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Instructions on the Defensive Action of Large Units in Battle

(Reprint of pamphlet translated from the French edition of December 20, 1917, at General Headquarters American Expeditionary Forces, France, March, 1918.)

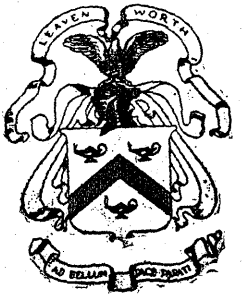
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WAR DEPARTMENT,
WASHINGTON, *April* 29, 1918.

The following pamphlet, entitled "Instructions on the Defensive Action of Large Units in Battle," is published for the information of all concerned.

(062.1 A. G. O.)

BY ORDER OF THE SECRETARY OF WAR:

PEYTON C. MARCH,
Major General, Acting Chief of Staff.

OFFICIAL:

H. P. McCAIN,
The Adjutant General.

This Instruction annuls the Instruction of May 27, 1916, from the Commander of the Army Group of the Center on the *Use of Artillery in the Defensive*, approved by the General, Commander-in-Chief, on June 30, 1916, and its Supplement of August 31, 1917.

The terminology of this Instruction will be rigidly and exclusively applied.

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INTRODUCTION

This Instruction is a sequel to the Instruction of October 31, 1917, on the offensive action of large units in battle. It forms the counterpart of that Instruction.

The first part deals with *the organization of the defense.*

Formation in depth is presented as the fundamental principle, because it gives:

To the high command the means for bringing up in time the necessary reinforcements for the fronts menaced or attacked (especially the artillery, whose mobility and facilities of maneuver should be looked into and developed).

To the commander of all echelons participating in the combat, the facilities for using the support and reserve troops to insure the continuity of the defensive front to make possible counter-attacks and counter-offensives.

The *organization of the ground,* the *intelligence research* and the *drawing up of the plans of defense* concur with the formation in depth to prevent surprise and to make possible the various defensive maneuvers.

The second part deals with *the development of defensive actions* in various situations:

When the plan of reinforcement has not yet been applied and it is necessary to face the enemy with reduced means.

When, with reinforced means, powerful action of prevention or retaliation is possible.

The first chapter of the second part deals with *destruction actions,* which should always be used to *wear down the enemy,* no matter what the situation of the front may be.

PART I

ORGANIZATION OF THE DEFENSE

1. The aim of the defense of a front is:

To insure the integrity of the front by economizing one's own forces while constantly destroying those of the enemy.

When this aim has been realized throughout the defensive fronts, the commander will be able at his pleasure to effect the selection of the forces for resuming the offensive on the fronts and on the dates of his choice.

2. The *requisites* of a good defensive are accordingly:

(1) Formation of the troops in depth so that the flexibility of the formations will permit concentration at the points menaced or attacked and yet allow a permanent destructive action against the enemy.

(2) *Defensive organization of the ground* so as to minimize the effect of hostile fire, to keep our losses less than those of the enemy, and to support the resistance of the troops and their maneuvers by fortifications.

(3) Intelligence research to inform the command of the plans and movements of the enemy.

(4) Plans of defense, indicating the organization and action of the defense for various situations and the precautions for insuring the proper application of these plans.

CHAPTER I

FORMATION OF THE DEFENSIVE TROOPS IN DEPTH

I. Necessity for a Depth Formation.

3. It is necessary to form the troops in depth during periods of stabilization and periods of combat.

4. A. During the periods of stabilization the troops are disposed in depth for protection against hostile fire and local attacks. It gives the best *protection against fire by decreasing the visibility and vulnerability of formations.* Natural cover can be utilized and the objectives we offer the enemy (personnel and materiel) can be spread over a large area. At the same time it is a *protection against local surprises* as it enables

reinforcements to be brought up rapidly and fire to be concentrated on the points that the enemy may attack without a warning preparation.

5. B. During periods of combat troops are disposed in depth for insuring defensive maneuver, that is, action by fire and action by movement.

(*a*) Action by fire consists of *counter-preparation fire* for breaking up the enemy's formation at the moment of attack, and *barrage fire* for breaking up the enemy's formation during its advance. The value of these fires depends on concentration and flanking, which are obtainable only by disposing the materiel judiciously in depth.

It should be possible to furnish the above fires at all times and continuously, even if part of the personnel and materiel is subject to an effective neutralization fire from the enemy or is menaced by a momentary advance of the hostile infantry. A formation in depth is indispensible for the above.

(*b*) Action by movement is intended for throwing back the enemy from those parts of the defensive front where they may have gained a hold, and whose solidity must be assured. This is the object of:

Immediate counter-attacks by infantry only. These are executed by fractions somewhat to the rear of the front and held ready to retake the ground captured by the enemy before he has time to organize this ground.

Counter-attacks or counter-offensives with artillery preparation or accompanied by tanks, executed by units not engaged in the combat. These units are to advance toward their objectives by passages assigned to them, and are to prepare for their entry in line under good conditions, espcially with respect to artillery and aeronautic liaison.

These general counter-attacks or counter-offensives should be launched *as soon as possible*. Complete preparations and plans for these counter-attacks should be made beforehand[1]. These counter-attacks will be more effective in proportion as they include the element of *surprise*. This implies, in addition to rapidity, a combination of frontal actions with flanking actions on the zone into which the enemy has penetrated or on the part of the front adjacent to this zone.

The infantry should therefore be disposed in the following manner:

Troops on guard, defending the advanced lines on the spot[2],

[1] For the preparation of counter-attacks see paragraphs 52, 53, 57 and 59.

[2] For the definition and purpose of the **lookout line** and the **main parallel** see paragraphs 39 and 40.

and *safety garrisons* for defending the main centers of resistance and strong points in the parallels of the various positions.

Support troops, stationed behind and as near as possible to the troops on guard so as to be ready for immediate counter-attacks.

Available or reserve troops, stationed considerably farther to the rear, ready for general counter-attacks or counter-offensives that include artillery preparation and accompaniment or tank accompaniment. Some of these reserve troops may not be assigned a mission beforehand for the counter-attacks or counter-offensives. In this event they will be reassigned to an assembling point to provide against an alert, and will be informed of their later use. They will enter action from this assembling point according to the situation and will always await an order from their superior authorities before moving. Their commanders should not hesitate to demand this order.

II. The Formation.

DISTRIBUTION OF THE COMMAND AND TROOPS.

6. The foregoing paragraphs have dealt with a formation for the special purpose of a *defensive* (use of fire and troops based on the assumed plans of the enemy). It was shown that the solution of the defensive formation is intimately based on the good use of the ground. The actual formation is based on a combination of these considerations and the *active* provisions by which the *command should always seek to destroy the enemy* (provisions for putting into action the infantry, artillery, aeronautic service, etc.).

General Formation, According to the Formation of the Ground.

7. A. *The ground* plays an extremely important role in the defensive. It has an intrinsic value even before it is organized. This intrinsic value depends mainly on *the flanking facilities, the observation, and the communications*[1]. The commander will seek to rest the entire formation on those positions which by their topography offer:

Flanking bastions permitting the most powerful fire of all arms, that is oblique and enfilade fire.

A system of observation posts which gives the superiority of observation over the enemy as well as good observation within the position, and permits terrestrial observation to complete or replace aerial observation.

Convenient communications, already existing or to be built, which will make possible the rapid shifting of troops and materiel.

[1] See the **Instruction on the organization of the ground,** paragraphs 13 to 16.

These elements, however, will rarely be united for the various parts of a front where the defensive will often result from the fact that the enemy will have realized the above advantage to his profit. The commander will remedy the faults of his advanced positions by the choice of other positions farther to the rear.

8. B. *Positions*, disposed in depth, will form the frame-work for the formation, even before any order has been given for their defensive organization.

9. (*a*) *The first position* will be the ground where contact has already taken place with the enemy (or will be planned when a covering formation is to be organized). For this position the command will be handicapped by the pressure of emergency or of the enemy. However, it should always try to realize the conditions enumerated in paragraph 10 below.

During the combat periods it will choose the objectives of the counter-attack and counter-offensive so as to benefit by a good zone of observation posts, covered by the infantry within supporting distance. In periods of stabilization it will not hesitate to modify, if necessary, the situation of contact with the enemy so as not to be forced to linger or immobilize in unfavorable parts of the ground.

10. (*b*) *The second position*, chosen and occupied under the protection of the first, will be able to realize all of the above requisites under much more satisfactory conditions. In establishing or improving the second position, try to *insure* the *best observation facilities* (superiority of observation over the enemy, good observation within the position) and to cover the region of the observation posts by pushing the infantry organizations far forward.

The second position should be far enough from the first to be safe from an artillery preparation directed on the first (6 to 8 kilometers).

11. (*c*) *The third position, the fourth, etc.*, will fulfill similar conditions.

12. (*d*) *Intermediate positions* will be organized between the main positions when necessary and when the ground permits.

Bretelle positions will be formed to retain the continuity of the front in the event that the enemy breaks through at one or several points. These positions should be oblique to the front so as to avoid salients with respect to the positions parallel to the front. They will follow the natural cuts of the terrain as much as possible. Their purpose is not only to con-

ceal the breaches opened by surprise, but especially to serve as bases of departure for the counter-attacks intended to re-establish the situation by combined actions on the front and on the flanks of the zone of penetration of the enemy. They should be fixed in a general plan that gives for each hypothesis of attack a front on which it will be possible to check the enemy.

At all events, the defense should use the ground, not only within each position, but also between the different positions.

13. C. The general formation of the troops for the various positions will be determined by the commander for:

The *troops on guard* in the first lines of the first position.

The *support troops*, intended, as a rule, for immediate counter-attacks on the first position.

The *reserve troops*, who are to execute counter-attacks with artillery preparation on the first position or who are to maneuver on the different positions.

The *safety garrisons*, who are to occupy the main centers of resistance of each line or position in the event of an alert.

The *artillery, aviation, engineers, cavalry* and other means used for the defense.

This general formation—corresponding to the missions and ideas of maneuver, and, to a certain degree, independent of the effectives and composition of the units—will always permit the high command to maneuver.

It will be possible to fight from the first position; to break off the combat and attack the enemy when he advances in the open at a disadvantage; or to fall back voluntarily to a rear position and thus take advantage of the resulting delay to the enemy's attack.

14. D. *The position at which the resistance is to take place* is defined by the high command, which alone has authority to prescribe the general form of defense to be adopted.

No matter what the position is, the mission of the units defending it is to insure its integrity.

When the high command indicates in its plans or prescribes an order that the combat be broken off on a forward position and shifted to a rear position, it should determine accurately:

The nature and duration of the defensive actions devolving on the troops on guard or in support in the forward position and the use of the forces and means to be applied to the defense of this position—in order to cover the bringing up of the reserve troops to the rear position.

The bringing up of the reserve troops and means to be used for the defense of the rear position, the liaison with the troops on guard and in support in the forward position, and their mission to enable the latter to fall back.

The measures to be taken for the orderly evacuation of all supplies and materiel from the forward position.

General Distribution of the Command and Troops.

15. A. *The division of the front into sectors* completes the designation of the different positions. It is the basis for the distribution of the troops at the different stages of defense.

The C. P.'s of the commanders of sectors or divisions of sectors should be planned and determined by the commander at the same time as the sectors themselves. The C. P.'s are chosen so that each commander can effectively direct the defense, especially:

By the observation of the ground.
By his use of the reserves.
By his use of the artillery, or his liaison with it.

The limits of the sectors (and divisions of sectors) should be prolonged on each side of the first lines so as to aid the infantry in its action in depth and the artillery in adapting its fire to the formation of the infantry that it is to support and cover.

16. (*a*) *A sector* is a part of a defensive front determined by the commander so that its defense will be *united* and *certain*. It should have *flanking positions*, *observation facilities*, and *communications*. It should lend itself to the maneuvering in depth of a tactical unit equipped with the various means of defense.

As a rule the front should be divided so that, *during the period of stabilization*[1], *the defense of each sector devolves on one division of infantry*, the division being the unit of defense just as it is the unit of attack[2].

During the period of combat the occupation of the sector will be reinforced when necessary by the army corps which contains a variable number of divisions. This reinforcement is such that, in an important battle, the average front of the division is 2,000 to 4,000 meters.

17. (*b*) *A defensive zone* is a combination of several sectors

[1] There is no **average front** nor **theoretical front.** On ground favoring defensive maneuvers and where the advanced posts offer great opposition to the advance, the front of a defensive sector may be increased considerably.

[2] See **The Instruction on the offensive action of large units in battle,** paragraph 33.

for the purpose of combining their defense under a single command. A defensive zone comprises 2, 3 or 4 sectors, and in a period of stabilization is usually planned under an army corps commander.

Several army *corps defensive zones* form an *army defensive zone.*

In periods of combat these zones are made more dense by reinforcements.

18. (*c*) *A sub-sector* is a part of a sector, determined by the character of the ground and favoring the maneuver of the troops stationed there under one command. In a period of stabilization the defense of a sub-sector is insured by a regiment of infantry.

19. (*d*) *A quarter* is a part of a sub-sector and in a period of stabilization corresponds to a battalion supporting point[1] in a sub-sector having several battalions on line.

20. B. *The general distribution of the troops* between the defensive zones, sectors, and sub-sectors depends essentially on the local situation and *continually* varies. The more it is necessary to adhere to the subdivision of the terrain, the more the command of all echelons must be accustomed to change the density of its occupation according to the developments of combat. This is the characteristic of maneuver on defensive fronts. The general principles of distribution can apply only to the stationing of the units with respect to one another.

21. (*a*) *The arrangement of units side by side* is advantageous for large units from the point of view of actual defense and of exercising the command. The units will always be on the same ground, will know the ground thoroughly and will have an interest in organizing it.

An army corps will, therefore, have its divisions side by side and a division its regiments[2].

This distribution, however, has the disadvantage of not facilitating the rest or the instruction of the entire unit (command and troops) and of depriving the command of available troops in the form of constituted divisions or regiments.

The high command will often need to intervene and inform

[1] A supporting point can thus correspond to a sub-sector (for a regiment having one battalion on line), or to a quarter (for a regiment having several battalions on line). In all cases the action of defense troops in depth with artillery co-operation is facilitated by prolonging the limits of its sub-sector or quarter on each side of the front of the supporting front.

[2] This principle does not apply to small units which should be organized in depth as much as possible to facilitate resting the troops and counter-attacking. The best arrangement for a regiment, therefore, is to have its three battalions in depth, one in line, one in support or reserve, and one at rest.

the subordinate commanders of the conditions to which the formation of the troops should comply, such as facilities for rest, instruction, or organization of the general reserves.

22. (*b*) *The organization of reliefs* is of great importance during a defensive battle.

In periods of stabilization, it should take care of the rest and instruction of the different grades of officers and troops, without the personnel becoming less hardened to danger and less skilled in combat. With this in view it is necessary that at certain times the divisions, with all their elements, be placed to the rear, preferably in instruction camps, for a period of two weeks or a month. They are then sent back to the sector. This also applies to non-divisional elements from the army corps and to the elements from the army[1].

In periods of combat the reliefs should take place before the combatants are physically and morally worn out and before the losses are too great. These will constitute new available troops after a short stay in the second line. During these periods it is a hazardous and difficult operation to relieve the troops. The command removes these difficulties by prescribing the establishing of contact between the staffs and the intelligence services, the execution of reconnaissances by the staff and officers, the halt of the troops entering the second line for the purpose of acclimating the troops before entering the first line, staking out the routes, use of guides, the regular transmission of all the records, various orders, and materiel.

The army and army corps staffs take part in the reliefs only in exceptional cases, but they should carefully supervise them to avoid useless fatigue to the troops and the subordinate staffs and to enable these to enter battle under the best possible conditions.

Distribution of the Infantry.

23. The distribution of the infantry is based on the following principles:

In the defensive as in the offensive, the *main action of the infantry lies in movements;* all its echelons should therefore have strong reserves for insuring counter-attacks.

Beyond a certain limit, an increase in the density of occupation of the ground does not increase the strength of defense, but exposes it to increased losses. The first lines should be

[1] Part of the rest and instruction periods can be used for extending the defensive organizations. It is indispensable, however, that these works be erected according to the **instruction on the organization of the ground** (paragraphs 125 to 129).

When so organized, the work periods, short as they are, are extremely efficient and help to instruct the officers and men.

guarded by a minimum of personnel and a maximum of materiel that can furnish powerful fire (machine guns, automatic rifles, rifle grenades, light guns, etc). *The intense use of these weapons enables the infantry to wear down and destroy the enemy in periods of stabilization as well as in periods of combat.*

In all periods, stabilization or combats, the disposition of the troops in depth should enable the high command to develop the defensive actions at the position it has chosen, and if it decides to break off combat in a forward position, it will favor the timely and orderly withdrawal of the troops, supplies and materiel.

24. A. *In periods of stabilization* the probabilities to be considered are that the enemy will undertake operations with limited objectives and restricted fronts. These will be made by surprise with rapid preparation or will be accompanied by artillery fire, gas, or tanks, for isolating or destroying our first lines.

The composition and formation of the support or reserve troops in the first position should prevent the destruction or capture of the first line troops, should guarantee the retention of the main supporting points by means of safety garrisons, and should prepare for the immediate retaking of lost ground. The support and reserve troops of a sector or sub-sector not attacked may be used for the aid of an adjacent sector or sub-sector.

The permanent occupation of the second position will uselessly wear down the troops. It will usually be sufficient to have a certain number of reserve units near enough to assemble there in the event of an alert. The units which are to furnish the safety garrisons should be the first on the alert.

Special units are permanently designated for *bretelle positions* during an alert. These units are to stop up the breaches that may have been caused by a surprise attack, then to counter-attack the enemy who enters these breaches for the purpose of extending them laterally.

The infantry forms its weapons in depth (especially machine-guns, combining frontal fire with indirect fire) not only for checking the enemy during attacks and for flanking the various lines of defense (including the bretelles), but also for attacking them by harrassing fire reaching his trenches, rest positions, materiel depots, assembling points and batteries.

25. B. *In periods of combat,* these arrangements must be modified. The width of the menaced front and the depth of the zone swept by the hostile artillery can, from the beginning of the preparation, prevent all relief by the reserves of other sec-

tors and hinder if not entirely prevent all reinforcements from the rear toward the front.

Usually the density of the troops in the first line will not be changed, since they should be able to face an attack at all times. If the fronts have been extended excessively it will first be necessary to draw the lines in so as to bring the first line units to the density which is necessary for insuring the defense.

In all events, *the reinforcements will be drawn from the reserve units* for the counter-attacks and reliefs. The reserves will be brought up for the second position as well as for the first. Others will be brought up for the bretelle positions to protect them, then to counter-attack.

When a very powerful attack is imminent, the high command may decide to engage the troops only in the second position. In this case, the first position will not be reinforced and the reserve troops will be sent to the second, *the troops on guard or in support in the first position should not decrease the strength of their defense.* The resistance that they offer will be invaluable for allowing the troops to the rear sufficient time for assembling and organizing. This time varies, the high command alone being in a position to determine its length. The high command alone may order the withdrawal of certain troops, supplies and materiel.

Until such an order is given by the high command, *it is the duty of the units to hold their positions at all costs.*

Distribution of the Artillery.

26. The distribution of the artillery should make it possible to:

Reach the enemy at all times in his vital points.

Hinder and even suppress the offensive preparation before it is launched.

Facilitate, in case of an attack, the rapid restoring of an advantageous equilibrium.

The distribution of the artillery is therefore made with a view to the *counter-preparations* and *barrages* having a strictly defensive character and to the *actions of destruction against the active forces of the enemy,* which should give the defense an active character. It should cover the various lines of defense and support the counter-attacks, not only for the positions parallel to the front, but also the bretelle positions.

27. A. *Command and general distribution.* All the artillery at the disposal of one echelon of command (division, army corps, army) is grouped under the orders of one commander.

The calibers are distributed so that each unit has the batteries that normally work for it, and the superior units have those batteries that can cover several sectors or zones. The arrangement is such that the greatest possible number of batteries can intervene for those troops that are in need of them.

The commanders of sectors (usually division commanders) have at their disposal:

The divisional light artillery, usually reinforced by some group of light artillery.

Trench artillery.

Heavy howitzer batteries (1558, 220, etc.).

Special anti-tank artillery.

The commanders of army corps have available:

Certain groups of light artillery that they retain under their direct orders.

Heavy long guns (95, 105, 120, 155).

In special cases, certain batteries of heavy howitzers.

The commanders of armies have available:

High-power heavy artillery.

Anti-aircraft artillery.

The above distribution is not rigid and may be modified by circumstances.

There should be no dead zones between sectors, army corps, and armies. On the contrary, all batteries should be prepared to concentrate on the menaced front, no matter to which group they belong. The army heavy artillery and the army corps heavy artillery should intervene for the army corps and the divisions and should be prepared to do this rapidly.

With this in view, the army heavy artillery is divided into groups or sub-groups, each of which covers two or three army corps or more. When necessary these groups or sub-groups are assigned to the army corps, which command them as if they were their own batteries. The army commander intervenes only in the case where several army corps use the same batteries. He distributes the fire to the best advantage.

28. B. *Distribution of objectives.* The objectives are distributed to the various groups, sub-groups, battalions or batteries by means of *normal zones of action and possible zones of action*[1].

The preparation of the fire should be made beforehand. This includes the preparation for the possible fire on our own

[1] According to similar principles given in **"Instruction on the action of large units in battle,"** paragraphs 73 to 75.

positions in the event the high command gives an order for falling back or in the case of a large hostile advance.

29. C. *Distribution of emplacements.* The emplacements are fixed by the tactical missions, that is to say:

For the light artillery, by missions of barrage. The batteries of light artillery for each sector will be partly echeloned in the sector itself to facilitate setting up barrages for any emergency and part of the batteries will be stationed in adjacent sectors so as to combine frontal and enfilade fire. Some batteries should cover the first position and the ground to the rear of the first position, especially between the bretelle lines, in case the enemy breaks through our lines. All batteries should be able to concentrate their fire and with this in view have an extended field of fire. When necessary, some batteries will have two emplacements, by which the fields of fire will be made continuous[1].

For the heavy howitzers, by the necessity of operating under favorable conditions, not only against the enemy's first position, but also beyond this position, and by the need of having the maximum horizontal field of fire.

For the heavy long guns, by the necessity of being able to reach the most distant hostile batteries, and yet keep the fire echeloned in depth. The heavy batteries will often be brought as far forward as the light artillery and even beyond.

Each battery (light or heavy artillery) should be provided with several emplacements organized in advance, provided with an emplacement record[2] and connected by telephone to the observation posts. *When necessary part of these emplacements may be occupied by the reinforcement batteries,* especially those emplacements permitting fire on the first position and on the friendly ground between the main bretelles of the lateral defenses.

The emplacements will be chosen so as to conceal the batteries from hostile terrestrial or aerial observation. Bottoms of valleys will be avoided as gas accumulates there. Emplacements will be carefully camouflaged.

A battery emplacement that is definitely abandoned can be advantageously used for a false battery. It may be temporarily occupied by a piece or be made to appear active by false flashes.

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[1] This condition may be necessary because of the casemate limits or because of the disadvantages of having too conspicuous a clearing in front of the gun in covered terrain. These two emplacements should be combined with many others so as to conceal the true emplacements from hostile observation.

[2] The emplacement record (firing board and notebook) belong to the emplacement and not to the battery. They should always be handed down to the relieving unit. If an emplacement is vacated the emplacement record is turned over to the artillery commander of the sector.

Distribution of Aeronautic Service.[1]

30. The distribution of the aeronautic service will depend on the missions to be fulfilled: *Offensive missions or missions of observation and liaison.*

(*a*) *The offensive mission* of the aeronautic service cover all periods—stabilization or combat. They are executed by *combat groups* and by *bombing groups*, both of which are elements of the groups of armies, partially at the disposal of the armies.

(*b*) *The missions of observation and liaison* are also permanent and comprise:

Missions of *control and intelligence* executed by the army squadron and by the army corps aeronautic service. In the defensive these missions are to insure the safety of the large units by discovering impending attacks.

Distant reconnoitering (army squadrons) for following changes in the enemy's territory and the rear installations of the enemy (stations, aviation grounds, depots).

Close reconnoitering (army corps aeronautic service) for following the organization of the ground of attack by the enemy and the reinforcement of his artillery.

Missions of *fire control* executed by squadrons and balloons of the army corps high-power heavy artillery and of the heavy artillery.

Missions of *liaison* executed by squadrons and balloons of army corps or division.

The aeronautic commanders of the group of armies, armies and army corps will insure the use of the various aeronautic units and the co-ordination of their efforts.

Distribution of the Anti-Aircraft Defense.

31. The mission of the anti-aircraft defense is to destroy the hostile aircraft or at least to hinder them in their mission.

Balloons will be kept far from the lines by artillery fire and at a low altitude by pursuit avions.

Control avions will be kept at a distance by machine gun fire and by the anti-aircraft artillery and will be attacked by low patrols of combat avions.

Reconnoitering avions will be fired at by the anti-aircraft artillery and pointed out by it to the high patrols of combat avions, who will prevent these from crossing the lines or from accomplishing their purpose.

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[1] See Chapter IV. of the **Instruction on the offensive action of large units in battle.** This chapter gives the use of the aeronautic means available on a defensive front.

The anti-aircraft defense will at all times, night and day, defend the rear against aerial bombardment.

32. A. *Command and general distribution.*

The above missions are fulfilled by the anti-aircraft artillery, machine guns and searchlights constituting the organs of the anti-aircraft defense, and the pursuit squadrons, chosen from the pursuit squadrons of the groups of armies or from the army aeronautic service.

The commander of the army is the commander of the army anti-aircraft defense. He co-ordinates the action of the anti-aircraft defense with that of the aviation service. He insures liaison between the army anti-aircraft defense and that of the adjacent armies, with the general headquarters and with the anti-aircraft defense of the zone of the interior. He decides all the measures for the passive defense.

The army chief of staff fixes the system of electrical liaison of the army anti-aircraft defense.

An officer attached to the army artillery staff (chief of squadron or captain) commands the units assigned to the anti-aircraft defense, but is under the authority of the army artillery commander, semi-permanent posts and sections, auto-cannon sections, searchlights; the searchlights are grouped under the command of a specialized officer, such as a lieutenant of the auto-searchlight sections of the army).

A commander of the defense sector is chosen among the commanders of the auto-cannon sections, for exercising the command in each *defense sector* over all of the means in that sector (guns, searchlights, lookout and alert service). Each defense sector should correspond as far as possible to the zone occupied by one or several large units or to a group of points well within the real zone.

33. B. *Detailed organization.*

(*a*) *The anti-aircraft artillery includes* sections of 75 mm. automobile guns and semi-permanent sections or posts. The automobile gun sections usually have a night position and one or more day positions nearer the lines. The semi-permanent units occupy isolated posts, excavated when possible, farther forward and are used mainly against fire control avions.

Certain army corps batteries may be designated by the command to fire on avions flying low.

(*b*) *The searchlights* put at the disposal of the anti-aircraft artillery are fixed searchlights. There is no advantage in having a rigid distribution. Frequent changes in position keep them from being discovered by hostile aviators. Isolated searchlights should be avoided; the groups should contain as many searchlights as possible.

(*c*) *Machine gun companies* are attached to the general system of anti-aircraft defense for protecting the first lines against avions flying low and for protecting important points in the rear. These companies include machine gun companies for position, and machine gun companies chosen from the territorial units. They receive their orders from the commander of the army anti-aircraft defense, with whom they should be connected by telephone.

Billets will be defended by the machine gun units of the protecting balloons.

Billets will be defended by the machine gun units of the troops billeted, under the direction of the commander of the billets.

The commander will use the machine guns and rifles of the active or territorial units against avions flying low.

(*d*) *Lookout and alarm service.* All posts of the anti-aircraft defense are lookout posts. The passage of aircraft over the lines should immediately be reported to the group of combat squadrons and to the organs of the anti-aircraft defense.

(*e*) *Electrical liaison.* In each army the liaison of the anti-aircraft defense is established according to a plan by the army chief of staff. The system is a combination of telephone lines and wireless posts.

The wireless is used to give the general alert by giving the number of hostile avions and their characteristics.

The telephone is used for the interior liaison of the defense sector and for completing the information sent by wireless.

Distribution of the Anti-Tank Artillery.

34. A number of 75 mm. guns are put at the disposal of the armies, to be used especially against tanks. They are stationed so as to sweep all the zones by which the tanks might penetrate our lines. They should be placed for short-range direct fire (1,500 meters average). Flanking directions of fire are to be sought, as they increase the zone of action. Bretelle positions usually offer the best fire emplacements.

As a precaution against premature destruction, these pieces should not be stationed in the most advanced parts of the organizations and should be concealed from hostile view.

The special anti-tank artillery is a permanent organ for the defense of a front. It is under the orders of the army corps artillery commanders in the army corps zones, not exceeding four or five kilometers of front. It is under the orders of the divisional artillery commanders when the zones of the army corps are wider.

In the event of a hostile tank attack, the *special artillery* and the other artillery of all calibers combine their actions for stopping and destroying the tanks, according to the plans of counter-preparation and plans of barrages. Special measures are to be taken for sweeping hollows. The emplacements are chosen beforehand and prepared so that the pieces, brought up by hand or teams, can sweep these hollows with direct fire.

Distribution of Engineers.

35. The engineers are used for works of combat (mines, destructions, etc.) and works of organization[1]. The engineer troops should be used by groups of companies, by single companies, or at least by tactical fractions that are well officered. Avoid using these units for the elementary tasks that the infantry itself can perform.

Distribution of the Other Arms and Means of Defense.

36. The distribution of the other means of defense (especially the gas groups) is determined by the momentary situation and cannot be made the object of any general principles.

CHAPTER II

ORGANIZATION OF THE GROUND.

37. The commander and the troops should immediately organize the successive positions on which the defensive maneuver is based. They should:

(1) Improve the following natural characteristics of the ground by special works or organization: Flanking facilities; observation and communications.

(2) Construct supplementary works that will reinforce the improved natural characteristics of the ground: Liaison, cover, and obstacle.

The preparation and execution of these works, dealing with the *infantry, artillery* and the *advance means of defense* should conform to the rules laid down by the *Instruction on the organization of the ground for the troops of all arms.*

The installation of the *aeronautic service* (landing field and parks) and of the Service of the Rear (normal and metric railroads, depots and stores for the various services, evacuation hospitals, etc.) is based mainly on offensive considerations and is determined by the Commander-in-Chief. It is realized by the works for the offensive preparation of the fronts as

[1] See the **Instruction on the organization of the ground,** paragraph 137.

indicated in the *Instruction on the offensive action of large units in battle*[1].

INSTALLATION OF INFANTRY.

38. The framework of each position comprises:

(*a*) The main parallel.
(*b*) The lookout system.
(*c*) The support parallel.
(*d*) The redoubt parallel.
(*e*) The communications, surface and underground.
(*f*) Bretelle lines.

39. (*a*) The *main parallel* is the base of the entire organization. It constitutes the *line of resistance for the troops on guard and the normal objective of counter-attacks by the support or reserve troops echeloned on this position.* The determination of its emplacements is of the greatest importance and should not be left to the chance situation at the end of combat or to the initiative of the combatants. It is ordinarily decided by the army commander.

In addition to the normal requisites of flanking facilities, cover and obstacle, this position should:

Cover the important points of the ground (observation posts), and be sufficiently far from the enemy so that our artillery may carry on its counter preparations and barrage fires with the greatest rapidity and effect.

Be organized so that the important points can best escape or resist the enemy's artillery and minenwerfer; in other words, be defiladed from the views of the enemy as much as the tactical situation allows.

Comprise only small and shallow shelters (large, deep dugouts that may trap the occupants are absolutely forbidden) and should have a combat organization for these shelters that permits an instantaneous alarm of the personnel[2].

This precaution against deep dugouts also applies to the cover parallel.

40. (*b*) The *lookout system should check the enemy's patrols,* and *give the alarm in case of an attack,* so that the artillery can set up the barrage and the infantry leave their shelters and take their combat positions in time. This system comprises either *isolation posts* that are carefully concreted or a *lookout parallel.* The lookout parallel is connected to the

[1] Paragraphs 102 to 104.
[2] See the **Instruction on the organization of the ground,** paragraphs 67 to 70.

main parallel by communications well swept by our fire or by underground communications. It is included in the system of auxiliary defenses covering this parallel.

Exact orders by the army commander determines the procedure for the infantry of the lookout position (holding the ground or falling back to the main parallel) and for the barrage artillery (the barrage line may be fixed immediately beyond the lookout line or immediately beyond the main parallel. The barrage may be set up at first immediately beyond the lookout line, then brought back beyond the main parallel after the infantry in the lookout line has fallen back).

41. (*c*) The purpose of the *support parallel* is to shelter the suport troops, to form a line of resistance in case the main parallel be momentarily lost, and to furnish a base for their counter-attacks. The support parallel should be fairly distant from the main parallel (about 200 meters), so as not to be included in the zone of dispersion of the same fire; not to be taken by the same surprise action; and so as to be within range for immediate counter-attacks by grenade and bayonet. It comprises *bombproof shelters*, organized for combat and as a guarantee against surprise[1]. It is advantageously covered at a short distance by a cover parallel.

42. (*d*) The *redoubt parallel* serves the same purpose as the support parallel; it also *covers the artillery*. The redoubts should be connected by a continuous parallel.

43. (*e*) *The surface and underground communications*[2] permit, in addition to their essential role of safe circulation—the defense to be improved and completed. These serve as the framework for the *partitions* (defensive organizations perpendicular to the front) which localize the advance of the enemy; limit their advance, and serve as a base for counter-attacks on the flank.

44. In addition to the above, it is necessary to organize:

(1) *Bretelle lines*, fulfilling the conditions indicated in paragraph 12. These lines are supported as much as possible by *natural features* of the ground. They may be constituted by partitions the framework of which is formed by surface communications.

(2) *The numerous combat emplacements outside of the general system* of parallels and approach trenches (especially for machine guns[3]). These organs are extremely important for the defense.

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[1] See the **Instruction on the organization of the ground,** paragraphs 67 to 70.

[2] See the **Instruction on the organization of the ground,** paragraphs 47 to 55.

[3] See **Instruction on the organization of the ground,** paragraph 23.

(3) *The dummy trenches* are designed to deceive the enemy and at the same time furnish elements of organization which, after being deepened, may be used for the defense[1].

INSTALLATION OF ARTILLERY.

45. The installation of the artillery should correspond to the tactical situation and should:

Permit the successive defense of the various infantry lines by the artillery.

Reduce the vulnerability of the batteries as much as possible.

Lend itself to a *rapid reinforcement* in case of an attack.

This last condition is especially important. Most of the supplementary emplacements are built farther to the rear, so as to be occupied even during the hostile preparation and to permit fire on the lines that are momentarily lost before the reinforcement takes place.

The artillery organizations are intermingled with those of the infantry, so as to profit by the defense of the latter. Moreover, when there is a possibility of an infantry attack on a battery, the battery should be organized for close defense[2].

COMMUNICATIONS—LIAISON—SUPPLIES.

46. The organizations for facilitating communication, liaison and supplies are also very important[3].

The commander should carefully supervise their preparation and execution.

He supervises the assembling and renewing of the materiel (individual and collective) for *protection against gas.*

He prescribes measures for the evacuation of supplies and materiel of the advanced positions in the event that the high command orders the combat to be broken off from these positions or in the event of an important hostile advance.

Special orders for occupying the ground and using the communications and passages under the action of persistent gas.

47. The commander should take all the necessary precautions for avoiding, within the limits of the tactical requirements,

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[1] **See Instruction on the organization of the ground,** paragraph 60.

[2] See the **Instruction on the organization of the ground,** paragraphs 88 to 92, and the **Instruction on the organization and construction of batteries.**

[3] See the **Instruction on the organization of the ground,** paragraphs 38 to 46, for communications and paragraph 56 for the liaison.
For the Liaison see the **Instruction on Liaison.**
For the supplies see below, paragraph 65.

the stay or prolonged maneuvers of the troops in the zone infested by persistent gas (blister gas[1]). These measures deal with:

The total or partial evacuations of the zones usually infested.

The temporary closing of these zones and the placing of signposts on the roads leading to them.

The precautions to be taken in the zones adjacent to the evacuated zone for the purpose of guarding them in the direction of this zone and for planning the reoccupation of this zone.

The neutralization of the gas in the affected zones or passages before resuming the circulation.

The procedure of the circulation reliefs, and the counter-attacks by passages that are least exposed to bombardment.

The intelligence service should discover an intended bombardment on a given zone by blister gas. The bombardment zone will usually be one that the enemy wishes to *neutralize*, either on the edge or to the rear of the points of attack that he has chosen.

When such an attack is immediate the command should prepare for a counter-preparation, and for launching counter-attacks by the passages least exposed to the action of gas.

DEFENSIVE ORGANIZATION AGAINST TANKS.

48. In addition to the active defense by artillery, obstacles should be constructed to halt tanks or lead them into zones that are well swept by our artillery fire. For this purpose improve natural obstacles first. Then build artificial obstacles wherever possible, especially at compulsory points of passage. The frontal organization should be combined with oblique organizations, constructions in bretelle perpendicular to the front, and partition constructions. These organizations[2] will be advantageously arranged on a reverse slope so as to be concealed from the enemy's view and better protected against his artillery.

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[1] See **"Note to the Armies,"** No. 16064, of December 16, 1917.

[2] Forests of full grown trees widely spread or of thickets less than ten years old do not by themselves constitute absolute obstacles. They should be reinforced by abatis of large trees, which form an almost impassable barrier.

A stream with a firm bottom is no obstacle at all unless the water is one meter deep. A deep swamp effectively halts tanks.

A slope should be cut with a sharp vertical wall to a height of at least two meters in the direction facing the tanks and three meters in the other direction.

A wall will halt a tank only when it can withstand the powerful ramming action of this apparatus. This implies a strongly braced compact masonry construction (concrete).

A ditch is a serious obstacle only when it is at least two meters deep and four meters wide.

The intervals between these passive obstacles may be protected by mines. Special apparatus of this nature is put at the disposal of the armies.

DEFENSIVE ORGANIZATIONS AGAINST AERIEL BOMBARDMENT.

49. The personnel and materiel of all arms should be *sheltered* from aerial bombardment *while the hostile aircraft are kept under fire.*

The same constructions that protect these positions from terrestrial bombardment will protect them from aerial bombardment.

This does not apply to the construction outside of the positions, constructions to the rear, billets, camps, stations, warehouses, depots, field and permanent hospitals, etc. *Dugouts* should be built for the personnel and for part of the materiel of all these constructions. Materiel that is not sheltered should be *dispersed* so as to limit the effects of bombardment and fires that may result. *Camouflage* and *asymmetry* of the new constructions is absolutely necessary.

The army commander supervises the execution of the general instructions. He fixes the orders for the *extinction of lights.* He controls the anti-aircraft defense and furnishes it with the necessary personnel for manning the means of defense other than the artillery or machine guns put at its disposal (barrage balloons, smoke defense system, etc.).

ORGANIZATION FOR MINE DEFENSE.

50. There is usually no advantage in the defense's beginning a *mine war* that absorbs effectives incommensurable with results. The defense should, nevertheless, be prepared for a mine offensive by the enemy. Whenever conditions do not prevent the use of mines by the enemy, the front should be defended beneath the surface as well as above.

The underground is protected by a system of *listening posts* distributed over the front. The intervals between listening posts and the distance these posts should be pushed beyond the line depends on local circumstances. The enemy should not be able to enter the defensive system unheard; and when warned of his approach the defense should have sufficient time to meet and check him.

CHAPTER III

INTELLIGENCE RESEARCH.

51. In each defensive zone and sector the intelligence research should be organized on the same basis as in an offensive zone and sector, in conformity with the *Instruction on the offensive action of large units in battle*[1].

The army staffs study the *enemy's offensive possibilities*, planning mainly for a *surprise attack* with a short preparation. They will discover the indications of an intended hostile attack:

Constructions in the forward zone (parallels, approach trenches, assembling places, dugouts, preparations for the passage of troops and tanks).

Gatherings, movements and constructions in the rear zone, identification of new troops, changes in the sectors, new battery emplacements, activity by artillery, avions and balloons.

All the intelligence means and organs should be put into use for this purpose, especially:

Aerial reconnaissance (photographs of the forward zone and reconnaissances of the ground behind the front).

Raids and local attacks[2].

Questioning prisoners and study of captured papers.

Observations by the infantry intelligence service, the artillery intelligence service, and the aeronautic intelligence service.

Lookout on the roads and railways.

Use of special observers.

Listening posts, etc.

The transmission of intelligence to the command conforms to the *Instruction on liaison.*

The *lookout* and alarm service is especially important in the defensive and should be organized with the greatest care[3].

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[1] See the **Instruction on the offensive action of large units in battle:** Paragraphs 115 and 129: Organization of the service in the army; army corps and divisions.
Paragraphs 145 and 146: Object and procedure of this service.
Paragraphs 63 to 66: Artillery (aerial and terrestrial observation).
Paragraph 152: Aeronautic service.

[2] See paragraph 93 below.

[3] See paragraphs 97 below and paragraphs 67 and 68 of the **Instruction on organization of the ground.**

CHAPTER IV

DRAWING UP THE PLANS OF DEFENSE.

52. The command of all echelons should plan the use of the forces and means of defense, echeloned and distributed according to the above principles, and should make the *preparations for the defense* as complete as possible. The conduct of the combat will then be to adapt the proposed measures to the actual circumstances.

The above applies very closely to the *preparation of the counter-attacks.* By considering the probable actions of the enemy, the results of these actions in width and depth, and by studying the lines of the terrain, it is possible to *foresee* the form of most *counter-attacks*[1], the base of departure for each of these, and the effectives to be engaged.

Operations that are planned and prepared in great detail can be launched rapidly and under extremely favorable conditions because their objective is usually a fatigued enemy, not organized on the ground. It will then be necessary only to adapt the plans to the momentary conditions and to give the hour H.

Although general counter-attacks require bringing up important means and include actions of destruction and tank or artillery accompaniment, yet they can be launched almost as rapidly as immediate counter-attacks.

53. The high command (commander-in-chief and commanders of groups of armies) gives the general orders dealing with:

A. *The general distribution of the forces and means* assigned to a defensive front.

B. *Their normal use in a period of stabilization:*

Density of troops in the first position.
Offensive or defensive attitude.
Constitution of the general reserves at the disposal of the high command.

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[1] It is necessary to distinguish between:
(*a*) Immediate counter-attacks, to be launched automatically without the intervention of the command by designated units within regiments having precise missions, or by units under the divisional infantry commander.
(*b*) More important counter-attacks, planned and prepared in advance, but which should be launched only with artillery accompaniment and by an order from the command, at a designated hour H.

C. *Their use in a period of combat:*

Increasing the density of the menaced or attacked fronts; reinforcements by forces and means of all arms.

Economies to be realized for the benefit of the menaced parts; withdrawal of forces and means from parts not menaced.

Determination for each army of the principal zones of counter-attack or counter-offensive corresponding to the probabilities of attack and to the possible advances of the enemy:

Assembling points for the forces of all arms called upon to operate in these zones, army corps, cavalry corps, division of infantry or division of cavalry, heavy artillery, assault artillery.

Definition of the successive objectives for the various actions (especially, observation posts).

D. *The transportation to be provided:*

By roads.
By automobile trains.
By railways.

E. *The rear organizations*[1].

Railways: 60 cm. track and road systems.
Stations, warehouses, depots.
Evacuation hospitals.

F. *The procedure in the event the enemy falls back:*

Limit of the zones of action of groups of armies and of armies.

General formation of the forces and means.
Attitude for the engagements before the halting positions.
Mission of the aeronautic service (combat and bombing).
Mission of the engineers.
Extension of the railways and road systems.
Large units to be kept stationary or reformed to the rear.

54. The commanders of the army, army corps, division of infantry, cavalry corps, and division of cavalry draw up the following plans in so far as they concern their units, without entering into details pertaining to superior or subordinate units.

These *plans* should be simple, concise, should not repeat standing regulations and should explain the titles by outlines, diagrams and sketches.

They constitute an essential part of the *records* of the local command and, notwithstanding movements and reliefs, insure

[1] The rules laid down by the instruction of October 14, 1916, on the organization of communications for an offensive action are also applicable to the organization of communication for the defense. Only the choice and magnitude of the installations may vary.

the *permanence* of the command. The staffs of the large units hand these records over when relieved.

55. Each division *sector* of the front organizes a *sector permanency* service to insure the transmission of the records, orders and materiel. It comprises:

Officers detached according to the orders of the sector staff (especially charged with the general orders of the sector as dealt with in paragraph III of the plan of defense—general plan for using the defense troops).

Officers, non-commissioned officers or orderlies from the artillery, engineers, medical service, administrative service (records relating to ammunition depots, defensive organizations, billet constructions, depots of various materiel, water supply, roads, electrical installations, sanitation materiel, food stores, use of local resources).

A personnel of officers, non-commissioned officers, clerks and orderlies assigned to the staffs and services as needed.

This personnel is usually attached to the staffs and services relieving the sector. They keep the records of the sector under the supervision of the chiefs of staffs and services. On no account should this personnel be assigned a more important mission. They should not be expected *to insure the continuity of control in the execution of the plan of defense; this is essentially the duty of the command, which is held rigidly responsible for it.*

PLANS OF DEFENSE.

56. The *plan of defense* deals with the normal functioning of the defense with the means immediately available and before reinforcements has taken place (plan of reinforcement).

57. I. GENERAL SITUATION OF THE DEFENSIVE FRONT (General Intelligence concerning the enemy):

Mission and sector of the infantry division[1] (or of the defense zone of the army or army corps).

General conditions of the defense:

(*a*) Analyzing the ground.
(*b*) Possible hostile attacks.
(*c*) Possible counter-attacks.

Immediate counter-attacks, general counter-attacks or counter-offensives with artillery preparation or tank accompani-

[1] The context of the plans are given here for the division where the plans should be most complete. The army and army corps draw up plans with similar titles and headings, but they are usually less detailed.

ment; indication of those actions that should be studied and prepared in advance.

58. II. DEFINITION OF THE POSITIONS.

(*a*) *Disposition in depth* of the various positions parallel to the front and the bretelle positions.

(*b*) *Various lines* of the first position: Lines parallel to the front, lines in bretelle.

59. III. GENERAL PLAN FOR USING THE DEFENSIVE TROOPS.

(*a*) *Disposition of the defense troops:*

Troops on guard in the first position (lookout line and main parallel).

Support troops (support parallel).

Reserve troops (redoubt parallel, bretelles, second position, camps or billets).

Safety garrisons for the main supporting points of each line or position.

(*b*) Limits of the *sector* (or of the defense zone), regimental *sub-sectors*, and when necessary battalion *quarters*.

Parts of each position or line constituting combat or alert emplacements for each regiment or battalion.

Number of troops on guard, on support, or in reserve.

Detailed missions of the troops on guard (lookout line and main parallel), of the support troops (immediate counter-attacks), and of the reserve troops having their mission planned in advance in case of an alert (principally the occupation of the second positions and bretelle positions; the execution of counter-attacks and counter-offensives indicated in paragraph 1*c* of the plan of defense).

Mission of the units charged with covering the flanks of the sector (or the defense zone) and the liaison with adjacent sectors (or defense zone).

(*c*) *Summary of the forces and means* put at the disposal of the division (of the army corps and of the army).

Forces:

Infantry, artillery, aeronautic service, engineers, cavalry, gas and flame companies, territorial troops, native troops, divisional machine gun companies, special detachments of workmen, etc.

Means:

Normal and narrow-guage railways, automobile and wagon trains, ammunition and fireworks, engineer materiel, camouflage, sanitary and administrative equipment.

(*d*) *Plan of reliefs.*
(*e*) Positions of command posts.
(*f*) General precautions against gas.
(*g*) General precautions against aerial bombardment. Mission and role of the anti-aircraft defense.

60. IV. PLAN FOR USING THE ARTILLERY.

(*a*) *Organization of the command, groups, sub-groups:*

Adapting the artillery distribution to that of the infantry.
Distribution of mission and objectives.
Normal and possible zones of action.
Co-operation of the groups with one another and with the artillery of adjacent units and of superior units.
Observation (list of terrestrial observation posts with their missions—alternate observation posts and false observation posts—distribution of the means for aerial observation, maps of the zones under observation and not under observation by ground or balloon O. P.'s—battle maps showing the O. P.'s and balloons covering each square of the map—extract of the O. P. dossiers—reconnaissance and distribution of O. P.'s to be occupied in case the troops fall back).
Liaison (map of the means of liaison between the O. P.'s, balloons, wireless aerials, artillery intelligence service, terrestrial observation section of intelligence research, sound ranging sections, command posts, batteries).

(*b*) *Distribution of emplacements.*

For the artillery assigned to the unit and stationed on the sector (or defense zone) and stationed on adjacent sectors (or defense zone).

For the artillery of other units that is to be stationed on the sector (or defense zone).

(*c*) *Direction concerning the emplacement records* (lists of co-ordinates, firing boards, firing notebooks, etc.)

(*d*) *Directions for the installation and functioning of the meteorological service.*

(*e*) *Plan for the destruction fire:*
On batteries.
On the defensive organizations.
On troops.

(*f*) *Plan for the harassing, prohibitive and reprisal fires:*
On communications.
On billets or assembling places.
On organizations and batteries.

(*g*) *Plans for counter-preparation and barrage:*

Plan for counter-preparation. Total or partial counter-

preparation; counter-preparation against tanks; directions for launching the counter-preparations; directions for passing from counter-preparation to barrage and, when necessary, to a part of the first position which the enemy may have taken.

Plan for barrages. Distribution of missions; diagrams of the fronts or points to be swept; directions for setting up the barrages by the light artillery and the intervention of the heavy howitzers, trench mortars and heavy long guns; firing schedule; speed, variations, ceasing fire; anti-tank barrages; concentrations in case of an attack on only part of the front; procedure in event the enemy takes the first position.

(*h*) *List of concentrations.* (See table VII. of Supplement I of the Instruction on the offensive action of large units in battle). Battle map showing the batteries that can cover each square.

(*i*) *Supplies:*

Ammunition of various calibers; special shells.
Sites and organization of depots.
Means of ammunition transport.
Supplies for the positions.

61. V. PLAN OF SPECIAL MEASURES FOR ANTI-TANK DEFENSE.

(*a*) Defensive organizations.
(*b*) Special anti-tank artillery.
(*c*) Mission of the troops.

62. VI. PLAN FOR USING THE ENGINEERS.

Distribution and mission of the engineer troops.

63. VII. PLAN FOR USING THE AERONAUTIC SERVICE.

(*a*) Distribution of the aeronautic materiel.
Emplacement of squadrons and balloons.

(*b*) Various missions:
Combat and bombing[1].
Intelligence and command.
Fire control.
Liaison.
Photographs.

(*c*) The *various telephone* systems for the command.

[1] The plans of defense of the division and the army corps should include these missions, although they are beyond the normal sphere of these units. Even these units should know the tactics used for these operations, which the occupants of sectors often desire to turn to their advantage alone, when the value lies above all in the mass and concentrated action of all the available forces.

64. VIII. PLAN OF LIAISON.

(*a*) *The various telephone* systems completed, under construction or under consideration (systems for the command, artillery, aeronautic service and anti-aircraft defense).

(*b*) Assignment of individual technical characteristics (wave length, pitch, etc.), to the various *radio-telegraphy posts* (wireless and earth induction sets), and the time allowed to each post for sending.

(*c*) Organization of *visual and acoustic* liaison.
(*d*) The code for liaisons by *fireworks*.
(*e*) Allotment of the *carrier-pigeons*.
(*f*) Characteristic signs of *avions* and balloons on missions of liaisons; conditions under which they operate.
(*g*) Assignment of *call letters* (indicatives).
(*h*) Stationing the *liaison personnel* and *chains of couriers*.
(*i*) Procedure in case it becomes necessary to fall back.

65. IX. PLAN OF INTELLIGENCE RESEARCH.

(*a*) Special arrangements for hastening the transmission and use of intelligence. Have direct communication between the various organs[1]:
Infantry intelligence service.
Division and army corps intelligence services (staff).
Division topographical service and army and army corps telegraph services.
Army and army corps aeronautic intelligence services.
Photographic section.
Army topographical sections (triangulation).

(*b*) Detaching certain elements of the army artillery intelligence service to the army corps artillery intelligence service, especially terrestrial observation sections of intelligence research and sound ranging sections.

(*c*) Directions to the various research organs.
Instructions on the questioning of prisoners.
Special instructions to the army corps topographical sections and the army topographical sections.
Instructions on the daily conferences between the representatives of the various research elements.
Centralization and use of information.
Drawing up of publications.
Maps to be made and kept to date *(Instruction on battle maps, maps and special diagrams)*.

[1] These direct communications should never do away with the regular communications prescribed by **"The Instruction on intelligence research."**

66. X. PLAN OF COMMUNICATION, SUPPLY AND EVACUATIONS[1].

A. *Communications.*

(*a*) Use of railroads (normal, metric).
Organization and use of 60 cm. track system.
(*b*) Use of roads (reserved roads, one way traffic).
(*c*) Automobile routes.
(*d*) Guarding the routes.
(*e*) Duties of the provost.

B. *Supply.*

Determining the amount of supplies and the reserve supplies.
(*a*) Assigning the stations.
(*b*) Artillery service (warehouses, depots, spare materiel and guns, transportation).
(*c*) Engineer service.
(*d*) Administrative service; food, transportation.
(*e*) Water service; water supply.
(*f*) Medical service; materiel depots.

C. *Evacuations.*

(*a*) Assignment of ambulances, hospitals and evacuation hospitals.
(*b*) Detailed directions for the evacuations.

D. *Prisoners.*

Movements and formation of trains of prisoners.

E. *Directions in the event the troops fall back.*

(*a*) Demolitions.
(*b*) Removal of supplies and materiel.

67. XI. PLAN OF ORGANIZATION AND OF WORKS.

(*a*) *Plan of organizations:*

Site and organization of supporting points and strong points in the first position.
Trace of parallels and approach trenches of this position, bretelle lines, auxiliary defenses, partitions.
Site and organization of O. P.'s, C. P.'s, dugouts, depots, and camps.
Defensive organizations against tanks.
Liaison (buried telephone lines).
Communications (trails, roads, 40 cm. track, 60 cm. track for the army).
Artillery emplacements.
Landing grounds and aviation parks.
Water supply.

[1] The plans of communications, supply and evacuations of the armies are submitted by the general in command of the group of armies for the approval of the General-in-Chief (Service of the Rear).

Directions on the organization of the second and third positions (army plan; organization of these positions).

Mine works, missions of gas companies, etc.

(*b*) *Marking the routes.* Placards, luminous signs, side lines, etc.

(*c*) *Order of urgency of the works* that are to complete the existing organizations.

(*d*) Execution of the works:

Mission of the various units of workmen.

Location of these units.

Materiel and tool supply.

Procedure.

68. XII. PROCEDURE IN CASE THE ENEMY FALLS BACK.

(*a*) Reconnaissance for indications of counter-attack.

(*b*) Mission of the troops designated for the possible advance, defining their zones of advance.

(*c*) Axis of liaison.

(*d*) Directions for the first charges, procedure for the departure and the advance.

Mission of the artillery advancing with the infantry.

Mission of the artillery retaining the first position.

When necessary, mission of the assault artillery and automobile guns.

(*e*) Transversals of liaison between the advancing units.

(*f*) Mission of the aeronautic service:

Reconnaissance of the enemy and his halting positions.

Reconnaissance of the first friendly lines.

Transmission of intelligence and orders.

(*g*) Mission of the engineers:

Re-establishing communication.

Discovering the hostile arrangements for destruction.

(*h*) Mission of the cavalry:

For extending and maintaining liaison and for repairing roads.

For advancing materiel, ammunition and supplies.

For changing artillery emplacements.

For extending the narrow-guage railways.

(*j*) Extending the traffic facilities, especially the reserved roads. Directions for the organization of the traffic.

(*k*) Sites for supply centers for the troops and civil population to be organized immediately in the zone reoccupied; circuits for the supply trains.

(*l*) Units kept stationary.

(*m*) Units regrouped to the rear.

PLAN OF REINFORCEMENT.

69. The object of the plan of reinforcement is to arrange for orderly and systematic reinforcements within the minimum time for an unexpected or threatened attack. This provides for organizing an artillery system more powerful than the existing one and readily combining with the latter, and for stationing the reinforced infantry at the various positions so as to avoid crowding the troops forward and to facilitate the maneuver for counter-attack and counter-offensive.

In order to insure the rapidity and facilty of reinforcement, it is necessary to respect the limits of the zones of sectors, artillery and aeronautic groups, as given in the plans of defense. The reinforcement will then consist of putting a stronger unit in the zone of the sector, artillery, or aeronautic group. For example, an army corps of two, three or four divisions will be put into a sector formerly held by one division.

Accordingly, a *reinforced sector* usually becomes an *army corps defense zone* and a *reinforced sub-sector* becomes a *sector*.

70. (1) *The army plan of reinforcement* is drawn up as a *plan of defense No. 2*, giving the distribution of the forces for the defense of the front:

(*a*) While the reinforcing is in progress.

(*b*) After the reinforcement has been completed.

(2) *The plan of reinforcement for a sector* is drawn up by the army corps staff under the title of *Plan of reinforcement of sector A (constituting the plan of defense of the zone A)*.

After an army corps commander has drawn up the plans of reinforcement for sectors A, B——, he may, after a reinforcement, retain direct command of the new defense zones, A. B——, and may himself control the execution of the plans of reinforcement, or retain direct command of only one of these zones and give the command of the other zones to a commander of the reinforcing army corps.

(3) *The plan of reinforcement for each sub-sector* is drawn up by the division staff under the title of *Plan of reinforcement of sub-sectors X (constituting the plan of defense of sector X)*.

After the division has drawn up the plans of reinforcement for the sub-sectors X, Y, Z, it will usually take the command of one of the new sectors and leave the command of the others to the commanders of the reinforcing divisions.

(4) Each plan of reinforcement is drawn up with the same form as a plan of defense. It includes one additional paragraph.

XIII. TRANSITORY DISPOSITIONS, including all the measures

of transition between the time the reinforcement is ordered and the time it is realized:

(*a*) Contact between the staffs, intelligence services, and other services of the reinforcing units and the large units holding the front.

(*b*) Tactical reconnaissances.

(*c*) Detailed organization of reliefs.

(*d*) Passage of records and orders.

71. All of the above measures, planned and drawn up in detail, the plans and records to be given to the staffs to insure the functioning of the new sectors, etc., are the best guarantees for the proper defense of the front and for the exercise of the command.

PLAN OF RETREAT.

72. The purpose of the plan of retreat is to permit the withdrawal of the necessary forces for carrying out plans of reinforcements and offensive action on other parts of the front.

The commanders of all units must provide for the maximum detachment of troops from their units to armies that are attacked or attacking.

An army corps defense zone will often become a *sector* and a *scctor* a *sub-sector.*

73. (1) The army plan of retreat is drawn up in the form of a *plan of defense No. 3* giving the distribution of the forces and the defense of the front:

(*a*) During the retreat.

(*b*) After the retreat has been completed.

(2) The commanders of the retreating army corps or division draw up the measures for their retreat and the emplacement records to be delivered to the authorities designated below.

(3) The army corps commanders designated by the army commander to command the new army corps defense zones draw up the plan of defense for these zones and determine the conditions under which the sector emplacement records of the retreating troops will be turned over to them.

(4) The division commanders designated by the army corps commanders procede in the same way with the new sectors put under their command.

PLAN OF TRANSPORT.

74. The plan of transport is drawn up in each army for the troops coming in (reinforcement) or leaving (retreat). It is arranged:

(1) For the first, the debarkation in the zone of the army.

(2) For the second, the embarkation in trains and autos.

The armies (or groups of armies) draw up these plans in co-operation with the service of the rear, not only for the small units at their immediate disposal, but also for the general reserve units in their territory. The commanders of the armies or groups of armies request the Commanding General of the Service of the Rear, by telegram, to draw up these plans of transport, indicating the large units at rest and their location. The Commanding General sends an officer to draw up the plan of transport in co-operation with the staff of the army or of the group of armies.

The plans of debarkation are similarly drawn up with the co-operation of an officer sent by the Service of the Rear.

VARIOUS PRESCRIPTIONS.

75. The commanders of armies, army corps and divisions have the staffs or various services subordinate to them (artillery, aeronautic, engineers, anti-aircraft defense, medical, administrative, provost, etc.) draw up records containing the plan of use proper of the staff or an extract from the plan of defense or of reinforcement. Each staff or service is charged with keeping these records to date and calling for them when necessary.

The division commanders have the plans of defense drawn up for the sub-sectors and quarters in the same form as the plans for the sector. These, however, contain only those directions referring to the regiment or battalion that drew up the plan.

76. *The commander sees to it:*

That the plans of defense and reinforcement are drawn up so as to be readily utilized.

That they are kept to date by intelligence (reports, shuttle maps, etc.) furnished by inferior to superior units every week or ten days. *This intelligence should never demand an excessive amount of office work from the sector or sub-sector staffs.*

That the planned arrangements are carried out.

That the various units of the command, the staffs, services, etc., know their missions (emplacement records, reconnaissance, etc.).

The control of the command consists in:

Examining the plans.

Visiting the positions (seeing that the missions and orders are known; inspecting the state of the organizations; the sup-

plies, food, ammunition, fireworks, materiel for gas protection, etc).

Finally the commander *perfects the preparation* so as to insure the proper execution of the plans of defense and reinforcement. He orders:

Practice exercises in the first position (preparing for action by the small units, tank alarm, gas alarm, liaison with avions and balloons).

Unexpected application of part of the plan for using the artillery, consisting of an actual artillery execution or a simple vertification with only a few rounds.

Temporary reinforcements by the artillery units at rest.

Exercises for occupying the bretelles, the second or third positions, reconnaissances by officers or N. C. O.'s.

Reconnaissances of entire positions by the officers or N. C. O.'s of units in reserve.

PART II.

DEVELOPMENT OF DEFENSIVE ACTIONS.

77. Defensive actions—like offensive actions—are carried out by the command in conformity with its plans, the direction of which should be adapted to the various phases of battle. This adaptation will be relatively easy during periods of stabilization, where the plans may be carried out without important variations. During periods of combat, however, this adaptation will present great difficulties because it will be necessary to meet the situation created by the enemy, to re-establish quickly an equilibrium of forces favorable to the defense, and to repel the enemy.

The first obligation of the command will be to recognize the intended attack so as to proceed with the necessary reinforcements. The defense, however, will often be surprised by an attack before the reinforcement is complete. The command will meet the situation created by the momentary inferiority of means. When reinforced, it will establish equilibrium and make the defense more and more active.

78. The defensive actions will deal with:

(1) *Permanently, the destruction of the active works of the enemy wherever vulnerable by a judicious use of available means, even when they are greatly reduced.* The purpose of these actions is to wear down the enemy while he is kept immobilized on the defensive, to weaken him as he reinforces himself for preparing or sustaining an attack, and *to retain in this way the initiative of operations* or resume it if lost.

(2) *During periods of stabilization,* where reduced means will be available—*the necessary concentrations for opposing* all hostile enterprises *by fire* (counter-preparation, barrages), and by movement (counter-attacks).

(3) During periods of combat, when the available means are reinforced—*putting them into action on the affected parts* to break the large hostile offensives and to insure prompt retaliation *by fire* (counter-preparation, barrages), and *by movement* (general counter-attack and counter-offensive). The main idea is that the defensive actions should never constitute a dispersion of efforts and means. *There should be concentrations at all times and at all phases of the engagement, for it is by concentration that the most powerful defense may be realized.*

CHAPTER V.

ACTIONS OF DESTRUCTION.

79. The destruction of the active works of the enemy throughout the defensive front is mainly a matter for the *artillery and aviation.*

The *infantry* also enters into this action in proportion as its means allow.

The anti-aircraft defense deals with the destruction of the hostile aircraft.

The gas groups obtain local but very powerful effects.

Mines may play a less important role.

I. Artillery.

80. The artillery is used to wear down the enemy by *destruction fire* (on batteries, defensive organizations and personnel), and by *harassing* and *prohibitive* fire. It replies to hostile bombarding by *retaliation* fire. Its action is controlled by the commander and depends on the situation and the amount of ammunition available.

The artillery seeks to deceive hostile observation by its *flexibility of fire* and *mobility* of materiel. Frequent changes of emplacements of batteries or parts of batteries are the most certain means of defeating the plans of hostile counter-batteries and of causing a pure waste of ammunition on unoccupied positions.

81. A Daily Destruction Fire.

All the artillery (light, trench, heavy) conform to the plan of destruction fire and concur in this systematic destruction in their respective zones. This is also true of the army heavy artillery under the direct command of the army corps commander.

The calibers, kinds of fire, the number of batteries and the number and kind of projectiles are determined by the importance, distance, protection and the transiency of the objectives.

82. (*a*) *Batteries*[1]—Their destruction devolves on the commanders of the army corps artillery, with the help of terrestrial and aerial observation. The objectives are preferably those batteries that are especially aggressive, that are accurately spotted and that are known to be occupied. The army corps commanders pay special attention to the continual

[1] The destruction of batteries and defensive organizations can be obtained only by **precision** fire with projectiles suitable to the objectives. (See Supplement No. 11 to the **Instruction on the offensive action of large units in battle).**

destruction of hostile batteries. This is one of the most important duties of the defense.

83. (*b*) *Defensive Organizations*[1]—Their destruction in each sector is ordered by the sector commander. He should take into consideration the probable reactions and the chances of success with the means available. If he decides on a demolition for which he does not have sufficient means he refers it to the army corps commander.

84. (*c*) *Elements of Troops*—Destruction fire on elements of troops should be executed very rapidly, as they offer transient objectives. The initiative for this fire lies with the commanders of groups and of batteries. Each battery of light or heavy artillery will have all the important points of the ground exactly registered. Battle maps and firing notebooks are carefully kept to date. The elements of fire are prepared in advance. Battery commanders will record the meteorological information and will be ready to make the corrections for changes in weather.

85. B. DESTRUCTION FIRE BY CONCENTRATIONS.

The destructions indicated above are usually executed by concentrations. Much more powerful effects may thus be obtained against nests of batteries, large defensive organizations and important gatherings of troops.

The *list of concentrations*[2] constitutes a methodical preparation for these fires and facilitates an immediate response to information from the infantry, artillery or aeronautic intelligence services. The order of fire is given by the commanders of zones and sectors who may, to avoid delay, delegate their authority to the respective artillery commanders[3].

86. The following are the principles controlling the execution:

(*a*) If the concentration is within one zone, each battery is assigned an exactly defined objective in that zone.

(*b*) The results of concentration are better in proportion as the area of the objective is smaller, the number of batteries larger, and their axes of fire converging.

(*c*) The adjustments vary with the objectives; fairly wide

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[1] The destruction of batteries and defensive organizations can be obtained only by **precision** fire with projectiles suitable to the objectives. (See Supplement No. 11 to the **Instructions on the offensive action of large units in battle**).

[2] See table VII of Supplement No. 1 to the **Instruction on the offensive action of large units in battle.**

[3] Concentrations are executed more rapidly when the orders for fire are transmitted by wireless or single cord telephone switchboard.

limits against billets, camps and large columns of troops; very accurate against batteries, trenches and approaches.

(*d*) The batteries participating in a concentration usually execute their fire for effect *simultaneously*, so as to benefit by the *surprise* and to cause the enemy an *impression of entire destruction*. Against stationary objectives the batteries may fire successively to facilitate control.

(*e*) Concentrations of fire are advantageously combined with actions by infantry. The infantry should always be notified of these concentrations so they can take the necessary measures for safety, and prepare patrols, reconnaissances or raids.

87. C. HARRASSING AND PROHIBITIVE FIRES.

These fires[1] are executed according to the daily programs drawn up by the sector commanders for the light artillery and by the zone commanders for the heavy long artillery. These fires may be changed to concentration fire on especially important points.

88. D. RETALIATION FIRE.

This fire is executed on the hostile trenches and billets when the enemy bombards our trenches and billets. This fire is usually accompanied by retaliation fire on the hostile batteries.

Retaliation fire is less efficient than destruction, harassing or prohibitive fire from the point of view of use of materiel, moral effect on the enemy and moral effect on our own troops. The commander (especially the sector commanders) should have charge of organizing this fire and usually of executing it.

(*a*) *Fire on trenches.* Fire should be opened immediately on hostile positions parallel to or near those bombarded by the enemy. When possible have the fire more intense and with larger calibers than that of the enemy. The fire is executed:

By the light artillery—enfilade fire, day fire with non-delayed fuses, night fire with shrapnel.

In rare cases, by trench artillery and heavy howitzers.

This fire is begun at the request of the infantry and is ordered by the sector commander, who may delegate his authority to the divisional artillery commander. This fire may be left to the initiative of the battery commanders in so far as it affects their normal zones of action.

(*b*) *Fire against billets.* The retaliation fire against billets should be prepared in advance, so that, when the enemy shells

[1] For the details of these fires see the **Instruction on the offensive action of large units in battle,** paragraph 166.

our billets, we can retaliate on his, preferably those containing ammunition depots or command posts.

The bombardment is executed with light artillery and with heavy artillery when the former is not available.

It is executed at the request of the commander of the bombarded billets and ordered by the sector commander, who may delegate this authority to the divisional artillery commander.

89. E. Fire With Special Shells[1].

Special shells (poison, poison-lachrymatory, and lachrymatory) are used to *neutralize* hostile batteries and to block the passage of points favorable for hostile action. Destruction fire with special shells is executed on points where there are good possibilities of reaching personnel—emplacements of occupied batteries, regions of shelters, camps, depots, distribution and assembling places, etc.

This fire is launched by *surprise* so as to attack the enemy before he has time to use his means of defense. *Concentrate* the maximum number of guns so as to develop a large amount of gas. Trench artillery is well suited for this fire because of the large capacity of the bombs.

II. Aviation.

90. The aviation plays an extremely important role during all the phases of battle by means of its offensive missions.

It is independent of the defensive organizations and may act offensively even on defensive fronts.

The commander (commander of the group of armies and in exceptional cases commander of the army) plans for the maximum offensive actions that the aerial means will allow. These actions comprise:

The destruction of the enemy's aeronautic means.

The bombing of the enemy's vital points.

The intervention in the engagement and the harassing by night with machine gun and bomb.

These actions are executed as in offensive operations[2].

III. Infantry.

91. The infantry can always carry on a wearing-down and destruction action *by fire* and *by movement.*

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[1] The directions for the use of special shells are given in Supplement II of the **Instructions on the offensive action of large units in battle,** paragraphs 286 to 288.

[2] See the **Instruction on the offensive action of large units in battle,** paragraphs 87 to 89.

92. A ACTION BY FIRE.

The power of the weapons with which the infantry is equipped enables it to obtain considerable destruction and harassing effects by the use of these means alone:

The *rifle* in fire by rounds on loopholes and individuals.

The *light cannons* with flat trajectories[1], by fire on blindages and embrasures.

The *automatic rifle* and *machine gun*, by volleys on transient objectives.

The machine gun, by long-range fire on trails, crossroads, assembling and distributing points, camps, billets and batteries.

The *grenade, rifle grenade*[2], *light howitzers and mortars*[3], by plunging fire on stationary personnel or those moving about in advanced posts, parallels and approaches.

All infantry commanders should put forth the greatest activity in the use of these weapons and should convince their men that it is always possible to acquire a great advantage over the enemy if the greatest precautions are taken against retaliation; strict discipline, observation of traffic rules, avoiding density of men in the advanced parallels, lookout service that will permit the main body of the troops to be sheltered during the retaliation fire by the enemy.

93. B. ACTIONS BY MOVEMENT.

The infantry should organize and carry on patrols, reconnaissances, and raids unceasingly, *especially when the enemy is planning offensive actions.*

The *patrols* (mainly at night and in fogs) will surprise hostile patrols in the open and capture them.

The *reconnaissances*, executed under similar conditions and pushed forward as far as the hostile lookout system, will surprise, kill or capture the troops on guard or in listening posts.

The *raids* will be conducted in the enemy's first trenches for killing the occupants, destroying the materiel and bringing back prisoners. The men will carry bayonets, grenades, incendiary grenades, flame-throwing apparatus, pistols, etc.

These operations improve the morale of the troops and sustain their spirit of offensive. They are obligatory when information is lacking as to the order of battle and situation of the enemy. They are very useful and very efficacious against an enemy that is preparing to attack.

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[1] 37 mm., etc.[1]

[2] V. B., etc.

[3] Brandt, J. D., Stokes, etc.

There is a distinction between *temporary raids* for the purpose of taking prisoners and verifying the order of battle and *raids for occupation*, the purpose of which is to retain important points of the ground, especially observation posts.

The success of all raids depends on:

Surprise.

A use of the artillery (possibly of tanks) that will open the way for the infantry and cover it by preventing the hostile artillery and infantry from executing counter-preparation, barrages and counter-attacks.

The maneuvering skill of the infantry.

Temporary raids do not require very powerful means and should be executed very rapidly, according to *summary plans of engagement* drawn up by the sector commanders or even by commanders of sub-sectors. Stimulate the initiative of the corps or battalion commanders, and give them all the facilities for direct communication with the artillery elements that normally act in their sub-sectors or quarters and with those that can act in their zones when necessary.

Raids for occupation should be controlled by a detailed division or army corps *plan of engagement*. If there is no complete plan of engagement for the army corps echelon there is at least a *plan for using the army corps artillery*, dealing mainly with counter-battery action. The destructions for opening up a passage to the infantry should be obtained by a *rapid and violent action* with a large number of guns of all calibers or with tanks.

In all events, the commander should see to it:

That the *opening of the breaches* and the *artillery adjustments* do not deprive the raiding parties of the benefit of surprise.

That the operation is covered by *caging* fires of both artillery and machine guns.

The superior commander (army corps or army) can increase or diminish the activity of the infantry at various points according to the situation. As a rule *raids are carried on mainly for the purpose of overcoming the passiveness and inertia that may result from long periods of stabilization.*

IV. Anti-Aircraft Defense.

94. The mission of the anti-aircraft defense is to destroy hostile aircraft.

(*a*) *During the day*, by fire from the anti-aircraft artillery and machine guns attached to the anti-aircraft defense. The

anti-aircraft artillery will usually be ineffective against avions flying low. These should be attacked by the machine guns assigned to the anti-aircraft defense and the machine guns and rifles of the units defending the sectors. A number of light artillery batteries of the sector may be assigned to fire on avions flying low.

(*b*) *During the night,* by artillery and machine gun fire, although the fire is not accurate, it nevertheless has a powerful moral effect on hostile aviators. The anti-aircraft artillery will preferably use high explosive shells. Machine guns will generally be grouped by twos and will be used near vulnerable points and especially near searchlights.

V. Gas Companies.

95. Waves of poison gas from containers or projectors are to be in general use. They are an effective means of wearing down the enemy in the front and in the rear positions. Their success depends mainly on surprise. Precautions should be taken for concealing the preparations of these gas waves.

The duration of the preparatory works should be as short as possible; the chemical materiel will be transported at night; the apparatus will have protective wrappings to avoid metallic sounds, etc.

Avoid provoking hostile activity before the preparation is complete—patrols and reconnaissances will be less frequent and less active, the artillery fire will be less active.

The orders of defense for the sectors interested may be momentarily modified so as to insure the absolute integrity of the front before the hostile attacks.

In the execution, a greater efficiency will be obtained by the concentration of gas rather than by extending it over a large front or by prolonging the time of emission.

The emissions from projectors comprise only one wave.

The emissions from containers comprise several waves. The first wave has the maximum concentration, is made up of the most poisonous gas, and is usually begun with colorless gas.

At the moment of execution an intimate liaison is necessary between the gas units and the troops holding the sector for the purpose of preventing any accidents during the operation. The liaison is prepared by the sector commander under whose orders the gas units have been placed.

VI. Mines.

96. As a rule, mines should retain a strictly defensive character and should comprise the minimum number of listening posts.

When a war of mines is launched on a defensive front, the command will do its utmost to turn it to advantage, and will seek in the development of the galleries those points of the hostile position where the destructions will have the greatest effect on the enemy's materiel and personnel.

CHAPTER VI.

DEFENSIVE ACTIONS WITH REDUCED MEANS DURING THE PERIODS OF STABILIZTION.

97. On a defensive front in the period of stabilization, the command must not permit itself to be completely surprised by an important attack or discover the indications of an attack too late. A skillful and timely use of the means of investigation[1] (and the preventive operations by the infantry and aeronautic service) always increase the time available for reinforcement.

The command should consider the possibility of not being able to reinforce the position in time and—in periods of stabilization, that is to say *with reduced means*—the possibility of being compelled to face the enemy, irrespective of the time and nature of the attack. These attacks may be *raids* (or local actions) affecting only part of the front or *offensive action*, more or less intense, affecting the entire front.

I. Defensive Actions With Reduced Means Against Raids or Local Attacks.

98. Raids (or local actions) will always be characterized by the *surprise* with which they are launched.

There will be no preparation at all or an extremely short one. The preparation will consist in burying the defense under a veritable shower of projectiles, in opening up breaches by an intense action of minenwerfer, mines or tanks, in preventing the movement of supports or reserves, and in silencing the batteries of the defense.

The execution will take place under cover of a box barrage from batteries of all calibers and under the protection of counter-batteries.

At times a raid will take place without any artillery preparation, hoping to benefit only from the surprise. Against such actions, the infantry and artillery will benefit most from *concentrations*.

[1] See Chapter III, **Instruction on intelligence research:**

99. A. CONCENTRATION OF OBSERVATION.

The troops on guard or on support should *be warned in time.*

The possibility of an effective retaliation lies essentially in a good organization of the intelligence service and in the concentration of observation on any actions that the enemy may be ready to launch. This concentration will be realized if the position has been well chosen[1] and if the various O. P.'s of the infantry and artillery intelligence services have a zone of observation sufficiently wide to enable them to observe manifestations of hostile activity in adjacent zones, in addition to observing the zone normally assigned to the O. P.[2] The aeronautic intelligence service furnishes the intelligence for the entire front.

Lookout posts in the lookout line and main parallel will, on the contrary, have a restricted front of observation. A lateral extension of this front will decrease the front of adjacent posts.

From any point on the hostile front, information may come by way of:

The lookout and listening posts.

The O. P.'s of the infantry and artillery intelligence service who have this point in their normal zones of observation.

The O. P.'s of the infantry and artillery intelligence services and of the terrestrial observation intelligence service who have this point in their possible zones of observation.

The special terrestrial observation posts.

The aeronautic intelligence service.

If the alarm can be given before the attack it comprises the request for counter-preparation—given by the methods indicated in the plan of liaison.

If the alarm can not be given before the attack, and, in any event, when the hostile infantry begins the charge, the lookout posts and the O. P.'s give the signal; *artillery fire wanted (on such a point)*[3].

100. B. CONCENTRATION OF FIRE.

According to the character of the alarm, the defenses will act by *counter-preparation and barrage,* or by *barrage only.*

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[1] See paragraphs 8, 9 and 10.

[2] This organization of zones of observation should correspond to the zones of fire, which allow each group or artillery unit a normal zone of action and possible zones of action.

[3] The signals are sent by all the methods of liaison. The registering data of the points on which fire is to be directed is given by telephone, wireless or earth induction sets. Rocket signals reveal the sites of important points.

101. (*a*) *Counter-preparation.* The defense may exercise effective counter-preparation, even during the periods of stabilization and with reduced means, by *concentrating its resources on only a part of the front.* These actions are planned and organized in the plan of counter-preparation which defines the authority of the commanders (usually the sector commander, who, as indicated in paragraph 85, may delegate the authority in this action to their artillery commanders).

A shrewd commander, having made use of information, will not wait for the request of the interested units before launching the counter-preparation. He will concentrate fire on the probable assembling zone of the hostile attack, using:

Light artillery, with time and enfilade fire on parallels, approaches and assembling points.

Heavy long artillery and trench artillery against concentrations, C. P.'s ,O. P.'s, dugouts and crossings of approach trenches.

Heavy long artillery for destroying or neutralizing hostile batteries and preventing the use of approach roads.

The infantry participate in this counter-preparation by using their fire weapons against the personnel in the trenches of departure. Machine guns will be stationed to fire at long range and set up prohibitive barrages.

102. (*b*) *Barrage.* At the signal: *Artillery fire wanted,* barrages will be concentrated according to the plan of barrage. The procedure comprises the concentration of fire by the:

Light artillery[1], whose percussion and time fire set up a dense screen immediately beyond and as near as possible to our lines.

Heavy howitzers, trench artillery and heavy long artillery, which continue their fire on the objectives of the counter-preparation fire.

If the signal, *aritillery fire wanted,* has not been preceded by an alarm that has brought about our counter-preparation fire, the light artillery immediately sets up the barrages, according to the plan of barrage. The coming into action of the heavy howitzers, trench artillery and heavy long artillery is controlled by the same plan.

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[1] On a defensive front in the state of stabilization the divisions will often be assigned a very large front and will not be supplied with much light artillery. The batteries of light artillery can not act effectively at more than 5,000 to 6,000 meters.

Assuming that a division has three battalions of its own divisional artillery and one of the army corps light artillery, it will be able to execute the following concentrations **on any one point of attack:**

5 or 6 batteries if the front is 12 kilometers.
6 or 7 batteries if the front is 10 kilometers.
7 to 9 batteries if the front is 8 kilometers.
10 to 12 batteries if the front is 6 kilometers.

The use of the heavy howitzers, trench artillery and heavy long artillery will often be greatly reduced in periods of stabilization, when the materiel available is not very large. The use of the artillery should always be planned according to the amount available because, *no matter what the circumstances are, the command should use all its means to retain the strength of the position.*

The light artillery barrage should fulfill the following requisites:

Should be launched immediately. This is made possible by good liaison between the observation and lookout posts and the batteries (battery notebooks), notebooks, for the various pieces, table of meteorological corrections, ammunition methodically allotted, lighting system, orders for the service of the piece, etc.).

Should be set up as close to our lines as possible[1], so as to be between our lines and the bases of departure of the enemy's infantry. (The barrage line should be immediately beyond the lookout line or immediately beyond the main parallel if the plan of defense provides for the falling back of the lookout elements.)

Should be varied according to the ground and the hostile organizations; in other words, should comprise a barrage of minimum density (200 meters of front per battery at the maximum) *very close to our lines and a superimposed fire increasing this density and applied farther forward on the very trenches of the enemy.*

Should be executed with the maximum rapidity, the interruptions, the letting down and cessation of fire being controlled by the plan of barrage.

Even if the enemy pentrates our lines the artillery barrage is maintained as long as the infantry does not ask for the fire to be shortened. It then constitutes the box barrage for the counter-attacks.

103. C. CONCENTRATION OF ATTACKS.

The plan of defense fixes the procedure of the troops on guard in the event of an enemy's raid. At times it orders re-

[1] The minimum distance between the mean point of fall with one elevation (or with the lowest elevation) and our lines on **horizontal** ground is the following:

High, explosive percussion shells: 100 meters at 2,000 meters; 150 meters at 5,000 meters.

Time shrapnel: 150 meters at 2,000 meters; 200 meters at 5,000 meters.

If the barrage is enfiladed, the above distances may be reduced to:

—80 meters for the high explosive percussion shells.

—90 meters for the time shrapnel shells.

(See Supplement No. 11 to the **Instruction on the offensive action of large units in battle.**

sistance at the points attacked by the enemy, at times it orders these points to be evacuated in order not to suffer losses.

(*a*) In any event it plans for *immediate and converging counter-attacks.* As soon as the enemy gains a foothold in our lines, the support troops of that quarter or sub-sector (and of adjacent quarters or sub-sectors when possible) converge toward that spot and clean up our own fortifications. This action by the support is facilitated by the fact that being very near the main parallel, they will usually be within the boxing zone of the enemy, and also by the fact that retreat by the enemy is cut off by our own box barrage.

(*b*) If this immediate counter-attack is not successful, *the commander of the quarter or sub-sector attacked enters into communication with the commander and gives the information for enabling the artillery preparations to begin at once.* The commander of the quarter, sub-sector or divisional infantry draws up the detailed plans for the preparation and execution. In the event of raids or local actions by the enemy, *the counter-attack is launched after the artillery preparation and usually without the intervention of the superior command*[1].

II. Defensive Actions With Reduced Means Against Attacks on a Large Front.

104. It may happen, even in periods of stabilization, that the enemy will undertake attacks on a large front, covering one or more sectors. These may be executed by surprise or after a short preparation, and before these sectors can be reinforced. In this case the reduced means of the defense do not permit it to oppose a continuous resistance over the entire front. If it should attempt it, the result would be a veritable dispersion of means, and the enemy would easily break through the defensive system whose meshes are too wide. *The best procedure will be:*

(1) To break the attack at certain well chosen points, at each of which the defensive action will be carried out as indicated for the reply to raids.

(2) To make use of the partition and bretelle lines for preventing the development of his initial success laterally and for executing immediate flank counter-attacks.

The infantry and artillery action will be limited to covering the centers of resistance. The situation will be treated as that of repelling several hostile raids executed simultaneously on each of these strong points or supporting points.

The commander will usually order that the infantry evacuate the intervals not covered by our artillery fire and will

[1] See footnote 1, paragraph 52.

reinforce the support and reserve troops. In this way useless losses will be avoided and the chances of successful counter-attacks will be increased, especially counter-attacks supported by the bretelle positions.

105. To sum up: The plans of defense, during the periods of stabilization, will always provide for the convergence of the means of defense toward the points attacked or menaced by the enemy.

If the attack takes place on one point only, this converging action will bring about powerful concentrations. The defense will then be better able to hold the ground or, at least, to retake it after a brief delay.

If the attack takes place at several points, the concentrations on each of these will be less dense. The defense, by its determination to retain and retake the strong points and supporting points, will nevertheless have confidence that it can break the attack and, having broken it, that it can repel it.

CHAPTER VII.

DEFENSIVE ACTIONS WITH REINFORCED MEANS DURING THE PERIODS OF COMBAT.

106. In large attacks the enemy will attempt to crush our first position by fire or tanks; to overcome the position by a sudden attack, and to follow up his success in depth and laterally. Depending on the indications as to the extent of this preparation, our command will have more or less time to *pass from the period of stabilization to the period of combat by executing the plan of reinforcement.*

Irrespective of the time the attack is launched, the commander will proceed as indicated in Chapter VI, sub-division II, by using the reduced means for *converging and concentrated actions,* and by insuring *a greater continuity of defense and relying more on counter-attacks as the reinforcements increase.*

In all events, *the commander will maintain the disposition of his defensive means in depth and their judicious distribution in bretelle positions* because when a strong attack powerfully reinforced by artillery is imminent there is no advantage in increasing the density of the advanced infantry and artillery elements.

I. During the Enemy's Preparations.

107. The commander will plan the procedure according to the means available.

108. A. THE ARTILLERY will execute the destruction, harassing, prohibitive and retaliation fires. It will bring up its *supplies* to maintain a full reserve in the ammunition warehouses and depots to provide for further combats. Some batteries will be kept in reserve carefully camouflaged.

The allowance of anti-gas apparatus will also be kept to the allotted figure.

The heavy long artillery and, when necessary, the *heavy howitzers*, will undertake the *destruction of the hostile batteries* and will be prepared to neutralize these batteries. They will also undertake the *destruction of tanks*.

The *heavy howitzers* and the trench artillery will be used to destroy hostile organizations and especially the base of departure.

The *light artillery* will use time fire to *harrass* the enemy in the assembling points and to *prohibit* the use of the approaches. The heavy guns will aid the light artillery in its mission of harassment and prohibition.

These fires will be executed over the entire front of the enemy's preparation or as powerful concentrations on parts of this front. In the latter case the procedure will be that of counter-preparation, indicated in paragraph 101 (*a*).

The artillery will take precautions to decrease its vulnerability. *Mobility* will enable it to use emplacements in zones not swept by hostile fire and will at the same time favor the execution of its multiple missions.

109. B. THE AERONAUTIC SERVICE will usually be used as in the preparation for offensive actions[1].

It will be as active as possible, hindering the work of the hostile aeronautic service by aggressive action and damaging his attacking formation by bombardments.

The reconnaissances should seek the immediate indications of attack, so as to be able to give the alarm. The avions should especially look for gatherings in approach trenches and assembling places at break of day.

A permanent lookout system by avions and balloons may be organized to watch for the indications of attacks (appearances of infantry avions, movements, lengthening the fire, gas waves, etc.). These indications should be signalled to the troops, the C. P.'s and the artillery by all the processes of signalling (wireless, dropped messages, fireworks).

In addition, it will co-operate in fire control and observation.

110. C. THE INFANTRY will stay in the shelters, ready to leave at the first signal—excepting those in the lookout posts.

The troops on guard (lookout line and main parallel) will be partly unsheltered and partly incompletely sheltered. They will minimize their losses by being widely distributed.

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[1] See the **Instruction on offensive action of large units in battle**, paragraphs 170 to 172.

No matter what their losses are, the troops will remain at their post and will continue to use their weapons unless otherwise ordered by the commander.

In addition to their trenches, they will use all points on the terrain not swept by fire. When they discover that the enemy has evacuated his trenches so as to be out of danger of their own fire, our infantry will advance reconnoitering parties for occupying their trenches. The infantry will show great activity, especially at night, in order to overcome the depression caused by the bombardment and in order to maneuver their formations, when the lines are nothing but a field of shell holes.

The troops in support or in reserve will prepare for their missions of counter-attack.

The army and army corps reserves will be echeloned by the commander as far as the bretelle positions and the second and third positions so as to be able, first, to insure the defense of these positions, and, second, to serve as assembling bases for counter-attacks or general counter-offensives.

The commander of all echelons should sustain the morale of the troops and make immediate decisions when circumstances require. In these two respects, the intervention of the commander is here more necessary than in the offensive. Every unit commander will endeavor to maintain liaison with the preceding, following and adjacent troops.

111. D. THE ENGINEERS will construct fortifications and maintain the communications by detachments of workmen.

112. E. THE TELEGRAPH DETACHMENTS will similarly be concerned with the liaison. The chiefs of staffs will be responsible for and see to the proper functioning of these liaisons.

II. DURING THE ATTACK.

113. The commander and the various services will conform as far as possible to the plans of defense and of reinforcements. They will take every initiative for facing the various incidents of combat[1].

114. A. THE ARTILLERY will pass from counter-preparation to barrage fire as indicated in paragraph 102; barrages in the form of concentrations on certain points, if the reinforcements have not come up; continuous barrages if the plan of the reinforcement barrage has already been carried out.

The *light artillery* will set up a barrage of time and percussion shells immediately beyond our lines. This barrage will

[1] The command should plan for **defending the rear of fortified** zones by use of flanking elements, observation, communication, materiel, cover and obstacles, etc. It should plan for the possible evacuation of the light and trench artillery, equipment, materiel, etc.

be intensified by superimposed fire and extended toward the hostile trenches and approaches.

The *heavy howitzers* will sweep the enemy's bases of departure.

The *heavy long artillery* will neutralize the batteries and will sweep the approaches.

When the attack is preceded by tanks, the artillery of all calibers will set up barrages to stop and destroy them. The *special anti-tank artillery* will be brought into action.

The artillery will be ready to shorten its fires in order to sweep the ground where the enemy may have gained a foothold, notwithstanding the counter-attacks and artillery fire[1]. The artillery must be positive of the success of the enemy, for it should not hinder our counter-attacks by shortening its fire too soon nor abandon its position when our infantry may still disengage it. The personnel will always be ready to protect the materiel, by the defensive organizations surrounding the batteries (entanglements, trench elements) and by the arms of close combat (machine-guns, carbines, grenades). When there is no longer any hope of being relieved by our infantry counter-attack, the personnel should destroy the materiel.

115. B. THE AERONAUTIC SERVICE will use all its means for hindering the action of the enemy and retaining the superiority of the air. Its most important mission will be:

To remain in constant communication with our first line. It will signal back their demands and report their condition.

To follow the movements of the enemy and signal them to the command. This will aid our retaliation.

It will intervene in the combat by machine gun fire and bombs.

116. C. THE INFANTRY will resist the attack by fire and maneuver.

The *troops on guard* will defend the strong points and supporting points no matter what the losses may be. The smallest *groups of defenders and even isolated individuals will not give up their ground in the face of frontal or even encircling attacks.* In this way *isolated strong points* are formed that will break up the attacking waves, disassociate the combined actions of the hostile infantry and artillery and prepare for the success of the counter-attacks.

The *support troops* will perform the planned counter-attacks by fire and especially by counter-attack maneuvers. They will come to the aid of the supporting points and strong points. In case these troops are momentarily halted or suffer great losses,

[1] The positions to which the artillery will fall back should be planned in advance and should be supplied with ammunition.

they will proceed as troops on guard and hold their ground accordingly.

The *reserve troops* will proceed as troops in support if they have a predetermined mission of counter-attack, especially a mission of defense or counter-attack on the bretelle positions. If they have no predetermined mission, the commander will use them according to the development of the first encounters. If they have no predetermined mission of counter-attack, and while waiting for such a mission from the commander, these reserve troops will organize the defense of their present position without advancing. *It is essential that the reserves be kept at the spot where they were originally stationed by the commander.*

The above also applies to the *reserve of the army corps and the army.*

If the attack is preceded or accompanied by tanks, the infantry fire on the latter with their light cannons of flat trajectory.

Machine guns will open fire only when the hostile infantry debouches. When directly attacked by a tank, they will defend themselves by using perforating bullets on the observation and firing loopholes.

117. D. THE GENERAL RESERVES OF ALL ARMS (infantry, artillery, aeronautic service, artillery of assaults, cavalry) will be used by the high command according to the general plans of denfense[1] (zones of counter-attack and counter-offensive) and according to the variations of the battle. They may be called upon to assemble at predetermined positions and enter combat after a methodical preparation, or to enter combat under conditions of a veritable *chance meeting.*

In the latter event their engagement will be controlled by the following principles:

To plan the formation of attack (counter-attack or counter-offensive) on a *judicious use of the natural properties of the ground in the zone of departure* of the counter-attack or counter-offensive.

To determine successive objectives the occupation of which will improve the *observation facilities* and make it possible to *cover the deployment of the artillery.*

To choose the objectives so that the enemy will be attacked from the front and *menaced from the flanks.*

To echelon the units in depth and have them flexible so as to make the *successive efforts* demanded by these maneuvers.

These measures come within the general scheme of offensive actions.

III. DURING THE INTERVALS OF COMBAT.

118. If the immediate and automatic counter-attacks have not prevented the enemy from gaining a foothold in the posi-

[1] See paragraphs 52 and 53 of this instruction.

tion, the commander utilizes the intervals of combat to prepare for the use of the reserves for *general counter-attacks.* He draws up *summary plans of engagement* conforming to the principles of offensive actions, but *eliminates all details that might delay the execution.*

The troops are immediately reformed, the organization of the ground is begun, and the artillery emplacements constructed.

The initiative in these preparations should usually be taken by the division commanders. The upper units intervene only for co-ordinating the actions of its units immediately subordinate (the army corps for the division, the army for the army corps).

It is necessary that our retaliation take place before the enemy is installed and organized. Planning is of utmost importance, but above all it is necessary to act and act quickly.

119. While the division and army corps commanders are using their available means to effect an immediate re-establishment, the army commander draws up the plans for the counter-offensive and brings up the necessary reinforcements. In this action he conforms to the principles of the *Instruction on the offensive action of large units in battle.*

PETAIN.

G. H. Q., December 20, 1917.