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S.S. 106.—Notes on the Tactical Employment of Machine Guns and Lewis Guns, issued by the General Staff at General Headquarters, March, 1916.

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AMENDMENTS.

Issued by the General Staff, May, 1917.

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1. Page 2. Contents.—For "Appendix A—Notes on Indirect Fire," substitute "Appendix A—Tactical Considerations of Indirect Fire."

2. Page 1. Contents.—Delete Appendices B, C and D.

3. Pages 20 to 31 inclusive.—Delete, and substitute following:—

TACTICAL CONSIDERATIONS OF INDIRECT FIRE.

This type of fire is used by Machine Guns and not by Lewis Guns.

I.—GENERAL.

When the ground admits, "direct fire" should always be employed by machine guns. If this is not possible, excellent results can be obtained by "indirect fire," provided careful arrangements have been made beforehand.

In the ordinary phases of trench warfare the value of indirect fire has been limited by the field fortifications of the enemy, and by the number of guns available for the purpose.

In the initial attacks against well-organized and long-established positions, and in the attacks against improvised defences following on successful assaults on these positions, its value has on several occasions been clearly demonstrated, and indirect fire by machine guns appears to be particularly applicable to these forms of field operations.

There is reason to believe, however, that the tactical and theoretical considerations which underlie this form of fire are not yet thoroughly understood, and because there are definite limitations as well as definite advantages these considerations must be fully recognized.

II.—TACTICAL CONSIDERATIONS.

(a) *In Trench Warfare.*—In trench warfare the value of machine guns for the purpose of economizing infantry is now recognized. This principle means that the machine guns which have been allotted a definite task in the scheme of defence cannot be moved from their main positions for purposes of indirect fire. This consideration defines the first limitation to the number of guns available. It is probable that only those guns which are in reserve positions can be used.

Again, the wear and tear of the guns and the rest which the troops require, necessitate minimizing still further the number of guns used for indirect fire, apart from exceptional circumstances when guns may be brought in for the purpose. Further, it must be remembered that one gun can engage a considerable number of targets. Some targets, however, require a section or more guns to engage them effectively.

Targets in trench warfare will consist chiefly of communication and support trenches; roads, cross-roads and paths; ammunition and ration dumps; trench railways; and places where it is known that work is being carried out. These targets should, when possible, be enfiladed.

A great advantage of indirect fire is that targets can be engaged which are invisible from the gun position, while the gun itself remains screened from observation and the chances of being located by the enemy are reduced to a minimum.

Another advantage of indirect fire will probably be found in the facilities it affords for the training of all ranks in the knowledge of the gun. Stoppages may be set up, men practised when wearing respirators, &c., and unique opportunities afforded for developing fire control and fire orders. With indirect overhead fire special regard must be paid to the rules of safety angles as laid down in Infantry Machine Gun Company Training, Section 30.

Owing to inaccuracy of maps, difficulties of observation, atmospheric influences on the flight of the bullet at long ranges, faults in mechanism and handling, and the varying quality of ammunition, it will be necessary to spray a target considerably in order to make sure of hitting it. In spite of these limitations, indirect fire, according to information of prisoners and deserters, has caused a considerable amount of moral and material effect on the enemy.

To obtain the best results, observation of fire is essential. If a number of points are registered, the errors due to ranging and inaccuracy of maps can be found and the necessary corrections applied to other targets upon which observation is impossible.

A barrage of indirect fire, under the prevailing conditions of trench warfare, will usually necessitate guns being brought specially into the line for the purpose. The available guns of a machine-gun company in the line will seldom be sufficient to allow of an effective barrage being created. As the result of experience and experiment, it would appear that an effective barrage will often require one gun for every 40 yards of front.

N.B.—Notes and Rules for Barrage Fire are being issued as an Addendum to Infantry Machine Gun Company Training.

(b) *The Attack from Trenches.*—In an attack from trenches a barrage of machine-gun fire is often both possible and desirable. After sufficient guns have been detailed to the tasks of supporting with direct fire the infantry advance and consolidating positions won, a sufficient number will usually be found available to bring additional direct or indirect fire on to selected portions of the enemy's positions, e.g., some guns should be placed so as to enfilade communication trenches, and others to form a barrage on the area between the enemy's trenches.

While the artillery is engaging the trench line, the machine guns can sweep the area beyond them, and thus keep down fire from machine guns placed in the area swept, and may hinder intended counter-attacks.

The time of the barrage should coincide with the artillery barrage which is fixed as part of the corps artillery plan by the Corps Commander.

A copy of the time-table decided upon should be issued to the section officers concerned.

To form a barrage on an area of ground, frontal fire should generally be used. The guns of each section should be close together in order to facilitate control. There are various ways of carrying out the formation of a barrage. If a definite front is given to each section each gun may traverse the whole extent of that front. By this means, in the event of any gun in the section being knocked out or having a prolonged stoppage, no gap in the barrage line is made.

On the other hand, the method of each gun sweeping a very small extent of front has also been used. This ensures an evenly distributed barrage, but care should be taken that the extent traversed by each gun should overlap by one half the extent covered by the gun on each flank, so that, if any gun ceases firing, a gap will not be caused in the barrage line.

Care must be taken in working out a barrage to apply the theoretical considerations of indirect fire to each successive stage of the advance to ensure the safety of our own troops.

(c) *In Defence.*—The above principles hold good for a barrage in defence. The machine guns should be ready to respond to the S.O.S. signal. By this means the enemy's supports may be prevented from reinforcing the firing line; moreover, the machine gunners creating the barrage are less perturbed than those in the front line, especially in those cases where the enemy discharges gas.

(d) *Open Fighting.*—Owing to the small scale maps which generally are alone available in open fighting, to the lack of contour lines on the maps, and to the resultant difficulty of laying the gun with any degree of accuracy, indirect fire becomes an operation of great difficulty. Indirect fire is also hampered by the rapid movements of the troops and by the difficulty of locating their precise positions; further, there is usually little time to make the necessary arrangements and calculations. These factors alone are sufficient to show that opportunities will seldom occur for using indirect fire under such conditions.

In these periods, however, of open fighting where the troops are stationary it may be found possible to search reverse slopes, if the maps sufficiently define the contours, or to search approaches or possible places of assembly.

### III.—SELECTION OF SITES FOR INDIRECT FIRE POSITIONS.

Too often indirect fire positions are selected without sufficient regard to the tactical situation. Generally it will be possible to select a number of sites to be used for definite purposes.

(a) *Targets ordinarily engaged by Night.*—In the case of targets which are ordinarily engaged by indirect fire, the gun positions should be selected with a view to bringing an enfilade fire on the targets; thus, maximum fire effect will be obtained. This desideratum may often be accomplished by the engaging of targets on adjacent brigade or divisional fronts. Arrangements should be made for this purpose through the Corps Machine Gun Officer or the Brigade Commander. Very often a combined weekly scheme for bombarding and harassing the enemy can be prepared and co-operation obtained with the artillery and trench mortar batteries through the medium of Brigade Headquarters. A copy of this scheme showing gun position, targets engaged, range and times of firing, should be sent to Brigade Headquarters, the Corps Machine Gun Officer and Battalion Commanders.

(b) *Barrage Line.*—If gun positions are required for the purpose of creating a barrage along the enemy's front or trench system, they should be so sited that the desired result will be obtained without the gunner being compelled to resort to oblique traversing. Traversing fire should effect the object in view.

(c) *In relation to Strong Points.*—Very often indirect fire positions can be sited in such relation to strong points that they form intermediate strong points in the intervals in a rear line of resistance, to which the forward guns may fall back if the front system is penetrated. Wire entanglements should be so sited along this line that they conform to the line of fire of the machine guns from these positions, and hold up the enemy under the maximum fire of the machine guns.

(d) *In Communication Trenches.*—As communication trenches are more or less parallel, it is possible in many sectors of the line to site an indirect fire position in the trench in such a way that guns from such positions, in the event of the enemy breaking through, can sweep the area behind the support line and prevent him reaching the reserve line. If arrangements are made for a block in the communication trench and wire erected along the line of fire of the guns, the enemy can be held up while the counter-attack is prepared. Generally it may be said that sites for indirect fire should be chosen with strict regard to the tactical situation. In the selection of the actual position concealment should be the first consideration. Very often it will be found possible to choose sites which will satisfy this consideration and still conform to the principles of siting already laid down.

As far as possible, dug-outs should be made at each position.

Above all, it should be clearly recognised that indirect fire from a "battle emplacement" is never to be used.

#### IV.—COMMUNICATION AND INTELLIGENCE.

A telephone should connect the dug-out of the officer in charge of the indirect fire guns to the Company Headquarters and also to the Headquarters of the Artillery and Infantry, so that targets which have been spotted by the infantry or artillery observers may be immediately engaged. Arrangements should be previously made that all such information should be passed immediately to the Machine Gun Officer.

NOTE.—For theoretical considerations see "Infantry Machine Gun Company Training."