men are not to fire at any distance until an opportunity of a range to 900 yards offers.

The third period; —recruits 90 rounds; — only 70 in the yearly course of practice.

When under 300 yards; —preliminary drills.

When they conclude their recruits' training after their company has commenced its annual

QUESTIONS.

officers' shooting to be notified; —and what concerning them? P. 77 and 78.

ANSWERS.

course; — Annual Return; — name of best shot and his points in target practice and judging distance practice.

JUDGING DISTANCE PRACTICE.

What men of battalion are exercised annually in this practice;—why;—and state how the proficiency of the several companies is tested? P. 1.

Into what parts are the chains divided; — and how marked off? P. 2.

How many men are to be placed on the chain when judging to,—and beyond 300 yards? P. 3.

In the absence of an instrument (stadiometer), what is used to ascertain the correct distance; —how many men employed as points up to, — and over 300 yards? P. 2 and 3.

Where is the commander to halt party or class; — and what is he to caution the men about when giving their answers? P. 4.

When one or more classes are judging distance, how may much time be saved;—and a possibility of obtaining a clue to the correct distance be prevented? P. 5 & 6.

Recruits, officers of companies, and drilled soldiers;—because it is a most important and essential exercise;—by an annual course.

Into parts of five yards;—the distance of each division to be so marked as to be distinguished only on close inspection.

One or more men;—a section of not less than eight or ten file, stationed at the end, or any other part of the chain or rope.

A cord or chain divided into parts of 5 yards (labelled), stretched in any direction (varying the ground as much as possible for the several practices);—one or more to 300 yards;—beyond 300 not less than 8 or 10 file stationed at any part of chain.

At a division of 5 yards (label on chain or cord); —complete a division of 5 yards.

By laying a chain or cord down, and sending forward a party of the third class (first period) to any distance from 100 to 300 yards. Parties judging upon one another.

QUESTIONS.

With what is the commander of each party or class to be furnished; — by whom; — and where? P. 6.

Why do the commanders require to know the point on the chain where the party, the men are to judge upon, is to stand? P. 7.

How are the several parties to be formed up with regard to one another? P. 7.

In what way is the correct distance to be ascertained in the absence of a stadiometer, and

ANSWERS.

In second period, one subdivision not less than eight or ten file of the second class is sent forward; these judge upon the men of their own class. The third class sent forward, judge upon either party of second class. In the third period, one subdivision first class is sent forward towards end of chain or rope, these judge upon one another. The second class is sent forward to any point within 600 yards of either subdivision of first class, on which they are to judge. The third class to any point within 300 yards of second or first class, on which they are to judge.

A memorandum specifying the distance on the chain, where the party they are to judge upon is to stand;—by the officer instructor; —on the practice ground.

That they may ascertain the correct distance, by deducting the distance where their party stands from the distance where the party they have judged upon stands on the chain.

So as not to prevent those in rear of them seeing the "points."

QUESTIONS.

when the ground is too hilly to lay down a chain or cord? P. 7.

What is recorded in Form D;—by whom kept;—under whose superintendence;—what observed throughout the practice;—what the men prevented from doing;—in what way are the answers to be given? P. 8.

How many paces are they to be halted from the chain;—where are the markers to stand when recording the answers, and why? P. 9.

Before the non-commissioned officer calls out each man in succession to give his answer, what is he to do? P. 9.

How are errors as regards entries in these registers to be discovered, and when corrected? P. 10.

After the answers have been checked, what is the commander to do? P. 10.

Where is the correct distance to be entered in the register;—and where the points obtained by each man? P. 10.

What constitutes a judging distance practice;—and why is the party or class never to give more than one answer from the same position? P. 11.

ANSWERS.

By triangulation.

The answer given by each man;—sergeant or corporal;—an officer;—the strictest silence;—consulting together in judging the distance;—in a low tone of voice.

Ten paces either to the right or to the left of the chain or stadiometer;—three paces in front of the right of their sections, to prevent the answers, when given, being heard by the men in rear.

Note his own answer down in the register.

The answers given by each man are to be read aloud, any error is to be at once corrected, and not after correct distance has been made known.

State aloud the correct distance.

At the top of the column;—at the side of his answer.

Six answers at six different stations;—to prevent any clue to the actual distance being gained.

QUESTIONS.

What is read over to the men at the conclusion of a practice;—how is the merit of the practice determined;—and how is the correctness of the register verified? P. 12.

Where is the register to be completed;—who is to initial the duplicate total points, and tear them off;—and why kept in his possession? P. 12.

By whom and when are the points entered in companies' return? P. 12.

How is the correctness of the entries made in the recruits' register verified;—and state whether duplicates are removed? P. 13.

What will invalidate a register? P. 14.

Into how many periods is judging distance practice divided;—and what constitutes a period? P. 15.

What value have the men's answers, by points, in the several classes, etc.? P. 16 and 17.

ANSWERS.

The number of points obtained by each man;—by adding up the total points and dividing by the number of men exercising;—by the signature of the non-commissioned officer who kept it, and that of the officer who superintended the practice.

On the practice ground;—the officer instructor;—to check the entries made in the Musketry Drill and Practice Return.

Company instructor;—immediately on his return to barracks.

By the signature of the squad instructor and the officer instructor, or assistant;—no.

Erasures, and corrections not initialed by the officer superintending the practice.

Three;—two practices or twelve answers.

Recruits and Drilled Soldiers.			
	3rd Class.	{	Within 5 yards, 3 points.
		{	" 10 " 2 "
		{	" 15 " 3 "
	2nd Class.	{	" 20 " 2 "
		{	" 30 " 1 "
	1st Class.	{	" 30 " 2 "
		{	" 40 " 1 "
			To 300 Yds
			To 600 Yds
			To 900 Yds

QUESTIONS.

How often, and why are the second and first class to be brought to judge within the distance for an inferior class;—and what value have the points? P. 18.

ANSWERS.

Occasionally, not oftener than once in a practice,—to test their proficiency;—as detailed for the inferior class.

FIRST PERIOD.

From what is a classification to be made;—how many points pass a man into the second class;—between what distances is this period performed;—and by whom? P. 19 and 20.

The sum of the points entered in the column “total points” of the Musketry Drill and Practice Return;—fourteen points;—100 and 300 yards;—every man of company, and recruit.

SECOND PERIOD.

What is the second period? P. 21.

The exercising of the recruits or men of the company in two classes, viz., second and third.

How is the classification at the conclusion of this period arrived at;—what are the number of points necessary to pass a man into the first and second class;—how are those to be exercised who fail to obtain them? P. 22.

Precisely in the same manner as in the first period;—Those men of the second class who have obtained 14 points and upwards pass into the first class; those of the third class who have obtained 14 points and upwards into the second class;—again in the second or third class.

THIRD PERIOD.

QUESTIONS.

In how many classes are the recruits or company to be exercised in this period? P. 23.

What is entered in the return at the conclusion of this period;—where is it to be entered;—what is made out;—and which man is the best judge of distance? P. 24.

How is a tie to be decided? P. 25.

State briefly how you determine which is the best judging distance company:—and rule laid down concerning officers' course;—in what return the three best judges of distance are to be mentioned;—and what concerning them. P. 26 and 27.

Are the three periods of judging distance practice, in which the men are exercised annually, considered sufficient;—when and by whom are they to be again exercised;—and state object of same? P. 28.

What encouragement is to be

ANSWERS.

Three:—first, second, and third.

The sum of the points obtained by each;—in the columns "total points" of the respective classes;—a final classification;—the man, who in the practice first class has obtained the greatest number of points.

By referring to the points in the second period, should they tie therein, then the first period.

Highest score, by adding together average points first period, the percentage of first class, minus percentage of third class men at final classification;—all officers annually;—the Annual Practice Return;—the points they have obtained respectively.

No, they are to be taken into the country by companies, under their respective captains, at least once a month after the annual course has terminated;—they will also be exercised in judging distance on marching out days;—to develop their powers in this branch of musketry training.

The names of the best judges of distance are to be sent to the

QUESTIONS.

given to induce men to excel in this essential particular? P. 28.

ANSWERS.

adjutant, and such of the men who deserve it, may be permitted to be absent from afternoon parade, or receive some other indulgence.

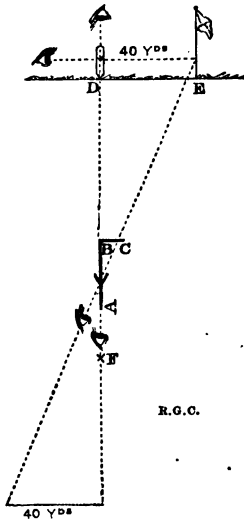
STADIOMETER.

Of what does the stadia consist; —and on what principle is it constructed? P. 1 and 2.

Index bar and head; moveable back-sight; slider on head; tripod; support; cross staff, fitted with four sights placed at right angles; — in similar triangles similar sides are proportional.

State briefly how the cross staff is used; — and how the right angle is established where points stand. P. 3.

Fix a flag where men are to judge from B; non-commissioned officer goes out and fixes cross staff D in ground, aligning one pair of sights on flag at judging distance point B; —measure 40 yards in a line with the other pair of sights, and fix a flag at end of cord or chain E, then remove cross staff, and in its place fix another flag at D.



Place stadiometer, and align moveable back-sight and fixed fore-sight at end of "bar" on flag at judging distance point, and that placed in hole made by cross staff F A B D; move slider on index until bar slider is aligned with sight on "head" and flag placed on right (left of men judged from) C E.—

Explain how stadia is used

QUESTIONS.

Read when points are thrown out;—and the distance taken. P. 3.

Why are two sights required on head;—and which is used for taking distance over 600 yards? P. 4.

On what scale is stadia graduated? P. 4.

When a subdivision of a class is sent forward to judge upon, how do you signal the correct distance to them? P. 5.

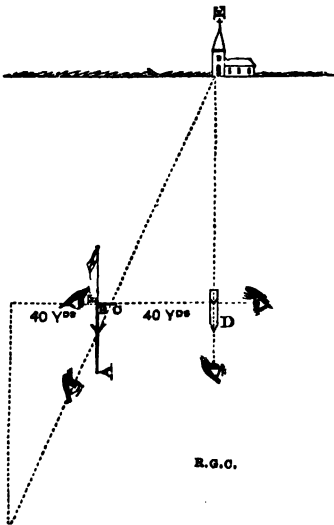
ANSWERS.

off distance on "index bar" in front of moveable back-sight.

The one at 4 inches when measuring up to 600 yards; the one at 2 inches when measuring over 600 yards.

Four inches to every 40 yards.

Flag lowered to right 100 s.; to left 10 s. of yards; to the front 5 yards.



State briefly how the correct distance of an inaccessible object is ascertained (during route marching, or when annual course is concluded). P. 6.

Press cross-staff D into ground, and align one pair of sights on object E; at 40 yards from cross-staff place stadia A F, and align sights B C on other pair on cross-staff; align moveable back-sight on index bar, with sight on head C and distant object E, then read off distance on index bar.

PART V.

PRIZES FOR GOOD SHOOTING.

QUESTIONS.

Why has a system of prizes been adopted in the army? P. 1.

How many prizes for good shooting are there? P. 2.

The first?

The second?

The third?

The fourth?

To enable the soldier to receive the first, how many companies must the battalion consist of, and to what extent must they have been exercised? 1st.

What badge is the holder of the first entitled to wear, and what extra pay is he to receive? 1st.

Is this prize issued to all battalions? 1st.

What rule has been laid down concerning the second prize?

ANSWERS.

To stimulate individual exertion, and to reward the proficiency of soldiers in the use and management of the rifle musket.

Four.

The best shot in the battalion.

The best shot of each company.

Marksmen.

Supplementary prize.

Four companies. Through the yearly course of musketry drill and practice.

Cross muskets and crown worked in gold. Twopence per day.

Not to dépôt battalions, and regiments in which all the companies have not been exercised through yearly course?

Forty rank and file at least (not including recruits in a musketry sense), must have been practised through the yearly course of instruction.

QUESTIONS.

Name the badge and the extra pay it carries with it. 2nd.

To whom, and to what number per battalion is the third prize issued? 3rd.

What is the badge, and extra pay it carries with it? 3rd.

On which arm, and what part of it, are these badges to be worn? 3rd.

Who will be the best shot of the battalion;—and who the best shot of the company? P. 3 and 4.

What prize holders are entitled to the extra pay of marksmen;—what is the maximum reward for the best shot of the battalion? P. 5.

What men receive third prize;—what are they required to possess a knowledge of;—how ascertained;—by whom;—and in whose presence? P. 6 and 7.

ANSWERS.

Cross muskets worked in gold.

One penny per day.

To certain of the first class shots, at the rate of ten per cent. of the number of men exercised through the yearly course, but not to exceed 100.

Cross muskets worked in worsted. One penny per day.

On the left arm, immediately above the slashed flap of the sleeve.

The soldier who in the practice of the first class has obtained 20 with Enfield, 32 with the Whitworth, and scored the greatest number of points in the second class firing, and is in first class judging distance practice;—the soldier who in first class shooting has obtained 20 (Enfield), 32 (Whitworth), and scored greatest number in first and second class together, and is in first class judging distance practice.

The best shot of the battalion and company, if eligible for the position;—threepence per diem, (twopence for best shot, together with one penny for a marksman).

“Marksmen;”—those men who have obtained, at least, 20 points (Enfield), 32 (Whitworth), in first class, greatest number in first and second class, and are in first class judging distance

QUESTIONS.

State how ties are decided.
P. 7.

State the conditions under which prizes are awarded in cavalry regiments armed with rifle carbines sighted only to 600 yards;—and mention when to be contended for in the same manner as in infantry. P. 8. & 9.

What order has been issued concerning the award of prizes to men trained at the Schools of Musketry? P. 10.

ANSWERS.

practice;—competent knowledge of laws affecting flight of bullet, and the rules for maintaining the efficiency of the rifle under all conditions, (“cleaning arms”);—by examination;—the inspector of musketry (in his absence, the officer instructor), in the presence of the commanding officer.

By referring first to their points:— 1st class, T.P.
then 1st period T.P.
,, 3rd ,, J.D.P.
,, 2nd ,, ,,
,, 1st ,, ,,

First prize, best shot of regiments; greatest number of points over 30 in second class target practice, and in first class judging distance practice at final classification; second prize, best shot of troop; greatest number of points over 30 in second class target practice, and first class judging distance practice at final classification;—when carbines are sighted to 900 yards.

Eligible (if qualified) for the rewards for good shooting in their respective battalions, provided they have not been previously exercised in the yearly course;—their practice returns to be sent to officers commanding battalions.

QUESTIONS.

Give an instance when a soldier, on account of transfer, etc., becomes ineligible for the rewards for good shooting;—when is he entitled to same;—(1) and state prizes which do,—(2) and do not lapse. P. 11, 12, and 14.

In case of marksman becoming non-effective, etc., or transferred to a corps where his services as such cannot be commanded, to which soldier is the extra pay issued? P. 13.

What reward is given to those sergeants who have drilled men of company;—why given;—and whether on leaving company it goes with them? P. 15.

How many—and what badges may a sergeant wear? P. 15.

What order has been issued to ensure strict impartiality? P. 16.

How does extent of range affect rewards;—and under what circumstances is the best shooting troop or company only to be established and company badge issued? P. 17.

ANSWERS.

Appointed staff sergeant or drummer before application for rewards be made or transferred to a corps not armed with rifles;—when transferred to another company or battalion, or from dépôt to service companies, and *vice versa*;—(1) marksmen;—(2) best shot of battalion, ditto of company.

To first marksman, in order of merit, who is not in receipt of marksman's pay.

A supplementary prize of cross muskets and crown, worked in gold, (without pay,) to be worn on right arm;—to induce all ranks to vie with each other;—no (property of company).

Three;—best shot of battalion or of company;—marksman's;—supplementary prize.

Companies to be equalised before the commencement of annual course;—no transfers (except such as are indispensable) are to be made until the period for commencing annual course the following year.

No rewards granted, unless a battalion has practised in the three periods of individual firing;—when range extends to 600 yards.

QUESTIONS.

A battalion, 850 (10 companies), of which number 800 have been exercised through annual course, how many prize holders will it be entitled to? P. 17.

State the data upon which the proficiency of men's shooting is to be estimated;—and why. P. 18.

How is the above ensured;—mention modes of departure from instructions which render rewards *liable* to be stopped;—and those which will cause all prizes to be forfeited? P. 19 and 20.

State when officers will be required to make good any disallowance for good shooting pay. P. 21.

ANSWERS.

If best shot of battalion and companies are eligible for third prize, 80;—if not eligible—

Marksmen	80
Best shots of companies	10
Best shot of battalion .	1
	—
	91
	—

Practice registers and diagrams; —to ensure a high rate of efficiency, and to prevent the public being called upon to pay for a low standard of merit.

By registers, diagrams, and company practice returns being correctly kept;—erasures,—corrections not initialed,—absence of proper signatures,—loss of documents,—shooting of battalion below the average,—counting ricochets,—placing marks to aim at to denote allowance for wind, etc.,—firing at shorter distances than allowed by regulation,—at greater number of targets than allowed,—bull's-eye and centre not regulation;—departing in any way from rules for platoon and skirmishing practices, deviating from the *spirit* of Musketry Regulations.

When occasioned through their neglect, by not superintending the target and judging distance practices.

QUESTIONS.

How are the prizes to be distributed between depôt and service companies;—extra pay, when drawn, and badges worn;—for how long;—and what rule is laid down concerning issue of extra pay to marksmen in depôt battalions? P. 22, 23, and 24.

When may rewards be continued beyond the year;—and for what period? P. 25.

What is the nature of the certificate forwarded by the commanding officer, and verified by the general commanding;—with what accompanied;—and to whom forwarded, and for what purpose? P. 25.

With what;—and to whom are recommendations for prizes to be transmitted;—to whom forwarded from Hythe;—and with what accompanied? P. 26.

ANSWERS.

The depôt is allowed its proportion of company prizes, as follows:—

10 service companies	} 100
2 depôt companies	

On the first day of the quarter succeeding that on which the Annual Return is required to be made up, or as soon as the necessary authority is received;—one year;—according to their order of merit in the *battalion*, irrespective of the depôt to which they belong.

When a battalion is on active service, or at a station where no range is available;—until an opportunity occurs of their being challenged by another yearly course of instruction.

Stating the circumstance which has prevented the prescribed annual course;—application in triplicate for a continuance of rewards (Form H.);—to Inspector-General, who forwards it to Adjutant-General of Forces for the information of the Commander-in-Chief.

With Annual Return;—in triplicate to the Inspector-General of Musketry;—to the Adjutant-General of the Forces;—accompanied by a recommendation from the Inspector-General of Musketry.

QUESTIONS.

When, and where are the prizes to be presented;—names of prize holders to be published;—and in what list entered? P. 26.

State briefly under what conditions the soldier will be liable to forfeit the extra pay he may derive from prizes? P. 27.

On what coloured cloth are the badges to be worked;—in what requisition included;—from what store issued;—and when? P. 28.

What is the object of issuing these rewards;—what are officers prohibited from doing concerning rewards;—on what condition may they be given from private funds? P. 29.

ANSWERS.

When a notification of the Commander-in-Chief's approval is received,—on parade;—in regimental orders;—in final classification list (Form L).

Under all the circumstances in Articles of War applying to ordinary pay of soldier,—Sentence by court martial for desertion, disgraceful conduct, or conviction of felony in any court of ordinary criminal jurisdiction in England and Ireland (but not to deprive him of a prize and pay he may gain a subsequent year).

The colour of the facings of the battalion;—the annual requisition for clothing;—from quarter-master's store;—when authority is received for awarding them.

To stimulate the soldier to attain skill in the use of the rifle;—giving rewards to the men from their private funds;—when divisional brigade or battalion rifle contests take place with the sanction of the general or officer commanding on the spot.

PART VI.

RECRUITS' RETURN.

QUESTIONS.

Who keeps this return;—what does it record;—from—and to what date;—what is stated in column “remarks”;—and in what order are the names to be entered? P. 2 and 4.

When is it closed at home and abroad, and how disposed of;—what is done with the names of non-exercised recruits? P. 5.

ANSWERS.

Officer instructor assisted by sergeant instructor;—the day and month the preliminary drills were performed, viz., $\frac{20}{8}$; points made at several distances in target practice and judging distance practice; average of each squad in volley firing and skirmishing; figure of merit of recruits fully trained from 1st of April to 31st of March; recapitulation of exercised and non-exercised men named in body of return;—a clear and concise explanation (column “remarks”) why a recruit has not been trained;—order they join.

At home, 31st March, and transmitted immediately to Inspector-General of Musketry;—abroad retained and inserted in regimental return book; transcript of first and second pages of recruits only who have been trained at service companies in Form M. forwarded to Inspector-General;—transcribed with performances into a new return.

COMPANY RETURNS.

QUESTIONS.

State difference between information rendered in this and Recruits' Return;—who is responsible for the correct keeping of it;—and why to be forthcoming whenever called for. P. 8 and 14.

When and how are the performances to be struck out of return;—when are totals at foot of return, and recapitulation table to be entered in ink;—and what tables are to be vouched by separate diagrams? P. 9, 10, and 11.

From what are you to deduct performances of the above men? P. 12.

State briefly the rule concerning the deducting of points of non-effective men or those transferred to another company or corps,—and where their performances are to be shown;—and what concerning exercise of transfer. P. 13.

State how it is to be shown when men do, or do not practise;—when no points are obtained;—

ANSWERS.

Information is the same except snapping caps; firing blank; preliminary firing; third period in target practice which recruits do not perform (*vide* answer P. 4);—the captain of company;—because it is the record showing the efficiency of every soldier of the company.

When they cease to be borne on the strength of the company; when annual practice returns are to be prepared; by fine line ruled through name and performance (date and cause entered opposite each, in column "remarks");—when annual practice returns are prepared;—tables recording volley firing and skirmishing.

From *totals* in table of volley firing and skirmishing.

The average of the section with which they practised; in skirmishing, the average of target under which their name is written in diagram,—under heading "volley firing and skirmishing" in body of return;—section with which exercised, and average points of *the* target.

When they do not practise several columns opposite name dotted through;—when practised

QUESTIONS.

and what entered in those columns where no practice is shewn? P. 15.

What is recorded in target practice register;—by whom signed;—nature of the certificate at foot of register;—when and how disposed of? P. 16 and 17.

What names;—order entered, and why;—what “number” prefixed;—and what names are entered in register for first period;—and state how and where any absence from practice is to be accounted for in all registers? P. 18 and 19.

What rule is laid down concerning the number of men to be entered in a register when classification has taken place;—why are casuals of different companies not to be entered in same register;—registers how kept, and by whom? P. 20, 21, and 22.

Number of registers required to record practice in a period, when number does not exceed five;—and mention how in this case the check is removed? P. 23.

ANSWERS.

and obtained no points, a cypher;—a line ruled through columns where no practice has to be entered.

Practice of section at two distances; period; class; number of targets; date of practice; distance; result of each shot;—marker, and captain or officer of company;—practice conducted according to regulation; targets examined before and after firing at each distance; points recorded were obtained by the men opposite whose names they appear;—at conclusion of day's practice; endorsed and filed.

Names of officers and soldiers;—same order as in Companies' Return; to facilitate comparison;—succession number;—name of every man per squad or section in Company Musketry Drill and Practice Return;—briefly in total and duplicate total points.

If 20 or under in one register;—greatest importance to secure their points for the company to which they belong;—separately; by captain of company.

One;—that portion of the duplicate total points referring to particular practice.

QUESTIONS.

Who is responsible for their safe keeping;—when and by whose authority may they be destroyed;—what part of register is removed;—where;—and by whom; who checks the returns, and name the check? P. 24 & 25.

What is recorded in Form D.;—nature of certificate at foot;—by whom signed;—causes of absence, where entered;—and who responsible for its safe keeping? P. 26, 27, and 28.

What are diagrams used for;—what information is recorded or entered in them;—where names of men practising to be entered;—when and by whom signed;—and what does captain or officer of company certify? P. 29, 30, and 31.

ANSWERS.

Captain of company;—when the Inspector-General of Musketry gives permission;—duplicate total points;—on practice ground;—officer instructor; duplicate total points (on no account the registers).

A period (two practices); class; state of atmosphere; the object used to judge from; date; correct distance; answers given; points obtained by each man;—conducted according to regulation; the answers recorded were those given by the men;—non-commissioned officer who kept it, and captain or officer of company;—in total and duplicate total points;—captain of company (safe keeping *vide* P. 24).

To note the position of each shot on the target;—result of performance of section in volley, file, and skirmishing practices; distance fired at; date of practice;—in volley and file, on back; in skirmishing, under foot of targets on diagram;—when completed, by company instructor, by non-commissioned officer of another company, and captain or officer of company;—that he saw the hits recorded on the diagram which was closed in his presence on the ground where the practice took place.

QUESTIONS.

State order concerning safe keeping;—in whose possession;—where, when, and by whom any part of register is torn off;—for what purpose. P. 32.

State in what the closing of diagrams for *casuals* of different companies differs from that for the company;—why is officer instructor to supply mean to captain;—diagrams, how numbered and headed;—and where said number is to be entered. P. 33. (*Vide* Questions on 29, 30, and 31.)

When are the musketry forms of the company to be produced for examination;—what officers to be present;—any carelessness or irregularity in keeping, to whom reported? P. 34.

Mention return or form made out in manuscript;—by whom prepared, and signed;—under what headings;—what does it show;—what order are names to be entered;—and where exhibited? P. 35.

ANSWERS.

Captain of company responsible;—captain of company;—on practice ground, when completed; memo of hits on several targets torn off after initialed by officer instructor;—to check entries in Musketry Drill and Practice Return.

Kept by officer instructor; mean average points supplied by him to captain of company;—in order that the men may be credited with the points they have obtained, in Company Return;—consecutively 1st, 2nd, and 3rd squad of casuals; headed “company and depôt of squad”;—number of diagram in column for volleys in Company Return.

At Inspector of Musketry’s periodical visits;—captain of company and company instructor;—commanding officer.

Final classification list of every man of company who practised;—by company instructor;—captain of company;—five headings: 1 fired in 1st class, 3rd period
2 passed into 1st “ ”
3 remaining in 2nd “ ”
4 passed into 2nd “ ”
5 remaining in 3rd “ ”
Total points obtained by each in

QUESTIONS.

ANSWERS.

target practice (or judging distance practice);—names in order of merit at conclusion of third period;—hung up in a conspicuous part of the company's barrack room.

BATTALION RETURNS.

(1) What is the Progress Return;—(2) by whom prepared and signed;—(3) by whom, — to whom,—and when forwarded at home, and abroad;—(4) what is done with the duplicate returned? P. 36 and 37.

(1) A recapitulation of the Recruits' and Company Musketry Drill and Practice Returns;—(2) by officer instructor assisted by sergeant instructor; commanding officer and officer instructors;—(3) in duplicate through district inspector;—to Inspector-General of Musketry;—fourth of every month; abroad, at station where there is no inspector quartered, only one copy; in Mauritius, Australia, Bermuda, one copy to Inspector-General, one to inspector of musketry of district;—(4) inserted in Regimental Return Book for future reference.

- | | | |
|---|---|--|
| 1 | { | Strength of companies. |
| | } | Ditto of recruits. |
| 2 | | Number under instruction. |
| 3 | | Stages of ditto. |
| 4 | | Absentees. |
| 5 | | Remarks. |
| 6 | | Number in each class. |
| 7 | | Diary of progress. |
| 8 | | Names of battalion and company non-commissioned officer instructors. |

Mention several headings (or information furnished) in Progress Return. P. 37.

QUESTIONS.

Mention how many lines are circumflexed for the company and the recruits;—and object of same. P. 37. No. 2.

Mention briefly what is shown under any of the headings (*vide licet* No. 3);—how is the average of casuals to be shown when they have exercised at a different time from their companies. P. 37.

Strength of company 71, of which number 13 are absent, 65 concluded course, 2 2nd period and progress 3rd; how and where performances shown; 3 not exercised where shown;—and state how many available for drill?

ANSWERS.

Three for each company; four for recruits;—to show the different stages of instruction in drill and practice.

(No. 3.) Preliminary drills and practices executed by each company, and by recruits; if preliminary drill concluded, the word written across the columns for same; if practice, points obtained in period or practice executed; drills or a period not concluded on the last day of the month, the word progress is written across the drill or in any period or practice;—always on same line as the number of men to which it refers, and included in the average of their company. (This rule applies to recruits trained at different times of the year, their average being included with those shown on first or second line, according to extent to which exercised.)

Sixty-five first line “preliminary drill concluded; average of practice in third period, volley, file, and skirmishing columns;— 2. Second line, preliminary drill “concluded,” average in first and second periods, progress written in third period;— 1 available, column “remarks;”— 3 absent, not trained, in column “absentees not yet exercised.”

QUESTIONS.

Show in table the instruction of 3 officers, 3 sergeants, 60 rank and file, concluded course; — 1 sergeant, 1 rank and file concluded first period, progress second; — 4 rank and file, concluded, second period, progress third; effective strength, 3 officers, 5 sergeants, 66 rank and file.

What information is furnished in these returns after Annual Return has been rendered;—and when not signed by the gazetted officer, what is to be stated? P. 38 and 39.

ANSWERS.

Strength.		Progress and Concluded.		Prelim. Drills.					Sec. Pd.			Third Pd.			Y.	F.	S.		
O.	S.	O.	S.	1	2	3	4	5	3 c.	2 c.	1 c.	3 c.	2 c.	1 c.					
3	3	3	3											21	8	4	12	11	5
												19	7	Pro	Pro	Pro			
1			1									22	Pro	Pro					

The averages..... 21. 8. 5. refer to 3, 3, 60.
 " 19. 7. to 3, 3, 60 and 4 = 30. 3 S. 64 R. E. F.
 " 22. etc. to 3, 3, 60, 4, 1 and 1 = 30. 4 S. 50 R. & F.
 1. Sergeant absent shown in column "Absentees not yet exercised."
 1. Private available for Drill, which state briefly in column "Remarks."

Merely the strength and absentees by companies; — number of casuals and third class shots who have been exercised since annual course terminated, with their performances; — and the information concerning casuals which is always furnished from the first of April to the thirty-first of March. The reason of omission.

Before commencing to fill in the Progress Return, examine the Company and Recruits' Musketry Drill and Practice Returns, to see that they are complete in every particular.

The Progress Return is merely a recapitulation of the Company and Recruits' Musketry Drill and Practice Returns, showing the progress made during the month by the companies and recruits which have been under instruction since the annual course commenced.

On observing the "headings" in this return, you will see that they correspond with those in the Company and Recruit Return.

First, look at the columns for volley, file firing, and skirmishing; secondly, columns for third period target practice and judging distance practice; fourthly, columns for second period target practice and judging distance practice; fifthly, columns for first period target practice and judging distance practice; sixthly, columns for preliminary drills. If no entries appear in any of the above periods, it is evident the company or recruits have only concluded (or may be in progress with) drills; in which case, count the number exercised and enter them (if in progress) in second line, because the officers and non-commissioned officers, who have concluded the drill before the annual course commenced, being further advanced, have to be shown on first line.

If on examining the Company and Recruit Return you find that a portion only have been exercised in volley, file, and skirmishing, and also have concluded third period of target practice and judging distance practice, count the number so exercised, and enter them on first line; secondly, that some few men have not exercised beyond the second period target practice and judging distance practice, enter these on second line; thirdly, that some are only in progress first period target practice and judging distance practice, but have concluded the preliminary drill, enter these on the third

line. Enter the averages of those shown on first line in several columns for volley, file, and skirmishing; also their averages by classes in columns for third period target practice and judging distance practice.

On the second line, the average by classes in columns for second period target practice and judging distance practice, and ditto in first period target practice and judging distance practice. The averages in first and second periods shown on second line, are the averages of those men shown on both lines. Those shown in third period, volley, file, and skirmishing, of those only on first line. Opposite number only concluded the drill, write in first period "progress." The numbers shown on the three lines in different stages of instruction, have concluded the preliminary drills, therefore write across the lines under heading of same the word "concluded."

Men, etc., of companies and recruits, are classified in Company and Recruit Return, by ruling lines through those columns in which their practice is not to be entered.

In filling in "classification table" at foot of Progress Return, first count, in Company Return, etc., the number of first and second class in first period, and enter these on first line; the total must agree with total number shown on first and second lines in body of return. Then count the numbers of third, second, and first class in second period target practice and judging distance practice, and enter them on second line; the total must agree with those shown on first and second lines in body of return. Thirdly, count the numbers of third, second, and first class, third period target practice and judging distance practice, and enter these on third line; the total must agree with those shown on first and second line in body of return.

Judging distance practice is to be carried on concurrently with the target practice, therefore, if the total number shown, classified in each period, does not agree

with totals in target practice, the cause of difference is to be explained in column "remarks," classification table.

Table "absentees of battalion" is merely a part of the battalion state, showing total number of absentees on the last day of the month. "Absentees not yet exercised" shows the number of the above absentees, who have not been under instruction since the annual course commenced. "Absentees," and "absentees not yet exercised," are again shown by companies and recruits, therefore, the total number of "absentees," and "absentees not yet exercised" shown separately by companies and recruits, must agree with total number in battalion shown in right hand corner of Progress Return.

The number shown as having been under instruction since annual course commenced, and those in progress added to number of "absentees not yet exercised," ought to equal the "effective strength" of the company. If it does not, the cause is to be briefly explained in column "remarks," viz., rank and file, etc., available, which implies that they have become available towards the end of the month, and are ready for instruction with the next company or squad to be handed over for instruction.

In column "remarks," opposite the several companies, mention the station of those detached from head quarters; number of men who have left or joined battalion (since last Progress Return was forwarded), and the extent to which they have been exercised; non-effectives during the month; number available for instruction on the last day of the month (their company having previously commenced its annual course); number of third class shots who have passed into second class (after conclusion of annual course).

In "Diary of Progress" (if previous to the company having commenced its annual course), mention

the non-commissioned officers in progress, or who have concluded preliminary drills; number of third class shots and casualties under instruction; the companies under instruction; instruction on wet days; cause of any suspension; extra position drill and judging distance practice (when annual course is not going on) to be noted in *red ink*.

To show the training of recruits, four lines are circumflexed. On the first line, those who have concluded their recruits' course and are ready to join their company; on second line, those who have not concluded third period, etc.; on the third, those not concluded second period, or may be in progress with first period; on the fourth, those concluded, or may be in progress with the drill. That part of the return which refers to recruits is filled in exactly in the same manner as that for the companies, except that on the second, third, and fourth lines, the stages of the instruction of the *several squads* are shown.

N.B.—When there are three stages of instruction in target and judging distance practice, *vide* tabular form Battalion Return.

ANNUAL RETURN.

QUESTIONS.

By whom prepared;—in triplicate or duplicate;—and state briefly information furnished on first page? P. 40.

ANSWERS.

Officer instructor assisted by sergeant instructor;—in duplicate.

1. Date course commenced.
2. Rifle.
3. Stations at which quartered during execution of course.
4. Number of men (non-effectives included) by companies exercised during year.

QUESTIONS.**ANSWERS.**

5. Total number of officers and men exercised, and their performances in the several practices and periods in shooting (by companies).
 6. Number in each class. Number of men and recruits non-exercised } Strength of company.
 7. Cause of difference in the numbers exercised in periods.
 8. Figure of merit of companies and battalion.
 9. File firing in presence of inspecting officer.
 10. Best shooting company.
 11. Name of best shot of officers, non-commissioned officers, and privates.
 12. Ammunition received and expended.
1. Names of all men effective, and then the non-effective, who have obtained with Enfield 20 points and upwards, with Whitworth 32 and upwards, in first class, specifying points obtained in each period of target practice and judging distance practice—best shot of battalion and each company, and cause of ineligibility for reward.

State information furnished on second and third pages of Annual Return. P. 40.

QUESTIONS.

ANSWERS.

2. Against non-effectives, date and cause — in case of transfer, the battalion to which transferred.
 3. Names entered in order of merit according to points obtained in 40 rounds in first and second classes.
 4. At foot of pages a certificate signed by commanding officer and Inspector of Musketry—latter not available by officer instructor;— (viz.,) Entries agree with registers—men examined in “theoretical principles” and “cleaning arms” and found eligible for marksmen, or other rewards—entries in Companies’ Musketry Drill and Practice Return agree with registers and diagrams.
-
1. Percentage of first class men in judging distance practice, at final classification.
 2. Number of effective men of each company, with the points obtained in periods of judging distance practice.
 3. Number in each class at final classification — number of non-exercised men and recruits,—(these added together should make the strength of company).

What information is recorded on fourth page of Form G.? P. 40.

QUESTIONS.

ANSWERS.

4. Names of the three best judges of distance among officers, with points obtained.
5. Ditto of non-commissioned officers and men, the name of each, and points in each period.
6. Names of non-exercised men, under separate headings, recapitulated numerically under endorsement of return.
7. Men returned in hospital, in prison, etc., period of absence from duty to be specified against their names.

Officer instructor.—Commanding officer, officer instructor, inspecting general officer;—one copy given to general officer making half-yearly inspection;—the other forwarded through the Inspector of Musketry to Inspector-General of Musketry as soon as inspection is made;—in the United Kingdom, Canada, Australia, Cape of Good Hope, not later than the 14th Nov., corps serving elsewhere by 15th of May, cavalry in United Kingdom not later than 1st of April.

By whom is the annual return prepared.—By whom signed, and how disposed of? P. 41.

Are annual returns furnished by all corps;—and in the event of partial training, what statement is to be made? P. 42.

All armed with rifle musket or carbine, whether course has been completed or not;—cause of delay.

QUESTIONS.

What certificates accompany these returns, and what is the purport of them.—And state what information is furnished when they cannot be supplied.
P. 43.

What other documents accompany this return;—and mention briefly the contents?
P. 44.

What information is given in "M." transfer return;—the object of same;—in case of company transfers, who is to prepare and sign it;—and who in the above instance? P. 45.

When are inspectors' monthly returns, etc, to be forwarded;—and accompanied by what returns?
P. 46.

ANSWERS.

A certificate from commanding officer; that the field officers have visited the drill and practice of the men daily during annual course;—that company officers were present with their companies during the whole time their companies were going through course;—that all the orders on the subject have been observed.—Cause to be fully explained.

Applications for rewards in triplicate;—names of effective men only (shewn on pages 2 and 3 of Annual Return), in order of merit, succession number and regimental number, *vide* Form H. WO 928;—columns "each man to receive," and "remarks" to be left blank for the Inspector General's entries.

Performance of each man in current year's course;—that they may receive credit in practice return of new company for the points they have severally obtained; and that their instruction may be resumed if not completed;—captain giving transfer;—officer instructor prepares, commanding officer signs.

At home stations, on or before 10th of each month;—battalion Progress Returns in duplicate.

QUESTIONS.

State when the inspector's monthly returns, etc., are to be forwarded abroad;—at what places;—and to whom copies of their returns, etc., are to be forwarded;—and for whose information. P. 47.

In Bengal, to what other officer are they to send a copy;—and state to whom he is to forward his quarterly report;—and a copy of same to whom? P. 47.

State when the annual course may be suspended;—and whether the return is also discontinued;—what explanation is to accompany it;—and for what reason. P. 47.

Enumerate the number of "Forms" considered ample for the annual training of a battalion;—from where and how obtained. P. 48.

ANSWERS.

First conveyance after 10th of each month;—Madras and Bombay;—to the Deputy Adjutant General of their presidencies, and Adjutant General of the Army in India;—for Commander-in-Chief's.

The chief Inspector of Musketry;—to Commander-in-Chief;—to Inspector-General of Musketry.

When the troops are employed on active service, etc.;—no;—the necessary explanation why suspended;—to enable the Inspector-General of Musketry to complete his quarterly and annual reports for the Commander-in-Chief.

A. 2 M. Drill and Practice Returns for Recruits.

B. 2 ditto,

C. 60 T. P. Registers

D. 50 J. D. P. ditto

E. 30 Diagrams

F. 36 Progress Returns.

G. 4 Annual Musketry Returns.

H. 4 Applications for Rewards.

M. 40 Musketry Transfer Returns

On application to the War Department.

} For Company 100
R. and F. or 100
Recruits.

PART VII.

MODE OF CONDUCTING THE MUSKETRY INSTRUCTION IN A BATTALION.

QUESTIONS.

State object of Musketry Regulations, Part VII. P. 1.

When are cavalry and infantry to commence annual course at home and abroad;—and when is an exception made? P. 2.

How is the annual course to be proceeded with;—and why so? P. 2.

What officers and non-commissioned officers are trained annually;—at what time;—number in each squad;—to what extent;—by whom exercised;—and how taught to drill? P. 3.

What officer is to superintend these drills;—from what duties are men under instruction exempted;—and state when less than one-fourth are to be occupied at drill? P. 3.

ANSWERS.

Establish uniformity and ensure the instruction being carried out in the shortest time.

Cavalry at home the first of October; infantry the first of April;—cavalry and infantry in tropical climates the first of October, or the beginning of the cold season;—when otherwise directed by Adjutant General of the Forces.

Regularly without interruption until completed;—that the Annual Return may be rendered at the appointed time.

Company officers and full non-commissioned officers;—previous to commencement of annual course;—one-fourth at a time;—through preliminary drills;—officer and sergeant instructor;—by drilling one another.

Regimental field officer;—all duty;—if duties very severe, then one-eighth.

QUESTIONS.

What arrangement is to be made concerning the training in the above instance? P. 3.

What time is occupied per squad in these drills;—and why are sergeants and corporals so drilled? P. 4.

In what way is the drill of the company to be proceeded with;—from what duties exempted;—under whose superintendence are they drilled? P. 5.

State number of days occupied per squad or company in drills, etc.;—number of lessons and time occupied in each subject;—and of what the judging distance drill consists, the first, second, third, and fourth days. P. 5.

Mention time of day the drills and lessons are to be performed;—and how the lessons in cleaning arms and theoretical principles are to be divided. P. 5.

ANSWERS.

That their training is commenced in sufficient time so as not to delay the commencement of the instruction of the companies at the appointed time.

Four days;—to assist in the instruction of their respective companies.

In succession by companies with their officers and non-commissioned officers;—all duty;—captain of company, (the officer and sergeant instructor being present to assist).

Four days.

C.A. 4 Lessons, $\frac{1}{2}$ hour.

T. Prins. 4 „ $\frac{1}{2}$ „

A. Drill 4 „ $1\frac{1}{2}$ hours.

P. Drill 8 „ $\frac{1}{2}$ hour.

J. D. D. 4 „ $1\frac{1}{2}$ hours.

First and second day known and unknown distances to 300 yards, third and fourth to 600 yards.

C. Arms, A.M.

T. Prins., P.M.

A. Drill, A.M. & P.M. alternate days.

P. Drill, A.M. & P.M.

J. D. Drill, P.M. & A.M. alternate days.

1st day, 1st and 2nd	} For	
2nd „ 3rd „ 4th		Recruits,
3rd „ 5th „ 6th		one
4th „ 7th „ 8th		each day.

QUESTIONS.

When rifles are sighted only to 300 and 600 yards, how many distances daily are men to aim at;—and what instruction is carried on when the weather is wet? P. 5. "Remarks."

When is the company to proceed to target practice and judging distance practice;—to what extent exercised before returning to duty;—and how many days occupied in the training? P. 6.

State number of distances to be fired at daily;—the exception;—and how and when is the judging distance practice to be performed. P. 6.

What practices is the captain of company personally to superintend;—what officer is to be present during the shooting in first and second periods;—and who the remaining practices? P. 6.

To what extent is a company exercised before another company is handed over for drill;—and what is the object of commencing at a particular time? P. 7.

Mention briefly in what order the instruction is to be carried on;—time occupied (in moderate weather);—number of days company off duty;—and in what order struck off. P. 7.

ANSWERS.

300, one distance—600, two;—ascertaining the proficiency in cleaning arms and theoretical principles.

Immediately it has concluded the preliminary drills;—first, second, and third periods of individual firing and judging distance practice, volley firing and skirmishing;—six days target practice, volley firing one day, skirmishing one day,—eight days.

Two;—when rifle is sighted or range extends only to 400, 450, 500, 550;—concurrently with target practice, one practice daily; alternately, morning and evening.

Platoon and skirmishing, also shooting in first class;—officer instructor;—assistant officer instructor.

To end of second period;—to be prepared to take the place of the company at practice by the time it has completed the course.

By companies until the whole battalion has been exercised;—twelve weeks;—twelve working days;—as commanding officer may direct.

QUESTIONS.

If a company commences its training on the eighth of May, when ought it to have concluded its target practice and judging distance practice;—and state date when next company is to be handed over for drill? P. 7. (“Tabular Form.”)

During what months;—for what purpose;—by whose orders may the annual course be suspended.—When resumed;—and whether continuously? P. 8.

Mention where this rule does not apply;—and on what day weekly, the instruction may only be suspended. P. 8.

With proper arrangements, how long will a battalion of ten companies take to complete its course;—when may the training extend over a longer period of time;—and in that case how many companies are struck off duty at a time? P. 10.

Whenever the annual course is suspended, to whom is it to be reported, and why;—what information is to accompany the report? P. 11.

Explain in a depôt battalion of more than five and a less number

ANSWERS.

Twentieth May.
Seventeenth May.

June, July, and August;—continuous battalion and brigade drills;—general commanding division or district.—1st September, but only during this month on such days as there are no brigade and divisional drills.

In the training of recruits at head quarters, depôt battalions, and to battalions abroad;—Wednesdays.

Thirteen weeks.

When the men have less than three nights in bed.

Only one.

Adjutant General, for Commander-in-Chief's information;—when owing to the men having less than three nights in bed;—correct duty—states, specifying the post of sentries and number furnished for guard daily.

If more than five in same manner as detailed for a battalion,

QUESTIONS.

how the instruction is to be proceeded with. P. 12 and 13.

How many companies of a dépôt are to be under instruction at a time;—and state what steps are to be taken to train detachments when a range is or is not available? P. 14 and 15.

What is the object of completing companies when handed over for instruction;—when are casuals to be trained, and in what their performances recorded?—P. 16.

What course is to be pursued with regard to casuals after termination of annual course? P. 17.

Supposing you have a squad of casuals composed of men of different companies, how do you exercise them;—in what and how are their performances in volley, file, and skirmishing recorded;—what rule is laid down for the

ANSWERS.

except that two companies are to be at drill, and two at target practice; if five or a less number, two companies at preliminary drill, and then to practise until they have concluded the course, when other two are similarly exercised.

One;—when no ranges, to be regularly relieved by trained companies who have previously gone through the year's course;—if a range is available at the station, the officer instructor is sent to instruct them after the companies at head quarters have concluded.

To prevent delay and inconvenience arising from casuals;—with next company furnished for instruction;—in separate registers and diagrams.

If five, they are to be exercised through a course of preliminary drill and practice in a squad by themselves.

In volley, file, and skirmishing together;—in diagrams, each man being credited in the Musketry Drill and Practice Return of companies, with the average points of the squad;—men of different companies are to fire at separate targets, that the average points

QUESTIONS.

skirmishing practice, and why?
P. 18.

What men to be exercised annually;—and state the exception? P. 19.

State what men, after having been once fully trained, are exempted from the annual course of musketry drill and practice;—and where such circumstance is to be notified. P. 21.

In the event of casuals and 3rd class shots after Annual Return has been rendered, when are they to be exercised;—in what are their practices to be recorded;—how is form headed;—are both casuals and third class shots struck off duty? P. 22.

Explain briefly how the training (at home and abroad) of cavalry armed with rifle carbine is to be conducted. P. 23.

ANSWERS.

of the target at which the man or file of men fired may be secured for the company.

All men for whom a rifle is issued;—men unfit for service, and those to be brought forward for discharge.

Band master, regulated number of bandsmen,—one orderly room clerk per dépôt (not to be a colour-sergeant),—clerks of paymasters of Royal Engineers,—sergeant as officers' mess caterer,—sergeant superintending cooking,—duly qualified gymnastic instructors,—sergeant as canteen keeper, provost sergeant,—four hospital orderlies per battalion,—master tailor (specially enlisted),—farrier and shoeing smiths in the cavalry. —In Monthly Progress Return.

During winter months; (in tropical climates early in the morning, and late in the afternoon in the hot season);—in a Companies' Practice Return, headed "casuals after termination of annual course";—the former are;—the latter exercised when not on duty.

As infantry; except that a complete troop is exercised at a time, through the entire course, between 2 P.M. and time for evening stables;—in India, when least likely to interfere with stable duties.

QUESTIONS.

At head quarters of Royal Engineers, how training conducted by companies;—how that of companies on detachment;—and state number to be handed over at a time for instruction? P. 24 and 25.

To whom are squads of recruits to be handed over;—how long under his instruction;—and when returned to battalion? P. 26.

Enumerate the several lessons and drills for infantry recruits;—days occupied in aiming drill, and what constitutes each day's drill (Tabular Form, page 113).

At what time of day are these several lessons and drills to take place;—and how many caps and rounds of blank are to be expended? (Tabular Form, page 113.)

ANSWERS.

One company at a time,—all men are to be exercised before proceeding on detachment;—the training of companies detached are to be trained by the non-commissioned officers, under the superintendence of their officers;—not less than one-fourth and not more than one half of entire strength is to be under instruction at a time. (This applies to commissariat staff corps.)

Officer instructor; — three weeks (16 working days);—when completed their course of preliminary drill and practice.

Aiming drill.

C. A.	1st day, explain rules
T. P.	for aiming, and aim
A. D.	at 100 and 150 yards.
P. D.	2nd day, 200, 250, and
S. Caps.	300.
Blank.	3rd day, 350, 400, and
J. D. D.	450.
M. Cart.	4th day, 500, 550, and
	600.
	5th day, 650, 700, and
	750.
	6th day, 800, 850, and
	900.

C. A.,	A.M.
T. P.,	P.M.
A. D.,	A.M. & P.M. <small>alternate days.</small>
P. D.,	A.M. & P.M.
S. Caps	A.M. 7th & 8th day.

QUESTIONS.

What constitutes a judging distance drill;—and how many days are occupied by the recruit and drilled soldier in this exercise? (Tabular Form, page 113.)

Mention time occupied in cleaning arms; theoretical principles; manufacture of cartridges; and each position drill;—recruits not aiming how employed;—distances to be aimed at each day when rifles are sighted only to 300 yards (Tabular Form, page 113).

As regards the sighting of rifles, to what extent are cavalry recruits to be exercised;—and mention arrangement as to distances? (Tabular Form, page 113.)

Name drills to be executed by recruit and drilled soldier (Tabular Form, page 113).

ANSWERS.

Blank, P.M. 7th & 8th day.
J. D. D., P.M & A.M. ^{alternate} days.
M. Cart., A.M. 7th day. P.M.
8th day;—20 caps;—20 rounds
of blank.

Making observations on points at known distances, and giving three answers at unknown distances;—company to 300 yards 2 days; recruits 4 days;—company to 600 yards 2 days; recruits 4 days.

Half an hour;—at position drill with the sight of the rifle adjusted for the actual distance;—one distance, repeating same at 300 yards on sixth day.

To distance carbines are sighted for;—to be regulated so as to execute them in 6 days.

Cleaning arms.

Theoretical principles.

Aiming drill.

Position drill.

Snapping caps. }
Blank firing. } For recruits only.

Judging distance drill.

Manufacture }
of cartridges. } Two or more lessons
for recruit;—12 men
per company annually.

QUESTIONS.

Show in juxtaposition the practice to be performed by the recruit and drilled soldier;—and number of rounds expended in periods and practices. (Tabular Form, page 113.)

When is the recruit to be handed over to the officer instructor? P. 27.

What arrangement expedites the recruit's training;—what number in squad when there are 60, or a less number in the battalion? P. 28.

When are recruits to join the service companies; by whose authority when their course is not completed;—where notified;—and what is to be stated in the application? P. 30.

State when a battalion proceeding on foreign service is to cease its instruction;—steps taken concerning cessation;—and when is the instruction to be resumed. P. 31.

How is the time on board a ship to be profitably occupied;—in which ship is the regimental instructor to embark;—who are

ANSWERS.

Preliminary firing 20 rounds, first and second period target practice, 20 in each; volley firing and skirmishing, 10 in each; first, second, and third period judging distance practice. For drilled soldier, first, second, and third period target practice, 20 in each; volley, file, and skirmishing, 10 in each; first, second, and third period judging distance practice.

After he has been under the adjutant for two months, and can handle his arms with freedom.

One party being at preliminary drill and another at practice;—twenty;—ten.

When they have completed the course of rifle training; by special authority from the Adjutant General of the Forces;—Monthly Progress Return;—when they joined, and the reason for making the application.

Within a few days of embarkation;—commanding officers are to transmit to the Inspector General of Musketry the Annual Practice Return completed to said date,—immediately on its arrival at its new quarters.

Lecture room models are to be supplied for the use of the assistant, in addition to those furnished for the regimental in-

QUESTIONS.

space at sides of outer ranges?

P. 5.

When are 3 or 4 ranges to be established;—what interval between them;—and what margin at the sides of the outer ranges?

P. 6.

What breadth of ground in rear of targets;—state when the breadth due to distance between the lines of fire may or may not be required;—and what rule is laid down for your guidance?

P. 7.

What is the least distance allowed between the targets;—and at the extremity of the ranges, whether laid out parallel or made to converge towards the targets? P. 7.

On level ground, what space should be behind the targets;—when dispensed with;—and what steps are to be taken before procuring ground for ranges?

P. 8.

What height of butt when range is on a plain, and distance behind targets is less than 1,500 yards;—under ordinary circumstances;—and when firing seaward? P. 9.

When may butts be dispensed with;—height of natural butt;—and why would not a less height answer? P. 10.

ANSWERS.

When the number to be exercised is large, and the breadth of ground available is limited;—10 yards;—not less than 40 yards.

Forty yards, gradually increasing to 80;—when they converge towards the targets;—the degree to which the ranges are made to converge.

Ten yards.

Eighty yards.

1,500 yards;—when a steep hill rises immediately in rear of sight for targets;—right to fire over level (if not desirable to purchase it).

Forty-five to 50 feet.

Twenty feet.

Twelve feet.

When there is a natural butt behind targets;—at least 45°;—because, instead of acting as a stop, it would increase the ricochet, and render the range unsafe.

QUESTIONS.

Give length of butt for a pair of ranges, and where measurement is to be taken;—length and width of platforms, and why required. P. 11 and 12.

How are ranges to be laid out;—and by whom? P. 13.

State (where nature of the ground admits of it) how, as to position, marker's butt is to be placed;—and give dimensions of sunken trench,—and fittings for same. P. 14.

When are ricochet butts not required;—give dimensions (under old system) of ricochet butt, —and where placed? P. 14.

ANSWERS.

Forty-five feet measured along the top;—16 ft. by 9 ft.,—to rest targets upon, and ensure their being at right angles to line of range.

Carefully and accurately measured,—distances defined at intervals of 50 yards, from 100 to 900, or extent of ground if under that distance;—officer of Royal Engineers.

Parallel with, and 10 feet in front of, target platform; so that marker may easily see the entire face of target through window.

- Outside of butt . . . 10' × 6' 9"
- Inside of ditto . . . 8' × 3' 6"
- Seat for marker . . . 4' 3" × 2'
- Thickness of legs . . . 2" × 2'
- Thickness of back wall . . . 1' 0"
- From top of seat . . . 1' 6"
- Front wall 9"
- From top of seat . . . 1' 3"
- From floor to slot for signal shaft 8' 0"
- Slot for shaft of disc . . . 6"
- Scantling above window 4" × 4"
- Ditto below window . . . 4" × 3"
- Entrance at side . . . 2' 6"
- From commencement of slope to front of butt . . . 9' 4"
- Ramp 11' 0"

When a sunken butt is placed opposite and close to the front of target;—sufficiently large to hold two men;—80 yards in rear of marker's butt.

QUESTIONS.

With what are shots signalled in sunken trench;—how used,—and how formed? P. 15.

When are iron mantlets to be used;—by whom supplied;—and where placed on range? P. 16.

By whom is the work in the formation of practice ranges to be executed;—and state the exception;—by whom are ranges, butts, etc., to be maintained and kept in repair;—in what order left by troops quitting station;—and when are damages to be charged to the troops? P. 18.

ANSWERS.

Discs to denote the exact position of each hit;—the poles to which they are fastened are to be flattened on each side, so as to rest evenly against small beam in front of trench, and marked off by a broad black line into 3 parts, of 2 feet each, on both sides, from centre of disc, which is let into slit at top of shaft, and fastened by screws.

When it is impossible, except at great expense, to construct marker's butts;—by barrack master;—placed 15 yards to the front and on one side of target platform; those for signalling ricochets 80 yards in rear of marker's mantlet.

By the troops;—when the earth cannot be moved or turned with the ordinary entrenching tools;—by fatigue parties furnished by troops using range;—in complete condition;—when arising from carelessness and neglect.

PART IX.

QUESTIONS.

What term is used to express the quality of arms, projectile or ammunition;—and what does said term imply? P. 1.

How is point of mean impact ascertained;—what does it imply;—explain from what part of target and hits, measurements are taken to arrive at mean horizontal,—and mean vertical measurements? P. 2.

How is “absolute deviation” and “mean deviation” ascertained;—and error due to wind and defective sighting? P. 2 and 3.

Mention briefly the general order concerning the trial of arms, etc;—what mean deviation will condemn a rifle;—give size of target;—number of distances

ANSWERS.

Mean deviation; mean absolute deviation;—degree of concentration of a certain number of rounds.

By the intersection of mean horizontal and mean vertical measurements;—the most central point of group of hits;—first, measure centre of each hit from left of target, then add measurements together and divide by *hits*; secondly, measure centre of each hit from bottom of target, add measurements together and divide by number of *hits*.

Measure the distance from the centre of each hit from point of mean impact, add these measurements together, including half diagonal of target for a miss, and divide the total by number of *rounds* fired;—measuring the distance from point of mean impact to point aimed at (bull's-eye established).

Arms to be examined and cleaned by armourer sergeant (if available), or by some careful soldier; to be fired by best and steadiest shot in battalion; charge

QUESTIONS.

when the trial is to test the merit of two rifles, projectiles or powder? P. 4.

State object of trial shots;—how many rounds expended;—and where aim to be directed at each shot. P. 4.

What is used to record the result of the trial;—what marked thereon;—in what order are the hits to be numbered;—what shown for a miss in first, second, and third columns respectively? P. 4.

State what information is furnished on face of diagram to make the trial conclusive. P. 4.

ANSWERS.

carefully weighed, and ammunition examined; to be fired from shoulder with aid of table-rest, etc., fired at 500 yards;—over three feet;—target 6 by 8 feet (first class), firing at and under 600 yards;—three distances.

To determine correct elevation and position for bull's-eye so as to ensure as many of the shots as possible striking the target;—not less than ten, and not more than twenty;—on bull's-eye established by trial shots.

A diagram marked off in squares of one foot to facilitate the taking off of *exact position* of each hit;—consecutively from one;—O in columns H. M. and V. M.,—half diagonal of target in column Absolute Deviation.

Name of firer; distance; number of rounds; object of trial; description of arms, projectile and powder; weight of charge and bullet; strength and direction of wind; thermometer and barometer if available; loading, or any other remarks to elucidate the diagram.

PART X.

QUESTIONS.

What are inspectors charged with;—and to whom as regards their particular duties are they subject? P. 1.

What are they responsible for;—and what arrangement are they to make concerning same? P. 2.

What are they to make themselves acquainted with at the several military posts in their district;—and to whom immediately to report any want of ranges, or musketry articles? P. 3 and 4.

When are they *daily* to visit battalions under instruction, drill and practice;—when are returns etc., to be examined by them, and why? P. 5.

State how often they are to visit troops quartered within a reasonable distance of them;—those quartered at long distances;—and what is their duty at such visits. P. 6 and 7.

When may they leave their posts;—what information are they to afford to the General concerning

ANSWERS.

Supervision of musketry instruction;—the Inspector-General of Musketry.

That the authorised system is rigidly adhered to in all its details;—the efficient carrying out of same in all corps in their district.

The facilities afforded for conducting the instruction;—the General Officer commanding.

When quartered at the same station;—once a month; to ascertain that the entries therein agree with the registers and diagrams, and that the duplicate total points are forthcoming.

Once a month;—once in every three months;—see the men both at drill and practice, and examine returns to ascertain their correctness.

Never, unless by the authority of the general officer commanding;—every information to him of their special duties, and render

QUESTIONS.

their duties,—and by whom to be permitted to visit stations? P. 8.

To whom to apply for leave;—during what time is it not to be granted;—to whom to notify said leave, etc.;—and state what officer is to perform the duty during their absence? P. 9.

If inspectors observe anything to impede the annual course, to whom are they to report it;—in what return to notify it;—and to whom? P. 10.

State object of their accompanying general officers of divisions. P. 11.

What are they particularly required to bring to the notice of commanding officers;—and in what return to notify any neglect, etc.? P. 12.

In what way are they to ascertain the proficiency of men in rifle training;—in what to examine those who are to be recommended for rewards;—and in whose presence? P. 13.

State date when their returns are to be forwarded, and to whom;

ANSWERS.

every assistance in giving effect to his orders, and to receive his orders to visit out stations.

General officer under whom they are serving;—during the period of the annual course, except under peculiar and pressing circumstances;—to the Inspector-General, enclosing their address; and the officer named to act for them;—a captain holding a “first class certificate,” (when such officer is available).

General officer commanding;—next monthly Progress Return;—to the Inspector-General.

To examine the officers on the theory and practice of musketry, and the system of conducting the musketry instruction of recruits and drilled soldiers.

Any want of care in keeping the company returns or neglect on the part of the officer and sergeant instructors;—in their next monthly Progress Return.

By a few well directed questions;—theory of musketry and cleaning arms instruction;—commanding officers’.

Tenth of each month to general officer commanding station, etc.,

QUESTIONS.

—mention “Form” and information furnished therein. P. 15.

Inspectors in East Indies forward return and report to whom, and through whom? P. 15.

• To whom are inspectors in Bengal, etc., to forward a return and report;—and when circuit embraces more than one district, to what troops are the returns to refer;—what return and report is to contain every regiment and depôt in the circuit of supervision? P. 15.

Where are inspectors to forward their returns, etc., to the Inspector-General of Musketry;—Progress Return in triplicate or duplicate;—and accompanied by what information? P. 16.

Where are the Progress Returns not forwarded to Inspector-General of Musketry;—by whom are they examined;—where are the duplicates remitted to;—and what is entered therein by Inspector of Musketry? P. 17.

ANSWERS.

and to the Inspector-General of Musketry;—return or report “J. or K.,” showing progress of musketry training.

Chief Inspector of Musketry at army head quarters, East Indies;—in Bombay and Madras, to general commanding troops;—Commander-in-Chief in India through Adjutant General.

Chief Instructor of Musketry at army head quarters;—in Bombay and Madras, to general commanding troops;—to Commander-in-Chief in India, through the Adjutant General:—to the troops under the command of the generals to whom they are sent. Those rendered to the Inspector-General;—the general commanding in Bombay and Madras presidencies, and to the Chief Inspector at army head quarters, East Indies.

At home;—duplicate;—memorandum detailing every error they may have discovered in said Progress Returns.

Abroad;—inspectors;—to several battalions;—remarks that may be required.

QUESTIONS.

To what Report do the Progress Returns refer;—when may they be destroyed;—and to whom is the circumstance to be reported? P. 17.

What notified,—by whom,—and to whom,—concerning the moving of regiments;—and state nature of information furnished concerning them? P. 18.

Give the headings of the several paragraphs mentioned consecutively;—the reports in which they appear;—and in what part of return to be stated. P. 19.

Briefly state pith of No. 1.

ANSWERS.

Annual Musketry Report;—not until a year has elapsed from the date of the publication of the Annual Musketry Report;—Inspector-General.

Removal of regiments from their districts;—Inspector of Musketry;—Inspector-General of Musketry;—date of departure; station to which proceeded; extent to which exercised.

- Corps visited during month.
- Non-commissioned officers employed as musketry drills.
- Target and judging distance practice.
- Company and Recruits' Musketry Drill and Practice Returns.
- Practice registers and diagrams.
- Ranges and musketry articles.
- Arms and ammunition.
- Correspondence.
- Instructors.
- Monthly and quarterly.
- The margin.
- Date of visit.
- Corps visited.
- Station of corps.
- Number at preliminary drill.
- Number of men.
- Distance of practice and average. } Target practice.
- Number of men. } Judging distance practice.
- Class. }
- Average. }

QUESTIONS.	ANSWERS.
No. 2 ?	Proficiency and inefficiency.
No. 3 ?	<p>Carefully conducted.</p> <p>Position of men.</p> <p>From questions put by the inspector, whether officers, non-commissioned officers, and privates have paid strict attention to the preliminary drill :—</p> <p>If not, name of corps, and detail particulars</p>
No. 4 ?	<p>The least deviation from the Musketry Regulations.</p> <p>Men at target practice in marching order ?</p> <p>Knapsack correctly worn ?</p> <p>Target coloured according to order ?</p> <p>Skirmishing conducted strictly according to regulation, from 400 to 800 yards, advancing and retiring ?</p> <p>Every irregularity is to be mentioned, stating corps, company and company officer concerned.</p>
No. 5 ?	<p>Returns neatly kept ?</p> <p>Entries agree with registers and diagrams ?</p> <p>Battalion company, and name of officer when not so.</p> <p>Points in Practice Return greater than in registers ?</p> <p>Whether the men practised in a higher class than was right ?</p> <p>Specify corps, company, regiment, number, rank, name, and particular mistake.</p> <p>Whether a marksman or not.</p>

QUESTIONS.

ANSWERS.

No. 6?

Correctly kept?
 Complete in every particular?
 Corrections not initialed by company officer, state corps, company officer and the company; if marksmen, regimental number, rank and name, distance target practice; period if in judging distance practice, number of points obtained in the period with and without the value of hits altered and not initialed.

Copy of remarks on Company Return to be retained by whom;— what concerning these irregularities is to accompany Annual Return;— and how arranged;— to whom sent when troops leave the district;— by whom are the Annual Returns to be examined before forwarded to Inspector-General of Musketry, and what notified in them?

Inspector;— synopsis of irregularities affecting claims for good shooting rewards, — by companies:— on removal of battalions, — synopsis to be sent to inspector of new district;— inspectors, — all errors discovered.

No. 7?

Condition.
 Alteration in number and direction.
 Condition and economical use of articles for the training.

No. 8?

State of arms.
 Clean.
 Serviceable.
 Properly browned.
 Regulation pull off.
 Defective arms and ammunition,

QUESTIONS.

ANSWERS.

No. 9?

To and through whom are inspectors of musketry to forward all their communications and returns?

"mean radial deviation of each trial," with following data:—

Distance.
Size of target.
Number of rounds fired.
Hits and misses.
Mean deviation.
Allowance made for misses.
Remarks.

Date and purport.
Officers to whom addressed, with the result, viz.:—
Date.
Purport.
To whom addressed.
Result.

Inspector-General. — D. A. A.
General of School of Musketry.—
To general officers commanding divisions, districts, or stations through the appointed channel.

No. 10?

Manner officers perform duties.
Instruction in theoretical principles conveyed in a methodical manner?

Name of officers indifferent to their duties.

Those deserving special notice.

Efficiency of sergeant instructors.

Whether sergeant instructors of School of Musketry attached to depôt battalions are efficient drills, and uphold their position

ANSWER.

by general good conduct and soldier-like bearing.

Those worthy of mention for efficiency and educational acquirements.

The subjects in which they have examined them during month.

QUESTIONS

FOR

NON-COMMISSIONED OFFICERS AND PRIVATES.

QUESTIONS.

What do the theoretical principles teach the soldier?

Which part of the barrel is the thickest?

Why made so?

What is the construction of the barrel towards the muzzle?

Why is not so much strength of metal required towards the muzzle?

The metal of barrel being thicker at breech than muzzle, proves what to us?

What do you understand by the axis of the barrel?

What does this line show or point out?

ANSWERS.

The reason for all those rules which have to be attended to in practice.

The breech.

To prevent its being burst on the explosion of the gunpowder.

The thickness of metal is gradually reduced.

Because after the bullet has been started, on the explosion of the powder, the gas has a greater space to expand into, consequently the pressure on the sides of the bore is lessened as the bullet moves up the barrel.

That the barrel has some elevation in itself.

An imaginary line drawn up the centre of the bore.

(1) The course taken by the centre of the bullet during its

QUESTIONS.

- What is the line of fire?
- What does it show?
- What are the forces which act upon it?
- What is the air or atmosphere?
- What kind of force is the atmosphere?
- Why is the air called a diminishing force?
- Explain the force gravity.
- What kind of force is it called;—and why so?
- What course do these three distinct forces, air, gravity, and gunpowder, cause the bullet to take, and mention how each separately affects it?

ANSWERS.

passage up the barrel. (2) The distance it is compelled to travel in a straight line. (3) Its general direction after leaving the muzzle.

The axis of the piece prolonged.

The course the bullet would travel for ever and ever, at the same speed, were it not acted upon by other forces besides that of the gunpowder.

Gunpowder, air, and gravity.

An elastic fluid (composed of small particles) which offers a resistance to everything passing through it.

A diminishing force.

Because it offers a resistance to the passage of the bullet, causing a friction on the surface which diminishes its speed.

A law of nature, by which all bodies are attracted to the earth in a straight line.

An increasing force;—because the longer the bullet is exposed to its influence the greater is the velocity with which it draws it to the ground.

A curved one;—gunpowder drives it forward—air resists its onward flight—gravity draws it to the ground.

QUESTIONS.

Why does the course of the bullet, at the commencement of its flight, scarcely deviate from the line of fire?

Why is the drop of the bullet greater as it becomes more distant from the muzzle?

The path of the bullet being a curved line, would it be possible to strike a point were we to direct the axis on it?

If we did so, say at a mark 100 yards distant, where would the bullet strike?

In order to strike the mark at 100 yards, what must we do?

Why would this enable us to strike the mark?

To what must we particularly attend in order to make accurate shooting?

What would the consequence be if the top of the fore-sight was the same distance from the axis, as the top of back-sight (say) when using the sight for 100 yards?

How has this difficulty been overcome?

ANSWERS.

Because gravity acts by time. The speed of the bullet being very great at first, gravity has only a short time to act.

The air having diminished its speed, or compelled it to travel slower, it is a longer time exposed to the attraction of gravity.

No.

About 10 inches below it.

Direct the axis on a point 10 inches above the mark.

The line of fire would be raised 10 inches, and the trajectory, which always conforms to the movement of the line of fire, would also be raised 10 inches.

That the sights are most carefully aligned between the eye and the mark.

To strike the mark, we should have to aim 10 inches above it. In doing so, the muzzle would hide the object from our view, and we should be uncertain how much above the mark we had directed the axis.

By the difference of thickness of metal between the breech and muzzle, together with the back-sight placed on breech.

QUESTIONS.

Explain the good resulting from this mechanical arrangement.

Explain the line of sight, and mention how often it cuts the line of fire.

If the 100 yards sight be used when firing at a mark 200 yards distant, where will the bullet strike the ground?

What does this prove to us?

How are we enabled to give the axis the necessary elevation for various distances?

To enable us to take advantage of this, what must we be able to do?

If, when in the field, you have to fire at an object at a greater distance than that for which your rifle is sighted, what ought you to do?

If, on the contrary, you have occasion to fire at an object within the distance for which the gun is sighted, viz., at 50 yards, what ought you to do, and why?

To what is a soldier particularly to attend when he brings his rifle to the "present?"

ANSWERS.

When aim is accurately taken on a mark 100 yards distant, the axis of the piece is directed 10 inches above it, and the object is not lost sight of.

The line from the object over top of fore-sight through the bottom of notch of back-sight. Twice, once a short distance from the muzzle, and again at the mark.

Five yards short of the mark, or 195 yards from the muzzle of the Enfield rifle.

That the greater the distance, the more elevation is required.

By the back-sight being made capable of adjustment by means of a flap and sliding bar.

To judge the distance which separates us from an object.

Raise the eye as much above the greatest elevation marked on the flap as would give the necessary elevation, always keeping the fore-sight accurately aligned between the eye and the mark.

Aim below it, at 50 yards about 3 inches;—because the trajectory being a curved line, the elevation would be too great, and the bullet would pass about 3 inches above the mark.

That in doing so, he does not incline the back-sight to one side or the other.

QUESTIONS.

If he inclines it to the left when firing, what would be the consequence?

Why?

What is lost by not attending to this rule?

Why are we obliged to train ourselves to judge distance?

What is the object of all the soldier's training?

Where in its flight does the bullet begin to descend?

What is the calculated height of cavalry and infantry?

What will be the result if you fire your rifle with elevation for 600 yards at a mark 570 yards off?

What with same elevation at a mark 625 yards off?

If you make an error of 30 yards in judging the distance when firing at these distances, where will the bullet strike a man?

When using the 300 yards sight, how much will the bullet fall during the last 135 yards of its flight?

ANSWERS.

The bullet would strike low to the left.

If the axis of the piece is turned to the left, the line of fire will also be directed to the left, and the trajectory conforming to the line of fire, the bullet must strike low to the left.

Elevation and direction.

Because the bullet travelling in a curved line, compels us, when firing at different distances, to raise or lower the sliding bar.

To teach him to hit his enemy in the field.

About half way at the shorter, and two-thirds of the distance at the longer ranges.

Cavalry, 8½ feet. Infantry, 6 feet.

The bullet will strike 3 feet above the mark.

The bullet will strike 3 feet below the mark.

Either in the head or feet.

Six feet, the height of a man.

QUESTIONS.

Why at the longer ranges does the same fall take place as during the time the bullet is travelling over much shorter distances?

What does this prove concerning "judging distance?"

When firing at an enemy, if you are not quite certain of the distance, what will give you a good idea of the elevation you ought to use?

What is wind?

What effect has wind on the flight of the bullet?

Which has the most effect on the bullet, a wind blowing up or down or across the range?

How is the soldier to make allowance for a side wind;—how when it is blowing from the front or rear?

Is it possible to lay down any fixed rule for the soldier's guidance?

Why?

When an object is moving across, from or to you, how are you to direct your aim?

ANSWERS.

Because as the range increases the trajectory becomes more curved.

The greater the distance, the greater is the necessity for knowing it accurately.

By giving the first shot an elevation rather under than over that which you think to be correct, and observing the dust thrown up where the shot ricochets (adjusting the sliding bar accordingly).

Air in motion.

It will carry it either to the right or left of mark, according to the flank from which it is blowing. If blowing from the front, it will *decrease*, and if from the rear *increase* the range of the shot.

Across the range.

By carrying his aim either to the right or left of mark. If from the front he must aim with a full sight, if from the rear with a fine sight.

No.

The allowance he will have to make must depend on the distance of mark fired at, and the strength and direction of the wind.

Across, in front—if towards you, low;—if from you, high.

QUESTIONS.

Why are you not to direct your aim on the object?

When firing at a moving object, or during wind, how are you to move the muzzle of the rifle to the extent required?

What are you to do when the object is moving towards, or from you?

Mention what you are to do should it be necessary to fire at night.

When an object is obscured by smoke or dust?

If the sun is shining from the left, how will it be likely to affect the aim of the soldier?

To which side would the axis be directed?

If the back-sight is placed on the left of the breech, how will it affect the shooting of the gun?

If the fore-sight is placed on the right of the muzzle, to which side will the gun carry?

If the back-sight and fore-sight are both placed in the same line, but on the right of barrel (or not

ANSWERS.

Because the bullet will pass over a certain distance between the moment of discharge and the time the bullet takes to reach it.

By simply turning the body from the hips, the arms and eye being kept perfectly steady.

Lower or raise the sliding bar.

Place two forked sticks in the ground in the required direction, and sufficiently high to give the necessary elevation.

Fix a stick in the ground a few yards from the muzzle, sufficiently high to cut the line of sight.

It will light up the right side of the back notch, and the left side of the fore-sight, and the firer would, in all probability, be guided by these bright spots instead of the real centre of the sights.

To the right.

It will cause the gun to carry to the left.

To the left.

QUESTIONS.

directly over the axis), how will the gun carry?

Should the soldier discover that the sights on his rifle are not placed directly over the axis, where is he to direct his aim?

How are you to aim when you observe there is not a full charge of powder in the cartridge.

What is the object of always loading, when practicable, standing?

What will serve, for the time being, to some extent, the grease placed on the base of bullet?

When may it be inferred that the rifle has not a proper bore?

What was the great defect in the old smooth bored musket?

What do you understand by windage?

Why was a certain amount of windage necessary?

When the musket was held up to the "present," on what part of the bore did the bullet rest?

Was the windage above or below the bullet?

How did this space affect the passage of the bullet?

ANSWERS.

If on the right, to the left; if on the left, to the right.

In the direction contrary to that in which he observes his shot to strike.

High.

That a portion of the powder may not stick in the fouling, and thus cause difficulty in loading.

Wetting the bullet in the mouth.

When the bullet is too tight, or too loose in the barrel.

Excess of windage.

The difference in size between the diameter of the bore and the diameter of the bullet.

That the gun might be easily loaded.

The lower part.

Above.

The gas rushed through it, striking the ball on the top at the same time that it forced it out of the barrel, causing it to bound from side to side, and where it last struck the barrel at the

QUESTIONS.

How has windage been rectified?

How is the bullet expanded?

Mention the advantages of this bullet.

Was there any other cause which made the spherical ball take a wrong direction?

How did imperfection of figure affect its flight?

Would the elongated bullet be equally affected by unevenness of surface?

Why?

By what means is the point of the elongated bullet always kept to the front?

What do you understand by "rifling"?

In what direction are they cut?

What is the advantage of these grooves?

ANSWERS.

muzzle, it received a force which tended to send it in an opposite direction.

By an elongated expanding ball.

By the force of the exploded powder, the indisposition of the bullet to move, and the resistance of the air in front.

Better shaped for passing through the air; windage done away with; greater velocity with a less charge of powder; no hopping motion during its passage up the barrel.

Imperfection of figure.

The air catching any hollow or unevenness on the surface of the bullet, drove it out of the course it was intended to take.

Yes, and even more so than the spherical ball.

It would not fly point foremost, but turn over.

By rifling the barrel.

Any number of grooves cut down the inside of the gun.

Spiral.

They cause the bullet to turn or spin on its longer axis, which

QUESTIONS

What effect has the spin on a bullet of imperfect figure?

What will result from careless loading?

From what other causes will inaccurate shooting arise?

ANSWERS.

keeps its point foremost, and ensures accuracy of flight.

It constantly presents the imperfection of surface to the air in contrary directions.

The figure of the bullet will be destroyed, and the powder mealed.

A dirty rifle, and damaged ammunition.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in the context of public administration and financial management.

2. The second part of the document outlines the various methods and techniques used to collect, analyze, and interpret data. It highlights the need for a systematic and consistent approach to data collection, ensuring that the information gathered is reliable and valid.

3. The third part of the document focuses on the role of technology in modern data management and analysis. It discusses how digital tools and software can streamline processes, reduce errors, and provide more powerful analytical capabilities than traditional methods.

4. The fourth part of the document addresses the challenges and limitations of data collection and analysis. It notes that while technology offers many advantages, it also presents new challenges, such as data security, privacy concerns, and the need for skilled personnel to manage and interpret the data effectively.

5. The fifth part of the document provides a summary of the key findings and conclusions. It reiterates the importance of a robust data management system and the need for continuous improvement and innovation in the field of data analysis.





