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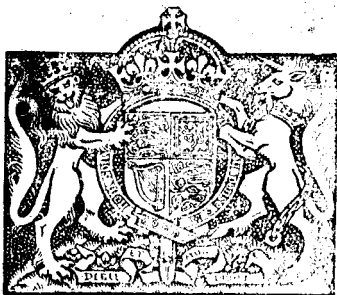
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Small Arms Training

Volume I, Pamphlet No. 20

·303-inch Lewis Machine Gun

1939

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By Command of the Army Council,

A handwritten signature in black ink, appearing to read 'A. J. Gifford'.

THE WAR OFFICE,
6th December, 1939.

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DISTRIBUTION

This pamphlet is issued on a pool basis to units armed with the .303-inch Lewis Machine Gun.

The scale of distribution is as follows :—

<i>Royal Artillery (Field Branch).—</i>	<i>Copies</i>
Regiments	30
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GENERAL NOTES

1. The general principles governing the employment of the section in War are dealt with in F.S.R., Vol. 11, Cavalry and Infantry Training, and Cavalry and Infantry Section Leading.

2. The chief characteristic of the weapon is its power of delivering a volume of fire with the employment of few men. When fired from the bipod, the effective range is 1,000 yards.

3. It is an air-cooled weapon, capable of a high rate of fire, and is fired shoulder controlled from a bipod. To avoid overheating, strain and excessive expenditure of ammunition, and at the same time to produce the necessary volume of fire as well as to maintain accuracy, it is best to fire in bursts of four or five rounds. The accuracy of the gun permits of only a small margin of error in aiming, range estimation or allowance for the effect of atmospheric conditions. Accurate observation of fire is therefore essential. If less than four or five rounds are fired in a burst, observation will be possible only in the most favourable circumstances.

4. Taking into account the time required to change magazines, a trained man should be able to maintain an average rapid rate of 120 rounds a minute with accuracy.

5. To ensure that the section can fulfil its role in war, the personnel must be trained so that each individual is capable of performing the following duties concerned with the handling of the gun :—

- i. To prepare the gun for firing and maintain it in action.
- ii. To carry the gun and get it quickly into action on any type of ground.
- iii. To fire accurately at various rates up to 120 rounds a minute according to the requirements of various types of targets likely to be encountered in battle.
- iv. To observe the fire and correct its application accordingly.
- v. To assist forward movement by fire whilst at the same time ensuring that such fire does not endanger his own troops.
- vi. To fire with effect at low-flying aircraft.
- vii. To perform the duties assigned to any member of the section.

6. In this pamphlet, solely to make training easy, members of a section are sometimes referred to by "Numbers." Every man in a section, however, must be an efficient shot with the L.M.G., and in addition be able to carry out every duty that will maintain the gun in action under all conditions. All men, in fact, will be interchangeable so far as duties with the L.M.G. are concerned.

7. **System of training.**—The principles of instruction laid down in Pamphlet No. 1 of this series will be followed during instructions in the Lewis Machine Gun. In addition the following points will be observed :—

Practice should be arranged in such a way as to ensure that no time is wasted. This can be done by each individual carrying out a cycle of action which leaves the gun ready for the next man. Those not actually handling the gun will be constantly questioned so that interest may be maintained. A further demonstration should be given when it is apparent that a point is not clear.

SECTION 1.—HOLDING, AIMING AND FIRING

The importance of correct holding of the gun will be impressed on the soldier from the start. Efficiency cannot be obtained until ball ammunition is fired, but instruction in correct holding cannot be delayed until this period of training. Any tendency to loose holding even during the most elementary instruction must at all times be checked, otherwise marksmanship will be poor.

LESSON 1.—MAGAZINE FILLING

Instructor's Notes

Stores.—

*Magazine, 1 loading handle, if available, for each man.
Gun in chest. Ground sheets and dummy cartridges.*

1. Explain and demonstrate.—

Insert the loading handle in the socket and press home, releasing the magazine catch. See that the magazine is not damaged and rotates freely. Insert the rounds one at a time without leaving any vacant spaces, and ensure that the rims are behind the retaining plate and the bullets between the separating pegs. After inserting each round rotate the magazine.

To fill by hand.—

Hold the magazine in the left hand and depress the magazine catch with the first or second finger. Place a round in the magazine and rotate the centre block with the thumb of the right hand. When filling ensure that ammunition is kept clean.

To empty.—

Hold the magazine as for filling. Rotate it slowly and remove each round.

2. Practise squad.

3. Demonstrate packing gun in chest.

4. Practise squad.

LESSON 2.—LOADING, UNLOADING AND SIGHT SETTING

Instructor's Notes

Stores.—

Gun, magazines, dummies and ground sheets.

Explain and demonstrate.—

1. Position for loading.—Body straight behind gun, legs together. Left hand holds small of butt, right hand holds pistol grip. First finger alongside trigger-guard when butt is on the ground.

2. Loading and unloading.—

i. **Loading.**—Ensure the cocking handle is forward. Place a magazine on the gun catch to the right. Rotate the magazine and pull back the cocking handle.

ii. **Unloading.**—Remove the magazine by pressing in the magazine catch, and pass it under the gun. Raise the butt into the shoulder, press the trigger, cock the gun and again press the trigger. During elementary training or on the range stand up and report "Gun clear."

3. **Repeating orders.**—If No. 1 fails to understand an executive order, he will call out "Repeat."

4. Conditions of test.

5. Practise squad.

6. **Unloading without firing.**—This will often be required when firing on the range. Remove the magazine, press a bullet on the base of the round causing the front end to rise. Draw the round forward, control the cocking handle and trigger, remove the round and cock the gun. Press the trigger, cock the gun and press the trigger. Report "Gun clear."

7. Practise squad.

8. **Sight Setting.**—Describe the back sight, odd numbers right, even numbers left. Minimum range 100, maximum 2,000. To adjust the back sight raise the leaf slightly, rotate the milled head screw until the line on the slide is opposite the required range, raise the sight. When not in use the leaf of the back sight will be lowered.

9. Practise squad.

LESSON 3.—HOLDING AND AIMING

Instructor's Notes

Stores.—

Gun, magazines, aiming disc, landscape target, representative target and ground sheets.

1. **Holding.**—Explain that the light machine gun, unlike the rifle, has little shock on recoil, but the automatic action of the gun, when fired from the bipod, sets up vibration which, unless controlled, throws the gun off its alignment. This control can only be effected by correct holding which is essential to accurate shooting.

2. Aiming position.—Demonstrate and explain:—

Raise the butt into the shoulder and hold gun in shoulder firmly with both hands, right hand on pistol grip, first finger round trigger and left hand on the small of the butt. Both hands exerting a backward and downward pressure. This should be firm but not excessive, arms and shoulder muscles should not be braced. The cheek will rest lightly on the butt. The bipod should be vertical so as to allow equal backward and forward movement of gun. On the command "Change round" lower the butt and stand up.

3. Practise squad.

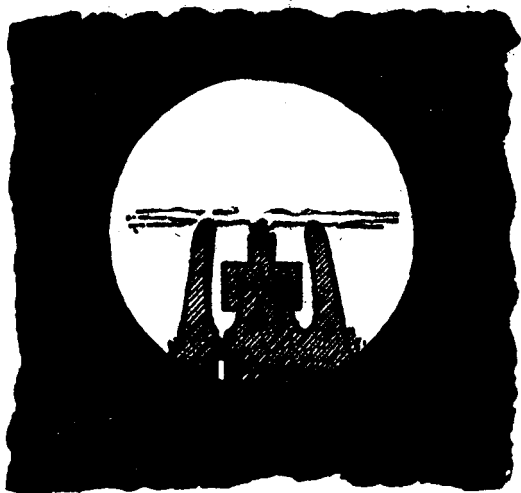
4. Aiming.—

i. Explain the rules:—

The first and second rules of aiming are the same as with the rifle, but the third differs on account of the aperture back-sight. To aim with the aperture sight look through the aperture at the target. Align the top of the foresight on the centre of the target, the point of contact thus made being in the centre of the field of view through the aperture. With the sights thus aligned look at the target. In firing at small or large classification targets the bottom of the aiming mark corresponds with the centre of the target.

ii. Draw or show a diagram as under:—

LEWIS GUN—CORRECT AIM



iii. Lay a correct aim on representative target. Squad view.

iv. Demonstrate how to obtain elevation and depression by means of the elbows. If necessary the bipod legs will be adjusted to suit the firer.

5. Practise squad { At aiming disc (no magazine on gun).
On landscape target.

LESSON 4.—FIRING

Instructor's Notes

Stores.—

Gun, magazines and dummies, landscape targets, ground sheets.

1. **Trigger pressing.**—Explain that the trigger has only one pressure. As with the rifle the trigger must be pressed by a squeezing action of the whole hand on the pistol grip.

2. **Firing.**—Explain and demonstrate in the firing position.

i. The normal rate of automatic fire is five bursts a minute. Correct holding must be maintained throughout each burst.

ii. The sequence of firing is :—

AIM—FIRE—OBSERVE—RE-AIM

iii. After releasing the trigger observe the strike of the shots with a minimum movement of the head and correct if necessary.

iv. When in action, the firer is responsible for keeping a full or nearly full magazine on the gun.

v. The firer will always make allowance for side wind by applying the rules for aiming off. (*See Rifle Lesson 11.*)

3. Practise squad.

4. **Types of fire.**—Explain :—

Rapid fire is a reserve of fire and will only be used to gain surprise effect against a vulnerable target, to cover movement, or in an emergency (*see Application of Fire, Pamphlet No. 2*). Firing will be in bursts of about five rounds with only such time between bursts as is necessary to observe and re-aim. With practice a rate of 120 rounds a minute should be reached. Accuracy must be maintained.

5. Moving targets.—Question squad on the method of engaging moving targets as taught in the rifle instruction (Pamphlet No. 3, Lesson 12). Explain that the same method will be applied in the case of the light machine gun, except that as its swing is limited by the bipod mounting, it is necessary to select some point in front and on the line of movement, then just before the target has closed to the estimated lead fire a long burst of eight or ten rounds. A succession of such bursts will be fired. A new point ahead of the target being selected each time. The correct grip with both hands must be maintained and the elbows must not be moved.

6. Give conditions of test.

7. Practise squad in Lessons 2, 3 and 4.

SECTION 2.—STRIPPING, CLEANING AND MECHANISM

In the following lessons the instructor will explain and demonstrate the stripping and assembling of each group. The parts will be named and the squad frequently questioned about them. After assembling, the correct functioning of the parts will be tested.

LESSON 5.—THE PISTON GROUP

Instructor's Notes

Stores.—

Gun, spare parts, dummy cartridge, table.

1. Stripping.—

- i. Cock the gun and press the trigger.
- ii. Press the thumbpiece of the butt catch forward, rotate the butt anti-clockwise and remove. With the No. 1 butt catch use a dummy cartridge.
- iii. Press the trigger and withdraw pistol grip slightly.
- iv. Pull back the cocking handle and remove it. Draw out the piston rod and bolt. Remove bolt and extractors. Unhook the pinion casing.
- v. Assemble in reverse order.
- vi. Practise squad.

Note.—When replacing piston and bolt, ensure that the feed arm is over to the left and the actuating stud fully screwed. If obstruction is felt, press back the tail of the ejector.

LESSON 6.—THE BODY GROUP

Instructor's Notes

Stores.—

As for Lesson 5.

1. Stripping.—Body cover.

- i. Draw back body cover and remove. Using a dummy remove cartridge guide, stop pawl spring and stop pawls.
- ii. Assemble in reverse order, ensuring that the stop pawls, which are numbered, are placed on the correct posts.
- iii. Practise squad.

2. Feed-arm.—

i. Push back the feed-arm latch, move the feed-arm round to the right and lift it from the magazine post. Remove the feed-arm pawl and spring.

ii. Assemble in reverse order. If the piston and bolt are in the body the underside of the tail of the feed-arm must be placed over the actuating stud.

iii. Practise squad.

3. Body.—

i. Remove the body locking pin and pistol grip, and unscrew the body.

ii. Assemble in reverse order.

iii. Practise squad.

LESSON 7.—THE BARREL GROUP

Instructor's Notes

Stores.—

As for Lesson 5.

1. Stripping.—

i. Using the spare gas regulator key unscrew the clamp ring screw. Remove the clamp ring and front radiator casing.

ii. Remove the bipod, the gas regulator key and gas regulator. Remove the rear radiator casing.

iii. Assemble in reverse order. The small hole of the gas regulator must be to the rear.

iv. Practise squad.

v. Unscrew the gas cylinder, using the piston rod if necessary. Remove the gas chamber and barrel mouthpiece with the spanner provided for the purpose.

vi. Assemble in reverse order.

vii. Practise squad.

LESSON 8.—CHANGING PARTS WITH MINIMUM STRIPPING

Instructor's Notes

Stores.—

As for Lesson 5.

When carrying out any remedy no time should be wasted by unnecessary stripping.

1. Explain and demonstrate.—

Part to be changed.

- i. Feed arm pawl or spring.
- ii. Bolt.
- iii. Piston.
- iv. Pinion casing

Stripping necessary.

- Butt and body cover.
Butt, pistol grip withdrawn slightly, cocking handle removed.
As for bolt.
Butt. Withdraw pistol grip slightly.

2. Practise squad.

LESSON 9.—CARE AND CLEANING, DAILY AND BEFORE FIRING

Instructor's Notes

Stores.—

Gun, magazine, holdall and cleaning materials.

The various articles of cleaning kit will be explained as they are used.

Explain and demonstrate :—

1. **Daily cleaning.**—Cock the gun. Using the cleaning rod, clean the barrel as for the rifle. Press the trigger.

NOTE.—If the gun has been used for instructional purposes it may be necessary to strip the piston and body groups in order to clean the working parts more thoroughly.

2. **Before firing.**—Strip completely. Clean and leave dry the gas affected part, *i.e.* barrel group complete ; gas cylinder (using the cylinder cleaning rod and mop) ; head of piston and rings, face of bolt. Clean remainder of gun and slightly oil working parts. When assembling, set gas regulator to the smallest hole and adjust both return springs to the correct tension, as follows :—

With the pistol grip disconnected, raise the pinion and pull back the cocking handle about 2 inches. This increases the weight by about 6 lb. Repeat as necessary and then test with the spring balance.

To decrease : With the pinion disconnected, pull back the cocking handle slightly, raise the pinion and connect up.

3. Clean and check spare parts and magazines.

4. Practise squad.

NOTE.—The striker post and inside the cam slot, having been dried, should be smeared with graphited grease. Flannel-ette should be wrapped round the mop when cleaning the cylinder.

LESSON 10.—CLEANING DURING INTERVALS OF FIRING, AFTER FIRING AND AFTER GAS ATTACK

Instructor's Notes

Stores.—As for Lesson 9.

Explain and demonstrate :—

1. **During intervals of firing.**—Unload. Oil working parts as necessary. Check ammunition and fill any partly filled magazines.

2. **After firing.**—Strip completely. Clean barrel as for rifle, using boiling water if available, and gauze when necessary. Clean gas cylinder with cylinder cleaning rod, wire brush and mop. Clean with oily rag remaining parts, and, if necessary, lightly scrape fouling from gas-affected parts, then dry, clean and slightly oil. The weight on both return springs should be reduced to about 4 lb. If it is not possible to clean as above immediately after firing, the barrel and gas-affected parts will be oiled. Further cleaning of gas-affected parts will only be carried out when necessary, particular attention, however, will be paid to the barrel, which will be cleaned and oiled daily until fouling ceases.

Clean spare parts and magazines.

Pack gun in chest.

3. Practise squad.

4. **Cleaning after gas attack.**—

Similar to that for rifle as laid down in Pamphlet No. 3, 1937, Lesson 4.

LESSON 11.—MECHANISM

Instructor's Notes

Stores.—

Gun, magazine, dummies, empty case, cut magazine, spare piston, bolt, ejector and pinion group.

Demonstrate with explanation the action, and ask questions at the end of each phase.

1. **Backward action.**—

Some of the gases following the bullet pass through the gas vent and gas regulator into the gas cylinder. This forces the piston and bolt to the rear. The rack on the piston rotates the pinion and so winds the return spring. The empty case being gripped by the extractors is carried to the rear on the face of the bolt until it is struck by the ejector. The case

is then ejected through the ejection opening. The feed-arm actuating stud moves the feed-arm from right to left. The pawl on the feed-arm rotates the magazine. This action will load the gun, the round being under the cartridge guide. The magazine is prevented from rotating too far by the right stop pawl.

2. Forward action.—

The return spring unwinding forces the piston and bolt forward. The top extractor hits the rim of the cartridge and knocks it forward into the chamber, the extractors closing over the rim. The feed-arm is moved back to the right. The striker hits the cap of the cartridge, thus firing the round. The magazine is held stationary by the left stop pawl. The right stop pawl is pressed back clear of the magazine.

3. Trigger action.—

Pressure on the trigger disengages the sear from the bent on the piston and the piston is allowed to go forward. As long as the trigger is pressed the gun will continue to fire. If the trigger is released, the bent will engage with the sear the next time the piston comes to the rear, stopping its forward movement.

4. Empty magazine.—

When there are rounds in the magazine and the piston is forward, the magazine cannot be rotated as the next round to be fed is against the tongue on the body cover. When the magazine becomes empty, the piston will stop forward, and the magazine can be rotated freely.

SECTION 3.—ELEMENTARY HANDLING, IMMEDIATE ACTION, STOPPAGES AND ADDITIONAL STRIPPING

ELEMENTARY HANDLING

1. This part is purely drill and will be carried out on any piece of level ground. An aiming mark on a landscape target will always be indicated.

2. When each man has had sufficient practice to enable him to carry out instinctively the correct action on any given word of command, the instructor will introduce handling exercises. The object of these exercises is to quicken Nos. 1 and 2 in handling the gun. Accuracy must not be sacrificed for speed, however, and mistakes in points of elementary training will on no account be overlooked.

3. As progress is made in locating the causes of stoppages and applying the correct remedy, practice in doing this will be introduced into handling exercises.

4. Several squads or sections can be exercised collectively under the control of one instructor.

LESSON 12.—ELEMENTARY HANDLING

Instructor's Notes

Stores.—

Gun, magazine, spare parts, landscape target and ground sheets.

Ground sheets placed to represent ACTION and CEASE FIRING positions as under :—

(a) ACTION position—Two sheets side by side.

(b) CEASE FIRING position—Two sheets about 2 yards apart and about 5 yards in rear of (a).

Gun, magazines and spare parts at CEASE FIRING position, the gun on right sheet.

Squad will fall in on right of the ACTION position and number off.

1. Explain that invariably two numbers are required to operate the gun. For purposes of instruction only, these are referred to as Nos. 1 and 2. It will be the duty of the No. 2 to assist No. 1 in operating the gun.

2. Prepare for action.—

i. Explain actions of No. 2 as follows :—

(a) Lie down and examine magazine.

(b) Examine spare parts holdall, opening outer flap to ensure the pockets are fastened. Re-fasten outer flap.

(c) Report to No. 1 "Magazines and spare parts correct."

ii. Demonstrate and explain action of No. 1.

Lie down and examine the gun as follows :—

Barrel mouthpiece tightly screwed up. Clamp ring screw tight and head of the screw to the right. Foresight undamaged. Gas regulator and key correctly assembled and small hole of the regulator to the rear. Bipod ; band clamping screw on the right ; leg clamping screws tight. Try weight on return spring to ensure that the firing weight has not been taken off. Pawls, springs and backsight undamaged.

When No. 2 has reported, report "No. . . .—Gun ready."

iii. Practise squad in pairs.

3. Action.—

Explain duties of No. 2 :—

i. Jump up, pick up the holdall by the handle with the left hand, wallet end to the front. Pick up the carrier with the right hand. Double to the ACTION position on the left of No. 1. Place the holdall on the ground, flap uppermost, wallet end nearest the gun, and place the carrier in a convenient position.

Lie down close to No. 1 without hindering his movements.

Place magazine on gun when ordered.

Watch for any signals.

ii. Instructor demonstrates action of No. 1 on command "Action" giving detail as follows :—

Jump up quickly—carry the gun forward, right hand grasping the small of the butt, left hand grasping bipod with wrist clear of radiator casing—place the gun on the ground, lie down behind the gun.

Order "Magazine on" and then load.

4. Aiming and firing.—

i. Explain action of No. 2.

On the word "On" No. 2 places his right hand over the back of No. 1.

On the order "Fire" No. 2 withdraws his right hand.

On range being given, adjust the sights to that ordered.

On target being indicated, he aims ; when the aim is correctly taken he shouts " On."

On command " Fire " fire as already taught.

5. " Stop " and " Go on. "—

i. Explain that when firing ball ammunition, on releasing the trigger, provided there are rounds left in the magazine, the working part will remain in the rear position. The action taught is the correct one for service conditions.

ii. Demonstrate and explain action of No. 1.

On the command " Stop " change magazine if necessary and lower the butt to the ground. Back sight remains up.

On the command " . . . Target . . . Go on," aim and fire.

6. Cease firing.—

i. Explain action of No. 2.

Assist in removing magazine. Return magazine to carrier.

Pick up holdall and magazine carrier, return to cease firing position and lie down.

ii. Demonstrate and explain action of No. 1.

With the butt in the shoulder remove the magazine.

Clear gun. Lower the backsight leaf, pick up the gun and return to cease firing position and lie down.

Explain that if the command " Cease firing " is given before fire has been opened the gun must be unloaded without firing.

iii. Practise squad in pairs.

" Action "—" Aiming and firing "—" Stop and go on " and " Cease firing."

7. Signals.—

i. Demonstrate and explain :—

" Action "—both arms raised and lowered in line with the shoulders.

" Stop "—hand waved horizontally.

" Cease firing "—arm circled from the shoulder.

" Prepare to fire "—hand raised above the head.

" Fire "—hand dropped to side.

ii. Practise squad using signals.

LESSON 13.—IMMEDIATE ACTION

Instructor's Notes

Stores.—

Gun, magazine, spare parts, dummies, landscape target and ground sheets.

The causes of stoppages will not be taught until the men are proficient in immediate action. They will be explained as set out in the Summary.

1. Explain that, if the gun is properly balanced and cared for stoppages other than an empty magazine will rarely occur ; also that immediate action is the action performed by the firer to remedy a stoppage. It must be carried out quickly, and with practice should become instinctive. Immediate action is not considered complete until the gun has been re-aimed and fired.

2. i. Explain and demonstrate, with full magazine on, that the gun will stop with the cocking handle in one of two positions.

1st Position.—Cocking handle right forward.

2nd Position.—Any position other than 1st, or fully cocked.

ii. These positions can be quickly determined by feeling with the hand as follows :—

With the butt in the shoulder, raise the hand straight up from the pistol grip, fingers extended.

1st Position.—If cocking handle is felt near tips of fingers.

2nd Position.—If felt on any other part of hand.

3. **1st position.**—

i. Explain and demonstrate :—

If gun fails to fire or commences firing and stops :—

Feel for the cocking handle—try to rotate magazine— if it rotates, change it, if it does not rotate cock the gun, aim and fire.

ii. Practise squad by word of command.

4. **2nd position.**—

i. Explain and demonstrate :—

If gun fails to fire or commences firing and stops :—

Feel for cocking handle—cock the gun—try to counter-rotate the magazine—whether it counter-rotates or not, aim and fire.

ii. Give conditions of test.

iii. Practise squad by word of command.

LESSON 14.—STOPPAGES

Instructor's Notes

Stores.—As for Lesson 13.

Instructor questions squad on Lesson 13.

1. i. Explain and demonstrate :—

If after I.A. for 1st position the gun will not fire :—

Feel for cocking handle—try to rotate magazine—if it does not rotate remove it and clear gun :—

(a) Examine feed-arm pawl and spring. If spring is broken change it—if not

(b) Change piston—load, aim and fire.

- ii. Practise squad by word of command.

2. i. Explain and demonstrate :—

If after I.A. for 2nd position, the gun fires a few rounds and stops :—

Feel for cocking handle—cock gun—try to counter-rotate magazine—if magazine counter-rotates, change magazine, aim and fire.

If magazine does not counter-rotate :—

Clear gun—take about 3 lb. off the return spring—load, aim and fire.

- ii. Practise squad by word of command.

NOTE.—The gun should be cleaned at the first opportunity, and the return spring readjusted to its normal tension.

3. i. Explain and demonstrate :—

If after I.A. for 2nd Position the gun **will not** fire, there will always be a live round in the feed-way :—

Feel for cocking handle—cock gun—counter-rotate magazine—remove magazine and examine inside the body and chamber :—

(a) If live round in chamber—clear gun—change magazine—load, aim and fire.

(b) If empty case in chamber or body—clear gun—change the bolt—load, aim and fire.

- ii. Practise squad by word of command.

4. i. If the gun stops either 1st or 2nd position and there is no resistance on the cocking handle :—

Clear gun—change the pinion group—load, aim and fire.

- ii. Practise squad by word of command.

5. Explain causes of stoppages (*see* Summary).

SUMMARY OF CAUSES

The following table is for the use of instructors, who, when using it in conjunction with Lessons 13 and 14 should teach the causes of stoppages, when the man is proficient in I.A. Instructors should use a cut magazine when necessary, to demonstrate a stoppage.

Reference	Possible cause of stoppage	How to teach cause of stoppage	Words of command for practice and handling exercises
(1)	(2)	(3)	(4)
Lesson 13, para. 3.	i. Empty magazine ii. Misfire	Explain cause—question squad on Lesson 11, para. 4. Explain "No gas."	"Gun firing all right"—"Gun stops"—"Gun firing all right."
Lesson 13, para. 4.	i. Hard extraction ii. Faulty feed	Explain and demonstrate force of gas absorbed in driving working parts to the rear. Explain and demonstrate over-rotation of magazine, owing to projection being worn. Stop pawl does not engage directly with projection.	"Gun firing all right"—"Gun stops 2nd"—"Gun firing all right." —
Lesson 14, para. 1.	i. Broken feed-arm pawl spring. ii. Broken striker	Remove spring—demonstrate and explain no rotation of magazine. Explain "No gas."	"Gun firing all right"—"Gun stops"—"Will not fire." Instructor will say: "Spring broken" or "Not broken"—"Gun firing all right." —

Reference	Possible cause of stoppage	How to teach cause of stoppage	Words of command for practice and handling exercises
(1)	(2)	(3)	(4)
Lesson 14, para. 2.	i. Worn magazine .. ii. Friction	Question squad on mechanism of right stop pawl. Explain that this stoppage will only occur after prolonged firing. Owing to fouling in gas cylinder and working parts being dry force of gas is absorbed in forcing the parts to the rear. Taking off weight lessens the work of the gas.	"Gun firing all right"—"Gun stops 2nd"—"Fires a few rounds and stops again 2nd"—"Magazine counter-rotates"—"Gun fires all right" or "Magazine does not counter-rotate"—"Gun fires all right."
Lesson 14, para. 3.	i. Worn magazine .. ii. Broken extractor ..	Explain and demonstrate why gun will not fire having applied I.A. Explain that empty case may be left in chamber, or partly extracted but not ejected.	"Gun fires all right"—"Gun stops 2nd"—"Will not fire 2nd." Instructor then says: "Live round in chamber" or "Empty case in chamber"—"Gun fires all right."
Lesson 14, para. 4.	Broken return spring ..	Explain why the gun may stop with cocking handle in any position.	"Gun is firing all right"—"Gun stops." Instructor then says: "No resistance on cocking handle"—"Gun fires all right."

LESSON 15.—ADDITIONAL STRIPPING

Instructor's Notes

Stores.—

Gun, magazine and holdall, table.

The parts dealt with in this lesson will only be stripped when necessary, and not for normal cleaning.

1. Pinion group.—

i. Raise the pinion pawl, rotate the pinion if necessary and remove the tension screw. Remove the pinion from its casing. Using a dummy cartridge remove the spring casing from the pinion.

ii. Assemble in reverse order.

2. The trigger group.—

i. Remove the sear axis pin, and remove the sear. Place one hand over the plunger and push out the trigger axis pin. Remove the trigger, the plunger and the trigger spring.

ii. To assemble.—

Replace the trigger spring and the plunger.

Keeping the plunger depressed, place the front end of the trigger bar into the slot in the plunger and replace the trigger axis pin. Place the dove-tailed end of the sear behind the rear end of the trigger bar and replace the sear axis pin.

3. Ejector.—

i. Remove the ejector cover. Place the point of a dummy cartridge in the hole under the left side of the body, press up the ejector and remove.

ii. Assemble in reverse order.

iii. Practise squad.

SECTION 4.—LIGHT MACHINE GUN (ANTI-AIRCRAFT)

LESSON 16.—DESCRIPTION OF ANTI-AIRCRAFT APPLIANCES, MOUNTING AND DISMOUNTING GUN

Instructor's Notes

Stores.—

Anti-aircraft mounting, mounting holder, rifle sling, gun, magazines, dummies and holdall.

Squad on right of gun.

1. **Description.**—

i. Anti-aircraft mounting. This consists of (a) folding tripod, (b) vertical pillar.

The legs of the tripod are hinged on two gunmetal collars which slide on the lower part of the vertical pillar. Distance pieces are inserted between the hinges to enable the legs to fold flat. The vertical pillar is formed of steel tubing. Holes are drilled through the lower part, and a pin is provided which rests on the upper gunmetal collar. By this means the height of the mounting can be adjusted. Two "D's" for a sling are riveted into the pillar. In addition, a split pin is placed just above the lower "D" to prevent damage to the latter.

ii. Question squad.

2. **Anti-aircraft holder.**—

i. This consists of a clamp ring and screw, to which is attached a steel tube. The tube fits into the top of the vertical pillar:—

ii. Demonstrate and explain.—

To attach the anti-aircraft holder. Place the clamp ring over the narrow part of the body, and slide forward until it is between the mounting rings on the rear radiator casing. The clamping screw to be on the right. Before tightening the screw, see that the tube of the holder is in line with the pinion casing. This ensures that the sights are upright when the gun is mounted.

iii. Remove in reverse order.

iv. Practise squad.

3. **Mounting and dismounting gun.**—

i. Action of No. 2. On the command "For aircraft—mount gun":—

(a) Erect the mounting as quickly as possible. See that the height of the mounting is suitable to the firer.

(b) Assist No. 1 in mounting the gun, and place a magazine on when ordered.

ii. Action of No. 1. (One of squad acting as No. 2.) Mount the gun on the tripod—order magazine on—load—and adjust sights to 500.

iii. Dismount in reverse order. (Unloading the gun without firing.)

iv. Practise squad.

4. Holding.—

i. Hold the gun as already taught. Balance the body on both feet with legs fairly well apart. When moving round the tripod in engaging crossing aircraft, the feet should not be crossed.

ii. Practise squad.

LESSON 17.—ANTI-AIRCRAFT HANDLING

Instructor's Notes

Stores.—

Gun, anti-aircraft mounting and holder, magazine, dummies and holdall. Model aeroplane on pole.

Fatigue man.

1. Explain.—

i. The gun will be mounted for aircraft in a position which affords a field of fire over as wide an area as possible, but at the same time allows it to be concealed. Gun positions should be under cover, or in the shadow of buildings, etc. It is rarely possible to obtain an all round view of the sky and maintain concealment. The siting of the gun in an area (*see S.A.T., Vol. 1, Pamphlet No. 6, 1937, page 7, para. 5*) must, therefore, be co-ordinated under unit arrangements.

ii. Care must be taken, in engaging low-flying aircraft, that the gun is not fired in a direction dangerous to our own troops.

iii. The team required to operate a gun against aircraft will consist of three. Their duties are as follows :—

Section commander.—Selects a position for the gun. Directs and controls the fire.

No. 1.—Fires and maintains the gun in action.

No. 2.—Assists No. 1 to change magazine, and keep up ammunition supply.

iv. Magazine will be filled with tracer and Mk. VII in the following proportion :—

3 tracer to 1 Mk. VII (subject to alteration).

2. Instructor acting as section commander :—

- i. Selects suitable position for gun.
- ii. Orders Nos. 1 and 2 to mount gun.
- iii. Points out field of fire and position of other guns in the area.

3. Explain and demonstrate actions of Nos. 1 and 2 on the following orders :—

“ Aircraft action ”—“ Aircraft front ” (right, left, etc.).

- i. No. 2 will stand on the left of the gun with a full magazine ready to change when ordered.
- ii. No. 1 will turn quickly in the required direction, raise the butt into the shoulder and aim.
- iii. On the command “ Rapid fire,” No. 1 will fire continuous—employing the hose pipe method of firing.
- iv. “ Stop ” and “ Go on ” as already taught.

4. Practise squad at all types of aeroplanes by word of command and signals.

SECTION 5.—ADVANCED HANDLING

1. This part is designed to teach and practise men as Nos. 1 and 2:—

- i. To use ground correctly in occupying a fire position.
- ii. To mount the gun so that full fire effect can be obtained combined with a minimum of exposure for Nos. 1 and 2.

2. This will be carried out on ground on which there are minor irregular features, use being made of both natural and artificial cover. Natural targets will be described.

LESSON 18.—ADVANCED HANDLING (USE OF COVER)

Instructor's Notes

Stores.—

Gun with carrying handle and sling, magazines, spare parts. Demonstrate and explain how to attach carrying handle and sling.

1. i. Instructor states that the object of the lesson is to teach men acting as Nos. 1 and 2 the use of ground, so that in occupying a fire position they can use the gun with full fire effect with a maximum amount of cover for themselves.

ii. It will be the duty of No. 2 to assist the No. 1 as far as is possible. He will, however, make use of the cover without unnecessarily exposing the position of the gun. His main duty will be to keep the gun supplied with ammunition.

iii. Question squad on the use of cover (rifle), and explain that the principle of using cover with the light machine gun is the same. After each demonstration the squad will practise individually.

The position of No. 2 will be explained and one of squad ordered to take up position.

2. The following will be included:—

- i. Mounting the gun without the bipod legs. (The cover should support the gun as near as possible at the same place as the bipod legs normally support it—otherwise the sighting of the gun will be affected.)

- ii. Mounting the gun using the bipod legs.
- iii. Firing round cover.
- iv. Use of low continuous cover.
- v. Firing on the side of a slope.
- vi. Using a fold in the ground.
- vii. Using a trench, with and without bipod.

LESSON 19.—ADVANCED HANDLING (MOVEMENT)

Instructor's Notes

Stores.—

Gun with sling and carrying handle attached. Magazines and holdall.

Ground sheets in position in ACTION and CEASE FIRING positions.

1. Introduction.—

Ask questions on points taught in "Prepare for action" (=Lesson 12) and make it clear that these duties should be carried out before a unit leaves camp, bivouacs or billets.

Explain that it is the duty of both numbers to use ground in occupying a fire position and to mount the gun with reference to the target to be engaged so that full fire effect can be obtained with a minimum of exposure. The occupation of a position will either be made quickly, such as a rush from cover to cover, or cautiously when cover is inadequate. In the latter case it may entail crawling.

2. Order two of the squad to "Prepare for action."

Explain and demonstrate actions of No. 1 (one of squad acting as No. 2) :—

i. Position behind cover.—

This position is adopted in the same manner as in using the rifle behind cover, *i.e.* complete concealment for both Nos. 1 and 2 and the gun. Place a magazine on the gun.

ii. Position of readiness.—

No. 1 will carry out the following action whenever a range is ordered or, if acting apart from the section, when a target is presented :—

Set sights—mount the gun on cover cautiously—load—On completion of the fire order or decision to open fire—FIRE.

iii. Cease firing.—

The following actions will be carried out :—

Clear gun—draw the gun back behind the cover.

No. 2 will replace magazines in carrier.

iv. Practise the squad in pairs on various types of cover, no further explanation being given.

3. Position of observation.—

When the light machine gun is acting within the section, the section leader will detail an individual to assume a position of observation but, when the gun is detached, No. 1 or his No. 2 will remain in observation to observe signals, and movements of the enemy or of his own troops. He will adopt a comfortable position affording concealment and a view of the front.

4. Method of crawling with the gun.—

Lying on the left side with the left knee drawn up, turn the gun over so that the top of the magazine rests on the inside of the left knee. Holding one leg of the bipod with the right hand, crawl to the desired place by exerting pressure on the left forearm and at the same time pushing forward with the right foot.

In certain circumstances No. 2 may be able to assist.

5. Practise squad.

SECTION 6.—TESTS OF ELEMENTARY TRAINING

In each of the following tests the man will be allowed three attempts and, to pass, two must be done correctly within the time limit.

Name of test and stores required	Conditions before the test	Time allowed	Remarks
(1)	(2)	(3)	(4)
No. 1. Loading.—Gun and one filled magazine.	No. 1 in the correct position for loading—No. 2 in position holding the magazine.	3 seconds from command "Load" until right hand is replaced on pistol grip.	—
No. 2. Sight setting—Aiming and firing.—Gun and aiming disc.	Firer lying behind gun—butt on the ground—gun cocked, but no magazine on.	Instructor orders RANGE . . . "FIRE," 6 secs. from the order "FIRE" until the trigger is pressed.	Maximum alteration of sights 400 yards. Height of aiming disc to be varied for each aim.
No. 3. Immediate action.—Gun — magazines — landscape target.	Instructor will give RANGE and TARGET "FIRE" followed by "Gun Firing all right"—"Gun stops" first or second—"Gun firing all right." No. 2 will be in position.	6 secs. from the command "Gun stops" until the firer has applied I.A., aimed and fired.	—
No. 4. Anti-aircraft. — Gun-magazines — holdall — Anti-aircraft mounting.	Both Nos. in the kneeling position. No. 1 behind the gun, No. 2 behind the magazine and A.A. mounting which is folded.	15 secs. from the order "For Aircraft Mount Gun" until the gun has been loaded and the sights adjusted to 500 yards.	—