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(Abbreviated Translation of a German Document)
Manual of position Warfare for all Arms — means of
Illumination - issued by the Chief of the General
Staff of The Field Army 1916



Is/33732.

(Abbreviated translation of a German document.)

Manual of Position Warfare for all Arms.

Part 4.

MEANS OF ILLUMINATION.

("Leuchtmittel")

31st May, 1916.

Issued by the Chief of the General Staff
of the Field Army.

Berlin, 1916.

The original is marked :-

Not to be taken into the front line.

Secret.

General Staff (Intelligence),

General Head-Quarters,

31st May, 1917.

Circulate

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MEANS OF ILLUMINATION ("Leuchtmittel")

(Abbreviated translation).

General.

- Sections 1-3 The means of illumination available are :-
- (a) Searchlights, worked by special units.
 - (b) Illuminating pistols, carried by all fighting units, including those of the flying service.
 - (c) Illuminating torches which burn for 10 to 12 minutes, and long burning torches which burn for 1½ to 3 hours; lanterns and lamps of all kinds which are kept in the engineer parks.

Searchlights.

- Sections 4-7 The equipment available is :-
- (a) heavy equipment, with 90-cm. mirrors;
 - (b) light " " 30-cm. "
 - (c) portable " " 14 to 45-cm. mirrors.

The heavy equipment is worked by a power lorry. The older pattern equipment has a "tower" 32 feet high on which the projector can be placed: the newer pattern has a collapsible mast 26 feet high.

The light equipment is carried on a limbered wagon, the projector on the trailer and the dynamo on the limber.

The portable equipment consists of :-

- (a) projectors, for use with any local electric supply. Range, with 55-cm. mirror, 890 to 1100 yards; with 25-cm. mirror, 330 to 380 yards.
- (b) projectors with accumulators. The complete equipment can be carried by one man, the accumulators in a valise on his back. The projector has a filament lamp; it can be fixed to a pole. Range 550 yards.
- (c) Oxy-acetylene (A.S.) projectors worked by two men.

The

The equipment requires the most careful looking after.
Range 330 to 440 yards.

Employment.

Sections
8-10

All searchlight equipment available must be definitely placed under the orders of the commander of some formation or unit, and used under his instructions for tactical purposes..

Attack.

11. The principal purposes for which searchlights can be used are :-

Assisting scouting and reconnaissance, by illuminating the foreground or the objectives which are to be engaged with artillery or infantry fire.

Lighting up points of direction for the movements of our own troops, without attracting attention.

Smothering hostile searchlights.

Throwing a beam to hide our own operations.

Misleading the enemy in feint attacks (e.g., at the forcing of a river.)

12. Every precaution must be taken to avoid lighting up our own movements and so disclosing them to the enemy. Directly that there is any danger of this, either through the proximity of the enemy or the nature of the ground, the lights must be stopped or their use limited.

When lights are assisting patrols working in front of the line, co-operation must be carefully arranged; in some cases it may also be necessary to settle the mutual attitude to be adopted with neighbouring troops. Patrols must, however, be warned that it is not always possible to avoid lighting them up and they must take their own precautions to avoid the consequences.

13. It

13. It is possible to blind the enemy and smother his searchlights by suitable use of our lights. The effect can be increased by traversing the lights quickly and changing rapidly from light to darkness and vice versa.

14. In general, the remarks made below on the use of searchlights in defence apply equally to the attack, as far as conditions allow.

Secure and uninterrupted communication between advancing troops and the observing officers, by means of telephones, runners, visual signals, etc., is of great importance.

Defence.

15. The more open the country, the greater the distance between opposing lines, and the more thinly our line is held, the greater is the value of searchlights, particularly those of the heavy and light equipments.

16. It has not proved true in practice that projectors in or near our defensive position show it up and attract fire. Experience has only confirmed the belief that our positions when viewed from the enemy's side are not disclosed by the use of searchlights, provided they are used properly.

The lights, moreover, are able to search the enemy's position and foreground by means of short flashes. Thanks to their excellent apparatus, the heavy and light equipments can suddenly illuminate any particular important tactical point (such as a bridge, farm or ridge) for a few seconds without any preliminary search. The enemy has no chance in this short time to hit the projector, and therefore has

has no interest in shelling the posts because a light has been exhibited.

17. It is therefore wrong to forbid the projectors, as a general rule, to light up, and only permit them to do so when an attack is imminent.

If the attack has already commenced, the lighting up will generally be too late.

It is most important that the searchlights should enable the preparations and the commencement of the attack to be detected.

18. Continuous exhibition of the lights should only take place, as a rule, when an attack has been definitely recognised.

19. The mobile searchlights should be used in co-operation with artillery in the front line, on account of their long range.

They should, if possible, be placed in position on ground higher than, and to a flank of the main approach roads, and be well concealed.

Lights will be required in pairs only in very exceptional circumstances. They should generally be placed singly. Alternative emplacements should be provided.

If the ground offers no cover, emplacements, either open without over-head cover or shell-proof, should be prepared (see Figs. 37-42 in "The Construction of Field Positions", the translation of "Stellungsbau", where shelters for projector and limber are shown.)

If it is not possible to arrange shell-proof cover, the emplacements must at least be protected by camouflage from aerial observation.

Cover for the limber, from which no view is required, can easily be found, e.g., in a reinforced cellar. It may

be

be remarked here that the projector trailer and the limber should be placed as far apart as the cable will allow, so that they cannot be knocked out by the same shell.

The cables should be protected from the enemy's fire as much as possible. Burying them is unsuitable as, after a little time, the insulation fails; it is better to lay them on the bottom of a narrow trench and protect them against damp by use of timber and roofing felt.

20-23. (These deal with technical matters and the position of the commander of a searchlight section as technical adviser.)

24. It is advisable to detail officers of the units with which a mobile searchlight section is to co-operate, as observers for the lights. They must be trained for their work by suitable practical exercises (training of the eye, judging distance, correct estimation of shadow effect.)

25. The observing officers receive instructions with regard to the use of the lights from the commander of the sector to which the lights are assigned. The lights and personnel are placed under their orders, and they are responsible that the tasks allotted to them are properly carried out.

26-30. (These deal with the provision of double telephone circuits, the position of the observers relative to the lights, and the provision of maps showing the elevation, bearing and angular measurement of the various objectives).

31. The portable apparatus on account of its short range is only suitable for the first line and for close fighting.
32. The portable projectors should, as a rule, be so placed in the front line that they illuminate the enemy's position frontally. At the same time it should be possible for them to be worked in co-operation with any machine guns or guns for repelling assaults that may be near, and to light up the ground in front of our position and our obstacles from a flank.
33. The position of portable projectors should be frequently changed in order to save them from aimed fire.
34. In order to protect the portable projectors and the detachments working them from artillery fire, there must be shell-proof dug-outs near the places where they are exhibited.
35. These places must be carefully reconnoitred and selected with reference to the emplacements of the machine guns and the artillery in conjunction with which the searchlights are to be worked. It is the duty of the engineer officers concerned to ensure that proper use is made of the portable lights.
36. The party for a portable searchlight consists of 2 sappers.
- The senior sapper will report at dusk to the commander of the sub-sector in which he is to be employed. This commander will issue the necessary orders to the

party

party and supervise its work, in accordance with the instructions issued by higher command for the tactical use of the lights.

37. In critical situations the parties must act on their own initiative.

38. It is sometimes desirable not only for the batteries for repelling assaults but also for the infantry batteries to work with the portable searchlights; for instance, when the enemy is consolidating a new position on our front.

In such a case it is best for the light to be placed near one of the artillery observers in the front line.

39. All searchlights are able to transmit information to the rear, by day as well as by night, by means of flashes. Sometimes it is possible for them to communicate to aeroplanes.

40. The 80-cm. mirror is the smallest that is suitable for anti-aircraft work. The lights are best used in pairs. They must be under the orders of the commander of the A.A. guns.

If possible they should be placed on high ground from which they can light up the area that is to be guarded.

There is nothing to be gained by continually swooping the heavens with searchlights; in fact to do so would very often provide the enemy with the best possible guide to the place. The searchlights ought not to come into action until the listening posts have reported the noise of aircraft. The light has no effect on the airmen when they are very high up. The lower the aeroplanes come down the more disturbing is the beam.

As a rule, aeroplanes succeed by skilful manoeuvring in getting out of the beam. A shrapnel-burst illuminated by the light is easily misleading, as there is a tendency to

keep

keep it in the beam and search for the aeroplane near it, whilst actually the aeroplane may have gone off in another direction.

FLARES AND SIGNAL CARTRIDGES.

41. The following are the service flares and signal cartridges :-

1	Flare ("Leuchtpatrone") : White.
2	Signal cartridge ("Signalpatrone") : (a) red. (b) green.
3	Signal cartridge with pearls ("Signalpatrone mit Perlen"): (a) with white pearls. (b) red star with pearls. (c) green star with pearls.
4	Signal cartridge with streamers ("Signalpatrone mit Verästelung"): (a) white. (b) red. (c) green.
5	Signal cartridge with parachute ("Signalpatrone mit Fallschirm"): (a) white. (b) red. (c) green.
6	Signal cartridge with double star ("Signalpatrone mit Doppelstern"): (a) red. (b) green. (c) red and green.
7	Signal cartridge with red lighting ("Signalpatrone mit (experiments not yet completed). rotem Blitz"):
8	Tread alarm signals ("Tretleuchtzeichen"): (a) white. (b) red.

42. No. 1 to 7 are fired from the light-ball pistol ("Leuchtpistole") and the star-signal pistol ("Sternsignalpistole")

43. It should be noted that red signals are the most easily recognised. Green ones are easily mistaken for white.

44. The use of signals formed of combinations of several flares and signal cartridges is not, as a rule, to be recommended, as if one cartridge fails the signal may be misunderstood. It is better to give each signal by a single flare or cartridge, and go on repeating it until a result is observed.

- 45-47. (These deal with the management of the pistol).

ILLUMINATING TORCHES ("Leuchtfackeln")

48. These torches serve to illuminate the near foreground. They light up a circle of about 80 yards radius. They burn 10 to 12 minutes. Once lighted they are difficult to extinguish. They are fired by two patterns of igniter, '94 and '11, for which a hole is provided at the side of the upper end of the torch. The firing wire projects towards the lower end. Care must be taken, as a considerable flame leaps out when the torch is ignited. A screen should be provided behind the torch to keep the light off our own trenches. It can be conveniently pushed out on a wooden sledge.

LONG BURNING TORCHES ("Dauerbrandfackeln")

49. These are principally employed for lighting up places where work is being done at night, but they can also be used like illuminating torches. They burn $1\frac{1}{2}$ to 3 hours.

LANTERNS AND LAMPS.

50. Information with regard to what lanterns and lamps are available can be obtained from the engineer parks.



1 - 2

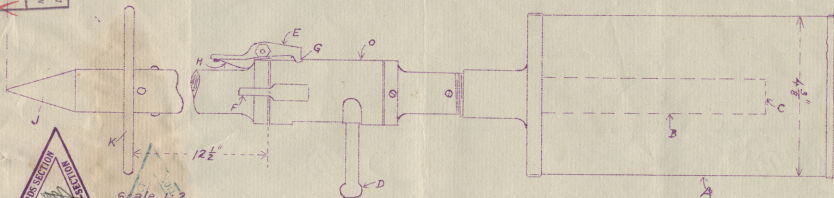
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12TH AUSTRALIAN
MACHINE GUN
COMPANY.

No.
Date

GERMAN STICK - ROCKET GUN CAPTURED AT MESSINES.

2' 7 $\frac{1}{2}$ "

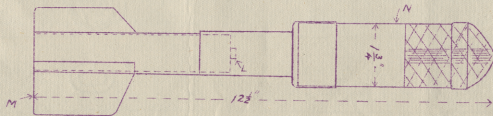


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ROCKET



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