FM 100-5

TENTATIVE

FIELD SERVICE REGULATIONS

OPERATIONS

Prepared under the direction of the
Chief of Staff

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WAR DEPARTMENT,
WASHINGTON, *October 1, 1939.*

FM 100-5, Tentative Field Service Regulations, Operations, is published for the information and guidance of all concerned. It contains the principles of troop leading and combat of the combined arms in maneuver warfare and constitutes the basis of instruction of all arms and services for field service. It should be studied in connection with FM 100-10, Field Service Regulations, Administration, which covers the principles of administration and supply, and FM 100-15, Field Service Regulations, Larger Units, which discusses the functions and operations of larger units and territorial commands.

The basic principles of the tactics and technique of the various arms and services are set forth in field manuals. It is the function of the command to coordinate the tactics of the arms and the technique of the services so as to develop in the combined forces the teamwork essential to success.

The tentative Field Service Regulations are drafted from the point of view of operations against an opponent armed, organized, and equipped along modern lines. An army capable of waging a successful war under these conditions will prove adequate to any emergency less grave.

While the fundamental principles are neither numerous nor complex, their application may be difficult. Set rules must be avoided and methods varied. A thorough knowledge of the principles and experience in their application to various situations enable a commander to decide what methods to use in a particular situation confronting him.

The scope of the tentative Field Service Regulations is limited to land operations. Operations involving the joint action of the Army and Navy are governed by special regulations.

In applying the principles of the tentative Field Service Regulations, they will be interpreted in the light of the Rules of Land Warfare (pt. two, BFM, vol. VII) and of the restrictions imposed by any treaties and international agreements,

properly ratified, to which the United States is a signatory power.

[A. G. 062.11 (8-4-39).]

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

E. S. ADAMS,
Major General,
The Adjutant General.

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TENTATIVE
FIELD SERVICE REGULATIONS
OPERATIONS

(These regulations supersede Field Service Regulations, 1923)

CHAPTER 1

ORGANIZATION

ARMY OF THE UNITED STATES

■ 1. The Congress determines the strength and composition of the peace and war establishments and decides what citizens are available for military service. It provides also for the control of national resources necessary to fulfil war requirements.

■ 2. The *Army of the United States* consists of the Regular Army, the National Guard of the United States, the National Guard while in the service of the United States, the Officers' Reserve Corps, the Organized Reserves, and the Enlisted Reserve Corps. These components constitute the *organized land forces*.

The *unorganized militia* comprises all persons, not included in the organized land or naval forces, who have been or may be declared by the Congress to be liable to perform military duty in the service of the United States. It constitutes the source from which the untrained man power is obtained.

■ 3. The War Department prepares the basic plans for recruiting, mobilizing, organizing, supplying, equipping, and training the Army of the United States.

Instructions relative to mobilization are published in War Department Mobilization Regulations and are incorporated in current mobilization and war plans.

■ 4. The *military organization* is primarily the systematic arrangement of means for obtaining unity of effort in the accomplishment of a task or mission. It consists fundamentally of three elements: *command*, *combat*, and *service*. These elements are so combined as to provide a flexible framework within which the necessary regrouping of means may be made to meet various situations.

■ 5. In accordance with existing laws and the orders of the President, the War Department determines the tactical organization of the field forces and the territorial organization of the theater of war. It prescribes the manner in which the command and administrative functions will be exercised.

TACTICAL ORGANIZATION

■ 6. The *field forces* consist of a general headquarters (GHQ), one or more armies, GHQ aviation, and a GHQ reserve.

The GHQ aviation includes all aviation not otherwise specifically assigned and constitutes a pool of combat and transport aviation which provides forces for the conduct of offensive and defensive operations along functional lines. See FM 100–15.

The GHQ reserve is composed of troops of the various arms and services not habitually required by an army in the field, but which are held for use as reinforcements or for separate missions under GHQ.

■ 7. The *army* is composed of a headquarters, certain organic army troops and a variable number of divisions; these divisions, together with certain auxiliary units called corps troops, are organized into *army corps*, each with a corps headquarters. In addition, troops of the GHQ reserve and support aviation may be attached to an army as needed.

Several armies together with certain GHQ troops and aviation may be organized into a *group of armies* under a designated commander.

■ 8. The term *large units* as used in this text refers to divisions and larger units. A more detailed description of the larger units is found in FM 100–15.

■ 9. The *division* is the basic large unit of the combined arms. It comprises a headquarters and troops of the essential arms and services, all in correct proportion and so organized as to make it tactically and administratively a self-contained force capable, to a limited extent, of independent action.

■ 10. The organization of the different *arms and services* (see Chapter 2) is adapted to the most efficient operation of their weapons and technical equipment and to the formation and distribution of suitable groupings in combat.

In each arm and service the *elementary unit* comprises the largest number of basic elements that can be successfully handled under a single leader. These elementary units are combined into a *company* or similar unit which is the basic administrative unit and includes all the agencies required for subsistence, interior economy, and administration (see AR 245–5).

The *battalion* or similar unit is the basic tactical unit in which the essential elements necessary for instruction, maneuver, and combat are conveniently arranged and organized. It is composed of a headquarters, two or more companies or similar units, and certain special elements, organic and attached, which fit it for a mission requiring the application of the essential means pertaining to the arm or service. Unless organized as a separate battalion it has no administrative functions. (See AR 240–5.)

The *regiment* is both an administrative and a tactical unit. Ordinarily, it consists of a headquarters, a headquarters company and service company, either separate or combined, and two or more battalions or similar units. It may also include a company or similar unit in which certain special weapons and means, supplementing those of the battalions, are assembled for economy, instruction and administration. (See AR 235–5.) In the Air Corps the corresponding administrative and tactical unit is the group.

■ 11. In the interest of economy and in order to facilitate greater flexibility in the assignment to tasks, the means not habitually required by a unit are pooled and organically assigned to the next larger unit. These means are then allotted

to subordinate units in accordance with their requirements for the particular operations involved.

■ 12. A command is often subdivided into *tactical groupings* to facilitate the conduct of operations. This organization for combat is temporary and is made to define clearly the tactical responsibility of subordinate commanders in the execution of their assigned tasks. Tactical unity is, as far as practicable, preserved in making the subdivision.

■ 13. The *details of organization* of the field forces, and the amounts and kinds of transportation and major items of equipment are published in current War Department Tables of Organization and Tables of Basic Allowances. The organization of large units and their road spaces and the technical and logistical data are given in SOFM.

TERRITORIAL ORGANIZATION

■ 14. The *theater of war* comprises those areas of land and sea which are or may become directly involved in the operations of war.

■ 15. The *theater of operations* comprises the area of the theater of war in which operations are or may be conducted. It is designated by the War Department and comprises initially territory that is to be occupied or defended. It is divided normally into a combat zone and a communications zone.

■ 16. The *combat zone* comprises the area of the theater of operations required for the active operations of the combatant forces.

It is divided into army, corps, and division areas, each comprising the zone of operations of the unit to which it pertains.

■ 17. The *communications zone* is the part of the theater of operations containing the lines of communication, the establishments of supply and evacuation, and other agencies required for the immediate support and maintenance of the field forces in the theater of operations.

■ 18. The *zone of the interior* in general comprises the national territory within the continental limits of the United States, exclusive of areas included in the theater of operations.

■ 19. The details of organization of the theater of war and its territorial subdivisions are given in FM 100–15, and in instructions relative to mobilization published by the War Department.

CHAPTER 2

ARMS AND SERVICES

■ 20. GENERAL.—The units comprising the Army of the United States pertain to two functional subdivisions, the arms and the services.

The *arms* engage directly in combat and are known collectively as the line of the Army. The arms are: the Infantry, the Cavalry, the Field Artillery, the Coast Artillery Corps, the Air Corps, the Corps of Engineers, and the Signal Corps.

The *services* are charged with serving the line of the Army by performing the necessary functions of administration, supply, replacement, hospitalization, and evacuation. For further details see FM 100–10.

■ 21. No one arm wins battles. The combined action of all arms and services is essential to success. The characteristics of each arm and service adapt it to the performance of its special function. The higher commander coordinates and directs the action of all, exploiting their powers to attain the ends sought.

INFANTRY

■ 22. The *Infantry* is charged with the principal mission in battle. It is essentially the arm of close combat. This role, rather than the nature of its armament, distinguishes the Infantry as an arm.

The *primary mission* of the Infantry in the attack is to close with the enemy and destroy or capture him; in defense, to hold its own positions, check the enemy's advance, and throw him back by counterattack.

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■ 23. Infantry acts by fire, movement, and shock action, combining these means of action in combat. By fire, it inflicts losses on the enemy and neutralizes his combat power; by movement, it closes with the enemy and makes its fire more effective; by shock action, it completes the destruction of the enemy in close combat.

Infantry is capable of independent action through the employment of its own weapons. Its offensive power, however, falls off appreciably when freedom of maneuver is limited or when confronted by an organized defensive position. Under these conditions the concentration of the fire of supporting artillery and other arms is necessary. The defensive power of Infantry reaches a maximum when the Infantry occupies an organized defensive position or the enemy's freedom of maneuver is restricted. However, under these conditions, the vulnerability of the Infantry to neutralization by artillery fire and air attack is correspondingly increased.

■ 24. Infantry is equipped with an *armament* adapted to its role as the arm of close combat. Its principal offensive weapons are the rifle and bayonet and the light machine gun. Its mortars and heavy machine guns reinforce the fire power of the rifle units and contribute to the attainment of fire superiority upon which their ability to advance depends. Curved trajectory weapons (mortars and grenades) are utilized at close and medium ranges to attack personnel protected against flat trajectory fire by defilade or cover. Shock action is provided by tanks which assist rifle units in dealing with organized resistance.

The automatic and antitank weapons of Infantry increase its defensive power even on extended fronts. This power is augmented by proper utilization of the terrain and by organization of the ground, thereby providing mobile reserves.

When the situation so requires, elements of other arms are attached to Infantry for combat.

■ 25. *Tank units* are organically assigned to GHQ reserve and habitually allotted by it to larger units for reallotment to divisions operating in terrain favorable for the employment of tanks.

Ordinarily, tanks do not participate in phases of combat prior to the assault. To develop their full power tanks must be given a well-defined objective, launched with surprise and employed in mass; if engaged piecemeal, they suffer rapid destruction from the concentrated fire of artillery and anti-tank weapons.

■ 26. The combat action of tanks is essentially offensive. They constitute a powerful maneuvering force in the hands of a higher commander with which to influence the course of combat. In case of a break-through, they can penetrate deeply into the hostile position and attack the enemy's reserves and artillery. In the defense they constitute an effective means of counterattack.

As a rule, tanks are employed to assist the advance of infantry foot troops, either preceding or accompanying the infantry assault echelon. They attack successive ojectives which coincide with those of the supported infantry foot troops; these objectives should include those terrain features which will mask the tanks from hostile view.

■ 27. Infantry can move in all kinds of terrain; its operative *mobility* can be greatly increased by the use of motor transport. Its ability to move in small and inconspicuous formations enables it to take advantage of covered routes of approach and minor accidents of the terrain. In both attack and defense, it can utilize the terrain so as to develop fully its own fire power and minimize the effect of hostile fire.

■ 28. Infantry has the hardest task in battle; its losses are also the greatest. Its *combat power* rests primarily on the morale and fighting ability of the individual soldier and the leadership of its subordinate commanders. The demands that are made on the physical and moral strength of Infantry during crises in operations require that at other times commanders take all possible measures to conserve its energies, stimulate its morale, and cultivate the initiative and fighting spirit of the infantry soldier.

CAVALRY

■ 29. *Cavalry* is characterized by a high degree of mobility; its special value is derived from the rapidity and ease with which its power can be displaced from one position or locality to another.

Cavalry finds its most intensive application under conditions which permit complete freedom of maneuver and the exercise of its power of mobility; its utility becomes limited as conditions are created tending to restrict freedom of maneuver.

■ 30. The *mobility* of cavalry enables it to operate on extended fronts and at considerable distances from the main friendly forces. It thus extends the scope of operations of large units and secures to them the necessary freedom of maneuver.

Cavalry executes the missions of reconnaissance, counter-reconnaissance, and security for large units. It delivers combat separately and in combination with the operations of other arms, extending and supplementing their action when speed, surprise, or distant action is required.

In cooperation with the Air Corps, Cavalry locates the enemy, maintains contact with him, and procures for the higher command the essential information which it requires. In its covering operations, Cavalry is employed to screen the movements of large units.

■ 31. Cavalry constitutes a mobile combat force in the hands of higher commanders. It is especially adapted to the execution of combat missions where rapidity of movement is required. This rapidity of movement enables Cavalry to take advantage of opportunities to strike a sudden blow at weak points in the hostile dispositions and to meet critical situations arising in the course of operations. The mobility and fire power of Cavalry make it an effective means of conducting delaying action over considerable fronts and depths.

■ 32. Cavalry fights on a relatively broad front and slight depth. In the smaller units, the greater part is in the combat echelon so that local reserves are reduced to a minimum. Strong reserves are, on the other hand, often held out by the

large cavalry units. In principle, relatively weak forces, deployed in groups, contain the enemy on the front while the principal forces, attacking with rapidity and by surprise, strike the hostile forces in flank and rear.

■ 33. Cavalry comprises both horse and mechanized units; they are used in combination so that the one supplements the other. *Horse Cavalry* can operate in almost any terrain except swamps; *mechanized Cavalry* seeks terrain that will permit the maximum development of its fire power and mobility.

■ 34. *Horse Cavalry* is equipped with weapons similar to those of Infantry and has considerable fire power; it is provided with means for observation and rapid communication, scout cars for reconnaissance and motor transport for supply.

Horse Cavalry habitually maneuvers mounted; it ordinarily fights on foot. Distant separation of troops from their mounts is avoided. As a rule, mounted action is combined with dismounted action. Mounted action by large cavalry units is exceptional. Small units may attack mounted when opposed to an inferior or demoralized enemy, or when the attack can be delivered from close range by surprise.

■ 35. *Mechanized Cavalry* is equipped with armored fighting vehicles; its weapons are similar to those of horse Cavalry and include a high percentage of automatic weapons. Its principal means of communication is radio. In combat, it is difficult to control; it is sensitive to obstacles and conditions of terrain, and is subject to neutralization by artillery fire and air attack.

Mechanized Cavalry finds its principal role in employment on distant missions covering a wide area. If properly supported it can seize an objective but cannot hold it for a prolonged period without the support of Infantry or horse Cavalry, and artillery.

Because of its great mobility, armor protection, and fire power, mechanized Cavalry is able to intervene rapidly at a decisive point in battle and produce a powerful effect. On the offensive, mechanized Cavalry is the essential combat means for exploitation of a success; on the defensive, it is particularly useful in a counterattack and in covering a

retirement. When held in reserve, it constitutes a powerful means in the hands of higher commanders to parry or execute an enveloping maneuver, to reestablish the continuity of a front, or to exploit a success.

■ 36. The efficiency of Cavalry depends in great measure upon the condition of its mounts and the maintenance of its mechanized vehicles. Adequate provision must be made for the rest and subsistence of animals and for the maintenance and upkeep of combat vehicles. The strength of Cavalry must not be frittered away in secondary undertakings so as to render it inadequate for the execution of its principal missions.

The vulnerability of large mounted and mechanized formations to air attack frequently imposes on Cavalry the necessity of executing its movements by night or of marching in several columns or tactical groups.

■ 37. Other arms are combined with Cavalry in the cavalry division.

Cavalry does not constitute an organic element of infantry divisions. Cavalry units are attached to large units from higher commands as required by the situation.

Several cavalry divisions may be combined into a cavalry corps for the execution of a special mission. Large cavalry units are frequently reinforced by motorized Infantry and additional Field Artillery; the attachment of these units is usually indicated when strong hostile resistance is anticipated.

FIELD ARTILLERY

■ 38. *Field Artillery* is an arm of relatively long-range combat. Fire is its sole means of combat. It contributes to the movement of the entire force through the fire support which it renders other arms; its own movement is to insure this support.

■ 39. Artillery fire possesses great power of destruction and neutralization. It is the principal means of attack against material objectives. Its curved trajectories enable fire to reach personnel defiladed against flat-trajectory weapons or protected by ordinary overhead cover. The wide radius of

effect of artillery projectiles compels hostile troops in the open to move in widely deployed formations. Artillery fire also produces great moral effect.

■ 40. Artillery fire possesses a high degree of *flexibility*. Field artillery is thus capable of intervening over a zone of great width and depth, and of rapidly shifting and concentrating its fire in accordance with the situation, without changing its positions. This characterstic makes it possible to concentrate the fire of large masses of field artillery under a common fire direction. Such heavy concentrations of fire are, under certain conditions, capable of being directed with annihilating effects against critical objectives in the zone of combat. Through the maneuver of artillery fire, higher commanders possess a powerful means of influencing the course of combat. The efficiency with which artillery fires are maneuvered is dependent upon adequate control, close liaison with supported troops, and efficient communication and observation. Deficient observation causes a great increase in consumption of ammunition; poor signal communication prevents concentration of fire both in time and place.

■ 41. Field Artillery has *two principal missions* in combat:

It supports Infantry and Cavalry by fire, engaging those targets which are most dangerous to the supported arms.

It gives depth to combat by counterbattery fire, by attacking hostile reserves, and by dislocating the enemy's communication system and agencies of command.

■ 42. In order to carry out its principal combat missions, the Field Artillery of a command is ordinarily subdivided for combat so that a part is assigned to the support of particular units and the remainder retained under the direction of the chief of artillery of the command.

In the division, certain field artillery units are assigned to the *direct support* of specified infantry or cavalry units, and the remainder are retained in *general support* of the division as a whole. In higher commands, field artillery units may be placed in support of component large units comprising the command.

The assignment of direct support missions to Field Artillery permits direct cooperation with the supported units, and enables it to act with greater promptness in meeting the requirements of the rapidly changing situation on the front of the supported units. Such assignment does not, however, imply subordination of the field artillery units to the commander of the unit supported. So long as the higher commander is able to exercise effective control of the fire of his Field Artillery through his chief of artillery, he does not delegate the command of any portion of it to subordinate commanders.

■ 43. As a fundamental principle, Field Artillery can be employed with more effect and greater economy under *centralized control*. When, however, as the result of unusual extension of frontage, restricted visibility of the terrain, or insufficiency of signal communication, the superior commander cannot efficiently direct the fire of the supporting artillery, he should promptly place it under the orders of the commanders of the units supported. Unity of command requires that the responsibility for the success of an operation be not divided.

The requirements of *decentralization* in the control of Field Artillery must be met in such a way that the ability to effect concentration of the entire artillery fire power of large units is retained in the largest possible measure. In cases where the direction of artillery fire has been decentralized, higher artillery commanders retain, as far as practicable, the power to resume centralized control except in cases where artillery elements have been attached to subordinate units by superior authority.

■ 44. The artillery missions of the several large units are adapted to the characteristics of the matériel with which they are equipped, and the relative importance of the objectives.

Division artillery is most effective in fire on personnel. Its principal mission is the support of the Infantry and Cavalry. It is also employed to neutralize enemy observation, to interdict hostile movements, and to assist the corps artillery in counterbattery.

The corps *artillery* has for its principal mission the neutralization or destruction of the hostile artillery, the destruction of hostile defenses, and long-range interdiction fire. It is also employed in reinforcement of the fires of division artillery. Special artillery observation units (sound and flash) are assigned to the corps artillery.

The *army artillery*, which includes only such units as can be employed effectively in support of the army as a whole, has for its principal missions distant interdiction and destruction fire, and the assistance of corps artillery.

The *artillery in GHQ reserve* includes field artillery units of various classes and special artillery observation units (sound and flash). These units are habitually allotted to armies for employment under the army commander or for reallotment to lower units.

45. Field Artillery is organized with a view to the most efficient development of its fire power and the constitution of suitable groupings for the execution of its supporting missions.

When occasion requires, particularly when there is a great massing of field artillery, temporary groupings of batteries, battalions, or regiments may be formed for convenience in the execution of missions. These groupings are based upon the nature of the mission to be executed rather than upon type or caliber. Tactical unity is, as far as practicable, respected in the composition of groupings.

COAST ARTILLERY CORPS

46. The *Coast Artillery Corps* is characterized by the great fire power it can deliver primarily against naval and aerial targets. Its armament comprises seacoast artillery, antiaircraft artillery, and submarine mines.

47. The missions of the Coast Artillery Corps are to attack enemy naval vessels by means of artillery fire and submarine mines, and to combat hostile aircraft by means of fire from the ground.

Cooperating in coastal frontier defense with the Navy off shore, the Coast Artillery Corps mans and serves the harbor defenses established in time of peace and augmented in time

of war. These harbor defenses are highly organized and strongly protected localities, organized administratively and tactically for the defense of a harbor or other water area.

■ 48. *Seacoast artillery* comprises all the artillery, whether fixed or mobile, employed against hostile naval vessels. It is classified according to caliber as primary armament which includes cannon of 12-inch or greater caliber, and secondary which includes all other armament.

Seacoast artillery has the same general characteristics of fire as Field Artillery (see pars. 39 and 40) except for its greater power and range, and the armor-piercing ability of its projectiles which, in general, are not suitable for use against land targets. It is provided with special equipment to facilitate the delivery of accurate fire on moving targets at sea.

Fixed seacoast artillery secures protection from naval and air attack by fortifications and other permanent structures; its operation and service are greatly facilitated by mechanical means; its stability permits great accuracy of fire. The provision of permanently installed communications, stations and fire control equipment makes possible the establishment of a common fire direction to exploit the flexibility of artillery fire to the maximum extent.

Mobile seacoast artillery comprises *railway* artillery and *tractor-drawn* artillery. Both types combine strategical mobility with a limited tactical mobility and require a considerable time for emplacement. Mobile seacoast artillery provides additional gun fire for existing harbor defenses and is used in conjunction with other forces to protect harbors or coastal areas for which no permanent defenses have been provided.

Seacoast artillery is organized into groups and groupments in order to develop the maximum fire power and provide efficient fire direction.

■ 49. The general mission of the *antiaircraft artillery* is to combat hostile aircraft. For this purpose, it is equipped with antiaircraft guns, machine guns, searchlights, sound-locators, and equipment required for observation, fire-control, and

signal communication. These means of antiaircraft defense are combined in the regiment.

Antiaircraft artillery operates both by day and by night. Because of the mobility of its matériel, antiaircraft artillery lends itself to rapid concentration in critical areas.

Antiaircraft artillery reinforces the antiaircraft measures of other troops and, in cooperation with our own aviation, operates especially against hostile aircraft flying beyond the range of the weapons of other troops. It provides protection for those vital elements of a command most likely to be subjected to hostile air observation or attack. It is employed also in harbor defenses and for the protection of airdromes and other sensitive points in the rear areas.

■ 50. The establishment of a coordinated antiaircraft defense is facilitated by *centralized control* of antiaircraft units. In some situations, however, such as during an advance, it may be necessary to decentralize control of part of the antiaircraft artillery to protect widely separated units or installations.

■ 51. An essential agency of antiaircraft artillery is its *intelligence service*. This service gathers and transmits information of the enemy's air activities necessary for the proper employment of the antiaircraft artillery units. It should not be confused with the *aircraft warning service* which is a regional service forming part of a theater, sector, or area, and serving all agencies of antiaircraft defense. The aircraft warning service operates directly under the control of the commander of a sector or area or the theater of operations concerned.

AIR CORPS

■ 52. The general mission of the *Air Corps* is the preparation for and execution of air operations as a part of the field forces.

■ 53. Military aviation is characterized by an extremely high degree of mobility, the ability to move in three dimensions, and extreme range of fire power. Air operations may be restricted by hostile counter air force operations and antiaircraft measures, by the availability of air bases, and by adverse weather conditions.

The mobility of aircraft enables them to cover great distances in a short period of time and makes possible their rapid intervention at critical points in a theater of operations and rapid movement between widely separated theaters.

The power of aircraft to move in any direction enables them to maneuver in altitudes beyond the range of ground weapons, to approach terrestrial objectives from such altitudes, and to make deep incursions into enemy territory.

The operating range and fire power of combat aircraft are reciprocal functions and depend upon the distribution of the useful load between fuel and ammunition.

■ 54. In general, air operations involve three fundamental tactical functions:

Air attack, which is the attack of objectives on the earth's surface by aircraft;

Air fighting, which is the act of fighting between aircraft in flight;

Air reconnaissance and *observation*, which is the gaining of information through visual and photographic means carried in aircraft.

■ 55. In accordance with the purpose for which aircraft are ordinarily employed, military aviation is divided as follows: combat; reconnaissance, observation, and liaison; transport; and training and special purpose aviation.

Combat aviation is organized, equipped, and trained to engage in offensive and defensive air operations by air attack and air fighting. Corresponding to the means with which equipped, combat aviation is organized into bombardment and pursuit units. Medium and long-range reconnaissance is performed by bombardment types of aircraft.

Reconnaissance, observation, and *liaison aviation* is organized, equipped, and trained to conduct air reconnaissance, observe fire, gain military information by visual and photographic means, and transmit instructions and reports in accordance with the orders of supported units to which organically assigned or attached. It includes both heavier-than-air aircraft and balloons. Although armed for their own protection, they are not suitable for air attack or air fighting.

Transport aviation is organized, equipped, and trained to carry personnel and cargo. It is indispensable for facilitating the operations of Air Corps units through the rapid transport of personnel and essential items of supply, and is particularly suitable for increasing the mobility of foot troops in an emergency.

Training and *special purpose aviation* is organized, equipped, and trained especially for the training of flying personnel and for other special purposes not connected with air operations; it is neither suited nor intended for combat use.

56. A knowledge of the powers and limitations of *combat aviation* is a prerequisite to sound employment. These powers and limitations are derived from the characteristics of its constituent aircraft. These characteristics change rapidly with the development of new aircraft.

Bombardment aviation is characterized by its ability to carry large loads of destructive agents to attack surface objectives. It includes light, medium, and heavy bombardment.

Light bombardment aviation constitutes the principal element of GHQ aviation which operates in direct support of ground forces. (See par. 65.) Its principal weapons are light bombs and chemicals. It is capable of applying these destructive agents to destroy light material objectives, to interdict routes of communication and supply, to render airdromes temporarily useless, and to attack troops in the open or under light shelter.

Medium and *heavy bombardment* aviation constitute the offensive power of the GHQ striking forces. (See par. 65.) They are designed to carry the maximum bomb loads to great distances and to conduct long-range strategic reconnaissance over land and sea. Their principal weapon is the heavy bomb. They rely primarily upon high altitude flying, speed, defensive fire power, darkness, and the cover of clouds for security. They are particularly suitable for the destruction of heavy material objectives. Their radius of action is such that they can strike objectives at a great distance from their base and still find service and security deep in friendly territory.

Pursuit aviation is characterized by its great speed and maneuverability in the air and by its ability to engage in air fighting. It includes interceptor and fighter pursuit.

Interceptor pursuit aviation is designed primarily for defensive missions in the antiaircraft security of important areas and ground installations, and the protection of ground troops and their observation aviation. It extends protection beyond the range of antiaircraft artillery and its operations are coordinated therewith. (See par. 65.)

Fighter pursuit aviation has greater range than interceptor pursuit and is designed to accompany and protect bombardment aviation exposed to attack by hostile combat aviation.

Although pursuit aviation is designed primarily for air fighting, it can also be used to attack troops and their transportation.

■ 57. *Balloons* constitute elevated observation posts and serve as a means for extending the field of view under continuous observation. They possess a considerable degree of mobility and can be moved frequently without material loss of efficiency. They are, however, vulnerable to attack by hostile combat aviation and antiaircraft artillery if within range of the latter.

For purposes of observing and adjusting artillery fire, the balloon or the observation airplane is employed, whenever practicable, in preference to the reconnaissance airplane which is provided for and intended to perform reconnaissance missions.

■ 58. The *fire power* of combat aircraft used in air attack is characterized by its potential concentration and cumulative effect. This effect depends upon the nature and extent of the objective, upon the enemy's measures for antiaircraft defense, and upon the number and charactertisics of combat aircraft used against the objective. The constant threat of air attack exerts a strong influence on surface movements and operations.

■ 59. Because of the speed and powers of evasion inherent in all aircraft, *air fighting* is generally of a brief duration and the results are often indecisive. As a result, pursuit aviation is incapable of controlling the air in the same sense that surface forces can control an area. Air fighting will, therefore, be carried on as necessary to limit hostile air operations.

■ 60. *Air reconnaissance* and *observation operations* are characterized by wide range and great depth, by the excellence and precision of the air photographs taken, and by the rapidity with which information is obtained and transmitted. They are limited by poor visibility, bad weather, antiaircraft fire, and the opposition of hostile combat aviation.

■ 61. All aircraft except balloons are equipped with two-way radio; balloons are able to communicate by telephone with the ground. Other means of communication between air and ground are dropped and picked-up messages, pyrotechnics, flares, and other visual signals.

■ 62. Much of the equipment pertaining to aircraft is of a complex and highly technical nature; its operation requires highly trained combat crews; its maintenance and repair require mechanics with specialized skill. As a consequence, all aircraft need constant care and maintenance and are vulnerable to air attack both in flight and on the ground. The fatigue of combat crews and the repair and reservicing of equipment and matériel require all aviation units to operate from air bases where the necessary facilities are provided for rest, replacement, maintenance, and repair.

The frequency of engagements of the elements of an aviation unit depends upon the urgency of the situation and the demands already made on the particular unit. It is essential that aviation units be conserved in their employment during less active periods of operations so that crews and equipment may be pushed to the limit of endurance during critical phases of operations.

■ 63. Air bases, suitably located, are essential for the operations of combat aviation. Without a suitable air base from which to operate, combat aviation soon becomes impotent.

An *air base* is an Air Corps command which comprises the landing facilities and the installations for shelter, supply, maintenance, and repair that are necessary to sustain the operations of combat aviation. Such a base will, as a rule, cover a considerable area. Its security requires a wide distribution of base facilities and installations and adequate means for their protection.

PROPERTY OF U. S. ARMY

■ 64. The basic administrative and tactical unit of the Air Corps is the squadron. The group, composed of two or more squadrons, is the principal tactical unit and contains all the essential elements necessary for operation, maneuver, and combat. The next higher Air Corps unit is the wing which may consist of two or more types of aviation but will rarely, if ever, operate tactically as a unit in the air.

Military aviation is assigned to GHQ, to oversea departments, to large units (division and larger units), and to the zone of the interior or other important areas.

■ 65. GHQ aviation (see par. 6) comprises:

Striking forces which operate as strong offensive air units to extend air operations to a great distance from their operating bases.

Defense forces which provide the necessary antiaircraft defense of the most vulnerable and important areas of the zone of the interior.

Support forces which operate in direct support of the operations of the ground troops.

Special forces which meet the requirements for air operations in coastal defense and similar operations in minor theaters.

■ 66. The *aviation* assigned to an *oversea department* conducts whatever air operations may be required incident to the application of the defense plans of the particular oversea department. It may be reinforced by GHQ aviation which then operates under the control of the department commander until returned to GHQ control.

■ 67. The *aviation* organically assigned to *large units* is generally limited to reconnaissance, observation, and liaison types, suitable in range and speed to the missions to be executed. The organization of these Air Corps units is determined on the basis of the estimated minimum requirements in aviation of the several large units. When greater strength in aviation is required for any particular operation, the increase is provided by attaching additional units. A portion of GHQ aviation may be attached to or placed in support of larger units, the size and composition of such support forces depending upon the task or mission to be executed.

68. The *aviation* assigned to the *zone of the interior* comprises training and special purpose aviation and such other Air Corps units and establishments as are required for effective mobilization and training, and for replacement and maintenance of aviation in the theater of operations. A portion of GHQ aviation (defense forces, see par. 65) may be assigned for antiaircraft defense in the zone of the interior.

69. The organization for combat of the aviation of a command is a function of the commander; each chief of aviation (air officer in the division) acts as adviser to his commander in the performance of this duty. This organization for combat is based on the consideration of the characteristics and the amount of aviation available, and a study of the air operations to be conducted in accordance with the situation. The organization should be such as to constitute a suitable task force to accomplish the mission, and render command, tactical control, communication, and supply most effective.

70. The selection of objectives against which air operations are to be directed is of vital importance. Air operations must be pushed with energy and dispatch, using every opportunity to take full advantage of surprise. Since the replacement of flying personnel and equipment is both slow and expensive, economy of force is especially important (see par. 62). Combat aviation should be employed in mass against objectives of decisive importance for the accomplishment of the mission of the field forces, and not dispersed or dissipated in operations of minor or secondary importance.

Air operations beyond the sphere of action of the ground forces are undertaken in furtherance of the strategical plan of the commander of the field forces. These operations are discussed in FM 100–15.

71. Combat aviation placed in support of large units operates to further the mission of the supported command. The superior commander under whom such support aviation is operating is responsible for the assignment of air missions or objectives, and for its employment within or beyond the sphere of action of ground forces.

In general, the greatest effectiveness of military aviation is secured through centralized control. When decentraliza-

tion of support aviation becomes necessary in situations requiring immediate tactical support of specified units, the superior commander attaches to or places a part or all of his support aviation in support of a specified large unit so that it may act with greater promptness and better understanding in meeting the requirements of the supported unit.

■ 72. In the hands of higher commanders, *support aviation* constitutes a powerful means for influencing the course of combat after the ground forces have become engaged. The increased application of motorization and mechanization extends the possibilities for air attack. The difficulty of gaining fire superiority over a well-organized defense points to an increasing need of air attack in support of ground troops, especially in critical situations when the available means of support on the ground are inadequate.

The hostile rear area is the normal zone of action of support aviation since operations in this area permit the full utilization of striking power against concentrated targets with the minimum losses and the maximum results. Ordinarily, the most effective results will be obtained from bombing attacks launched at altitudes above the effective range of ground weapons. Support aviation usually is not employed against objectives which can be effectively engaged by available ground weapons within the time required.

CORPS OF ENGINEERS

■ 73. The *Corps of Engineers* is essentially skilled in all work of construction in the field designed to increase the combat effectiveness of troops, facilitate their movement, and hinder the movement of the enemy.

Engineers contribute to the mobility of ground troops by the repair and maintenance of the routes of communication and the elimination of obstacles to movement; they impede the movement of hostile forces by the execution of demolitions and the creation of obstacles. They increase the combat power of other arms by technical assistance in the construction of protective works by furnishing them with the necessary supplies and matériel for the execution of field fortifications, and by the construction of works requiring special equipment and training.

Engineer troops assist in maintaining the effectiveness of troops by making the necessary provisions for their shelter and water supply, together with the incidental installations (except signal communication); they operate all utilities of general service to the troops except such as are specifically assigned to the services. They make and supply maps, air photographs, and map substitutes.

■ 74. One of the most important engineer missions is the construction, improvement, and maintenance of routes of communication and movement. Upon the successful execution of this mission depend, in large part, the mobility of the field forces and their power of maneuver. Broad prevision of the scope of operations, careful planning, and the timely supply of the necessary matériel and labor are essential preliminary measures. Progressive reconnaissance must continue throughout the course of operations.

Of equal importance is the mission of hindering enemy movement. The mobility inherent in motorized and mechanized forces must be countered by an intensive use of military obstacles, natural and artificial. Engineer troops are equipped to execute demolitions by explosives and other means and to erect obstacles of every description. These may consist of hastily erected barriers, such as road blocks and mine fields, or of deliberately prepared zones of obstacles.

■ 75. In principle, each arm is responsible for the execution of the works necessary to its own defense. Engineer troops are employed for the construction of defensive works of a special character and such other works as are essential to the general service of the command. They assist the other arms in the siting and construction of defenses, and supply the necessary engineer tools and material therefor. The siting and construction of rearward defensive positions are frequently delegated to the engineers.

■ 76. Engineer troops are classified as *general* and *special*.

General engineer troops include divisional combat engineer units, and the general service regiments and separate battalions of larger units. Their duties are, in general, in the nature of a pioneer service and cover a wide field.

Special engineer troops include topographic, camouflage, railway operating, water supply, ponton, dump truck, depot, and shop units. They perform engineering duties which require specialized technical training and equipment. Most of these units are assigned to armies and to the communications zone. The requirements of units lower than the army are met by the attachment of special engineer troops or by the execution of the work under the direction of army headquarters.

■ 77. In principle, the engineers assigned to any large unit are responsible for such route improvement and construction, including bridging, as are necessary to facilitate the movement of the troops and transportation of that unit. Work of a more permanent nature and construction required for the passage of heavier loads than the maximum included in the composition of the leading units are undertaken by the engineers of higher units in order that the advancing troops may not be deprived of the services of their own engineers.

■ 78. As a rule, the best results are obtained when engineer troops operate under centralized control. They may, however, be attached to a subordinate unit when their work is intimately associated with the operation of that unit, or when distance and insufficient communication make direct control by the superior command difficult. Economy of time, personnel, and materials usually requires that engineer work be limited to bare necessities. In general, each unit to which engineers are assigned or attached performs only such engineer work as is essential to the operations of that unit; heavier or more elaborate engineer tasks are performed by the engineers of higher echelons.

■ 79. The elementary unit of combat engineers is the platoon which is the smallest unit to which engineer equipment and the means for its transportation are organically assigned. Larger combat engineer units are so organized and equipped as to meet the general engineering needs of the unit to which they are assigned and to make available suitable groups for attachment to its component units. Engineer units are given at least the same degree of mobility as the units to which they are assigned.

80. While the presence of other troops usually affords some security, engineer units are required to provide for their own immediate protection. For this purpose they are armed with the rifle. In an emergency, engineer units may be used as a combat reserve.

SIGNAL CORPS

81. *Signal Corps* troops have the combat mission of providing the signal communication of the large unit to which they are assigned. They are immediate agencies of the commander in whose services they provide channels of signal communication and transmit and receive orders, reports, and other messages.

82. *Wire* transmission (telephone, teletype, and telegraph) constitutes the basic means of signal communication. Other means of communication supplement and extend the service of the wire circuits.

Radio transmission is especially useful during movement in spanning great distances and in communication between air and ground. It is subject, however, to hostile interference and interception, and must often be silenced for tactical reasons or restricted because of congestion of frequency bands.

83. Signal troops install, maintain, and operate the signal communications which constitute the framework of the communication system of the field forces. The control points of this framework are the *command posts* (*message centers*) and *advanced message centers* of the large units. The system of signal communication thus defined is known as the *command system*.

84. The organization of signal units is adapted both to their technical employment and to their distribution for the execution of their various missions. Signal troops assigned to divisions, corps, and armies comprise *construction units* for the installation of wire circuits; *operating units* for the operation of message centers, messenger service, and wire, radio, and visual communication; and *supply units* for the supply of signal equipment. In addition, signal troops assigned to armies include units for employment with the signal *intelligence*, *photographic*, and *pigeon* service of the army.

■ 85. The *signal intelligence service* is charged with the interception of enemy wire and radio traffic, the location of enemy radio stations and airplanes by radio direction finding, the location of unauthorized radio stations, and with all matters pertaining to the preparation and solution of codes and ciphers. It is also the agency charged with the duty of intercepting the radio traffic of our own stations in order to safeguard against violations of radio procedure and of regulations governing the use of codes and ciphers.

■ 86. The Signal Corps exercises technical supervision over the entire signal service of the field forces. It supplies other arms and services with the technical equipment required for the installations of their own systems of signal communication.

■ 87. Technical control and coordination of the employment of signal communication in the field forces require the early issue of signal operation instructions. These instructions are prepared by the signal officer of the unit and are issued by authority of the unit commander prior to entry into action.

CHEMICAL WARFARE SERVICE

■ 88. While the Chemical Warfare Service is not classed as an arm, chemical troops supplement the arms in employing chemical agents. Chemical troops are employed to perform tasks for which they are especially trained and equipped.

■ 89. Chemical regiments, completely motorized, are assigned to the GHQ reserve. They are allocated to armies and lower units as the situation requires. They are profitably employed in large scale chemical operations during the preparatory phase of an operation by corps and higher units. For important chemical operations, chemical units ordinarily are held under control of the commander ordering the operation. In giving smoke support they may be attached to divisions or lower units.

CHAPTER 3

CONDUCT OF WAR

GENERAL PRINCIPLES

■ 90. The *conduct of war* is the art of employing the armed forces of a nation in combination with measures of economic and political constraint for the purpose of effecting a satisfactory peace. It is based on the skillful adaptation and application of the technique of modern science. New means are always giving it a different form. These developments must be anticipated, and their influence must be correctly evaluated and promptly exploited.

■ 91. The *ultimate objective* of all military operations is the destruction of the enemy's armed forces in battle. Decisive defeat in battle breaks the enemy's will to war and forces him to sue for peace which is the national aim. To attain this ultimate objective one or more *intermediate objectives* may have to be determined. These objectives must be well defined and must contribute toward the attainment of the ultimate objective.

■ 92. The situations that arise in war are numerous. They are subject to sudden and frequent change. Frictions and mistakes are common occurrences. Since the enemy is also free to act, situations seldom develop as expected. (See par. 181.) Imponderable factors often exercise a decisive influence. While certain principles, deduced from experience, serve as a useful guide, their application varies according to circumstances.

■ 93. Concentration of *superior forces*, both on the ground and in the air, at the decisive place and time, creates the conditions most essential to decisive victory and constitutes the best evidence of superior leadership.

The necessity for concentrating the greatest possible force at the point of decisive action requires strict *economy* in the strength of forces assigned to secondary missions. Detachments during combat are justifiable only when the execution of tasks assigned them contributes directly to success in the main battle.

■ 94. Only through *offensive* action can a commander exercise his initiative, preserve his freedom of action, and impose his will on the enemy. A *defensive* attitude may, however, be deliberately adopted as a temporary expedient while awaiting an opportunity for counteroffensive action, or for the purpose of economizing forces on a front where a decision is not sought.

In the offensive, the commander must focus his attention on the objective; in the defensive, on the front of greatest danger. In campaign, offensive action is occasional and for a limited period of time. Success comes from the ability of the commander to select the right time and place for offensive action.

Numerical inferiority does not necessarily commit a command to a defensive attitude. Superior hostile numbers may be overcome through greater mobility, more effective fire, higher morale, and better leadership. Superior leadership often enables a numerically inferior force to be stronger at the point of decisive action.

A strategically defensive mission is frequently most effectively executed through offensive action. It is often necessary for an inferior force to strike at an early moment in order to secure initial advantages or to prevent itself from being overwhelmed by a growing superiority in the hostile forces.

■ 95. *Unity of effort* is necessary to apply effectively the full combat power of the available forces. It is obtained through *unity of command*. Where this is impracticable, dependence must be placed upon *cooperation*.

■ 96. Whenever practicable, combat action should be based upon the effect of *surprise*. Surprise finds the enemy in a state of moral and material unpreparedness, prevents him from taking effective countermeasures, and often compensates for numerical inferiority of force. Surprise is sought not only in the initial stage of action but also throughout the action and by every echelon of command. Surprise applies to fire as well as to movement.

The effect of surprise is dependent upon rapidity of maneuver, the efficiency of counterinformation measures, and the

effectiveness of the means employed to deceive the enemy as to our own dispositions and intentions. It must be reinforced and exploited by fire superiority.

The effect of surprise is furthered by variation in the means and methods employed in combat. Fixed methods of procedure enable the enemy to estimate the character and object of an operation.

■ 97. The necessity for guarding against surprise requires adequate provision for the *security* and readiness for action of all units.

Each unit takes the necessary measures for its own local security as soon as the next higher unit has developed for action.

Provision for the security of flanks is of especial importance in combat.

■ 98. The task assigned to any unit must not involve a complicated maneuver. *Simple* and *direct* plans and methods are alone practicable in war. Simple action, promptly and thoroughly executed, is the best guarantee of success.

LEADERSHIP

■ 99. Man is the fundamental instrument in war; other instruments may change but he remains a constant factor. Unless his behavior and elemental attributes are understood, gross mistakes will be made in planning operations and in troop leading.

■ 100. The *conduct* of the average man in battle is governed more by instinct than by reason. By instinct he is gregarious and prefers to fight in the group. He is beset with fear of the unknown, especially at night and when alone, and therefore seeks security in the group. He readily accepts symbolic ideals implanted by tradition and national culture and will fight for these ideals when he is aroused. His instinct of self-preservation will induce him to flee from danger but he is deterred from flight by the disgrace he feels in the eyes of his comrades. He wants to earn their respect and esteem as measured by the standard of military conduct accepted by

the group. In the training of the individual soldier, the essential considerations, therefore, are to integrate the individual into a group and to establish for that group a high standard of military conduct and performance of duty.

■ 101. War places a severe test on the *moral stamina* and *physical endurance* of the individual. It is not sufficient that he be well armed and equipped. Not only must the individual soldier be physically hardened, but he must be qualified to march, to use his weapons, and to care for himself and his transportation in the field.

The individual soldier must be fortified by *discipline* which is based on a high ideal of military conduct. This discipline must cause every man to have a horror of the disgrace that will be visited upon him and his unit if he succumbs to fear and endangers his comrades. An endeavor to dominate the instinct of self-preservation by the fear of a greater terror is resorted to only in extreme cases and then primarily for its salutary effect on the members of the group. As a rule it is far better to dominate demoralizing influences by inculcating in the individual a proper sense of duty, a conscious pride in his unit, and a feeling of mutual obligation to his comrades in the group. (See par. 106.)

■ 102. In spite of the advances in technique, the worth of the *individual* man is still decisive. His importance has risen due to the open order of combat. Every individual must be trained to exploit a situation with energy and boldness, imbued with the idea that success will depend upon his action.

The dispersion of troops in battle caused by the influence of modern weapons makes control more and more difficult. Modern combat, therefore, requires more than ever a strong cohesion within a unit in order to give it a *sense of unity*. This cohesion is promoted by good leadership, pride in the accomplishments and reputation of the unit, and by mutual confidence and comradeship among its members.

■ 103. *Troop leading* in combat, regardless of the echelon of command, calls for cool and thoughtful leaders with a strong feeling of the great responsibility imposed upon them. They

must be resolute and self-reliant in their decisions, energetic and insistent in execution, and unperturbed by the fluctuations of combat. (See par. 178.)

■ 104. Troops are strongly influenced by the example and conduct of their commissioned and noncommissioned leaders. Will power, self-confidence, initiative and disregard of self will enable a leader to master the most difficult situation. A bold and determined leader will carry his troops with him no matter how difficult the enterprise. Mutual confidence between the leader and his men is the surest basis of discipline in an emergency. To gain this confidence, the leader must find the way to the hearts of his men. This he will do by acquiring an understanding of their thoughts and feelings, and by showing a constant concern for their comfort and welfare.

■ 105. The *combat value* of a unit is determined by the soldierly qualities of its leader and members and its "will to fight." An outward mark of this combat value will be found in the set-up and appearance of the men, in the condition, care, and maintenance of their weapons and equipment, and in the readiness of the unit for action. Superior combat value will offset numerical inferiority. The greater the combat value of the troops, the more powerful will be the blow struck by the commander. Superior leadership combined with superior combat value of troops constitutes a reliable basis for success in battle.

■ 106. A hastily or poorly trained unit is likely to fail in a critical moment due to demoralizing impressions caused by unexpected events in combat. This is particularly true in the first engagements of a unit. Therefore, training and discipline are of great importance. Every leader is obliged to take energetic action against indiscipline, panic, pillage, and other disruptive influences. *Discipline* is the cohesive force that binds the members of a unit and its strict enforcement is a benefit for all. Its constraint must be felt not so much in the fear of punishment which it evokes as in the moral obligation it imposes on the individual to heed the common interest of the group. (See par. 101.)

■ 107. A commander must live with his troops, and share their dangers and privations as well as their joys and sorrows. By personal observation and experience he will then be able to judge their needs and combat value. A commander who unnecessarily taxes the endurance of his troops will only penalize himself. The expenditure of combat strength must be in proportion to the objective to be attained. Impossible demands only undermine the morale of troops and destroy their confidence in the leader.

Comradeship among officers and men is to be fostered by every available means. The strong and the capable must encourage and lead the weak and less experienced. On such a foundation, a feeling of true comradeship will become firmly established and the full combat value of the troops will be made available to the higher commander.

■ 108. A willingness to accept *responsibility* is the foremost trait of leadership. This willingness should not, however, manifest itself in a disregard of orders on the grounds of probably having a better knowledge of the situation than the higher commander. Independence must not be confused with personal caprice.

Officers and men of all grades are expected to exercise a certain independence in the execution of tasks assigned to them and to show initiative in meeting situations as they arise. *Every individual from the highest commander to the lowest private must always remember that inaction and neglect of opportunities will warrant more severe censure than an error of judgment in the choice of the means.*

■ 109. A wise and capable commander will see that the men assigned to the component groups of his unit are compatible and that the composition of the groups is changed as little as possible. He will provide each group with a leader in whom its members have confidence. He will so regulate the interior economy of the unit that all groups perform the same amount of work and enjoy the same amount of leisure. He will see that demonstrated efficiency is promptly recognized and rewarded. He will set before all a high standard of military conduct and apply to all the same rules of discipline.

■ 110. Good morale and a sense of unity in a command cannot be improvised; they must be thoroughly planned and systematically promoted. They are born of just and fair treatment, a constant concern for the soldier's welfare, thorough training in basic duties, comradeship among men, and pride in self, organization, and country. The establishment and maintenance of good morale are incumbent upon every commander and are marks of good leadership.

CHAPTER 4

COMMAND AND STAFF

COMMAND

■ 111. *Command* is the authority which an individual in the military service lawfully exercises over subordinates by virtue of rank or assignment. This authority is commensurate with the individual's responsibility, and must be sustained as long as the subordinate fulfills his lawful responsibility.

Command and *leadership* are inseparable. Whether the command be large or small, and whether the exercise of the functions of command be complex or simple, the commander must be the controlling head; his must be the master mind, and from him must flow the energy and the impulse which are to animate all under him.

■ 112. The commander should have three conceptions ever before him: the *moral* and *physical* state of his command as a whole, the *material conditions* under which he is operating, and the *capabilities of the enemy*. A good commander avoids subjecting his troops to useless hardships; he guards against dissipating their combat strength in inconsequential actions or harassing them through faulty staff management.

■ 113. In the exercise of his command functions, the commander should keep in close touch with all subordinate units by means of personal visits and observation. It is essential that he know from *personal contact* the mental, moral, and physical state of his troops, the conditions with which they are confronted, their accomplishments, their desires, and their

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needs. He should promptly extend recognition for services well done, lend help where help is needed, and give encouragement in adversity. Nevertheless, he should not hesitate to exact whatever effort is necessary to attain the desired end. Considerate and devoted to those whom he commands, he should be faithful and loyal to those who command him.

■ 114. Commanders inspire confidence in their subordinates primarily by their ability to gain material advantage over the enemy with the least losses. A reputation for failure in a leader destroys morale. The morale of a unit is that of its leader; it is not defeated until he is defeated.

■ 115. A commander must bear in mind that his physical condition is the basis of his efficiency. He owes it to the men under his command to conserve his own fitness by proper regard for food and rest, particularly in times of crises. Neglect of this rule soon renders him unable to bring a normal mind to the solution of his problems, and reacts unfavorably on his whole command.

■ 116. All the troops assigned to the execution of a distinct mission should be placed under *one command*. So long as the commander can exercise effective control, he does not decentralize. Centralized control is indicated in the initial stages of an action, in more deliberate operations, or when powerful and concentrated action is desired. In the later stages of an action, in rapidly changing situations, when communications function with difficulty, or when visibility of the terrain is restricted, a certain degree of decentralization becomes necessary. As far as practicable, a commander retains the power to resume centralized control should this become necessary.

■ 117. All *orders* and *instructions* from a higher to a subordinate unit are given to the commander thereof, and all orders and instructions for any element or elements of a subordinate unit emanate from the immediate commander of such unit. By this means alone are authority and responsibility definitely fixed and the channels of command definitely established.

Decision as to a specific course of action in any given case is the responsibility of the commander alone and presupposes an analysis by him of pertinent facts and factors. It is the task of the staff to furnish the commander with such information, data, and advice as he may require in reaching his decision. It is also the *function of the staff* to elaborate the details necessary to carry the decision into effect. (See pars. 121 and 188.)

Personal conferences between the higher commander and the subordinates who are to execute his orders may at times be advisable, in order that the latter may arrive at a correct understanding of the plans and intentions of their superior, and may correctly interpret the orders issued. However, the purpose of such a conference is neither to criticize the orders or plans of the higher commander nor to influence the latter's action. The commander issuing the order cannot share the responsibility therefor with any of his subordinates. The decision, no matter how arrived at, is his alone.

■ 118. A commander of a subordinate unit cannot plead absence of orders or the nonreceipt of orders as an excuse for inactivity in a situation where action on his part is desirable, or where a change in the situation upon which the orders issued were based renders such orders impracticable or impossible of execution. If the subordinate commander understands the general plan and knows the end in view, lack of initiative on his part is inexcusable. (See par. 108.)

STAFF

■ 119. The *staff* assists the commander in the exercise of his command functions.

The staff may be subdivided into two groups—(1) the *general staff* and (2) the *special staff*. In large units these two staff groups are separate and distinct; while in smaller units they merge into each other, and one staff officer frequently is charged with duties pertaining to both staff groups.

■ 120. The *chief of staff* (executive in small units) renders professional aid and is the personal representative of the commander. He assists the commander in the supervision

and coordination of the command, and should enjoy his complete confidence and a considerable degree of independence in the performance of his duties. He is responsible for the working of the whole staff, and, under the orders of his commander, for the control and coordination of the operation of the troops. His powers of supervision, coordination, and control in the commander's name are coextensive with this responsibility and are exercised to the extent deemed necessary to its discharge. He directs the activities of the staff so as to relieve the commander of details.

■ 121. The *general staff* is a closely coordinated group of assistants to the commander, organized so as to comprehend the essential functions of command. Its duties are to render professional aid and assistance to the commander; to prepare detailed instructions for the execution of his plans and to supervise their execution; and to act as his agent in harmonizing and coordinating the plans, operations, and activities of the various units and agencies of the command. (See pars. 117 and 188.)

In large units, officers of the General Staff Corps are assigned to the general staff group while in smaller units the duties are performed by officers of the arm or service to which the unit belongs.

The general staff of a unit is organized into four or more subdivisions comprising the principal functions of command as follows: personnel, military intelligence, operations and training, and supply. In large units each of these subdivisions is headed by an assistant chief of staff who supervises the activities of his group in the name of the commander and solely with a view to unity of command.

■ 122. The *special staff* includes those officers of the various arms and services who may be assigned to a headquarters for technical, supply, and administrative purposes. Certain of these officers have no duties other than staff duties, while others have staff duties in addition to their primary functions as commanders of combat or service troops. It is the duty of each special staff officer to keep the commander and the general staff group constantly informed as to the conditions and capabilities of his particular arm or service.

■ 123. For operations in the field, a staff is usually organized into two echelons or parties, one of which accompanies the commander. (See pars. 210 and 230.) The efficient operation of a staff depends largely on its proper functional organization and the distribution of work and cooperative spirit among its members. (See SOFM.)

■ 124. To insure effective coordination *liaison officers* are often sent to subordinate and adjacent headquarters. They seek to learn the instructions and plans of the commander to whom accredited, and present their own commander's views concerning the situation and the conduct of operations.

Liaison officers are habitually sent from supporting to supported units. They act as advisers on the staff of the commander of the unit to which sent on matters concerning the supporting arm.

A liaison officer assists in keeping his own commander currently informed of the progress of the operations together with his impressions thereof. He does not return to his headquarters or unit until his mission is fulfilled or an immediate personal report becomes necessary. The presence of a liaison officer does not relieve a subordinate commander of the duty of keeping his superior informed of the situation through normal channels.

■ 125. In every headquarters there is a constant tendency to multiply personnel, expand the functions of staff administration, and accumulate records and office equipment. The commander must limit such expansion to an essential minimum and organize his headquarters so as to maintain its readiness for prompt movement.

The organization, functions, and duties of the various divisions and sections of the general and special staffs of large units, and the corresponding staff subdivisions of smaller units are prescribed in SOFM.

CHAPTER 5

INTELLIGENCE AND COUNTERINFORMATION

INTELLIGENCE

■ 126. In order to plan and conduct operations, as well as to guard against surprise, a commander should know as much as possible about the theater of operations and particularly about the enemy's capabilities. The information on which this knowledge depends is gathered from many sources of varying credibility. Before information can be accepted, it must be studied, conflicting items weighed against each other, and the whole evaluated dispassionately. It then becomes *intelligence*.

From reliable and adequate military intelligence the commander is able to draw logical conclusions as to what possible lines of action are open to the enemy. Military intelligence is thus an essential factor in the estimate of the situation.

Information of the enemy will always be incomplete. The commander will have to take calculated risks; to postpone action on the plea of waiting for complete information encourages indecision and may result in lost opportunity.

■ 127. The information initially obtained concerning the enemy and the theater of operations is derived from War Department peacetime *intelligence studies*. This information is supplemented by more recent data obtained in the field by such means as air and ground reconnaissance and observation; troops in contact with the enemy; artillery intelligence sections; aircraft warning service; inhabitants, repatriates, deserters, prisoners, and agents; captured documents and equipment; interception of enemy communications; and enemy and neutral press and broadcasts.

In the combat zone commanders will be interested primarily in the following information about the enemy: Whether there are any enemy forces in a specified area at a particular time; the line of contact and the identification of the enemy's front line units; the location, size, and movements of hostile main forces and reserves; and whether the enemy is advancing, holding his position, or retiring.

Military intelligence procedure, functions, and organization are covered in detail in BFM, volume X.

■ 128. It is the duty of the commander to coordinate the action and to maintain a continuing supervision over all the information collecting agencies at his disposal in the search for *essential information*. The orientation of this search for information is assured by an *intelligence plan* which indicates the items of information of vital importance to the commander in the execution of his plan of action and in the security of his command. Based on these essential elements, instructions for the collection of the items of information are issued to the subordinate agencies, or requests are made on the higher and adjacent units. In small units, such instructions may be included in the field order; in large units they may be issued in the form of an *intelligence annex* (see BFM, vol. X, and SOFM).

In performing his duty of coordination and supervision of his collecting agencies, the commander is assisted by the *intelligence section* of his staff. The intelligence section recommends the detailed missions for the collecting agencies; collates, evaluates, and interprets the information received; and disseminates the resulting military intelligence to subordinate, adjacent, and higher units in the form of periodic reports as ordered by the commander. (For form of intelligence report, see SOFM.) It keeps the commander and interested staff officers informed of the enemy situation and of the deductions relative to the enemy's capabilities. When possible, it estimates the relative probability that the enemy will adopt certain lines of action.

■ 129. Information incorrectly interpreted and evaluated, or inaccurate or incomplete information, may lead to unsound conclusions. Therefore, the search for information by all echelons of the command must be unremitting and its evaluation must be logical.

Items of information that appear unimportant to a collecting agency may attain significant importance to a higher echelon when considered in conjunction with other information. On the other hand, unnecessary reports encumber the means of communication and may have a disturbing influence

on the commander. First contact with the enemy is always reported; new identifications are sent in by the most rapid means of communication available. It may be desirable to report confirmation of important items of enemy information. The effectiveness of a collecting agency is measured by the content and reliability of its reports rather than by their number.

Negative information, such as a report that a certain locality was not occupied by the enemy at a specified hour, is frequently important; likewise, confirmation of the information that the situation has remained unchanged during a specified period of time.

All agencies of a command are responsible that their immediate commander is promptly and fully informed of the situation. Adjacent units habitually exchange pertinent information.

■ 130. Front line troops are frequently so closely engaged in combat that they are unable to report as often as desired by the higher commander. Commanders make provision for obtaining prompt information by special reconnaissance and by sending liaison officers to subordinate or adjacent units. These provisions do not relieve subordinate commanders from making every effort to keep their superiors fully informed of the situation. (See par. 124.)

■ 131. During pauses in combat, or whenever the situation demands, subordinate commanders make brief reports on their own and the enemy situation to higher headquarters. At the conclusion of a phase of combat a concise report is made without delay stating what hostile troops are opposed, the line of contact, the enemy's attitude, the situation of our own troops including effective strength, and the status of supply, especially of ammunition.

■ 132. The best information will be of little use if it arrives too late at the headquarters for which it is intended. Orders for reconnaissance should indicate the time by which a report is desired by the commander or the intervals at which reports are to be made. Whether or not information arrives in time usually depends on the measures taken for its transmission.

In a critical situation, reports are made to the next higher commander and to adjacent units in immediate danger by the most rapid means of communication available.

COUNTERINFORMATION

■ 133. The success of operations and the security of the command depend to a large extent upon the effectiveness of measures taken to prevent the enemy from gaining information relative to our dispositions, movements, and plans. It is therefore the duty of all ranks to prevent leakage of information to the enemy.

Counterinformation measures comprise counterespionage, censorship, counterreconnaissance, night movements, the use of covered approaches and camouflage, the enforcement of secrecy discipline, and the observance of secrecy measures in the preparation and execution of plans of operations.

■ 134. The intelligence agencies of the several units control the *censorship* and *counterespionage* service in a theater of operations and maintain general supervision over all *secrecy measures*. In hostile territory the movements of inhabitants are strictly controlled; possession is promptly taken of radio, telegraph and telephone establishments, and other means of communication; and newspapers and postal communications are suppressed or censored.

Counterreconnaissance cannot be relied upon for complete protection from enemy observation and should therefore be supplemented by appropriate secrecy measures, including night marches, camouflage, and the use of cover to conceal the location of troops by day.

Secrecy discipline requires that all ranks refrain from discussing the military situation, plans, movements, etc., in the presence of civilians. Every soldier must be instructed that in case of capture he is required to give only his true name, grade, and Army serial number, and that any other information may prejudice the success of operations and endanger the lives of his comrades. Signal communication will be closely supervised to insure compliance with the regulations relative to the transmission of information and instructions. Only those orders, documents, or maps absolutely indispen-

able to operations will be taken into action, and every effort will be made to destroy all such papers when there is a risk of capture.

■ 135. Special precautions are taken in the preparation of plans of operations to avoid their premature disclosure. In the various phases of their development only so much is communicated to subordinates as is necessary to the efficient execution of assigned missions. For reasons both of secrecy and of simplicity, it is generally undesirable that the operation orders of any unit reproduce in their entirety the provisions of the orders of superior units. (See par. 130.) Special precautions are taken in the safeguarding and transmission of secret and confidential documents. (See AR 380–5.)

■ 136. Counterinformation is supplemented by positive measures designed to deceive or mislead the enemy as to our dispositions and intentions.

CHAPTER 6

RECONNAISSANCE

GENERAL PRINCIPLES

■ 137. *Reconnaissance* is the operation of obtaining information in the field by troops sent out for that purpose. The information concerns the enemy, the terrain, and the resources of the theater of operations.

It is executed in conformity with the principle that contact with the enemy must be gained at the earliest practicable moment and once gained is never lost.

Depending on the location of the objective and the phase of operations, reconnaissance is classified as distant, close, and battle reconnaissance.

■ 138. *Distant* reconnaissance is the mission of the aviation and the large cavalry units of the field forces. It procures the information upon which the strategical and operative decisions and the plans of the high command are based. The information gained by the medium and long-range reconnaissance aviation of the army and higher command enables

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the commander of the field forces to give the proper orientation to the reconnaissance activities of the cavalry. Distant reconnaissance is dealt with in FM 100–15.

■ 139. *Close* reconnaissance begins as the opposing ground forces approach contact. It furnishes the commander with the information upon which he makes his tactical decisions, and constitutes the basis for engagement with the enemy. Close reconnaissance is executed by the aviation and cavalry assigned to large units and by reconnaissance detachments of other arms which supplement the general reconnaissance of the aviation and cavalry. The forces employed in close reconnaissance may vary in strength from a single observation airplane or patrol to a force composed of all arms.

■ 140. *Battle* reconnaissance includes the continuous observation of the activity of all enemy forces engaged in combat or in immediate contact with our principal forces both before and after battle. It aims chiefly to obtain information relative to the combat value and tactical disposition of the enemy and the possibilities of the terrain and fire. Battle reconnaissance is executed by all arms.

■ 141. Due *economy of force* is observed in the assignment of reconnaissance missions. Effective reconnaissance requires concentration of the available means against objectives of decisive importance. In other directions the means employed are reduced to the absolute minimum requirements.

Depending on the situation, some reconnaissance elements are held available in reserve to reinforce or extend the reconnaissance in progress of execution, or to project reconnaissance in a new direction.

■ 142. The commander coordinates the employment of the reconnaissance agencies at his disposal by formulating a well-conceived *plan of reconnaissance*. Duplication of effort is avoided by the assignment of reconnaissance missions and objectives and by informing subordinates concerning reconnaissances to be executed by agencies of higher commanders.

In the absence of instructions, each unit executes the reconnaissance necessary to its own operations within its own zone of action and toward any unsupported flanks.

■ 143. *Superiority of force* in the zone of reconnaissance facilitates the execution of tactical reconnaissance and makes correspondingly more difficult the reconnaissance activities of the enemy. Superiority is gained by the active and aggressive action of patrols and by the early seizure of important localities and critical terrain lines in the zone of reconnaissance.

In principle, combat is avoided which is not necessary for gaining essential information or superiority over hostile reconnaissance. Essential information can frequently be obtained only through attack. Reconnaissance units do not hesitate to attack when their mission requires it.

If the enemy is superior, the reconnaissance mission is often more easily accomplished by containing the enemy's reconnaissance or security forces in front while pushing reconnaissance around the enemy's flanks.

■ 144. A certain amount of *security* is assured by a successful reconnaissance. Since a security mission ties a force to a definite area, a dual mission of reconnaissance and counterreconnaissance should not be assigned to the same force. If this is unavoidable, the instructions must state explicitly which mission has priority.

When it is of especial importance to screen the dispositions of our own troops from hostile investigation, the necessary forces are assigned to counterreconnaissance missions on the indicated front or flank (see pars. 168–174).

■ 145. A commander regulates the employment of the available reconnaissance agencies in such a manner that they will supplement and assist one another. Until battle reconnaissance is begun, the principal reconnaissance agencies available are his reconnaissance aviation and the cavalry reconnaissance units, horsed and mechanized.

Under favorable conditions, *reconnaissance aviation* can furnish early information of the enemy's general dispositions and movements to a considerable depth in rear of his security forces. It is also valuable for orienting and directing ground reconnaissance agencies. It cannot, however, provide continuous or detailed information since it is subject to definite limitations of inclement weather, darkness, covered terrain, antiaircraft fire, and the activities of hostile combat aviation.

Cavalry, on the other hand, cannot obtain a complete picture of the enemy situation to any great depth in rear of the hostile reconnaissance screen. Cavalry needs the cooperation of reconnaissance aviation in order to conserve its combat strength and direct its ground reconnaissance in the decisive direction and area. Cavalry can maintain continuous contact, operate under weather conditions which preclude air reconnaissance, and determine details of enemy activity, strength, composition, and combat value.

■ 146. The indiscriminate mixing of horse and mechanized cavalry units results in a reduction in the efficiency of both. To each is assigned the reconnaissance mission for which it is best suited according to its characteristics.

Reconnaissance units of *horse cavalry* have the advantage of greater mobility across country and freedom of conditions of weather, terrain, and supply. Their speed and range of action are, however, limited. The great value of horse cavalry on reconnaissance missions lies in its ability to determine details of information, to observe the enemy where secrecy is essential, and to establish a closely knit reconnaissance screen.

Mechanized reconnaissance units, because of their road speed, are useful for quickly seizing widely separated and distant localities. Their mobility is comparatively sensitive to terrain and weather. They are dependent upon conditions of roads and weather and the replenishment of gasoline and oil. The great value of mechanized cavalry lies in its ability to execute a distant reconnaissance mission when time is a vital factor, and to establish an extensive reconnaissance screen over a wide area.

■ 147. Reconnaissance missions must be clearly defined. The *essential items of information* desired by the commander and their relative importance must be explicitly stated in his instructions for reconnaissance. (See pars. 127–128, and pt. one, BFM, vol. X.)

The commander regulates the establishment and maintenance of signal communication so as to insure the prompt and reliable transmission of the results of reconnaissance. He coordinates the communication to be used between air

and ground reconnaissance agencies and between horse and mechanized cavalry units. To enable air reconnaissance to give proper direction to ground reconnaissance, he may find it necessary to establish an *advanced center of information* near the command post of the cavalry unit. When there is danger of hostile interception he may sharply restrict the use of radio in the interest of secrecy or impose a radio silence.

■ 148. Instructions for the execution of reconnaissance are included in field orders or in an accompanying *intelligence annex*. They may also be issued separately, in complete or fragmentary form, as instructions for reconnaissance. (See BFM, vol. X, and SOFM.)

EXECUTION OF RECONNAISSANCE

■ 149. CLOSE RECONNAISSANCE.—As the opposing forces approach their probable zone of contact, the reconnaissance agencies, air and ground, endeavor to determine the contour and identification of the enemy's leading elements, the frontage and depth of the enemy's movement, his assembly positions, the enemy's measures for antiaircraft defense, and the location of his airdromes, detraining stations, and principal supply establishments.

■ 150. On the march in proximity to the enemy, the zone of the corps reconnaissance aviation usually extends to a distance beyond the objective of the command at least equal to the distance of its rearmost combat unit to the objective. Timely reports of hostile motorized and mechanized columns are of especial importance.

The nearer the approach to the enemy, the more intensive is the reconnaissance. More detailed information will be required at points of decisive importance near the probable or actual zone of contact of the ground forces.

■ 151. The primary mission of *air reconnaissance* is to extend in depth the zone under observation by ground reconnaissance and to secure information which will enable ground units to give effective direction to their reconnaissance activities.

The principal objectives of reconnaissance aviation are roads, railroad centers, and exits of woods and villages.

These objectives are closely observed both day and night with a view to discovering the location of the enemy's main forces and their direction of movement. Reconnaissance flights made shortly after dawn and before dark offer a favorable opportunity for discovery of night movements.

■ 152. As a general rule, agreements as to *cooperation* and *direct communication* between air and ground reconnaissance agencies must be made each day prior to the execution of the reconnaissance mission. This agreement is made through the air officer of the command or through an air liaison officer, who must be able to inform the commander of the reconnaissance aviation unit of the routes of advance of the principal reconnaissance detachments, the location of the command post, and the advanced center of information of the higher command; and the location of any intermediate dropping grounds or temporary landing fields.

■ 153. Cavalry units charged with the execution of close reconnaissance regulate their activity by their mission and the activity of the enemy. They usually operate under direction of the corps commander who fixes the reconnaissance tasks to be performed and regulates the distance at which they are to operate in front of the leading divisions.

A cavalry unit assigned to a reconnaissance mission generally details separate forces for the execution of reconnaissance and for its own security.

Zones of reconnaissance are assigned to *reconnaissance detachments* which vary in strength and composition according to the opposition expected and the mission to be executed. Greater strength and a more aggressive mission are given to the detachments operating in the more decisive zones.

When contact with the enemy is expected, the *advance* is made *by bounds* from one terrain line to another. The length of bounds is determined by the road net and the distance apart of the successive critical terrain lines. As the distance to the enemy decreases, the bounds are made shorter.

■ 154. Ground forces assigned to reconnaissance missions secure information chiefly through the use of patrols. *Mechanized cavalry* patrols are used to gain contact with hostile forces reported by air reconnaissance and to seize distant

localities along the main routes leading to the objective. They do not replace the reconnaissance detachments but are means of extending and facilitating the work of these detachments. For rest and security, mechanized patrols when in hostile territory must usually be recalled at night, returning to their unit preferably by routes other than the ones used in the advance.

The commander of a reconnaissance detachment keeps his *mounted patrols* well in hand and at such a distance that he can effectively support their action. This is accomplished in part by a regulated advance to successive terrain lines and by the assignment of close objectives and definite missions. The reconnaissance detachment supports by attack the action of its patrols held up by stronger hostile forces.

■ 155. Reconnaissance detachments which have established contact with the enemy main forces keep them under surveillance through their patrols and follow the enemy's movements. They take advantage of the discovery of gaps between hostile elements to penetrate within the enemy's lines, explore the gap, and reconnoiter the enemy's dispositions.

■ 156. When the distance between the main bodies of the two opposing forces is so reduced that there is no longer room for the operations of reconnaissance detachments, they are assembled under corps control for the execution of the various missions required by the situation, or distributed as *divisional cavalry* to the leading infantry divisions for missions of close reconnaissance.

■ 157. Under the protection of the cavalry reconnaissance detachments, *reconnaissance parties* are sent forward by the *artillery, infantry,* and *engineers* with a view to preparations for their own operations. Their reconnaissance is conducted in connection with that of the *command reconnaissance* of the commander or a designated staff officer. It bears especially on the routes and covered areas available for the development of the command, the terrain obstacles and barriers for antimechanized defense, the defiles requiring antiaircraft protection, the location of suitable position areas for the artillery and covered assembly positions for the infantry, the general location of the zone of resistance for the organization

of the defense or of a covering position to cover the development of the command, and the sources of water supply to be used by the troops.

■ 158. BATTLE RECONNAISSANCE.—Battle reconnaissance commences when the troop columns begin to develop for combat. Provision is made for the further employment of the cavalry in the orders for the development. In case of the withdrawal of the cavalry from the front, reconnaissance zones are assigned to subordinate units of the command.

■ 159. *Corps and divisional cavalry* is employed as required by the situation to cover the flanks of the command, to fill gaps, to hold important localities until relieved, or to execute reconnaissance against the enemy's flanks. It particularly reconnoiters hostile movements in extension of the wings, the existence of any gaps which may develop in the enemy's dispositions, and the location and movement of hostile reserves.

In case no orders are received, corps and divisional cavalry maintains contact with the enemy, executes detailed reconnaissance essential to the development for combat of the leading divisions, and screens the advance of the main columns until forced to withdraw by the enemy.

■ 160. *Reconnaissance aviation* is employed principally in the reconnaissance and surveillance of areas beyond the zone of reconnaissance of front line troops and the corps and divisional cavalry. Its purpose is to obtain for the superior commander the information on which he will base his tactical decisions. The reconnaissance of movements of hostile troops in rear and on the flanks of battle and the surveillance of hostile detrucking points and detraining stations are of especial importance.

■ 161. For *observation* and *liaison aviation*, battle reconnaissance comprises artillery missions, infantry missions, and command and liaison missions. Whenever practicable, the airplane is reserved for missions involving the observation of objectives which are beyond the effective view of observation posts and balloons or are defiladed from their view. The most important employment of the balloon is in observation missions for the artillery.

Artillery missions include the location of artillery targets, adjustment of artillery fire, report of effect of fire, and general surveillance of scheduled artillery fires and enemy activity. Airplanes assigned to artillery missions operate under the direction of the artillery commander.

Infantry missions include the location of the opposing front lines, observation of the progress of combat, location of hostile resistance holding up our advance or of enemy penetrations into our position, and assembly of hostile troops for attack or counterattack.

Command and *liaison missions* include the transmission of information and instructions between the superior commander and his artillery, infantry, and other subordinate commanders, and all observation missions executed for the especial information of the superior commander. They may be ordered for the purpose of obtaining or verifying information as to the situation of the troops engaged or to obtain urgent information when the actual situation is in doubt.

Detailed instructions concerning the methods of identification and communication between air and ground units are contained in the field manuals of the arms.

■ 162. The amount of battle reconnaissance executed by reconnaissance and observation aviation is largely dependent on the air situation. In the assignment of reconnaissance missions, consideration is given to the number of missions that can be effectively executed with the aviation available under the existing air situation.

The methods to be employed in the execution of air reconnaissance and observation are normally left to the decision of the air officer.

■ 163. Close and intensive *battle reconnaissance* by *infantry, artillery* and *engineer* units supplements the battle reconnaissance of the aviation and cavalry. Infantry reconnaissance assumes especial importance when cavalry is lacking or is deficient in strength, and when the conditions of terrain or the proximity of the enemy's main forces preclude the use of cavalry.

■ 164. Orders for the development of a command frequently assign zones of reconnaissance to subordinate units. Each unit becomes responsible for battle reconnaissance within its zone of advance or action. Flank units are likewise responsible for battle reconnaissance on their open flanks.

■ 165. Terrain features that afford an insight into the hostile dispositions constitute especial objectives of reconnaissance. When hostile resistance is encountered which cannot be brushed aside or enveloped, a *reconnaissance in force* constitutes the best means of clearing up an uncertain situation. This applies especially when advanced enemy detachments deny information to our patrols. These patrols must then be reinforced sufficiently to brush aside the hostile detachments, or the main body must take over the reconnaissance in force.

For troops engaged in a reconnaissance in force, the combat action usually consists of a local attack with a limited objective and requires a concentration of means and unity of effort. The commander who orders a reconnaissance in force must consider the possibility that his intentions or those of the higher commander may thereby be disclosed. He must also be prepared for the eventuality that the reconnaissance may bring on a general engagement.

■ 166. The battle reconnaissance of the several arms is conducted to serve their particular needs. To obtain the full benefit of the results of reconnaissance, careful consideration must be given to the element of time when planning a reconnaissance.

Infantry units cover their front and open flanks by reconnaissance detachments and combat patrols. The mission of these elements is to locate advanced enemy groups, break through the hostile screen, and gain contact with the enemy's principal forces. They also reconnoiter covered routes of approach for the advance of their units into action. After battle, infantry units maintain contact with the enemy by similar means.

Artillery details conduct reconnaissance for the location of objectives, observation posts and firing positions, and the exploration of routes of approach. To expedite their entry

into action, artillery units send forward reconnaissance details under officers with the advanced elements of the command (divisional cavalry, advance guard) on the march. (See par. 157.)

The observation of the combat zone by the observation posts and liaison observers of the artillery is of great value in battle reconnaissance. They are often in a position to give to the higher commander early reports of important combat events concerning which information may be delayed in transmission from front line units.

Engineer parties execute timely reconnaissance with a view to the preparation of the necessary measures for the execution of engineer work. Their most important reconnaissance mission is in connection with antimechanized defense and the maintenance of routes of communication and movement. Upon the successful execution of this mission depend in large part the mobility of the field forces and their power of maneuver. These measures must be supplemented by progressive reconnaissance continuing throughout the course of operations.

■ 167. The methods of reconnaissance employed by the several arms are described in their respective field manuals.

COUNTERRECONNAISSANCE

■ 168. *Counterreconnaissance* includes all measures to screen a command from hostile observation. It is executed principally by the Air Corps, antiaircraft artillery, Cavalry, and security detachments. The commander coordinates the action of all of his counterreconnaissance agencies by assigning to each a mission in accordance with its capabilities.

As a rule, special measures for counterreconnaissance are indicated in any operation where secrecy is important. The later that counterreconnaissance measures are recognized as such by the enemy, the more effectively have they accomplished their purpose.

■ 169. Counterreconnaissance cannot be relied upon for complete protection from enemy observation. It must be supplemented by other measures, including night marches, radio

secrecy, counterespionage, concealment of the forces in woods, villages, and other cover; passive measures of antiaircraft defense; and the use of masks, camouflage, and smoke.

■ 170. *Pursuit aviation,* if available, is employed for counterreconnaissance on fronts where it is important to conceal our own activity from hostile air reconnaissance. It seeks to defeat such reconnaissance by attacking hostile reconnaissance and observation aviation. *Combat aviation* may contribute materially to counterreconnaissance by attacking hostile airdromes.

Due to the inability of our own combat aviation to remain constantly in the air, complete elimination of hostile air reconnaissance cannot be expected; ground forces must in any case take the necessary measures to conceal their movements and dispositions.

■ 171. The operation of combat aviation in counterreconnaissance is supplemented by the action of *antiaircraft artillery* and the weapons of other units. Before the fire of antiaircraft weapons is resorted to, consideration must be given to the fact that such fire may disclose the importance of the area being screened.

■ 172. *Cavalry units* assigned to counterreconnaissance as their principal mission seek to defeat or neutralize hostile ground reconnaissance forces. In the execution of this mission, they operate offensively, defensively, or by delaying action, resorting to all forms of combat when necessary.

Offensive counterreconnaissance is most effectively executed by the defeat of the hostile reconnaissance forces. The activity of hostile patrols is most completely eliminated by the defeat of the stronger detachments which support them.

Defensive counterreconnaissance is most effective when the screen can be established behind an obstacle which must be crossed by hostile reconnaissance forces. Cavalry forces engaged in defensive counterreconnaissance are, when necessary, reinforced by infantry, chemical troops, and artillery. Infantry is assigned to those sectors where the strongest resistance must be offered. Dummy works have a great de-

ceptive value. Cavalry sends forward reconnaissance detachments which obtain information, attack advanced enemy detachments, or obstruct their operations.

When a broad front must be covered, it will be necessary to resort to *delaying action* as a means of temporarily impeding the operations of hostile reconnaissance forces.

The aviation assists cavalry on counterreconnaissance by attacking hostile aviation attempting to cross the zone of counterreconnaissance and by reporting hostile ground movements, especially the movement of approaching cavalry and motorized units.

■ 173. The *counterreconnaissance screen* established by cavalry may be either *moving* or *stationary*. A *moving screen* is applicable to situations where the movement of a force over a wide front must be screened; a *stationary screen* is used to screen the dispositions or concentration of troops or prevent the enemy from reconnoitering an area.

■ 174. All *security detachments* are charged with the mission of counterreconnaissance. They take the necessary measures to prevent hostile ground forces from observing the main body. They devote especial attention to observation points affording views into its dispositions.

■ 175. A counterreconnaissance mission lends especial importance to the action of the intelligence service of the Signal Corps, to deceptive radio communication, and to strict supervision or complete silence of radio traffic. (See pars. 82 and 85.)

CHAPTER 7

TROOP LEADING

GENERAL PRINCIPLES

■ 176. *Troop leading* is the art of commanding troops in campaign. In general, it comprises the methods employed in fighting and supplying troops in the field and the processes followed in the conduct of operations.

■ 177. The basis of troop leading is the commander's *decision* which is derived from the *mission* and the *situation*. The

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When a broad front must be covered, it will be necessary to resort to *delaying action* as a means of temporarily impeding the operations of hostile reconnaissance forces.

The aviation assists cavalry on counterreconnaissance by attacking hostile aviation attempting to cross the zone of counterreconnaissance and by reporting hostile ground movements, especially the movement of approaching cavalry and motorized units.

■ 173. The *counterreconnaissance screen* established by cavalry may be either *moving* or *stationary*. A *moving screen* is applicable to situations where the movement of a force over a wide front must be screened; a *stationary screen* is used to screen the dispositions or concentration of troops or prevent the enemy from reconnoitering an area.

■ 174. All *security detachments* are charged with the mission of counterreconnaissance. They take the necessary measures to prevent hostile ground forces from observing the main body. They devote especial attention to observation points affording views into its dispositions.

■ 175. A counterreconnaissance mission lends especial importance to the action of the intelligence service of the Signal Corps, to deceptive radio communication, and to strict supervision or complete silence of radio traffic. (See pars. 82 and 85.)

CHAPTER 7

TROOP LEADING

GENERAL PRINCIPLES

■ 176. *Troop leading* is the art of commanding troops in campaign. In general, it comprises the methods employed in fighting and supplying troops in the field and the processes followed in the conduct of operations.

■ 177. The basis of troop leading is the commander's *decision* which is derived from the *mission* and the *situation*. The

mission should be clearly stated and constantly kept in mind by a commander. A multiple mission distracts attention from the principal or ultimate objective.

In campaign, exact conclusions concerning the enemy can seldom be drawn. The commander must make every effort to clarify the situation by reconnaissance. To delay action in an emergency because of insufficient information indicates a lack of energy in troop leading. (See par. 126.) The proper evaluation and utilization of the terrain reduce the disadvantage of a lack of information of the enemy.

■ 178. A *decision* once made is not changed without some compelling reason. In combat the will and energy of the commander must persist until the objective is attained. (See par. 103.) Changed conditions may, however, call for a new decision; too stubborn an adherence to a previous decision may result in failure. The art of troop leading also lies in knowing when to make a new decision. (See par. 189.)

■ 179. Every advantage gained over the enemy increases a commander's freedom of action. A correct evaluation of the terrain and the time and space factors enables a commander to recognize a favorable situation quickly and to exploit it promptly and resolutely. Prompt action deprives the enemy of time to initiate effective countermeasures and exploits any surprise which has been attained. Rapidity of action is increased by favorable conditions of weather, terrain, and road net, by good physical condition of the troops, by adequate means for moving them, and above all by a smoothly working staff.

■ 180. The duration of a tactical operation can seldom be predicted. Successful engagements often progress so slowly that the gains made are not immediately recognized.

Troops are used up rapidly in the decisive phases of combat. This attrition must be anticipated by the commander and he must direct his staff to take timely measures for replacement of men, transport, and weapons, and for replenishment of ammunition and other supplies. Units that have been heavily engaged cannot be depended upon for effective action on a new mission until they have been rested and reorganized.

■ 181. In spite of the most careful planning and anticipation, unexpected obstacles and frictions will arise in combat. A commander must school himself to regard these events as commonplace and not permit their occurrence to frustrate him in the accomplishment of his mission. (See par. 92.)

■ 182. For the control of troops in battle, certain processes in troop leading are essential in order to obtain unity of effort. They are carried out in such detail and with such speed as is permitted by the situation. The guiding principle is that troop leading must expedite and facilitate the effective employment of the troops, and not delay or impede them. (See par. 205.)

In any tactical operation, the first duty of the commander is to evaluate quickly all the available information bearing on his task, estimate the situation, and reach a *decision*. (See pars. 184–189.)

The commander then makes a simple *plan* which does not require too distant an objective and is based on the most effective combination of surprise, fire power, maneuver, and use of terrain. The plan is communicated to subordinates directly by brief, clear, and concise oral *orders*, or to the staff by a *directive* sufficiently complete to enable it to work out the details and issue the orders.

Having issued his orders, the commander should take personal counsel and consider the *future lines of action* that may develop in accordance with the capabilities of the enemy. Based on this study he confers with his chief of staff and orients him as to further plans to be made or measures to be taken in anticipation of future contingencies.

After issuing his orders, the commander places himself where he can best *control* the course of action and exert his *leadership*. His command post affords the advantage of complete communication and control of his unit as a whole. However, when opportunity offers and when his presence at the command post is not urgently required, he *visits* his subordinate commanders and his troops in order to inspire confidence and to assure himself that his orders are understood and properly executed. (See par. 235.) He gives his subordinates appropriate freedom of action so long as this

does not jeopardize his plans. In case of inexperienced or newly organized units a closer supervision is required.

183. A commander exercises the greatest influence on the course of action by the use he makes of his reserve, including such aviation as may be at his disposal, and the measures he takes to concentrate the fire of his artillery and increase the volume of fire of other weapons at the decisive place. The extent to which he can do this will depend largely on the mobility of his reserve, the flexibility of artillery fire, and the adequacy of the ammunition supply.

ESTIMATE OF THE SITUATION—DECISION

184. Before arriving at a decision a commander must make an *estimate of the situation* based on a consideration of all the *factors* bearing thereon. When time is pressing, this estimate requires rapid thinking, simple and logical reasoning, with consideration necessarily limited to the most essential factors. (See SOFM.)

185. In estimating a situation, a commander first considers the *mission* assigned to him, studying its import to be sure that he understands what is required of him. His next step is to study the terrain and weather and gain an appreciation of their influence on the task that confronts him.

A consideration of the conditions affecting his own command will establish the location of his own troops and their availability for combat, the status of their ammunition supply, the physical effort that may be expected from them, the proximity of adjacent or supporting troops and the assistance that may be expected from or needed by them.

From a study of the intelligence reports and other information on hand, the commander estimates the enemy's strength, position, and distribution, his capabilities for movement and combat, and any other factors insofar as they affect the particular situation.

The commander then compares the various lines of action open to him and weighs the prospect of success which they offer. In this connection he must not fail to examine into the capabilities of the enemy to interfere with his plans. *Above*

all, the commander must guard against believing that he has discovered the enemy's intentions. So long as the situation does not clearly indicate the enemy's probable action, it is prudent for the commander to ascribe to the enemy that line of action which will be most harmful to the accomplishment of his own mission.

■ 186. In larger operations such factors as the enemy's road, railway, and signal communication nets, and the activities of the enemy's aviation, antiaircraft artillery, and mechanized forces assume an increasing importance in estimating the enemy's capabilities.

A commander's decision may be influenced by his knowledge of the enemy's leadership, racial characteristics, or methods of combat. However, too much should not be taken for granted unless a reliable index of these factors has been gained through previous combat.

■ 187. Having weighed and compared the various *lines of action* that are open to him, the commander decides upon a *plan* that will best enable him to accomplish his mission. This plan should be clear and simple so as to reduce to a minimum the confusion resulting from misunderstandings and complex orders.

■ 188. In general, it is the function of the staff to furnish the commander with the combat intelligence and such information as he may require in reaching a decision, and to elaborate the details necessary to carry this decision into effect. (See pars. 117 and 121.)

■ 189. The estimate of the situation is a *continuous process* for the commander and his staff, and is subject to revision in accordance with the changes that occur in the situation. This possibility emphasizes the importance of a simple plan (see pars. 182 and 187) which will readily lend itself to a variant to meet the changes in the situation.

If the mission turns out to be inadequate or if the situation on which it is predicated has changed, these altered conditions must be considered by the commander. (See par. 178.) Should he decide to defer his mission or change his line of

action, this fact must be reported to the superior without delay. In any event the subordinate assumes full responsibility for the consequences of his decision. The criterion by which he judges the soundness of his decision is that it will further the intentions of the higher commander. (See pars. 108 and 118.)

ORDERS

■ 190. The authority to issue orders is an inherent function of command. (See par. 111.) It is exercised by a commander to give effect to his decisions.

■ 191. The orders issued by a commander come under two categories:

a. Those which regulate the discipline, welfare, interior economy, and daily life of a command. They include *general* and *special orders*, *bulletins*, and *circulars*. Due to their standing nature and wide distribution, these routine orders are printed or mimeographed. They are governed by AR 310–50.

b. Those orders or instructions of any kind which pertain to operations in the field. Their object is to regulate the operative and tactical action of troops in accordance with the intentions of the commander. They include *field orders*, *administrative orders*, and *letters of instruction*. For instructions governing field and administrative orders, see SOFM. Letters of instruction deal with the strategical phases of operations of larger units and regulate operations over a large area for a considerable period of time. (See FM 100–15.)

■ 192. Orders may be *written*, *dictated*, or *oral*. Those of smaller units are usually dictated or oral.

Written orders of large units are issued in the form of typed or duplicate copies. Very often their context is dictated over the telephone or dispatched by some other technical signal means, in which case a written copy is transmitted by messenger.

Oral orders transmitted by telephone or messenger are required to be repeated. The content of important oral and dictated orders is made of record by the headquarters of issue.

■ 193. The time required for orders to permeate through the various echelons of command is frequently underestimated. To give subordinate leaders an opportunity to reconnoiter, to estimate the situation, and to issue their own instructions, orders should reach them in ample time.

■ 194. An order should not trespass upon the province of a subordinate. It should contain everything that the subordinate must know to carry out his mission, but nothing more.

Orders must be clear and explicit and as brief as is consistent with clarity; short sentences are easily understood. The more urgent the situation, the greater the need for brevity in the order. Any statement of reasons for measures adopted should be limited to what is necessary to obtain intelligent cooperation from subordinates. Detailed instructions for a variety of contingencies, or prescriptions that are a matter of training, do not inspire confidence and have no place in field order. Trivial and meaningless expressions divide responsibility and lead to the adoption of half measures by subordinates. Exaggerated and bombastic phrases invite ridicule and weaken the force of an order.

An order must be simple and understandable, being framed to suit the intelligence and understanding of the recipient. Above all it must be adapted to the circumstances under which it will be received and executed.

■ 195. Orders should prescribe only so far as conditions can be foreseen. When an attempt is made to arrange details too far in advance, orders usually have to be countermanded. Such changes overload the means of signal communication, cause confusion and misunderstanding, impose needless hardships on the troops, and injure their morale.

Orders issued by subordinates should not be mere repetition of those from higher authority with additions of their own. New orders are clearer and more satisfactory.

■ 196. As a rule it is desirable to keep contemplated movements secret as long as possible and to confine knowledge thereof to a few staff officers and senior commanders. (See par. 135.) However, upon entry into action no unit should be in doubt as to what the commander wants it to do.

Whenever knowledge of his intentions is necessary to insure the cooperation of the units engaged, a commander does not hesitate to disclose them to all concerned. In case of a withdrawal, it may be expedient to inform confidentially only the next subordinate commander and a few staff officers of the contemplated operation.

A commander may find it necessary to clarify his intentions by explaining them orally to subordinate commanders. In doing so he must not give the impression of justifying his decision, or of depending upon his subordinates for approval. The commander can share the responsibility for the decision and the order with no one. (See par. 117.)

■ 197. *Oral* and *dictated orders* have particular application to smaller units. Whenever practicable, they are given by pointing out and identifying localities and terrain features on the ground.

The assembling of commanders or their representatives to receive orders is advisable only when the situation permits their absence from their units.

■ 198. To enable the will of the commander to be quickly understood to preclude omissions and for ready reference, field orders are required to follow a *standard sequence*. This sequence divides the field order into the following principal parts: Heading, Distribution of troops (in certain orders); Body; Ending. In the body the following sequence should be observed:

1. Information of the enemy and friendly troops.
2. Decision of the commander and general plan of maneuver.
3. Tactical instructions to subordinate units.
4. Administrative provisions as far as they need be known to troop units, or a reference to an administrative order if it accompanies the field order.
5. Instructions for signal communication and location of command posts.

For further details see SOFM.

■ 199. In certain situations it may be necessary or desirable to issue a *warning order*. A warning order usually consists of a brief message giving information which will enable sub-

ordinate commanders to make the necessary preparations for a contemplated operation. Its principal purpose is to gain time for preparatory measures and to conserve the energy of the troops.

■ 200. In the division and smaller units, orders are frequently issued in fragmentary form in order to expedite operations. Such *fragmentary orders* may be extracts from the complete order or may cover the various phases of an operation successively. The instructions must contain all that is necessary for the unit concerned to know at the moment in order to carry out its mission.

■ 201. It is impossible to prescribe forms of orders to fit every tactical situation. To attempt to do so would result in a rigid form and a routine style of expression which would not be in accord with the tactical requirements presented by the diverse situations that arise in war. (See par. 92.)

How much is to be included in a field order depends upon the situation in each case. Information of the enemy need be included only in case it has not been covered adequately in intelligence previously disseminated. Only so much of the administrative provisions are covered in field orders as must be known to subordinate units.

Whether the order be issued orally or in written form, as a complete order or in fragmentary form, the order must provide for the combined and coordinated action of all parts of the command.

■ 202. *Administrative orders* are employed by large units for issuing instructions relative to traffic, supply, evacuation, and other administrative matters. They are issued under circumstances where such instructions are too voluminous to be embodied in the field order, and at other times under circumstances which do not require field orders. Their number and context can be greatly reduced by the adoption of standing procedures. (See par. 205.)

The heading and ending are similar to those of field orders. If the administrative order is to accompany a field order, the heading contains the reference: To accompany FO ——.

The body of the administrative order contains information and instructions for the command as a whole relative to the

following items: supply, evacuation, traffic, trains, personnel, and miscellaneous. For instructions governing these orders, see SOFM.

■ 203. When an operation is prepared deliberately and in great detail, *annexes* covering particular aspects are used to amplify the orders of large units if the volume of detail is too great for inclusion in the orders themselves. As a rule, such annexes are of importance to a particular arm, service, or agency, but not to the command as a whole. Annexes find little or no application in mobile operations, principally because of the impracticability of their timely preparation and distribution. For instructions governing annexes, see SOFM.

Where an annex has but limited distribution, certain instructions contained therein may have to be repeated in the field order in order to insure coordination.

■ 204. Field and administrative orders and their annexes can be abbreviated and clarified by using *appendices* in the form of sketches, maps, or overlays, and appropriate charts and tables. The use of such graphic means should be fully exploited. For further details see SOFM.

■ 205. In every unit it is important that a *standing operating procedure* be prescribed by the commander whenever practicable in order to reduce the volume of orders and instructions, and to establish in the command a common understanding of routine operations to be executed. The adoption of such a procedure will save time in the preparation and issuance of orders, minimize the chances for confusion and errors when under stress of combat, and greatly simplify and expedite the execution of operations in the field.

COMMUNICATION

■ 206. *General.*—The efficient exercise of command and the prompt transmission of information and instructions require the establishment of reliable means of communication. Communication is effected by technical signal means and by messengers. Entire dependence cannot be placed upon any one means of communication; alternative means must be provided.

In principle, orders and messages are transmitted through the channels of command. In urgent cases requiring devia-

tion from this principle, intermediate commanders are informed as soon as practicable as to the purport of orders or messages delivered directly.

■ 207. Every commander is responsible for the establishment and maintenance of the communication system of his unit and for its efficient operation as a part of the communication system of the next higher command. Signal systems must be simple, flexible, and properly used by the command.

The establishment and maintenance of communication between subordinate and superior units is the responsibility of the superior commander; between adjacent units, as directed by their common superior. A supporting unit is responsible for the establishment and maintenance of communication with supported units.

■ 208. The various means of communication are so employed that they mutually supplement each other. Those requiring the greatest expenditure of effort and matériel are not put into action when the service required can be effectively performed by the less elaborate means.

When headquarters are in movement, communication is maintained between and within columns by means of vehicular radio and motorcycle, motor car, or mounted messengers. When distances between columns are great, aviation may be used to relay radio messages.

■ 209. The command posts and advanced message centers constituting the command system of a unit (see par. 83) are the control points in the initial installation of the signal communication system. (See pars. 229–234.) Early information is given to the signal or communication officer of a unit relative to projected operations and the location and movement of command posts. (See pars. 230–233.)

In accordance with the directions of the commander, the unit signal or communication officer prepares the instructions for the establishment of the signal communication of the command. These instructions contain the necessary information to enable the communication officers of subordinate units to establish signal communication within their units and to connect with the command system. Communication offi-

cers of subordinate units maintain close cooperation with the signal officer of the higher unit.

■ 210. The prompt establishment of signal communication is facilitated by the early designation of command posts and advanced message centers and the early arrival of signal units in the combat area.

Signal units usually move and operate by echelon corresponding to the echelons in which a unit headquarters is subdivided in combat. (See par. 123.) Signal agencies are installed and put in operation at a new command post or location before similar agencies are discontinued at the former location. (See par. 231.)

■ 211. *Message centers* are operated at the command posts, and at the rear echelon of the headquarters of the large units by the signal communication personnel of the command. *Advanced message* centers for the reception and relay of messages are employed to facilitate communication with advanced units or units operating on a flank.

Message centers assist the command and staff by coordinating the transmission of outgoing orders, reports, and messages with the available signal communication agencies, and by expediting the delivery of incoming messages. In general, cryptographing and decryptographing of messages are the responsibility of the message center.

■ 212. Messages between staff sections of the same headquarters, when the sections are located at the same place, do not normally pass through the message center.

■ 213. The message center transmits messages in accordance with the classification indicated by the sender, as follows: "urgent," "priority," "routine," or "deferred."

Urgent messages.—The urgent classification is reserved for messages requiring the greatest speed in handling. Ordinarily the urgent classification is used only in combat or when combat is imminent. It may be used when reporting serious damage or distress during peace or war.

Priority messages.—The priority classification is used for messages which must be given this classification in order to reach the addressees in time for effective action.

Routine messages.—The routine classification is used for messages which require no special precedence.

Deferred messages.—The deferred classification is used for those messages whose delivery to the addressees may be delayed until the beginning of office hours of the morning following the day on which they are filed.

■ 214. The message center employs the most suitable means available for the transmission of any message. The originator does not ordinarily designate the particular means by which a message is to be sent. If he desires the physical transmission of the message, he will mark it "By messenger," and it will be so transmitted.

■ 215. *Advanced message centers* are established whenever needed for the reception and relay of messages. Information as to their location is always transmitted to the troops.

Advanced message centers are frequently employed in the reconnaissance operations of cavalry divisions as collecting points for messages of several reconnaissance detachments. (See pars. 147 and 152.)

■ 216. *Transmission by technical means* includes wire, radio, visual and sound signals, and homing pigeons.

■ 217. *Wire transmission* (telephone, telegraph, and teletype) constitutes the basic means of signal communication. It will not, however, always be available for communication between forces operating at a considerable distance from each other, between troop units and the higher command on the march, and between the advanced troops and the rear in combat. Rapidly changing situations such as a pursuit or retreat greatly restrict the practicability of its employment. The possibility of failure to function in critical situations must also be reckoned with. A wire system must, therefore, be supplemented by other means of communication.

Although wire transmission is a relatively safe means, there is always the possibility of hostile interception. It should not be employed in interchanges relative to plans of operation which are not to be executed immediately. Code language is frequently prescribed for use in telephonic interchanges subject to enemy interception.

The general plan of the wire system and its proposed extension during combat is fixed by the *axis of signal communication* of a unit, announced in the field order. (See par. 232.)

■ 218. *Radio transmission* is especially applicable to employment in spanning distances between widely separated mobile forces and in communication between ground and air. It possesses the advantage of being less vulnerable than wire transmission to the effects of hostile fire, and is, therefore, a valuable supplement to wire systems in combat; it is subject, however, to hostile interference.

Radio permits of the simultaneous transmission of a message to several recipients. Interception of radio messages must, however, be presumed; code is therefore used for the transmission of all messages which contain information of value to the enemy. Discretion must be used even in the sending of messages in code or cipher. When prompt action is called for, the commander must decide whether the urgency of sending the message in the clear outweighs the value to the enemy of information contained therein.

■ 219. *Airplanes* find especial application as a means of communication when distance, intervening obstacles on the ground, or other factors of the situation prevent the use of other means, or when more rapid transmission is required than can be accomplished by other available means. They are thus used to span gaps between widely separated forces, between the command and the infantry, between the artillery and the infantry in combat, and between the command and various elements of columns on the march.

Communication between air and ground is effected through radio, visual signals, and dropped and pick-up messages. In combat, dropping and pick-up grounds are established near the command posts of large units, and those of infantry and artillery commanders; on the march, they are established near the location of higher commanders and at various points along the route of march. Dropping and pick-up grounds are identified by the display of panels. (See FM 24–5.) Moving vehicles designated to receive dropped messages are identified by prearranged marking of the top.

■ 220. *Visual signals* are generally used to supplement other means. They are not suitable for long messages but find especial application in communication by a few short signals in accordance with a prearranged code. (See FM 24-5.)

The use of signal lamps is limited by the consideration that the light flashes must be concealed from hostile observation. The discovery of their location draws hostile fire and may give the enemy information as to the distribution of the troops. Their utility is, therefore, for the most part, limited to communication from front to rear and to short conventional messages.

Communication by signal flags is similar in application to lamp signaling but is more restricted in scope.

Pyrotechnic signals (rockets, flares, special dischargers, etc.) are valuable for communication between the infantry and the artillery in battle and for transmitting to the command information of the arrival of the leading battalions at important terrain lines or points. Pyrotechnic signals of the leading units are, when necessary, repeated by message centers of the higher unit to which they pertain.

Panels are used only for communication from ground to airplane.

■ 221. *Sound signals* are of value chiefly for spreading an alarm, as a means of attracting attention, and for the transmission of short conventional messages and orders.

■ 222. *Homing pigeons* find their principal application as a means of communication from the combat echelon to the rear when other means have failed. They are trained to return to their lofts which are located far enough to the rear to avoid frequent change.

■ 223. TRANSMISSION BY MESSENGER.—Sole reliance cannot be placed upon the technical means of signal communication. Their absence or failure to function does not relieve a commander of his responsibility of keeping superiors and adjacent units informed as to the situation. Independently of the technical means, each commander provides for the transmission of orders, information, and reports by means of messengers.

224. In transmission by messengers, the most efficient means of transport available is employed. In hostile territory it may be advantageous to use airplanes or armored cars, or to provide an armed escort.

225. In combat, communication by *mounted messengers, motorcyclists*, or *cyclists* is maintained as far forward as the hostile fire and the nature of the terrain will permit. *Runners* are used extensively in the more advanced units; they may operate singly or in relays of runner posts. The latter method is necessary when heavily shelled areas must be crossed and great rapidity of movement is required. Runner relays between the message center of a unit and lower units are established by the higher unit.

226. For covering long distances, *courier airplanes* or *relay lines* of cyclists or motorcyclists may become necessary. When relay lines are established, connecting posts are generally placed on the roads at well-marked points such as crossroads, bridges, etc.

227. Important messages are often sent by two or more messengers. It may be advisable to send duplicate messages by different routes. Officers are employed for the transmission of important messages when explanation relative to the situation or additional information may be required.

228. The officer or noncommissioned officer directing the transmission of a message gives the messenger the instructions necessary to the accomplishment of his mission (destination, route, rate of movement, dangerous points to be avoided, place where he is to report after the delivery of the message).

Messengers have the right-of-way and must be given all practicable assistance. In crossing an outpost or other line established by a security detachment, a messenger reports his destination to the nearest leader who is required to orient the messenger and lend aid, if such is necessary, to expedite transmission.

COMMAND POSTS

229. The *command post* of a unit is the station of its headquarters. It is the place where the staff does its work

and where contact with the commander can always be secured. All agencies of signal communication center at the command post.

■ 230. For convenience of operation in campaign, the headquarters of a large unit is divided into a *forward* and a *rear echelon*. (See par. 123.) The forward echelon then constitutes the command post.

The *forward echelon* consists of the staff agencies immediately required by the commander for assistance in tactical operations; the *rear echelon* consists of the remaining staff agencies required for control of administrative and supply activities.

■ 231. In the selection of a command post, consideration is given to the disposition of troops, routes of communication, the requirements of signal communication, ample space for staff activities, cover, and concealment.

Remote location of a command post with respect to subordinate units places an unnecessary burden on the means of signal communication and delays the transmission of orders and information. Another consequence of such remoteness is that the commander and his staff lack full knowledge of the terrain and the progress of operations.

Through the use of motor transport a command post can be moved quickly over a considerable distance. As a general rule, frequent changes in the location of the command post are avoided. Before a change of location is made, the necessary technical means of communication to the new command post must be established. (See par. 210.)

■ 232. During operations requiring movement of command posts, each large unit designates an *axis of signal communication* by naming the probable successive locations of its command post in the direction of contemplated movement. It also assigns an axis of signal communication to each of its major subordinate units.

A commander must keep superior and subordinate units informed of the location and contemplated displacement of his command post.

■ 233. On the march, the command post of a large unit usually advances by displacement along a designated axis; command posts of subordinate divisional units continue to function while moving at the head of their march columns.

On the offensive, command posts are well forward, in a location that offers good facilities for communication and is protected from effective hostile fire. For small units proximity to a good observation post, and for large units proximity to a suitable landing field are desirable.

On the defensive, command posts are located farther to the rear due to the wider frontage and greater depth of deployment of units.

■ 234. All command posts and routes thereto are marked to enable messengers to find them by day and night. Security measures are taken to protect the command posts against surprise attack by hostile aviation, mechanized cavalry, or other mobile ground forces.

■ 235. The personal influence of the commander on the troops is of the utmost importance. (See par. 182.) He must be near his troops when they are engaged in combat. When he leaves the command post he is accompanied by a small staff party.

In an advance, column commanders and their staff parties are well forward. If the advance is made in several columns, the division commander is with the principal column or with the column along which the axis of signal communication is being established. Ordinarily, he and his staff party move forward by bounds to successive stations where messages may reach the commander without delay.

When combat is in prospect, the division commander joins the advance guard of that column which will probably have the most important task. His location must be easily found and reached.

During the decisive phase of battle, the place of the commander is near the critical point of action. He should remain until he is assured that his orders and intentions are understood and that the subordinate commander has taken proper measures for their execution.

CHAPTER 8

SECURITY

GENERAL PRINCIPLES

■ 236. *Security* embraces all measures taken by a command to protect itself against annoyance, surprise, and observation by an enemy. It includes the special measures taken for protection against hostile aviation and mechanized units and against the risk of gas attack by the enemy.

■ 237. Adequate and timely information is the basis of all security measures. A continuous reconnaissance is therefore an essential part of security. When the security measures taken are directed primarily against hostile observation of our own dispositions, greater emphasis is placed upon counter-reconnaissance. (See pars. 168–175.)

■ 238. *Security* and *reconnaissance forces* operate in accordance with somewhat different principles. In general, security forces operate primarily with reference to the command to be secured; reconnaissance forces operate primarily with reference to the enemy.

■ 239. Security is always necessary, whether during rests, movement, or combat. When contact with the enemy is remote, especial attention is given to protection against hostile aviation. When contact is imminent, security measures against hostile ground forces are increased.

A command protects itself against hostile air attack and observation by the employment of combat aviation and anti-aircraft weapons, by night operations and movements, by measures taken for concealment and camouflage, and by distribution of troops into small units or groups.

A command protects itself against observation and surprise attack by hostile ground troops by reconnaissance, by employment of security detachments, by the skilful use of terrain, and by the increased readiness for action of its component units.

Readiness for action is facilitated by the distribution of troops in accordance with their probable tactical employment and by each unit making provision for prompt formation and movement. The degree of readiness for action required varies widely with the situation.

240. In proximity to the enemy, an advancing force secures itself by an advance guard; a retreating force by a rear guard; a resting force by an outpost. When necessary, flanks and rear are protected by security detachments. In combat, each unit provides for its own security by the employment of combat patrols.

241. *Security detachments* constitute a partial commitment to action of the command. Their strength should be sufficient to preserve the commander's freedom of action but should not exceed the requirements imposed by the situation, the terrain, and the proximity of the enemy. As far as practicable, tactical unity is respected in the detail of security detachments. It is desirable that security forces possess mobility at least equal to that of forces they are expected to oppose.

242. In general, the mission of a security detachment is to furnish the command with information relative to the enemy, to protect the command against surprise and observation by hostile ground forces, and to gain the time and space required for the command to make the necessary dispositions. The priority given to these missions of reconnaissance, counter-reconnaissance, and resistance varies with the situation and the expressed intentions of the commander.

243. There is a similarity in the formation of all security detachments. Each has its reconnaissance groups which send out patrols or sentry squads for observation. These reconnaissance groups are backed up by a support or security element which is the principal echelon of resistance of the security detachment. In the case of larger detachments, a reserve is provided. This reserve constitutes the principal maneuvering and reinforcing element for offensive or defensive action as determined by the mission of the security detachment and the requirements of the command which it is protecting.

■ 244. When a command is subdivided into separate columns or tactical groupings, each subordinate commander is responsible for the local security of his column or grouping. The superior commander may, however, prescribe security measures for the protection of the command as a whole or coordinate those adopted by subordinate commanders.

ANTIAIRCRAFT SECURITY

■ 245. Regardless of the effectiveness of the security measures taken by the higher command through the offensive action of its own combat aviation (see FM 100–15), all units within the range of hostile air operations must reckon with the probability of hostile air attack and reconnaissance.

The measures taken by ground troops for antiaircraft security vary with the situation, the degree of visibility, the cover offered by the terrain, and the capabilities of the enemy's aviation. In the order of their importance, the protective measures comprise *warning, concealment, dispersion,* and *fire*.

■ 246. The first requirement of antiaircraft security is an efficient *warning service*. Air scouts are detailed by all units at all times to give timely warning of the approach of hostile aviation. The air alarm signal is given on orders of company and similar unit commanders. Friendly airplanes when available are the most effective means of warning, the alarm being given by prearranged and distinctive movements of the airplane.

Upon hearing the air alarm signal, all elements cease movement if in the open. Foot troops on the road seek cover in the adjacent ditches, depressions, or shadows lining the road. Motorized and mounted elements clear the center of the road, halt and dismount, with vehicle brakes set. Troops in position, bivouac, or billets seek the nearest cover or concealment and remain motionless. At night, all lights are extinguished or shaded. Movement and operations are resumed on the signal "Forward march."

■ 247. In defended rear areas an *aircraft warning service* is organized to furnish early warning of the approach of hostile aircraft. The area covered by the observing stations of the

■ 251. At night special precautions must be taken against reconnaissance by hostile aviation using flares. When a unit is illuminated it halts and remains motionless. Shaded lights only are permitted to be used by troops and vehicles.

■ 252. In principle, the combatant arms take the necessary measures for immediate protection against low-flying hostile aircraft by using their own weapons suitable for *fire against aircraft*. Antiaircraft artillery reinforces the antiaircraft fire of other arms and units and operates especially against hostile aviation flying beyond the effective range of weapons of the other arms.

■ 253. In the forward area of the combat zone, *antiaircraft artillery* protects the principal troop concentrations and assembly positions, and covers the movement of troops through defiles and critical localities, and by driving hostile aviation to higher altitudes decreases the effectiveness of air attack. Since searchlights will seldom be available in forward areas, antiaircraft artillery will be handicapped in giving protection at night to troops in position. Therefore dependence must be placed on passive measures supplemented by the fire of organic weapons of troops in position. (See pars. 444 and 532.)

In the rear area, antiaircraft artillery cooperates with friendly aviation in protecting important establishments from air attack. The antiaircraft defense of an air base is the responsibility of the territorial commander, who utilizes for this purpose an antiaircraft defense command comprising an aircraft warning service and the necessary antiaircraft artillery supported by such defense aviation as may be assigned. (See pars. 49–51.)

PROTECTION AGAINST MECHANIZED UNITS

■ 254. All commanders provide for the protection of their commands against mechanized attacks. This includes the protection of the lines of communication of a command unless such protection is furnished by the higher commander.

■ 255. Terrain and the road net greatly influence the employment of mechanized forces. A *map study*, supplemented by air and ground reconnaissance, will disclose lines of

advance which favor and which impede mechanized operations.

Protection against mechanized units requires that all units organize an efficient *warning service*. Timely warning permits an increased readiness for action. Mechanized reconnaissance detachments operating well to the front and flanks are especially suitable for giving warning. All observation and reconnaissance agencies, both ground and air, are required to make an immediate report of a mechanized threat to the nearest commander.

■ 256. The means available for protection against mechanized attack are *active* and *passive*. The *active means* include antitank guns, artillery, combat aviation, armored vehicles, and mines. The *passive means* include all natural and artificial obstacles, demolitions, buildings, and organized localities. Usually active and passive means are used in combination.

■ 257. The utilization of natural barriers is an important consideration in any plan for security. During the march, if there is a choice, the routes having the best natural protection are used. When the enemy's approach is limited to a few routes crossing a natural barrier, a high degree of protection is obtained by blocking these crossings.

During halts or when in position, full use is made of terrain features which restrict hostile mechanized operations. Even those that merely slow up or impede the movement of mechanized vehicles are of great value for security and defense. Artificial obstacles may involve so much time, material, labor, and equipment that their construction is often impracticable. Road blocks require less time for construction, especially when materials can be obtained locally.

In general, obstacles, demolitions, mines, and persistent gas contaminations are located where the enemy will come upon them suddenly and be unable to avoid them. A barrier or obstacle loses its defensive value unless covered by fire of supporting troops.

■ 258. The antitank cannon is of first importance in antimechanized defense; small arms and machine gun fire has a limited effect, interfering primarily with the enemy's observa-

tion. Hand grenades have proved effective against some types of armored vehicles. Fire is withheld until the mechanized vehicles have come within effective range of the weapons used in the defense. Premature opening of fire is likely to cause early neutralization by hostile fire.

■ 259. Contact mines are an effective active means of defense against mechanization. Mines can be laid or buried without prohibitive expenditure of time and labor. They are usually laid in checker-board order, in two or more rows, avoiding any strictly geometrical pattern. The supply of a sufficient number of mines to establish a mine field involves no great transport difficulties.

Mines are useful for quickly blocking defiles and the principal avenues of hostile approach, thus releasing antimechanized weapons for use elsewhere. Mines constitute a means for canalizing a hostile mechanized attack. Like other obstacles, mine fields must be covered by fire to prevent their removal. To preserve the element of surprise they should be concealed; they should be supplemented by dummy mine fields to lend deception.

Buried mine fields, contaminated obstacles, and obstacles seeded with mines are unsafe for the passage of vehicles and troops. They also restrict the movement of the troops which they are designed to protect. Great care must therefore be taken that a record is made of the location and extent of such obstacles. The staff must keep itself informed of all mine fields laid so that the necessary precautions may be prescribed for the safety of our own troops.

■ 260. Security against mechanized attack must be organized from two standpoints—the *local protection* of the troops nearest the enemy and the *protection of the command* as a whole. The first is the mission of the antimechanized weapons organically assigned to regiments with which they fight in close cooperation. The second is the mission of the antimechanized units placed at the disposal of the higher commander; these units, because of their great mobility, are available for employment at a distance from the command or for concentration at the decisive locality.

■ 261. Antimechanized weapons are habitually attached to all security detachments. When an antimechanized unit is given a distant security mission which will require separation from the command, the necessary supporting troops (engineers and infantry or cavalry) are attached to construct and protect the obstacles and to furnish protection for antimechanized weapons.

The coordination of the means of antimechanized protection is a command responsibility. Within the zone of his tactical responsibility the commander is usually the only person in a position to make a proper estimate of the situation which will comprehend all the factors and information. As a general rule, commanders of antimechanized units are given missions which are specific with respect to time, place, and purpose, and cooperation with other units, but which leave to them the details of execution.

■ 262. Ordinarily, no special detachments for antimechanized protection are required in rear areas. When, however, a flank is vulnerable or an appreciable gap exists in the front of battle, as the result of a divergent maneuver or a hostile break-through, the protection of headquarters and important establishments in the rear area may require adequate measures and the detail of special detachments for antimechanized protection.

PROTECTION AGAINST CHEMICALS

■ 263. Effective protection against chemical agents depends primarily on the training of the individual and the collective measures taken by a command to guard against the effects of such agents.

Details of protective equipment and the individual and collective protective measures to be taken are covered in chapter 8, BFM, volume I.

■ 264. Good *gas discipline* is essential if casualties are to be minimized and undue interruption of operations prevented. The first requisite is that the individual be trained to use the equipment properly.

The danger of panic is reduced if the soldier is taught to look upon chemical agents as only another combat weapon

for which he should have due respect but no great fear. The individual must understand that if the protective equipment provided is properly used, chemical attacks can be met with relatively few casualties.

■ 265. All commanders are required to take effective measures to protect troops against chemical attacks. Measures to prevent surprise include a reconnaissance of suspected gassed areas and alternative routes, an efficient system of gas alarm, and a constant check on wind and weather conditions favorable for hostile chemical attack.

■ 266. Standing orders are usually issued by a command which set forth a standard and uniform procedure for protection against gas. The duties of *gas sentries* are laid down in chapter 8, BFM, volume I.

In the combat zone every unit must have prepared a *plan* for protection against chemical attack. The important provisions of such a plan are to avoid contaminated areas, expose as few men as possible to the effects of chemical agents, take prompt measures for decontamination, and give special attention to prevention and treatment of casualties.

Upon the detection of gas or the sound of the alarm, all men are required to adjust their gas masks promptly and to warn others within hearing. Masks are not removed until so ordered by proper authority. Good gas discipline implies the ability to war the gas mask continuously for 1 hour without undue fatigue while engaged in normal duties.

In the selection of bivouac areas, defensive positions, assembly areas, and positions for reserves, due consideration is given to the factors of gas drainage and prevailing winds. Alternative positions for supporting weapons are selected.

■ 267. Upon encountering an area contaminated by vesicant agents, the primary rule of security is to avoid the area by passing it upwind. Areas heavily contaminated by gas are marked and guarded by gas sentries who are instructed to warn unauthorized persons from entering such areas. Reconnaissance should be made to determine a route as free as possible from long grass and undergrowth. If time is avail-

able, decontamination is performed by men specially detailed for such work and equipped with gas masks, decontaminating material, and protective clothing.

■ 268. All troops must know how to protect supplies, equipment, and munitions from the contaminating effect of chemical agents and to use the equipment provided for decontaminating weapons, equipment, and vehicles.

Since rear areas are liable to chemical attacks by aircraft using chemical bombs or spray, adequate precautions against this form of attack must be taken for the protection of all important headquarters and establishments.

SECURITY ON THE MARCH

■ 269. GENERAL.—In a large command, a certain amount of security is provided by the reconnaissance detachments or other covering troops operating between the enemy and the marching columns.

In proximity to the enemy, each march column provides its own security detachments, whether or not the front is covered by reconnaissance forces of larger units. If a command advances or retires in two or more columns, a general security detachment may be employed, or a separate security detachment may be detailed for each column and their action coordinated by the commander of troops.

Corps and divisional cavalry operating with an infantry division are usually employed on reconnaissance missions under the direct control of their respective superior commander. (See pars. 156 and 159.) In proximity to the enemy, a portion of their strength may be attached to subordinate units for purposes of local security.

■ 270. Security detachments regulate their march so as to give the main body the protection required by the tactical situation and conditions of terrain. As a rule they move by bounds to successive important terrain lines, halting on each line until the main body has reached or cleared the previous terrain line, depending upon whether the column is advancing or retiring. Terrain lines which cover the passage of river crossings and other defiles are of especial importance.

Within an advance or rear guard, its several elements similarly move by shorter bounds; crests which afford observation and protection in the direction of the main body chiefly determine the length of the bounds.

A wholly motorized security detachment has a marked advantage over a dismounted or partially motorized detachment in that it can be made smaller and can operate at a greater distance from the main body. Superior mobility permits earlier contact with the enemy; radio communication expedites transmission of information. As a result, the commander has greater freedom of action, and the main body is afforded more time to prepare for combat.

■ 271. The security of a march column depends initially on the efficacy of the concealment in its last bivouac. During a movement, the most important periods during which antiaircraft security must be provided are the formation of the march column (see pars. 364–366), the passage of any defiles or crossings en route, and the movement into shelter or assembly positions at the end of the march. (See pars. 335, 339, 405, 406.)

When danger of an air attack exists, all units designated for antiaircraft defense march in a state of increased readiness for action. Elements of antiaircraft artillery advancing by bounds follow the advance guard or precede the rear guard as the case may be, or move on parallel roads when these are not occupied by adjacent columns, prepared to defend or reinforce the defense of elements most vulnerable to air attack.

When there is a good road net, the mobility of motorized units and the great radius of action and striking power of hostile mechanized units require that special measures be taken for antimechanized protection especially by exposed march columns. In general, both active and passive means are used in combination. (See pars. 257, 260–262.)

■ 272. The *march order* for a command includes all instructions relative to security as well as other details for the march. Definite provisions are made for close cooperation between the security detachments and the reconnaissance detachments operating under the control of the higher commander. (See SOFM.)

■ 273. When combat is in prospect, the commander marches with the commander of that security detachment with whose action he is most vitally concerned. From time to time he gives to the commanders of the security detachments additional instructions based on his knowledge of the situation.

■ 274. ADVANCE GUARDS.—The general mission of the advance guard is to prevent unnecessary delay in the advance of the main body and to protect it against surprise and observation by hostile ground forces. In proximity to strong hostile forces, the advance guard procures for the main body the time and space required for its deployment for action.

The advance guard accomplishes its mission by exploring the terrain to the front and on each side of the line of march, overcoming isolated hostile resistance, reconnoitering and preparing, so far as practicable, the route of advance for the movement of the troops (removal of obstacles, repair of bridges and roads, etc.). It directs its reconnaissance in particular against those points which afford extended observation into the dispositions of the main body or which provide concealment for hostile reconnoitering or harassing detachments. In proximity to the enemy, it seizes and holds important features of the terrain, particularly those that will cover the deployment of the main body from hostile observation and provide good observation and defilade for the employment of the artillery. According to circumstances, it pushes back hostile covering detachments, or it opposes an enemy advance in force long enough to permit the main body to make its dispositions.

■ 275. The *strength* and *composition* of an advance guard vary with the strength and mobility of the command, its mission, the situation, the terrain, and the time of day. It should be no stronger than is necessary for security, and for large commands may comprise components of all arms in varying proportion.

Greater strength is required as the distance from the enemy decreases. As a rule, antimechanized weapons and scout cars are attached. Motor transportation for organic foot troops is very advantageous.

When contact is imminent, light artillery is attached to support the probable combat action of the infantry. (See par. 276.) Elements of long-range medium artillery may be attached under conditions favoring their employment with a view to taking advantage of opportunities to open fire on favorable distant targets (e. g., hostile troops in column) and forcing the enemy to an early deployment.

A signal detachment with vehicular radio to provide for communication to the higher commander and reconnaissance detachments in front, and chemical troops to carry out any required decontamination are of special value.

Engineers are attached in accordance with the needs for bridge and road work, engineer reconnaissance, and the construction of antimechanized obstacles. When the negotiation of a river crossing is in prospect, a bridge train may be attached.

A medical detachment with one or more ambulances usually marches with the reserve.

■ 276. At night and under conditions of low visibility, an advance guard comprises only infantry with its heavy infantry weapons and engineers attached. If the night march is to be extended into hours of daylight, the march is organized as for a daylight march or the necessary measures are taken at daylight for reinforcing the advance guard. (See pars. 360–362.)

In case of a night march conducted under protection of a covering force or outpost in front of the command, a small infantry detachment will usually suffice for security.

■ 277. The *distance* between the advance guard and the main body is always sufficient to preserve for the commander his freedom of action with reference to the employment of the main body and to make his dispositions without serious interference from the enemy, but is never so great as to expose the advance guard to defeat before assistance can reach it. In general, distances are reduced at night, in close terrain, under conditions of low visibility and restricted observation, or when the advance guard is small.

278. The *formation* of the advance guard is, in general, such as to assure its own security and to provide sufficient distribution in depth and in width for its offensive and defensive maneuver.

The distribution in depth from front to rear of the troops of the advance guard usually comprises the *advance guard cavalry* or *motorized detachment*, *the support*, and the *reserve*.

The distribution in width of the advance guard increases with the proximity of the enemy. When necessary, this width is allocated to two or more subordinate elements and their action coordinated by the advance guard commander.

279. The *initial order* of the advance guard commander is based on the march order of the higher commander. It gives such available information relative to hostile and friendly forces as is necessary for the guidance of subordinates, including the zone or route and objective of the march; designates the troops for the several fractions of the advance guard; fixes the hour at which the support and, when necessary, the advance guard cavalry will reach or clear the initial point of the march; and gives such instructions to the several fractions and elements of the advance guard as may be required by the mission and the situation. For further details, see SOFM.

280. The *advance guard cavalry* or other reconnaissance detachment reconnoiters far enough to the front and flanks of the line of march to guard the column against surprise by hostile mechanized forces and artillery fire, and to secure timely information of the enemy and the terrain. If sufficient in strength and the situation so demands, it seizes and holds terrain points along the route of march (terrain features covering river crossings, town exits, defiles, etc.), advancing by bounds from position to position. It thus assures, as far as practicable, the continuous movement of the advance guard and the possession of ground facilitating its deployment. As proximity to the enemy increases, the necessity for the use of a mobile detachment on the more distant reconnaissance missions disappears, and the requirements of local security and the necessity for flank protection increase; it is then employed

in the exploration of the terrain on the immediate front and flanks of the advance guard. (See par. 159.)

■ 281. The *support* secures the march of the reserve and executes the necessary local reconnaissances on the front of the advance. It provides for the execution of reconnaissance and its own security by sending forward a small advance party. In the face of an enemy advance in force, it offers sufficient resistance to permit the reserve to prepare for action.

The support is given sufficient strength for the execution of its reconnaissance and security missions. When contact with enemy elements is probable, heavy infantry weapons are included in the composition of the support. An artillery liaison detachment habitually marches with the support. Messengers and motorcyclists are attached for the purposes of communication.

■ 282. The infantry strength of the advance party seldom exceeds a platoon; when practicable, transportation is furnished for carrying infantry packs. The attachment of antimechanized weapons and mechanized vehicles is of great importance.

■ 283. As soon as hostile resistance is encountered, the leading elements of the advance guard will have to move on a broader front. Prompt support of the leading elements in dealing with hostile resistance will be necessary, and provision must be made to prevent infiltration of hostile mechanized elements seeking to attack the main body or rearward subdivisions of the advance guard.

At the same time that the front is extended, the necessity for close support will generally require a reduction in the distances separating the elements of the advance guard.

■ 284. The *reserve* constitutes the principal maneuvering and offensive element of the advance guard. It therefore comprises as large a part of the strength of the advance guard as is consistent with its own security and the preservation of its maneuvering power. The artillery and other auxiliary troops assigned to the advance guard usually march with the reserve.

The reserve follows the support at a distance sufficient to enable it to deploy for action in an effective manner. As soon as the situation indicates the necessity for artillery support, the advance guard artillery marches in a state of increased readiness for action. One echelon of the artillery takes up a position in readiness or in observation, while the other moves forward to an advanced position.

■ 285. The combat action of the advance guard is regulated with reference to the requirements of the main body. The mass of the advance guard is therefore put into action only for the purpose of gaining or retaining advantages which contribute to the tactical success or security of the main body. So far as practicable, endeavor is made to hold the principal advance guard forces well in hand for unified employment in the execution of missions of importance to the success of the main body and to avoid dissipating the advance guard strength in minor detachments. Forces will thus be available for the seizure of important points, the execution of reconnaissances in force, and finally for covering the development and deployment for action of the main body.

■ 286. The general principles governing the advance guard of a combined force of all arms also apply to the security of the more mobile forces—cavalry (horse and mechanized) and completely motorized units. The principal modifications result from superior mobility of these units. The advance guard operates at greater distances from the main body and with greater distances between its own elements. Mechanized vehicles are attached to the advance guard. The zone of reconnaissance is more extensive, both to the front and flanks. Terrain lines that cover the passage of streams and defiles are of especial importance, and must be so protected by the advance guard that the security of the passage of the main body is assured before it reaches the crossing or defile.

■ 287. During a retirement, when there is likelihood of hostile mechanized attack against the heads of the retreating columns, advance guards are detailed; they are composed of mobile troops reinforced by antimechanized and engineer detachments. If there is no threat against the heads of the columns, the principal mission of the advance guard will be

to clear routes of march, insure the uninterrupted movement of the main body, and regulate civilian and refugee traffic; in the latter case, military police are attached.

■ 288. REAR GUARDS.—The mission of the rear guard is to protect the main body from hostile surprise, harassment, and attack. By the successful execution of this mission a rear guard covering a retirement enables the main body to avoid accepting battle and regains for the commander of the force his freedom of action. The strength and composition of a rear guard are such as to permit the execution of its mission without the intervention of the main body. The rear guard cannot count upon the support of the main body but must be able to accomplish its mission with its own means.

■ 289. A rear guard covering the retirement of a combined force initially consists principally of infantry supported by artillery. Contingents of other arms are added in accordance with the requirements of the situation, including antimechanized weapons, tanks, and other mechanized units for counterattacks against hostile mechanized forces, signal troops for radio communication and removal of wire lines, chemical troops for interdicting abandoned areas, and engineers for the preparation of demolitions and obstacles.

■ 290. A rear guard is usually strong in artillery and heavy infantry weapons on account of their power to force the enemy to deploy at long range and delay his advance. The ability of cavalry to conduct delaying action makes it an especially important element of a rear guard when the main body has succeeded in gaining sufficient distance from the enemy; it may then constitute the principal element of the rear guard.

■ 291. The *formation* and the *method of operation* of the rear guard are adapted to the situation. Movement to the rear is made by bounds, based on the progress of the main body and the time limit set by the higher commander for holding designated terrain lines. The distance between the rear guard and the main body is determined accordingly. Delays in the retirement of the main body must be expected; to obviate this all available roads are used.

292. When in contact with the enemy, the rear guard distributes its forces in groups over a wide front and opens long range fire with its artillery and heavy infantry weapons with a view to forcing the enemy to deploy and thus delay his advance. Unless the security of the main body requires a stubborn resistance, the rear guard, as far as practicable, avoids close range combat and retires successively from position to position as the enemy approaches. Cavalry covers the retirement and maintains contact with the enemy. (See par. 568.)

The successsive positions of the rear guard are chosen at such distance from each other that the enemy is forced to renew his preparations for attack in front of each of them and that the changes of position by the artillery of the rear guard are reduced to a minimum. A position should also favor a withdrawal by affording a good line of retreat. Smoke screens may often be effectively employed to cover the movement of withdrawing troops.

293. When the enemy presses his pursuit closely, greater resistance is offered; advantage is taken of favorable opportunities to punish over-hasty pursuit by counteroffensive action. Cavalry attack against the flanks of pursuing columns is often an effective means of disorganizing the enemy's pursuit. The most favorable time for offering a determined resistance is during the late hours of the day which will permit of the withdrawal of the rear guard under the cover of darkness. When necessary for the security of the main body, the rear guard sacrifices itself in the execution of its mission.

294. When the distance from the enemy permits, the rear guard retires in march formation. Its distribution corresponds, in general, to that of an advance guard, and in order of march comprises the reserve, the support, and the rear guard cavalry or motorized detachment. The support detaches a rear party and the necessary flank patrols.

Because of the direction of march, infantry reconnaissance during the retirement is much more restricted than in the case of the advance guard; the chief reliance must be placed upon cavalry or motorized infantry for the execution

of the necessary reconnaissances. Cavalry especially observes and forestalls enemy atempts to pass the rear guard on the flanks. Infantry supports provide security by breadth of dispositions when contact with the enemy is probable.

■ 295. A rear guard may also be detailed in an advance if attack or harassing action, especially by hostile mechanized forces, is expected. Usually a detachment, strong in engineers, machine guns, and antimechanized weapons with a weak infantry escort will suffice.

■ 296. FLANK SECURITY.—In addition to the reconnaissance and security by the supports of advance and rear guards, it will sometimes be necessary for the reserve and the main body to send out patrols to the flanks of the line of march. Special flank reconnaissances are ordered by the commander of the advance guard and the commander of the troops.

In principle, the main body and the advance guard assure their own flank protection.

When the flanks of the command are not protected by adjacent units, it may become necessary to provide stronger flank protection by the detail of a flank guard.

■ 297. When the necessity for detaching a flank guard for the protection of the main body during the course of the march can be foreseen, it will be advantageous to attach the flank guard troops to the advance guard in order to give them the time required to reach their positions. When this necessity cannot be foreseen, it is usually more convenient to convert the advance guard into a flank guard and then detail a new advance guard.

■ 298. When the main body executes a flank march in proximity to the enemy, flank protection assumes great importance, and the detail of a strong flank guard is frequently necessary.

Flank security is also of especial importance during a retirement. Cavalry detachments march on adjacent parallel routes when these are not occupied by other columns.

■ 299. As a rule, flank guard duty requires a high degree of mobility. Greater distances must be marched than in the case of troops assigned to the main body, and equal distances

must often be covered in shorter periods of time. When practicable, flank guards consist principally of cavalry or motorized infantry with the necessary artillery and means for antimechanized defense attached. Cavalry is especially suitable to detail on flank guard duty on account of its ability to carry out extensive reconnaissance and effect rapid communication with the main body.

■ 300. The operations of flank guards are conducted with especial reference to the routes which give access to enemy attack against the flanks of the command. When the locality from which an enemy attack is to be apprehended is well defined, a flank guard occupies a position covering the routes of approach until the command has passed. Infantry detailed on a mission of this character must start its march in advance of the movement of the main body; on the completion of its mission, it joins the rear of the column.

When several such localities must be successively passed during the progress of a march, echelons of the flank guard move by bounds from one position to another. A mission of this character requires the detail of especially mobile troops.

When a route generally parallel to the line of march of the main body exists, and more or less continuous flank protection is required throughout the depth of the column during the march, the flank guard marches parallel to the main body, distributed in detachments over sufficient depth to be able to offer resistance to enemy attack at various points on the flank of the main body and to deal with the inroads of small hostile detachments.

■ 301. A flank guard makes the necessary provision for its own frontal and flank security.

OUTPOSTS

■ 302. GENERAL.—The provisions made by a resting command for its security vary widely with the situation.

When contact with the enemy is remote, the leading elements of a large unit provide security in the direction of the enemy by occupying the terrain features which control the routes leading from the enemy and afford facilities for observation. By holding the positions controlling the routes

of approach and making the necessary provisions for their own security, the leading units assure the general ground security of the command. (See pars. 391, 396.) Local security by the various units of the command is obtained by the detail of the necessary interior guards; in hostile territory, interior guards assume especial importance. (See pars. 404–407.)

As the distance from the enemy decreases, a higher state of readiness for action becomes necessary. In shelter, units are distributed with reference to their probable tactical employment and generally occupy a more extended frontage. Provision is made for the security of the command by the detail of an outpost, more or less completely organized, depending on the seriousness of the hostile threat. (See pars. 404–405, 409.)

■ 303. An *outpost* is a covering detachment detailed to secure a resting command or a defensive position against surprise and observation by hostile ground forces.

When the distance of the hostile forces from the main line of resistance of a defensive position is too reduced to permit of the establishment of a separate outpost, each battalion in the forward area covers its sector by the detail of outguards forming a *combat outpost*. (See pars. 329–331.)

When the command makes a long halt during the course of a march, the advance or rear guard establishes a *march outpost* usually formed by extending the support. Units of the support occupy critical terrain features controlling the approaches to the column, establish outguards or lookouts at commanding points, and when necessary send out patrols.

■ 304. A resting command provides for outpost protection in those directions which afford hostile forces access to the location of the main body. The control of roads and terrain features that afford facilities for extended observation, and of observation points which if in the possession of the enemy would permit him to direct the fire of long range artillery on the main body, are of especial importance. Special attention is given to measures for antimechanized security. (See pars. 254–262.)

Flank security is, when necessary, provided for by refusing the exposed flanks of the outpost position and by establishing detached posts on roads or at important observation points which lie outside the sector covered by the outpost.

■ 305. The decision of the commander relative to the location of the main body constitutes the basis for the position and nature of the outpost. Security requirements generally increase with the length of time a command remains in occupation of a locality.

Outposts conduct reconnaissance only so far as required by their security mission. The execution of more distant reconnaissance is regulated by the higher commander through reconnaissance agencies under his control.

■ 306. STRENGTH AND COMPOSITION.—The strength and composition of an outpost vary with the distance, mobility, and the attitude of the enemy, the terrain, the time of day, the size of the command to be secured, the degree of resistance, and other special duties expected of it. An outpost of a force of all arms may thus comprise varying proportions of all the combatant arms except aviation. It should be no stronger than is consistent with reasonable security. The most economical protection is furnished by keeping close contact with the enemy by means of patrols in conjunction with resisting detachments on the avenues of approach.

■ 307. Infantry ordinarily constitutes the principal element of an outpost.

Direct support of the outpost infantry is usually provided by the artillery with the main body or that assigned to the defense of the main position; if such support is impractical, artillery is attached to the outpost.

Engineers are attached to the outpost for the construction of obstacles, mine fields, and other barriers. If necessary, the local antimechanized weapons are reinforced by the attachment of antimechanized units at the disposal of the higher commander.

When cavalry is attached to the outpost, the zone of reconnaissance of the outpost is extended by cavalry patrols or reconnaissance detachments.

■ 308. In close terrain and during periods of darkness or low visibility, security forces are usually stronger and operate in closer proximity to the main body or defensive position.

■ 309. DETAIL OF THE OUTPOST.—The halt order of the commander of the troops, besides assigning locations to the various elements of the command and designating, when necessary, the position to be held in case of attack, contains instructions relative to security. Unless measures for security have been delegated to the several column commanders, these instructions detail the outpost troops, assign an outpost commander, and designate the outpost line of resistance and the limits of the sector to be covered by the outpost. According to circumstances, they indicate whether in case of hostile attack in force the outpost is to hold its position either definitely or for a prescribed period, or is to conduct a delaying action falling back on the main line of resistance. They outline special reconnaissances to be carried out and indicate the approaches which are to be especially guarded.

■ 310. During an advance, the outpost troops are usually furnished by the advance guard; relief from security duty is generally effected by the detail of a new advance guard when the movement is resumed. The outpost ordinarily stands relieved when the support of the advance guard has passed the outpost line of resistance.

During a retreat, the outpost usually furnishes the rear guard; relief from security duty is generally effected by the detail of a new outpost from the main body when the command goes into position or shelter.

When the command is in position or remains stationary for a prolonged period, the outpost is ordinarily relieved at intervals of several days. The frequency of reliefs is regulated according to the arduousness of the service. All reliefs are conducted so as to provide continuity of security.

■ 311. Instructions of higher commanders provide for the necessary coordination between the outposts of adjacent subordinate units. When necessary to insure close coordination between the dispositions of adjacent outposts, higher com-

manders designate a common outpost line of resistance and assign sections of the outpost line of resistance to each unit; they may further indicate the important areas to be held, fix the strength of the several outposts, and prescribe their conduct in case of hostile attack. They regulate the signal communications to be established between adjacent outposts, and the support to be given by the artillery under the control of the higher commander. If there are any gaps between adjacent units, the unit responsible for keeping them under observation is prescribed.

■ 312. Signal communication between the command posts of the commander of the troops and the outpost commander is established by the commander of the troops.

■ 313. DISTRIBUTION OF THE TROOPS.—The outpost of a large command is distributed into a *reserve*, *supports*, and, when cavalry is attached, the *outpost cavalry*. When important points to be secured lie outside the sectors of the supports, detached posts are detailed by the outpost.

The missions and the dispositions of the several fractions into which the outpost is distributed depend upon the mission assigned to the outpost and the situation.

■ 314. Against minor hostile enterprises and when the outpost is required to hold its position against hostile attack in force, the *supports* constitute the principal echelon of resistance of the outpost. They are usually placed at the more important points on or near the outpost line of resistance. As a general rule, roads exercise the greatest influence on the location of supports in open situations, and a support is generally placed on or near a road. Each support is assigned a sector which is clearly defined by means of tangible lines on the ground. Supports furnish the outguards and patrols required for the observation service of the outpost. Supports vary in strength from a platoon to a company. Machine guns and heavy infantry weapons are attached to supports as required. Supports are numbered consecutively from right to left.

■ 315. The mission of the *reserve* is to support the troops in front by reinforcement or by counterattack, or in case

the outpost is assigned a delaying mission, to hold a rallying position on which they may retire in event of a hostile attack in force. It is so located that it can readily occupy the line of resistance, and, when its mission requires delaying action, take up a position covering the retirement of the supports.

■ 316. ESTABLISHING THE OUTPOSTS.—Upon receipt of the orders for the establishment of the outpost, the outpost commander makes his dispositions with the least practicable delay. Until the leading outpost troops are able to assume their duties, temporary protection is afforded by march outposts established by the advance or rear guard.

In large commands it will frequently be necessary for the outpost commander to give his initial orders from the map. In proximity to the enemy, the *initial orders* insure the prompt execution of the most urgent measures to prepare the outpost to meet a hostile attack. These measures include the occupation of commanding terrain, instructions for reconnaissance, construction of obstacles blocking important roads, and preparations for the defense of the outpost position. Details and the rectification of preliminary dispositions are regulated by subsequent instructions.

Having made his reconnaissance, the outpost commander designates the *outpost line of resistance* in accordance with the instructions received from the commander of the troops. He fixes the distribution of the outpost troops; assigns to each support its location and the sector it is to cover; prescribes the location and disposition of the reserve, and its conduct in case of attack; provides for the necessary detached posts and connection with adjacent troops; issues instructions concerning organization of the ground, signal communication, and the measures to be taken for antiaircraft, antimechanized and gas defense. He prescribes the disposition of any trains with the outpost and gives the location of his command post.

■ 317. After issuing the initial orders, the outpost commander inspects the outpost position, coordinates the dispositions of the several supports, completes his arrangements by more detailed instructions where necessary, and sends

his superior a report of his dispositions. He prescribes the degree of readiness for action of the several elements of the outpost as required by the situation.

§ 318. In occupying their positions and during the progress of a relief, the various subdivisions of the outpost conceal their movements as far as practicable against both ground and air observation, taking advantage of existing covered routes of approach. They prepare their positions for defense unless the situation renders such action unnecessary. As soon as practicable, the subdivision commanders make a report of their dispositions, accompanied, if practicable, by a sketch, to the outpost commander.

Prominent points within the outpost position in rear of the outguards which afford extensive view over the foreground are occupied as observation posts as directed by the commanders of the several subdivisions and the outpost commander.

§ 319. When supports are to be furnished from more than one battalion, a sector of the outpost position is assigned to each battalion furnishing the supports. Battalions assigned to sectors of the outpost position usually hold out their own reserves. When battalions are assigned to sectors of the outpost position, the outpost commander issues his orders for the occupation of the line of resistance to battalion commanders.

§ 320. SUPPORTS.—The *supports* are the principal agencies of security of the outpost. They constitute the strong points of the line of resistance and provide for their own security and the observation service of the outpost by establishing *outguards* and sending out *patrols*.

The support commander in posting his unit seeks to cover his sector in such manner that the enemy cannot reach the section of the line of resistance assigned to the support in dangerous numbers unobserved. On the other hand, he economizes in the number of men used on observation and patrol duty. He organizes the defense of the section of the line of resistance assigned to him as required by the situation. A unit detailed as a support is usually deployed on a frontage and in a depth corresponding to its deployment in

defensive combat. Each strong point on the line of resistance is so organized as to command an adequate field of fire to the front and to sweep with its fire the intervals between its position and those of adjacent supports. Suitable road blocks and obstacles are prepared for defense against mechanized attack.

■ 321. As soon as the posting of the support is completed, the support commander inspects its dispositions, rectifies defects, and makes a report of his dispositions, preferably accompanied by a sketch, to his immediate superior. He indicates the spaces which are dead to the fire of infantry weapons and especially require artillery support. He renders subsequent reports covering additional developments and embodying the information collected by his patrols. He maintains connection with adjacent supports and keeps them informed as to his situation.

The support commander prescribes the degree of readiness for action of the support. Greater vigilance is required in case of fog and toward dawn; it may then be necessary to cause the entire support to stand to arms and to draw in the outguards closer to the support. At night, it will sometimes be advisable to place the outguards in positions different from those which they occupy during the day. Where an outpost occupies a position for a considerable length of time in close proximity to the enemy, provision must be made for frequent change in the position of outguards in order to avoid capture by hostile raiding parties.

■ 322. An *outguard* varies in strength from four men to a platoon, depending on its location and the number of sentinels it is required to furnish. Posts at a short distance from the support may be held by weak outguards while important posts at a considerable distance must be more strongly held. Outguards are numbered consecutively from right to left in each support. Outguards comprise pickets, sentry squads, and cossack posts. (See FM 7–5, and Cav FM, vol. III.)

Outguards must be ready for action at all times. When in close contact with the hostile outpost, the establishment of listening posts at night in front of the general line of observation may become necessary.

■ 323. *Sentinels* are charged with the observation of a certain portion of the foreground of the outpost position, with the discovery of indications of hostile activity, and with giving the prescribed alarm or signal in case of hostile attack. Sentinels at the post of the support and the outguards repeat the signals given by the advanced sentinels.

The duties of sentinels are prescribed in special orders in which all sentinels are carefully instructed.

■ 324. The field of view held under observation by the outpost by means of sentinels is extended by *patrols* detailed by pickets and supports. Patrols execute reconnaissances in advance of the line of sentinels and especially reconnoiter positions of the foreground which are masked from the view of sentinels and observation points and are too distant to be included in the outpost lines. (See ch. 9, BFM, vol. I.)

Patrolling in front of the line of observation is increased during periods of low visibility and is of especial importance during the hour preceding dawn.

■ 325. When the situation requires strong support of the action of patrols, the outpost commander may detail a reconnaissance detachment (see pars. 153–155) for the execution of a specific mission.

When the outposts of opposing forces are in close contact, reconnaissance is largely restricted to night patrolling. Night patrolling requires systematic organization, careful preparation, and the cooperation of advanced outpost elements with the activity of the patrols.

■ 326. Within the outpost position, patrols are employed by supports and pickets to maintain contact with their advanced elements and with adjacent supports and pickets and to reconnoiter the ground between sentinel posts. Patrols are employed instead of sentinels to hold under observation ground which affords a limited field of view. In close country, patrols constitute the principal organs of observation of the outpost.

■ 327. When cavalry is attached to the outpost, it operates under orders of the outpost commander primarily on reconnaissance missions. It is also employed to maintain contact

between adjacent units and to establish detached posts at more distant points. In general, when not engaged in outpost duty, cavalry is withdrawn to a rearward echelon of the outpost for rest and care of animals.

■ 328. RESERVE.—The reserve sends out such detachments as have been ordered; at least one sentinel is stationed at the post of the reserve which remains at rest. Connection is maintained with the supports and nearby detached posts. Each unit of the reserve is informed as to its place of formation in case of hostile attack.

■ 329. COMBAT OUTPOSTS.—As a rule a combat outpost is established by each front line battalion or squadron in contact with the enemy. (See par. 303.) When battle is interrupted by nightfall, combat outposts are established by the leading battalions and squadrons; they push their patrols forward in close contact with the enemy (see par. 553). The action of the several outposts is coordinated by the commander of troops as described in paragraph 311.

When combat outposts are established during hours of darkness, temporary measures for security are immediately taken by initially occupying the more accessible points with outguards and patrols; the outpost is then completely organized at daylight.

■ 330. If the outpost position is at a considerable distance from the main battle position, the combat outposts of adjacent units are placed under a single outpost commander designated by the commander of troops. If the artillery with the main body is unable to support the outpost, some artillery is attached to the outpost in order to force the enemy to deploy his artillery prematurely for the attack of the outpost position. Under such circumstances the foreground of the main position is temporarily occupied by outguards (combat outposts) detailed from the front line units on the battle position who cover the withdrawal of the more distant outpost troops (see par. 543).

■ 331. In general, combat outposts provide for the close security of the defensive position and are responsible for maintaining close contact with the enemy. For action taken

by outposts in the defense and in delaying action, see paragraphs 543 and 582.

If there are friendly troops or detachments in front of the outpost, the higher commander must clearly prescribe their mission and coordinate their combat activity with respect to the outpost.

■ 332. CAVALRY AND MOTORIZED UNITS.—Cavalry and motorized units secure themselves principally by a far-reaching reconnaissance and by greater depth of their dispositions in the bivouac area. Except when in close proximity to the enemy, a cavalry or motorized unit does not secure itself by a completely organized outpost. It sends out security detachments (troops, platoons) to hold critical points on the routes of approach from the front and flanks. These detachments are preferably posted along some protective terrain line that the enemy will be forced to pass in his advance (defiles, streams, crossings, etc.). They provide for their own security by posting outguards and sending out patrols, and oppose a hostile advance long enough to permit the security detachments to withdraw under protection of the natural obstacle and the main body to make its dispositions. Additional outguards are posted in the vicinity of the shelter of the main body.

■ 333. In closer proximity to the enemy, security measures approach a more continuous outpost organization. When the security troops occupy an extensive front, outpost sectors are assigned to the various security detachments. When necessary, portions of the main body are held in readiness for immediate action.

The speed with which a motorized or mechanized unit can move permits its main body to bivouac at some distance from the outpost. The number of vehicles with the outpost is reduced to the minimum necessary for patrolling and communications. All vehicles pertaining to the resting units are serviced and made ready for operation before dark. Motor parks are established under cover and located to avoid congestion and to expedite movement.

■ 334. In immediate proximity to the enemy, the outpost organization conforms to the general principles of an outpost

of all arms. An outpost commander is detailed and a reserve is constituted. Mounted outguards leave their horses with the rearward echelons of the outpost. When there is danger of surprise, increased readiness for action is obtained for outguards and supports by holding animals saddled and ready for movement.

SECURITY DURING DEVELOPMENT

■ 335. With the approach of a marching column to close contact with strong hostile forces, it becomes necessary to abandon the road and to develop the route column into a broader formation. Hostile artillery may effectively interdict daylight movement on roads at ranges up to 10 miles. Open terrain, extended hostile observation, and the threat of air attack may necessitate an earlier development. As a rule, time can be saved and losses avoided by detouring areas under hostile observation or fire.

The *development* of the route column is effected by breaking the single column into several roughly parallel columns, each of which is assigned a march objective. As contact with the enemy becomes imminent, these columns are themselves developed into smaller columns. In the development of a large unit a portion of its strength is held back until contact with the enemy has clarified the situation.

Time is generally gained in the execution of the development by assigning the longest routes to the leading units of the march column.

■ 336. The *advance guard* may be employed as a covering force to protect the development of the main body or it may cease to operate as a security detachment and be given a combat mission as a part of the whole force. In either case, each column into which the command is developed covers its advance with a security detachment.

■ 337. Each unit becomes responsible for *reconnaissance* of its objective and its own *local security* as soon as the next higher unit is developed. Orders for development frequently assign reconnaissance zones to subordinate units. Terrain features that afford an insight into the hostile dispositions

constitute especially important objectives of reconnaissance and of combat action with advanced enemy detachments. Heavy infantry weapons advancing by echelon and by bounds take up successive positions covering the advance of infantry units.

■ 338. When the objective is well defined, development of the command can be expedited by an advance in several columns in order to secure possession of essential terrain features which will facilitate an envelopment. Eventually, however, the several columns must be concentrated for battle. In case a wide envelopment is contemplated, special security measures are taken to protect the enveloping force.

■ 339. The development of an infantry division usually terminates in the occupation of an *assembly position* preliminary to deployment for attack or defense. Each of the units into which the division is developed occupies a section of the assembly position assigned to it in the order for the development of the division.

Assembly positions are so selected as to be, as far as practicable, screened from air and ground observation and reconnaissance. Special attention is given to terrain which provides turn-arounds for motor vehicles and natural protection against a mechanized attack. The general lie of the position should be such that the troops face in the general direction of their contemplated movement and have at their disposal favorable lines of advance to their deploying positions. When the terrain does not afford cover, the assembly position of an infantry division should be beyond the effective range of hostile artillery. The assembly position of the infantry is protected by antitank weapons and local security detachments. The artillery is so disposed that it can also protect the occupation of the assembly position.

The movement into an assembly position is usually executed by bounds. Massing of units in close formation in assembly positions is avoided. Units are separated by sufficient intervals and distances to insure that concentrated targets are not offered to the hostile air attack or artillery fire. Each unit makes its own provisions for local security.

■ 340. When a command is required to execute its development under cover of darkness, all preparations for the maneuver are completed, as far as practicable, before dark. A covering force is sent forward without delay to gain contact with the enemy; routes of advance are reconnoitered and marked beforehand; if necessary, artillery protects the occupation of the assembly position by occupying suitable firing positions before dark or completing its preparations for night firing. In general the provisions for night marches apply. (See pars. 360–362.)

CHAPTER 9

MARCHES

■ 341. GENERAL.—In the combat zone, troop movements are generally executed by marching or by a combination of marching and movement by motor transport. Motor transportation is employed whenever practicable for the purpose of increasing the operative mobility of foot troops and conserving their strength.

For the logistics of troop movements and the transportation of supplies in the theater of operations by various means of transport, see FM 100–10 and SOFM.

■ 342. The ability of a command to concentrate superior forces where required depends in large measure upon the march capacity of the troops. All elements of the command must be equally well-trained and accustomed to march exertions. In war, troops spend the greater part of their time in marching; therefore, from the first days of mobilization, advantage must be taken of every opportunity to perfect troops in this requisite for field service.

■ 343. A successful march is one that places the troops at their destination at the proper time and in effective condition for combat. It is the task of commanders to reconcile, as far as practicable, the conflicting requirements of rapidity of movement and conservation of fighting power by adapting their dispositions to the situation, making careful march preparations, enforcing strict march discipline and the observance of rules of march hygiene, and taking measures for the avoidance of unnecessary hardship.

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344. CARE AND CONDITION.—Special attention to the care of troops and the means of transportation is essential to successful marching. Commanders take the necessary measures prior to a march to place men, animals, and transportation in the best possible condition and exercise the necessary supervision during the march to maintain them in that condition.

345. *Hot weather* is one of the greatest sources of hardship on a march. Every precaution is taken to prevent suffering from this cause. Full use is made of available transportation to carry the packs of troops as well as the equipment and loads of animals in need of relief. Places for long halts are, when practicable, selected where there are shade and free circulation of air.

Care is exercised to prevent men from obtaining unwholesome food and beverages from local sources and from indulging in excessive eating and drinking. The rate of consumption of water during a march is largely a matter of habit and training. Men are encouraged to drink all the water they need before starting a march; they are cautioned to drink sparingly during the course of the march. Excessive perspiration deprives the body of essential salts, the loss of which predisposes to fatigue and heat exhaustion. The dangers of these two conditions can be minimized by the consumption of sodium chloride (common table salt). Cold coffee or tea is likewise beneficial. The eating of sweets greatly increases thirst and should be discouraged. Commanders are required to have all water for drinking and cooking purposes chlorinated unless procured from a source found to be safe by the medical service. They make the necessary arrangements for the replenishment of canteens in accordance with anticipated needs; they permit no straggling from the column for this purpose. In large commands, replenishment of canteens from local sources is often impracticable so that water must be transported in water carts or tank trucks. Troops exercise economy in the use of water in order to make the available supply suffice for the march. When combat is in prospect, the replenishment of water consumed during the march requires special attention.

Animals suffer more from lack of water than from lack of food. If insufficiently watered, they rapidly lose condition. The times of watering are largely dependent upon march conditions and available facilities.

■ 346. The hardships caused by *cold weather* can be mitigated by taking proper precautions and providing troops with suitable winter clothing. Ears, face, and hands must be protected. Mounted troops stimulate circulation by dismounting and leading. Foot troops sling their weapons over the shoulder to free their arms.

Snow and ice greatly reduce the rate of march. To equalize the exertion of breaking the way, leading elements of a column are frequently changed. In deep snow, it may be necessary to break the way for foot troops with a vehicular drag or a tractor plow.

■ 347. Troops are not kept in column or under arms any longer than necessary. Many of the discomforts, annoyances, and hardships of marching can be mitigated by the exercise of foresight and good judgment.

On going into shelter, the care of animals is given first consideration when the tactical situation permits. Transportation is kept in good condition by regular care on the road and thorough cleaning and overhauling in shelter.

■ 348. MARCH DISPOSITIONS.—The factor which exercises the greatest influence upon dispositions for marching are the proximity of the enemy and the activity of hostile aviation.

The use of motor transport in the movement of foot troops of a column must be fully exploited. If the available number of motor vehicles is insufficient to carry all the foot troops, the column commander resorts to *shuttling*, using the organic motor vehicles of the units. In shuttling, a part of the motor vehicles dumps its load to carry foot troops, returning later for its cargo; while the other part moves its cargo first and then returns to carry foot troops. While awaiting their motor transport, foot troops may move by marching. The column thus advances by bounds.

When contact with the enemy is remote, the principal object of march dispositions is to facilitate and expedite the

movement of troops and to conserve their energy. As far as practicable, march columns are composed of units having the same rate of march. In columns composed of foot and motorized troops, the proportion is such as to facilitate shuttling. Separate roads are assigned to the several columns thus constituted, or the movement of the columns by the same road is echeloned in time. In general, the longer the bound, the more expeditious is the movement. The necessary measures are taken to guard against air observation and attack.

When contact with the enemy is probable, tactical considerations govern march dispositions. March columns are constituted in accordance with their tactical missions. Adequate provision is made for security. Shuttling is by comparatively short bounds to avoid an undue elongation of the column. Ordinarily, certain tactical units, with a limited supply of ammunition, are moved by motor transport in order to cover the movement of the remainder of the column. Whether important cargo, such as ammunition, is transported before or after the foot troops are moved will depend upon the needs of combat. Service trains may be held in a protected area until moved forward under cover of darkness.

Certain elements are ordinarily not included in the march columns of other troops. For example: air base units move in long bounds of several days' march; antiaircraft artillery moves by echelon and by bounds.

■ 349. A *large unit* advancing against the enemy is assigned a march objective or direction of march, and a zone or route of march.

A large unit whose zone of march includes several routes distributes its zone to its component units on the basis of the available road net and its own plan of maneuver. Tactical unity is observed in the assignment of routes of march.

Considering the possibilities of hostile air attack, the length of any march column or serial should ordinarily not exceed that of a reinforced infantry regiment; the longer the column, the greater is the danger from air attack. (See par. 369.)

■ 350. The commander of a large unit preserves his freedom of action by echeloning his march columns to one or both flanks, by regulating their advance by bounds, and by the timely control and maneuver of his march columns during movement.

Echelonment of columns to a flank facilitates maneuver and deployment to that flank. An advance by bounds to successive terrain lines regulates the movement of the command. Control is insured by having column commanders report the position of the heads of their columns periodically, either geographically or by road distance from the initial point.

After a march has begun, the desired echelonment of columns may be obtained by halting certain columns as necessary. An advance by bounds can be regulated by halting each column when it arrives at an indicated terrain line. The route of a column may be changed if desired without interrupting its movement.

■ 351. *Communication* between columns and with the superior commander is regulated ordinarily by standing procedure, supplemented, if necessary, by special instructions issued before the march is begun. Ordinarily the means employed are motorcycle messenger and vehicular radio. In the daytime, liaison airplanes are used to maintain contact between columns and to report their arrival at successive march objectives.

■ 352. For a large command, changes in march dispositions after the march has started usually slow up the process of the march and lead to congestion of rear elements. As a rule, the prescribed march dispositions are taken at the beginning of the march. When changes must be made during the march, they are accomplished upon arrival at a suitable terrain line or after a halt. In an emergency, all subordinate commanders are expected to adopt temporarily such march dispositions as the tactical situation requires.

■ 353. As a rule, a *warning order* is issued for a march. The essential information is the hour of start of the march. Other items which may be included are the initial point,

the route, the order of march, and the probable length of the march.

A march by a large unit usually can be covered in a simple and brief order. A march of several days' duration made by a large unit marching in several serials may call for a march table. (See SOFM.)

■ 354. The routes are, when necessary, reconnoitered and marked prior to the commencement of the march; timely measures are taken for preparation of stream crossings and for the removal of obstacles and other possible causes of delay. Suitable rest areas along the route of march with cover from air reconnaissance are selected.

Careful examination is made of fords, bridges, ice, etc., before attempting a stream crossing.

Sources of water supply are examined and marked as good or bad. This measure is imperative in countries infected with water-borne diseases. If water is bad or water sources insufficient, potable water is supplied in the same manner as rations.

■ 355. When several elements of a command marching by different routes are to unite on a single road or when their routes of march cross each other, arrival at or clearing of the point of junction is so timed as to prevent collision between columns.

When a crossing of two columns cannot be avoided, the superior commander regulates the crossing so as to reduce to a minimum the delay in the march of both columns. Measures are taken to prevent congestion of the roads or the massing of troops in exposed terrain in the vicinity of the crossing.

When an unforeseen crossing of the routes of two columns occurs, the senior commander regulates the crossing, basing his action on the situation and the missions of the two columns.

When corps and army troops or other separate units follow closely in the zone of advance of a division, the necessary steps are taken to prevent friction between these units and the rear elements of the division.

■ 356. The distribution of the troops in a march column comprises the security detachments, the main body, and the trains. (See FM 100–10.) The formation and movement of each of these groupings are regulated by a designated commander in accordance with instructions of the column commander. Distance between the groupings is regulated by the column commander.

■ 357. In each arm and service, movement is based upon a *march unit* which moves and halts at the command or signal of its commander. A march unit is an effective subdivision for the regulation and supervision of marching. It comprises: in foot troops and mounted units, the battalion or squadron; in motorized and mechanized units, a group of approximately twenty-five vehicles or an equivalent tactical unit. Smaller separate units may be constituted as march units or attached to march units for march purposes.

In each march unit, the order of march of the several component units is changed daily. Alteration in the order of the march of larger units may also be ordered when permitted by the situation.

Foot troops usually march in platoon column; cavalry, mounted officers and men, and led horses march in column of twos; vehicles in section column.

■ 358. In a column composed of foot and mounted troops, regular distances are maintained between march units with a view to minimizing the effects of irregularity in the march. For motor columns the introduction of fixed distances between march units serves only to elongate the column without compensating advantages.

The normal distances may be increased for the purpose of decreasing the vulnerability of the column to air attack, increasing the comfort of the men, or for other special reasons.

■ 359. Cross-country marches may become a necessary incident to development and approach march preliminary to battle, or to the extension of a command for the purpose of diminishing its vulnerability to air attack. Basic factors in the reconnaissance and selection of routes are practicability

of the terrain and the location of cover, obstacles, and march objectives. Foot and mounted troops constitute the elements of a large unit most capable of cross-country movement. All units march with considerably increased distances.

■ 360. NIGHT MARCHES.—The necessity for concealment of a movement from the hostile aviation and the importance of effecting an approach march under the cover of darkness frequently lead to the execution of a march by night. Night marches may also be made in connection with forced marches or for the purpose of avoiding the excessive heat of the day. Daylight marches are, however, frequently unavoidable in the approach to the battlefield.

■ 361. Night marches are carefully prepared. The route is, whenever practicable, reconnoitered prior to the commencement of the march.

Special precautions are taken to insure the maintenance of direction and connection within the column, especially for motorized and mechanized units. Guides are furnished when available. Routes are marked; men are stationed at crossroads and in towns to prevent the wrong route from being taken; numerous connecting groups are provided.

On good roads, foot and mounted troops can usually maintain the same rate of march as for a day march; on poor roads and very dark nights, the rate of march is considerably reduced. Motorized units must also reduce their speed at night, especially if traveling without lights.

In movement off roads, the routes are laid out and direction maintained by compass.

■ 362. In night marches, when protection must be provided against hostile air reconnaissance or attack, special precautions are necessary. (See par. 251.) When troops are being concentrated by night marches, daybreak should find the troops either in position or in concealed localities (woods, villages), and the trains under cover.

When near the enemy, silence is maintained and measures are taken to suppress the noise made by vehicles, motors, and equipment.

■ 363. FORCED MARCHES.—Forced marches seriously impair the fighting power of even the best troops. They are undertaken only in cases of urgent necessity. Requirements for increased rates of march are met, wherever practicable, by the use of motor transportation. Troops should be informed why the march is necessary. The completion of the march must find the troops in condition to accomplish the object of the movement.

Ordinarily the march capacity of foot and mounted troops is increased by increasing the number of marching hours per day rather than by increasing the hourly rate of march. The march is broken into shorter stretches by halts of several hours' duration. A long forced march practically becomes a succession of daily marches of greater average length and with shorter intervals of rest.

The march dispositions adopted for a forced march are governed primarily by the prospect of early contact with the enemy's ground forces. (See par. 348.)

■ 364. FORMATION OF THE COLUMN.—A march column is ordinarily formed by the successive arrival of its component units at an initial point on the route of march.

Initial points are located in the direction of the march in order that no unit may be required to move to the rear in joining the column. They should be inconspicuous to hostile air observation and easy to identify on the ground through some natural or artificial feature; at night special provision for identification is frequently necessary (lanterns, lights).

■ 365. Initial points and hours of arrival or clearance of the several elements of a command are stated in the march order or in a march table accompanying it. The *hour of arrival* is the hour at which the head of the unit reaches the initial point; the *hour of clearance* is the hour at which the tail of the unit passes the initial point.

When a large unit marches in several columns, it may fix an initial point for the formation of each column, or designate an initial line to be passed at a prescribed hour by a specified element or elements of each column (e. g., support of advance guard, head in main body, etc.). When an *initial line* is designated, each column commander fixes an initial

point and hours of passage in such manner as to pass the initial line as prescribed in the orders of the higher commander.

Units which arrive at the initial point or line in advance of the scheduled time, halt off the route of march until the hour fixed for their inclusion in the march column.

When a large unit moves in several groupings echeloned on the same route, the superior commander regulates the start of each column by fixing its initial point and hour of passage, or by fixing the hour of its departure from the area which it occupies. In the latter case each column commander designates an initial point for the formation of his grouping.

¶ 366. Commanders of subordinate units of a march column consider the route to be followed in reaching the initial point, calculate the time required, and start their commands in such manner that there will be neither delay nor unnecessary waiting at the initial point or elsewhere. They designate an initial point for the formation of their commands in column of route or assemble their units in an appropriate preparatory formation.

Ordinarily, march units are the largest units which are assembled preparatory to a march; march groupings usually form route column by a successive passage of their subordinate units at an initial point. The assembly of such groupings in their bivouac area is, when practicable, avoided on account of the resulting exposure to hostile air attack and reconnaissance.

The necessary measures are taken to insure the clearance of routes for the formation of the column. When trains are sheltered with combat units and are to join the tail of the column on the march, they are kept off the roads until the troops have cleared the routes; their assembly on the route of march is so regulated as not to interfere with the movement of the troops.

¶ 367. THE START.—The hour to be fixed for the start of the march depends upon the situation, the length of the march, and the hour at which the troops must arrive at their destination.

When practicable, daylight marches begin at as early an hour as is consistent with allowing ample time after daybreak for the men to breakfast, animals to feed, and transportation to be loaded. An earlier hour is designated when the distance to be covered would otherwise make it necessary for the troops to go into shelter after dark at the end of the march. The repose of foot troops ordinarily ceases about one hour, that of mounted and motorized troops about two hours, before the start of the march. The repose of mounted and motorized troops does not commence as soon as that of foot troops on going into shelter.

Units of the command which start at an exceptionally early hour avoid disturbing the repose of other troops.

■ 368. ORDER OF MARCH.—The order of march of a column of all arms advancing against the enemy is dependent upon the terrain, the tactical situation, and the mission of the column. When contact with the enemy is possible, the order of march is adapted to the probable order of entry of units into action.

The order of march of security detachments is ordinarily prescribed by their respective commanders. The column commander prescribes the order of march of the main body, and assures himself of the proper and timely entry of its units into the march column at the initial point.

In arranging the order of march of a column and fixing the composition of the tactical groupings, careful consideration is given to the location of bivouacs of units and the distance each unit must cover to reach its march objective or next bivouac area.

■ 369. The column commander, his staff party, and the necessary signal communication troops ordinarily march near the head of the main body. The remainder of the signal unit is disposed so as to insure their availability when required.

When an infantry division advances in several columns, each column having a security function consists of a tactical grouping including infantry and artillery. Ordinarily the strength of the column should not exceed a reinforced infantry regiment; if greater than this, it is distributed in

depth preferably in several tactical groupings each composed of infantry and artillery. (See par. 350.)

The maintenance of roads and the removal of obstacles to the cross country movement require the presence of an engineer unit near the head of the principal columns.

Antimechanized weapons are attached to the security detachments and distributed within the march column at the head and tail of the principal march groupings.

Combat trains are so placed in the march column as to be readily available to their units. Service trains not immediately required are held in protected areas in rear and sent forward under cover of darkness.

■ 370. In a large unit, the motor elements not engaged in shuttling operations are organized into motor columns which follow the main body or the several march columns by bounds. These motor columns move continuously at the most favorable speed so as to arrive at their destination at the proper time.

Motor elements of the reserve of the advance or rear guard, and those motor vehicles required in the exercise of command and control of the column, ordinarily advance by bounds in the road interval between the main body and the security detachment. Other motor elements pertaining to staff parties march at the head of their units.

■ 371. The rates and lengths of march vary greatly with the weather, the time of day, the character of the roads, the condition of the troops, the nature of the terrain, and the obstacles that must be overcome. Average rates and lengths of march are given in SOFM and the field manuals of the separate arms.

The elongation of a column varies greatly with road conditions, weather, the condition of the troops, and the changes in march disposition adopted for antiaircraft protection.

In each march unit, the leading element under the direction of his commanding officer regulates the rate of march in accordance with instructions issued for the march.

Congestion is avoided by the timely report of the leading units of delays encountered in their movement. When an

unavoidable cause of delay is encountered, units in rear are notified as to the minimum length of the delay; they then conduct themselves as at regular halts.

■ 372. In motor columns, the leading vehicle moves at a prescribed march speed which it does not exceed. The remaining vehicles keep closed up on the vehicle ahead to the limit of safety, regaining lost distance at an increased but safe speed.

Since greater distances are required between motor vehicles as their speed is increased, the time length of a large motor column is nearly constant. For practical purposes it may be taken as eight minutes per hundred motor vehicles regardless of their speed. This method is inapplicable when a column is elongated deliberately under the threat of an air attack.

In a daylight march the greater speed and distances permissible cause a motor column to offer a more dispersed target and diminish the risk of discovery as a troop movement.

In a night march the slower speed and closer distances facilitate control of the motor column and permit the column to be halted and protected more easily in case of an impending air attack.

Supply vehicles ordinarily move at increased distances in order to make them less conspicuous and to ease the strain on the drivers.

■ 373. THE CONDUCT OF THE MARCH.—Ordinarily, troops keep to the right of the road, leaving the left free for passage of other traffic along the column. If the left of the road offers better concealment from hostile air observation, it may be used. On muddy, sandy, or very dusty roads, or when both sides of the road provide concealment from air observation, troops may be directed to march on both sides of the road; the middle of the road is kept clear for other traffic.

In the case of motor columns, the nature of the road may make it necessary for the vehicles to utilize the middle of the road. Motor cars and motorcycles seeking to pass the column move in the march distances between vehicles and take advantage of halts and favorable sections of the road to work their way along the column.

■ 374. *Halts* are made at regular intervals to rest the men and animals, to service motors, to adjust equipment, and for other purposes. Regular halts are usually made according to standing procedure. Notification relative to halts not foreseen in the march order is conveyed to unit commanders during the course of the march with the least practicable delay.

A halt of fifteen minutes is usually made at the end of the first forty-five minutes of march for the purpose of permitting the troops to relieve themselves, adjust equipment, inspect motors, vehicles and loading.

After the first halt, columns including foot or mounted troops usually halt ten minutes each hour. The halts of motor columns are usually made every two or three hours and are regulated with reference to the location of facilities for servicing vehicles and making adjustments. The vehicles of each march unit close on the leading vehicle in order to facilitate inspection and supervision.

The march units of a column halt and resume marching simultaneously, regulating the time by the watch. At the signal for the halt, units bear to the side of the road and troops fall out or dismount to rest.

Shortly before the termination of the halt, the commander of each march unit gives the preparatory signal for the resumption of the march; foot troops fall in, mounted men remount, drivers resume their seats. Each unit moves out at the signal of execution of the march unit commander.

■ 375. It is generaly desirable to finish the day's march as soon as practicable; long halts in the course of a daily march are not made unless special conditions require it. The length of the march or the desirability of avoiding excessive midday heat may, however, render it advantageous to make a long halt toward the middle of the day. Except for the purpose of avoiding excessive heat, long halts are not ordinarily made during marches of less than eight hours' duration for foot troops; ten hours' duration for mounted troops; and twelve hours' duration for motorized and mechanized columns.

Columns execute long halts by units or tactical groupings which decrease their march depth and extend their frontage.

Each unit or grouping moves to a previously reconnoitered location in proximity to the route of march. Mounted units are located near sources of water supply. Concealment from air reconnaissance and the comfort and security of troops are considered in selecting the locations for the halt. At night troops rest along the route of march.

■ 376. The omission of timely and adequate rest periods places a heavy responsibility upon a column commander. They facilitate increased readiness for combat and the continued march of rear elements of the column. Such halts can be omitted only at a critical juncture when it becomes necessary to reach an important locality with a fraction of the command.

■ 377. Men are not permitted to fall out during the march or to leave the immediate vicinity of their unit during halts without the specific authority of an officer of their unit. An officer marches at the tail of each march unit; he is charged with keeping the unit closed up and with preventing *straggling* from the column. He examines men who fall out on account of sickness or footsore condition; according to circumstances, he gives them a written permit to be presented to the surgeon or requires them to continue the march.

A small guard marches at the tail of each regiment and separate unit; it has charge of the march of stragglers not admitted to the ambulance by authority of the surgeon.

A detachment of military police marches at the tail of the combat troops of a division. It arrests all men found absent from their units without authority and, except in cases of men apprehended for serious offenses, turns them over to their units at the first opportunity with a statement of the circumstances of their apprehension. For organization and duties of military police, see Part Two, BFM, Vol. IX, and FM 100–10.

■ 378. The surgeon attached to a troop unit marches at the tail of the unit. He examines men authorized to await his passage by the officers of troop units; according to their condition, he gives them a permit admitting them to the ambulance or authorizing them to place arms and equipment (in whole or in part) on the ambulance or other trans-

portation provided for that purpose, or after treatment directs them to report to the guard at the tail of the regiment. One or more ambulances march at the tail of each regiment and similar unit for the transportation of men who become sick or disabled during the course of the march.

For instructions concerning collection and evacuation of casualties, see FM 100–10.

■ 379. A vehicle which for any reason is compelled to halt moves off the road or as far to one side of the road as practicable. Disabled vehicles are promptly removed from the road.

■ 380. Special precautions are taken to avoid congestion and delay during the *passage of obstacles and defiles* which compel the column to march on a reduced frontage or otherwise delay the movement. Provision is made promptly for antiaircraft protection; other measures to be adopted vary with the nature of the obstacle. It will frequently be advisable to detail an officer with such assistants as may be necessary to supervise the passage of the column, and coordinate the measures taken for antiaircraft defense. His instructions relative to formation, rate of march, use of bridges, cover, etc., are strictly obeyed.

In passing through a short defile requiring a temporary reduction of front, the leading unit increases its rate of march at a point sufficiently distant from the defile to avoid delaying the march of following units; the leading element of the unit maintains the increased rate and reduced frontage until the rear of the unit has cleared the exit of the defile; other elements until normal frontage has been resumed. Points where changes of rate and formation are to take place are indicated by the supervising officer.

■ 381. Fordable streams may be crossed at several points; if a unit becomes extended during the crossing, the head of the unit slackens pace or halts a short distance beyond the crossing until the entire unit has crossed and has closed up; it then regains its distance, increasing the rate if necessary.

In fording a deep stream with a strong current, foot troops cross on as broad a front as possible, the men marching

abreast and holding hands. They do not look at the water but at the opposite bank. If the ford is broad enough, mounted troops may cross at the same time on the upstream side, thus breaking the force of the current. The crossing of many animals or vehicles may deepen a ford and render it impassable; new crossings may thus become necessary.

When roads lead through swamps or quicksand or across streams with treacherous bottoms, the limits of the road are marked or warnings placed at dangerous points.

382. In *crossing on a military bridge*, the column commander prescribes the order of crossing of the units. The engineer officer in charge of the bridge is responsible for the security of the bridge and the regulation of traffic on the bridge and its approaches. All instructions issued by the engineer officer and the engineer bridge guard relative to the use of the bridge are strictly obeyed.

The massing of troops and vehicles in the immediate vicinity of the bridge site is avoided. Ordinarily, march units will be given orders at their assembly positions to cross when their turn comes.

Every unit takes the prescribed formation for crossing not less than one hundred yards before reaching the bridge and maintains this formation for at least one hundred yards after the tail of the unit has cleared the bridge.

The maximum load capacity of the bridge is made known to all march unit commanders who are responsible that any vehicle exceeding this weight is cut out of the column for crossing at some heavier bridge or by ferry. The maximum load capacity of the bridge will be indicated on signs posted at the bridge approaches.

383. Foot troops crossing bridges march without cadence. When necessary, heavy vehicles cross at increased distances. In crossing on a ponton bridge, cavalry dismounts; in columns of twos, troopers march on the outside of the horses. Teams in front of the wheel pair of any vehicle are led by the bridle. Motor vehicles travel slowly, holding to the center of the bridge and maintain the distance prescribed by the bridge guard.

Having once entered on the bridge, troops do not halt thereon. The command to halt on the bridge may be given only in an emergency by the engineer officer in charge.

In case of an air attack during a crossing, all commanders of units en route to the bridge halt their troops to prevent jamming at the bridge approaches. Troops on the bridge and its approaches are evacuated in a quiet and orderly manner as directed by the engineer officer in charge.

During a crossing only engineers engaged in the service of the bridge are permitted to cross in the opposite direction.

384. For *ferrying operations*, troops are first assembled under cover in the vicinity of the embarkation points and there organized into tactical groupings corresponding to the capacity of the means for ferrying. From these assembly positions each tactical grouping is conducted at the proper time by an engineer guide to the point of embarkation. Instructions for embarking and disembarking and for conduct during the crossing are given at the assembly position prior to embarkation.

385. In crossing streams by ferry, men enter the ferry at the bow or stern and gradually move toward the stern or bow in a formation adapted to the size of the vessel (column of files or platoon column). They retain the places assigned to them so as not to interfere with the handling of the boat and stand or sit as directed. When there is room for a single row only, horses alternate heads and tails; if there is room for two rows, they face inward. Guns, caissons, wagons, and motor transport are usually loaded on small ferries by hand; if practicable, teams and prime movers are loaded on the same ferry with their carriages or trailers. Vehicles are blocked or secured by locking brakes. In unloading, points of debarkation are promptly cleared.

Infantry and cavalry may be ferried in pontons and small boats. Infantry removes equipment when there is danger of capsizing. Horses cross the stream by swimming.

When rafts are used, the center is occupied first, and the load is then uniformly distributed. Unloading takes place in reverse order, the center of the load being unloaded last.

CHAPTER 10

SHELTER

■ 386. GENERAL.—In the theater of operations, troops are sheltered in billets, bivouac, camp, or cantonment.

■ 387. Troops are in *billets* when they occupy private or public buildings. In the United States and its oversea territories, billeting in private dwellings is limited by the third amendment to the Constitution. In hostile territory, billeting is resorted to when desirable. In the territory of an ally, the local laws and customs govern billeting. Billets are frequently combined with other forms of shelter in which case the area used for sheltering the unit is referred to as *close billets*.

Billets afford protection against inclement weather and screen troops from air observation. They provide, moreover, immediately available shelter and facilitate the proper care of men, animals, matériel, and equipment. Because they limit readiness for action, billets are usually undesirable in close proximity to the enemy. Under certain conditions, the danger of air attack or of long range artillery fire and the necessity for secrecy may make it inadvisable to occupy towns or villages.

■ 388. When troops rest on the ground with no overhead cover or under shelter tents or improvised shelter, they are in *bivouac*. Although bivouacking facilitates tactical control and readiness for action, it is undesirable for reasons of comfort, rest, and protection from the weather. Therefore, it is resorted to only when dictated by the military situation or when better shelter is not available. These conditions generally apply in proximity to the enemy.

■ 389. When troops are sheltered by heavy tentage (tent camps), they are in *camp;* when quartered in temporary structures especially constructed for military purposes, they are in *cantonment*. Camps and cantonments are more suitable for use in the communications zone than in the combat zone.

The portability of tentage makes tent camps advantageous for temporary shelter. Cantonments are generally more economical for prolonged occupancy because tents soon become unserviceable.

■ 390. ASSIGNMENT OF SHELTER AREAS.—The requirements of the situation and probable future action dictate the distribution of troops in shelter areas.

When contact with the enemy is remote, march considerations and comfort of the men govern. In large units, troops are sheltered as close to the route of march as practicable and are distributed in depth consistent with their march depth and in the order of march. Distribution in depth facilitates shelter and supply.

■ 391. When contact with the enemy is probable, tactical considerations govern the distribution of troops. Frontages are increased and units are echeloned in depth according to their disposition for battle. Units incapable of self-defense against surprise attacks by hostile ground troops are quartered in protected areas or with troops equipped for self-defense. Service trains are assembled under cover in a rear protected locality. Antiaircraft artillery units are assigned in accordance with the general plan of antiaircraft defense. Headquarters of regiments and higher units are under cover as close as possible to principal routes.

■ 392. When in close proximity to the main hostile force, combat requirements govern bivouacking. Unit commanders reconnoiter their assigned areas. During pauses in combat, troops rest in position on ground held and secure their front and exposed flanks.

■ 393. The commander announces the shelter areas in the march order or as soon as practicable after the march begins. Countermarching by any unit to reach its assigned shelter area indicates poor staff work.

■ 394. A *quartering party* composed of a staff officer, a medical officer, necessary assistants, and representatives of subordinate units makes preparations for quartering a command. The staff officer is the *chief quartering officer*.

Quartering arrangements are completed prior to the arrival of the troops. Quartering parties proceed separately to their assigned areas prior to the commencement of the march or from positions in the column, depending upon whether areas are assigned before or during the march.

■ 395. In general, quartering parties facilitate the occupation of a shelter area and insure that all agencies of command, administration, and supply function with minimum interruption. Subject to the approval of the area commander, quartering parties select the area unless it has already been selected; make detailed arrangements for its occupancy; apportion areas to subordinate units and allot to each the available facilities; and reserve those facilities essential for the administration and supply of the whole command (headquarters, infirmaries, message centers, etc.).

■ 396. As far as the tactical situation permits, security, supply, sanitation, administration, and the comfort of troops govern the *selection of bivouac sites*. A firm, dry, well-drained soil, concealment from air observation, and protection against the elements are important considerations. In hot weather, an area shaded by trees, free of underbrush and sufficiently high to get the prevailing breezes is desirable. In cold weather, a site sloping to the south, or with woods to break the north wind, is sought. A good road net and availability of wood and good water facilitate administration and supply. Marshy ground or areas near stagnant water courses may constitute sources of disease and be subject to mist or heavy dew. Narrow valleys and dry stream beds are subject to sudden freshet.

■ 397. A shelter area large enough to prevent crowding and to permit interior communication without intrusion into the area of other units promotes comfort of the troops.

■ 398. DUTIES OF THE AREA COMMANDER.—The senior officer of each shelter area is the *area commander*. He is responsible for the reallotment of the area to subordinate units, its local security, counterespionage, police control of inhabitants, its administration, sanitation, use of the various

resources and utilities, establishment of signal communication within the area, and the quartering and readiness for action of his unit. He issues the necessary instructions and supervises their execution, paying particular attention that troops are established in shelter without delay and obtain the maximum amount of rest.

When the shelter area is in or near a town, the area commander regulates the use by the troops of local facilities and utilities by prompt and equitable allocation to subordinate units.

■ 399. When a town is occupied during the course of military operations, the senior commander of troops must take immediate steps to provide a suitable guard for *security and police protection*, deputizing, if necessary, a staff officer or subordinate commander as area commander. Among the initial measures to be taken by the area commander are the establishment of an interior guard for fire prevention, traffic regulation, and the protection of public utilities, captured matériel, food and water supply; and the employment of patrols for searching houses, locating gassed areas and prepared demolitions, and seizing weapons and communications.

■ 400. SANITATION.—The area commander protects the health of the command by promptly initiating and strictly enforcing adequate sanitary measures.

■ 401. Improper disposal of human excreta may cause serious epidemics. Adequate and suitable latrines are constructed in appropriate places *immediately* upon going into bivouac; in billets, additional latrines are generally necessary. Latrines for the men, usually one for each company, are always located on the opposite side of camp from the kitchens and so sited that their drainage cannot pollute the water supply of the area. Officer latrines are constructed on the basis of one per battalion or similar unit.

Areas are kept policed at all times. Refuse and garbage are burned or buried. Upon the evacuation of a shelter area, fires are extinguished, latrines and kitchen pits filled and marked, and the site left in thorough police.

■ 402. Troops will be informed where water for drinking and cooking, animals, bathing, and washing clothes may be obtained. If the water supply is a small stream, these places are designated in the sequence given, beginning upstream. Watering places are clearly marked and guards posted to insure proper use of the water supply. Unless water is known to be pure, it is chlorinated or boiled, then cooled and aerated.

■ 403. In billets, it may be necessary to designate medical and veterinary officers on the staff of the area commander as public health officers of the community to regulate all matters affecting public health and sanitation. Sources of drinking water are tested and marked; additional latrines are constructed; effective measures are taken for the disposal of refuse and garbage; good order and cleanliness are enforced on all persons in the shelter area; a dispensary is established; and, in general, all requisite measures are taken to protect the health of the command.

■ 404. LOCAL SECURITY.—In each shelter area, the commander establishes an interior guard in conformity with BFM, volume VI. These guards are also charged with giving warning in case of hostile attack, gas attack, approach of hostile aircraft or ground troops, and with the enforcement of regulations governing traffic control, police, use of lights, circulation of civilians, etc.

■ 405. Detachments of the main guard, armed with antimechanized and antiaircraft weapons and posted as outguards, cover all routes of possible approach by mechanized vehicles and provide antiaircraft and antimechanized security. When the superior commander has not established an outpost, commanders of the most advanced areas send outguards well to the front of their areas. (See par. 302.)

■ 406. In bivouac, protection against hostile air observation and air attack is afforded through the selection of wooded areas and the irregular distribution of units. Efficient camouflage and traffic control and blackouts aid concealment. Vehicles prepared for prompt movement are concealed or are parked irregularly and camouflaged. Trenches may be necessary to limit the effects of bombardment.

407. In hostile territory, stronger interior guards, special guards for bridges and railway stations, searching parties for telephone and radio installations, holding of hostages, closing roads to civilian traffic, and other special security measures are often necessary.

Peaceful inhabitants must be treated considerately. Troops must be restrained in their attitude toward the local population. Families will not be removed from their dwellings unless required by the military situation.

The misuse of arms, destruction of property, and acts of tyranny, looting, and pillage will be ruthlessly suppressed. (See pars. 106 and 109.) When necessary, local resorts will be closed or certain areas designated as "off limits."

408. The command post of the area commander is concealed, but is so located that it can be easily found. The route to it from the nearest road is indicated by direction signs; at night, a shaded lantern marks its position. All sentries are instructed as to its location and routes to it. To forestall air observation, traffic to and from it is rigidly controlled.

409. ALERTS.—At each headquarters and in each company or similar unit, one officer, and in each platoon, one noncommisisoned officer is constantly on duty.

The area commander designates a *rallying position* and the route thereto for each subordinate unit. Intermingling or crossing of units is avoided. Each subordinate commander designates an *assembly place* for his unit; in bivouac, the assembly place for a company or similar unit is its parade or park.

In proximity to the enemy, each unit must be prepared to move on the shortest possible notice. In a threatening situation, men sleep fully dressed, with arms and equipment close at hand; gun crews are at their pieces; horses are kept saddled, teams harnessed, and motors warmed.

410. To alert the troops, the call "To Arms" is blown on orders of the area commander or officer of the main guard; or the area commander may decide to alert only certain troops secretly and cause a still alarm to be transmitted to unit commanders by telephone or messengers.

Ordinarily, the main guard is notified of the approach of hostile aviation. If danger is imminent, the alarm is sounded. All troops take the prescribed antiaircraft measures. At night, a blackout is ordered.

■ 411. When alerted, each unit forms on its assembly place, reports to the area commander that it is ready to march, and awaits orders.

Outguards receive their orders from the officer of the day of the main guard; interior guards from their respective unit commanders.

In an alert, quiet and order are maintained by all. Each man must know where to go and what to do.

The area commander may issue special instructions for defense against chemical attack.

■ 412. CAMPS AND CANTONMENTS.—When areas in rear of the zone of active operations are occupied successively by different units, permanent administrative groups consisting of area and subarea commanders and necessary assistants are usually established. Under direction of the commander of the communications zone, they prepare standing orders governing the police and administration of their areas. Commanders of units occupying the camps and cantonments in these areas are subject to the standing orders of the area.

In stabilized situations, the rear shelter areas of large units may be similarly administered.

CHAPTER 11

THE OFFENSIVE

GENERAL PRINCIPLES

■ 413. An objective may sometimes be attained through maneuver alone; ordinarily, it must be gained through battle. A sound tactical maneuver, however, has a great influence on the successful outcome of battle.

Having determined on offensive action, a commander must decide whether to attain his objective by attack, or by an initial defense followed by an attack when the enemy has committed his forces. In the latter case the great difficulty lies in timing the attack. Whatever his decision, the com-

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mander, in making his plan of maneuver and distribution of troops, must consider the capabilities of the enemy and his power to take countermeasures.

■ 414. The *attack* is characterized by fire and movement so combined as to create an impulse of force in a decisive direction where success will insure the attainment of the objective.

■ 415. In the offensive, troops are distributed into two principal tactical groupings: a *main* or *decisive attack* in which the greatest possible offensive power is concentrated to bring about the decision; and a *secondary* or *holding attack* designed to contain the enemy, to force him to commit his reserves to action on the threatened front, and to prevent him from reinforcing the front attacked by the troops making the main attack.

According to the situation, the main attack aims to envelop or turn a hostile flank or to penetrate the hostile front. The decisive results following successful action on the enemy's flank favor adoption of the enveloping form of attack whenever practicable.

In each tactical grouping, the mass of the available means of combat is concentrated in a *main effort* and applied in the decisive direction. The choice of front on which the main effort is to be made is often determined by the possibilities which the terrain offers for the effective employment of artillery and of tanks or mechanized units.

In order to insure *unity of effort*, the command must constantly endeavor to prevent the attack from breaking up into a series of separate combats. Unity of effort is promoted by prescribing where and in what direction subordinate units are to make their main effort. The combat action and direction of attack taken by subordinate commanders must then be such as to build up the main effort of the tactical grouping in accordance with the intentions of the superior commander.

■ 416. An *envelopment* is effected by directing a portion of the forces against the hostile flank or rear while other forces contain the enemy along the front.

A successful envelopment requires skillful maneuver; superior mobility increases the prospect of success. An envelop-

ment carelessly executed loses surprise and exposes either the main or the holding attack to defeat by hostile counterattack.

The envelopment is simpler of execution if the troops in the main attack are launched at a distance from the enemy. An enveloping maneuver executed in proximity to the enemy is dangerous and ordinarily can succeed only when conditions of terrain are favorable or visibility is poor (darkness, fog, etc.).

In the initial deployment, a simultaneous envelopment of both flanks generally requires considerable superiority of force. Favorable conditions for a *double envelopment* through the use of reserves may, however, be created during the course of battle when the success of our own troops has placed the enemy in a disadvantageous situation. In such situations, double envelopment should always be attempted on account of the decisive results which are thereby attained.

■ 417. The enemy's preparations to meet an envelopment of his flank ordinarily cannot be as completely organized as the defense of his front. An enveloping maneuver avoids attacking on the ground selected by the enemy; it seeks to endanger the enemy's lines of communication and strike him in a decisive direction.

The defender usually strengthens an unsupported flank by reserves echeloned in depth and in width, and when threatened with envelopment moves them in part into position to meet the enveloping maneuver. He may attempt to envelop the flank of the attacking forces, or extend his flank beyond that of the attack up to the limit of his strength. An attempt on the part of the attacker to meet such hostile extension may lead to overextension or to a dangerous separation of the enveloping forces from those making the holding attack. It is usually better to take advantage of the enemy's extension and consequent weakness by retaining a deep formation of our enveloping forces and protecting their exterior flank with reserves than to overextend in an effort further to outflank the enemy.

■ 418. The general attack may be so timed that the enveloping and holding attacks take place simultaneously, or that the holding attack precedes the enveloping attack in order

to force the enemy to commit the greatest possible portion of his forces to frontal defense.

The success of the enveloping attack will depend to a large extent upon the ability of the holding attack to contain the enemy and force him to commit a large part of his forces to frontal defense. If sufficient forces cannot be spared from the enveloping attack to force the enemy to make a strong frontal defense, the holding attack is given a limited objective or conducted so as to contain the enemy along the critical part of the front. If the enemy attacks in turn, the troops engaged in the holding attack adopt the defensive until the enveloping attack can bring about a decision.

■ 419. When the enemy takes up a defensive position, the commander of the attacking forces should always consider the possibility of turning the enemy out of his position, and forcing him either to withdraw or to fight on ground more favorable for the attacker. A favorable direction of approach in a turning movement may result either from the previous direction of advance or from a flank march.

Since a *turning movement* ordinarily requires the division of the command into two tactical groupings which are beyond mutual supporting distance, each grouping must be made strong enough so as to avoid defeat in detail. Initial deception and mobility are important factors in executing a successful turning movement.

Situations may occur, especially in the pursuit of a defeated force, in which the enemy can be forced by direct attack to take up a defensive position while a portion of the attacking forces executes a turning movement against his line of communications.

■ 420. When the situation does not favor an envelopment, the main atack is directed with a view to a *penetration* of the hostile front. Conditions which favor a penetration are: enemy's flanks unassailable; lack of time to make an enveloping maneuver; overextension of the enemy; terrain and observation favorable for more effective cooperation of the combined arms. Such an attack can often be organized more quickly than can an envelopment, especially if the objective is limited or a quick initial success is desired.

A penetration seeks to break the continuity of the enemy's front and to envelop the flanks thus created. The essential conditions for success are surprise, sufficient artillery to neutralize the front of penetration, favorable terrain for the advance of infantry and supporting tanks within the hostile position, and sufficient forces to carry the attack through to its objectives.

The greatest distribution in depth is placed in front of the prospective front of penetration. The distribution of the troops takes into account that after a penetration of the hostile front has been effected, forces must be available for attacking and enveloping the hostile flanks created by the penetration. The mission of the troops designated for the execution of the penetration is to effect a complete break-through of the enemy's dispositions so that he will be unable to reconstitute his front on a rearward line; until this mission has been accomplished the attacking troops do not divert any of their strength to the attack of the flanks of the gap. Hostile counterattacks against the flanks of the penetration are met by reserves, by the fire of the artillery, and by the support of combat aviation.

■ 421. In the penetration of a defensive position, the main attack must be launched on a front wider than that of the contemplated break-through in order to hold the enemy in place on the flanks of the penetration. The attack on the remainder of the hostile front is designed to contain the enemy and prevent him from moving his reserves.

The amount of artillery available has a direct bearing on the width of the front of penetration. The wider the front of penetration, the deeper can it be driven. The deeper the penetration, the more difficult will it be for the enemy to close the gap and the more effective will be the action of reserves in rolling up the hostile flanks.

As a general rule, the mission of rolling up the flanks of a gap created by penetration and of exploiting the break-through is assigned to the reserve of larger units. Army cavalry and mechanized units are the first troops to be employed. These units are supported by combat aviation operating against hostile reserves and important objectives beyond the range of the supporting artillery.

■ 422. Whether the main attack is based upon an *envelopment* or a *penetration*, the battle generally develops into local conflicts along two opposing fronts. During the course of battle the combat action of units may undergo a change as between envelopment and penetration. A force that has successfully enveloped the enemy's flank may have to make a frontal attack to defeat a hostile reserve; or a force that has penetrated the hostile position may find a favorable opportunity to attack in flank the hostile troops on either side of the penetrated front. Likewise, in an envelopment the attack of all small units must to some extent be frontal; in a penetration, the outflanking action of small units is the most effective means of reducing the stronger hostile centers of resistance.

■ 423. The *main attack* is characterized by narrow zones of action, by reinforcement of artillery and heavy infantry weapons, by successive concentration of fire on critical objectives, and by proper timing in the engagement of tanks and reserves. When the situation is such that it is impracticable to determine initially when or where the main attack is to be made, the commander of a large unit preserves his freedom to act in the decisive direction at the proper time and place by disposing his forces in greater depth, by holding out stronger reserves, including tanks, and by maintaining more centralized control of his artillery.

■ 424. While the main attack is delivered against the weak points of the enemy's dispositions, hostile forces holding the strong sections of the enemy's front are contained by holding attacks. *Holding attacks* are characterized by lack of depth and limited objectives; reserves are reduced to a minimum; wide zones of action are assigned to attacking units. On the other hand, the effectiveness of the fire which the defender is able to develop in the defense of his stronger sectors may make it necessary to give the holding attack additional fire support. Holding attacks executed by large units are given contingent support by artillery located in adjacent zones of action; holding attacks executed by small units are similarly given contingent support by heavy infantry weapons.

■ 425. The *frontage* assigned to any unit in an attack is, in general, based upon its rifle strength. It varies with the mission and combat power of the unit, the terrain, the amount of fire support available, and the probable hostile resistance that will be encountered. As a general guide, it may be estimated that an infantry battalion at full strength in a decisive attack is ordinarily assigned a *frontage* varying from five hundred to one thousand yards measured in the hostile position.

Units assigned to make the main effort are distributed in relatively great depth with strong reserves; such units are, therefore, assigned relatively narrow frontages.

■ 426. *Depth of formation* for combat rather than a wide extension of front is necessary in the initial deployment. Sufficient depth makes available the means to meet contingencies and unforeseen developments in the situation as they arise. The progress of battle will call for an extension of front that cannot be foreseen at the time of the initial deployment and that can only be met by adequate distribution in depth. When the situation requires an unusually wide extension of a command, the increased extension is generally effected by increasing the gaps between units. Troops are seldom uniformly distributed along a battle front. Units usually fight in tactical groupings determined largely by the advantages which the different sections of the terrain offer for combat action.

■ 427. In deploying for attack, units are ordinarily assigned a *zone of action* and a *direction of attack*. These zones of action regulate the limits for battle reconnaissance of the unit. It is not necessary that the zone of action of a unit be completely filled with troops. To do so places restrictions on maneuver in combat and prevents the commander from building up a main effort. (See par. 415.) A preponderance of force on any particular part of the front is obtained by varying the zones of action of subordinate units.

Zones of action may be defined by designating their lateral *boundaries* or by the assignment of a front of deployment and the designation of the lateral limits of the objective. An open flank is ordinarily not bounded. In certain situ-

ations, the designation of the objective may be sufficient to indicate the zone of action. In large units the designation of objective and boundaries is made from the map; in small units these designations are made on the terrain. Points designated should be easily identified on the ground.

Zones of action of units in the main attack extend through the depth of the hostile position at least as far as the position area of the hostile artillery. Important localities and terrain compartments should lie wholly within the zone of action of a tactical unit; if it is desired that an adjacent unit assist in the attack, its area of responsibility should be clearly defined. During the progress of combat and especially when reserves are committed to action, appropriate changes in zones of action must be made.

In order to take advantage of favorable routes of approach, units may temporarily move into adjacent zones. Such movement must not, however, interfere with the action of adjacent units or result in a dangerous massing of troops. The movement of artillery and heavy infantry weapons in zones of action adjacent to the zone of the units they support is always permissible.

The battalion is ordinarily the smallest unit which is assigned a zone of action. Smaller units are usually assigned directions or objectives.

■ 428. Experience shows that an attack is seldom executed exactly as planned. Since the enemy also has a certain freedom of action, unexpected difficulties are encountered which finally culminate in a crisis. The approach of this critical phase of the attack must be recognized by the commander and his staff so that timely measures may be taken to prevent a reverse and to shape the course of action so as to secure a favorable outcome.

■ 429. Infantry units once committed to action lose their availability for employment in the execution of other missions. Infantry deployed and under fire can change front only at the risk of incurring heavy losses. The commander can materially influence the course of an action once begun only through the employment of his reserve, the fire of his artillery, and the intervention of combat aviation placed at

his disposal. If these are not available, it is better to suspend the attack and make a redistribution of forces rather than to persist in a plan of action that offers no promise of success.

In reaching his decision to commit his *reserve* to action, the commander must consider that he thereby loses one of his principal means of influencing the action. Nevertheless, at the decisive moment of action, every man that can be used to advantage must participate in the battle and the reserve must be launched without hesitation. As far as practicable, the reserve is sent in by complete units. Reinforcement by driblets is avoided. Commanders endeavor to reconstitute reserves from troops which the course of the action has made available.

■ 430. The *location of a reserve* is controlled by the nature of the maneuver to be executed by the unit to which it belongs.

When the maneuver involves a penetration of the hostile front, the strength of reserves is greatest in front of the enemy's weak points and least in front of points which are naturally strong and difficult to reduce. If the maneuver involves an envelopment, the strength of reserves is greatest toward the flank on which the envelopment is to take place. Reserves disposed on the flank of a unit for the purposes of envelopment or flank protection are usually echeloned laterally and in depth.

■ 431. In general, every offensive battle involves certain phases of combat which follow in natural sequence and when properly coordinated constitute the commander's *plan of action*.

Whether an offensive battle is the termination of a maneuver resulting in a meeting engagement or is based on the attack of an organized defensive position, a sharp distinction in the tactics of offensive combat is difficult to make. Whatever difference there is, exists principally in the power and rapidity developed in the opening phases; in general, the conduct of the attack from the time the enemy is engaged until he is defeated is essentially the same in all offensive situations.

COMBINED ARMS IN THE ATTACK

432. The doctrines which underlie the employment of the combined arms in the offensive are to conserve the combat power of the troops in the attacking echelon, assist them to close with the enemy, and thereafter support their attack until the enemy's power of resistance is finally broken. As a general rule, the attainment of this objective requires that the hostile artillery be taken or forced to retire.

433. In attack, it is the special mission of the artillery of direct support (see par. 42) to open the way for the troops in the attacking echelon by engaging enemy elements which directly impede the advance. Its fire conforms to and accompanies the movement of the assualt echelon; it executes its displacements in such manner as to insure the continuity of artillery support.

In the zone of close combat the close support of the rifle units is taken over by heavy infantry weapons, tanks, and mechanized units; the rifle units in turn afford each other mutual support.

At critical moments in the battle, the fire of all the available artillery, both that of direct and of general support, is concentrated against objectives of decisive importance.

434. The best guarantee for success in the attack is the effective *cooperation* between the troops in the attacking echelon and the supporting artillery. The superior commander, acting through his artillery commander, coordinates the fire support of his artillery with the plan of maneuver of the attacking troops.

In order to assure close cooperation with the attacking troops, some artillery units are normally assigned for the direct support of designated infantry or cavalry units with which they maintain constant connection either through common command posts or by means of liaison detachments. Ordinarily, an artillery battalion is placed in direct support of an infantry regiment or a cavalry brigade. Cooperation is facilitated by habitually associating the same units on the march and in combat.

■ 435. In general, the *command post* of the division artillery commander is at the division command post. The same principle applies in the case of the senior artillery commander of a smaller force of the combined arms.

Subordinate artillery commanders establish their command posts where they can most effectively exercise tactical command and fire direction. If this requires that an artillery commander locate his command post at a place other than the command post of the supported unit, he establishes liaison and maintains signal communications with the commander of the supported unit. Very often commanders of supported units will find it advantageous to locate their command posts near the artillery command posts in order to facilitate a prompt interchange of information and ideas.

■ 436. In arranging for the coordination of the action of their units, the commander of the supported unit informs the associated artillery commander of the location of his command post and leading troops, the results of battle reconnaissance, his plan of attack, and the terrain which can be covered by the heavy infantry weapons. Based upon the plan of attack of the supported unit, a study of the terrain, and the facilities for observation, the supporting artillery commander informs the commander of the supported unit of the number and general location of his batteries, the present location of the artillery OP's and those that must be seized during the advance, and the terrain which the artillery commands with observation and fire. (See par. 480.)

As a result of the above exchange of information, the associated commanders come to an agreement as to support to be given by the artillery and the heavy infantry weapons in the execution of the plan of attack.

The artillery commander meets the requests of the supported infantry or cavalry to the limit of his capabilities, subject only to orders received from higher authority. If he receives a fire mission which conflicts with the needs of the supported troops, he makes the situation clear to the commander ordering the mission and then complies with the resulting decision. If the urgency of the situation is such as to preclude this report, the artillery commander acts on his own initiative in accordance with his knowledge of the

situation, reporting his action to his superior at the first opportunity.

Artillery liaison detachments are employed wherever required to meet the demands of the unit which the artillery supports. As a rule a liaison detachment is assigned to the infantry battalion or cavalry regiment making the main effort in an attack. A mutual obligation rests upon the commanders of supported and supporting units that liaison once established is maintained. It is of especial importance to the supporting artillery commander that he know at all times the location of the leading elements of the attacking echelon and the position or OP's of the heavy infantry weapons. The close proximity of the OP's of the artillery and heavy infantry weapons is avoided whenever practicable.

■ 437. The fire delivered by the artillery of direct support should be observed fire whenever possible. Unobserved fire lacks the accuracy required for the close support of infantry and cavalry in the attack. It is also wasteful of time and ammunition. When artillery of direct support is unable to deliver effective fire in close support, it lifts its fire to more distant targets.

■ 438. In attack, *rifle units* are advanced to assaulting distance of the hostile position under the supporting fire of the artillery, heavy infantry weapons, and their own alternating fire support. Until the main hostile resistance is broken, rifle units advance by bounds to successive terrain lines on each of which the fire support for the next bound is organized. Fire and movement are alternated in such manner that a rifle unit whose advance is made possible by the combined fire of adjacent and supporting units moves forward to an advanced position and by its fire from that position assists the advance of the adjacent rifle units.

The *base of fire* covering the advance of the rifle units is constituted by the heavy infantry weapons and the artillery of direct support. Continuity in the support of heavy infantry weapons is assured by echeloned advances. Alternate fire and movement finally bring the assault echelon within such distance from the hostile position that the defender can no longer support his leading troops by the fire of his artil-

lery and rearward machine guns without endangering his own troops. As the rifle units approach assaulting distance, it becomes necessary for friendly artillery to lift its fire in order to avoid endangering the assaulting troops. The loss of the direct support of the artillery is compensated for by the increased fire of the heavy infantry weapons and the action of tanks which intervene at this stage of the attack. Artillery, tanks, and combat aviation support the attack through the depth of the hostile position; supports and reserves protect the flanks of preceding echelons.

■ 439. *Superiority of fire* rests chiefly upon the mutual support of infantry and cavalry units, and the coordination of their action with the fire support of the artillery. It depends not only on volume of fire but also on its direction.

Fire effect is greatly increased by enfilade action. Flanking or oblique fire is especially effective when frontal fire is delivered simultaneously against the same objective; a convergent fire results which forces the enemy to defend himself against attack from several directions and thus creates a powerful moral as well as material effect.

In the attack, small units seek for enfilade fire by enveloping action. Enfilade fire is also secured through the lateral echelonment of heavy infantry weapons. Heavy machine guns, from positions in adjacent zones of action, deliver oblique fire over the troops in their front and protect the flanks of troops in the assault echelon. Light machine guns are habitually pushed forward behind the leading rifle units to deliver enfilade fire through the gaps along the front. Rifle units which have succeeded in gaining advanced positions deliver enfilade fire across the front of adjacent rearward units.

Lateral echelonment of artillery for purposes of enfilade fire increases the difficulties of fire control and of communication between the artillery and supported units. The fire of supporting artillery is more reliable and effective when its positions and OP's are in the zone of action of the supported unit.

■ 440. *Tank units* are ordinarily assigned the same objective as the troops they support. The piece-meal employment of

tanks is avoided; in principle, the mass of the tanks is engaged on that part of the front where the main attack is to be made. The suitability of the terrain is a major factor.

Normally tanks do not operate beyond the effective fire support of the infantry and other supporting arms. Tanks are, therefore, given successive objectives which they attack. When the hostile resistance at each objective is subdued, they reorganize and prepare for further employment. Tanks should not be tied too closely to foot troops; if so, they will sacrifice their mobility and become a vulnerable target for antitank weapons. Tanks attack in several echelons disposed in depth; the leading echelon will normally be composed of medium tanks, if available.

The advance of the leading echelon is carefully coordinated with the supporting fire of the artillery and heavy infantry weapons. These tanks have the mission of dominating the hostile antitank guns. The second echelon, closely followed by the foot troops, advances with the mission of dominating the enemy's machine guns; these are the accompanying tanks that break into the hostile position with the assault echelon.

The troops of the attacking echelon take advantage of the tank action to advance promptly and occupy each successive intermediate objective. The tanks are supported by the artillery, heavy infantry and chemical weapons, and combat aviation in order to neutralize hostile antitank weapons and artillery which may threaten the tank advance. Observation aviation cooperates in detection of tank obstacles, hostile artillery and hostile mechanized forces assembling for counterattack. Whenever the necessity for their services can be foreseen, engineer troops may be attached to tank units for assisting their advance.

The employment of tanks in no way lessens the need for strong artillery supporting fire. Artillery supports tanks in the attack by neutralizing hostile antitank weapons, blinding hostile OP's, placing protective fires on woods and localities which tanks must pass, and blocking the movement of hostile reserves. Communication between the tanks and the supporting artillery, both radio and visual, is indispensable.

■ 441. The allotment of tanks in combat and the general plan for their employment are determined by the higher commander. The subsequent action of the tanks is controlled by the commander of the tactical grouping in whose zone of action they operate, or by the infantry regimental or battalion commanders to whose units tanks are attached. The higher commander is responsible for the proper coordination of the action of the supporting arms under his control.

In some situations it may be advisable to delay the entry into action of the tanks until a later phase of the attack because of the character of the terrain or the diminishing fire of the artillery during the assault or when batteries are displacing forward.

■ 442. In moving situations, the ability of the *cavalry* to transport its fire power quickly from one locality to another is utilized to attack the enemy by surprise at a vulnerable point, usually his flank and rear. Cavalry is especially adapted for use in an envelopment or a turning movement and in the exploitation of a break-through. Its employment in the direct attack of an enemy in a defensive position is exceptional and is avoided unless required to contain the enemy.

The value of cavalry in exploiting a success is so great that after having executed its reconnaissance missions for the attack it is ordinarily held in readiness with the reserve until the infantry has launched its assault. When committed to action to exploit a success, both horse and mechanized elements of a cavalry command push past the hostile disorganized elements and by a rapid advance endeavor to engage the hostile reserves, artillery, and vital installations in rear. In an envelopment, the mechanized cavalry is employed to make a wide turning movement to strike the enemy in a vital area in conjunction with the direct flank attack of the horse cavalry. In the exploitation of a break-through, the mechanized cavalry penetrates deeply into the hostile rear area while the horse cavalry operates against objectives at less depth in rear of the gap. Infantry in trucks and artillery may be attached to the cavalry.

The rapid changes in the situation and the numerous tasks that confront the cavalry commander require that aviation be placed at his disposal for reconnaissance and liaison missions and that he be well forward in the zone of attack in order to get a personal view of the terrain and the situation.

■ 443. The use of *chemicals* by the enemy as a combat weapon must be considered as a possibility. In the attack the important consideration is to take adequate protective measures. (See pars. 263–268.)

Because of the difficulty of establishing and maintaining effective chemical concentrations in mobile operations, the use by the attacker of chemical agents other than smoke is limited. The employment of smoke must be carefully limited in respect to both time and space. Under favorable conditions of wind and weather, smoke is used to blind hostile OP's and heavy infantry weapons, to conceal the approach of the assault echelon, and to protect the flanks of an attack. It is especially useful during short periods when troops must traverse exposed ground.

In the approach to the hostile position the attack must not permit its advance to be long arrested by the enemy's attempts to bar movement by means of chemical concentrations. Contaminated terrain which cannot be avoided is posted and passed with the protection of gas masks. The area is decontaminated at the earliest opportunity by special chemical detachments which follow up the attack. As gas settles in ravines and valleys, its effects may generally be avoided by moving to higher ground.

Chemical warfare reaches its greatest development in stabilized operations and chemical agents become very effective weapons.

■ 444. Early measures are taken to provide *antiaircraft protection* of the principal troop concentrations in the zone of action for the attack (see pars. 245–253). In the rear area, antiaircraft artillery may be employed to protect important supply establishments and critical points on the lines of communication; in the forward area it is employed to protect the assembly position of the attacking troops and critical

points in the zone of action of the main attack. All troop units take the necessary measures for their own immediate protection against low-flying hostile aircraft.

■ 445. In the attack, the principal duties of the *engineers* are the construction, improvement, and maintenance of routes of communication to facilitate movement of troops and supplies. Based on a vigorous engineer reconnaissance, early provision is made for removing mine fields and other obstacles and for providing sources of potable water. The necessary means are assembled for assisting the advance of artillery, tanks, combat cars, and heavy infantry weapons across difficult terrain in the zone of attack. In emergencies, engineer troops may be used as a combat reserve.

■ 446. The early establishment of the division command post is essential in offensive situations since its location determines the general plan for the establishment of *signal communication*. (See pars. 210, 229–235.) This plan must conform to the plan of maneuver of the division and make provision for the extension of the system of signal communications in support of the decisive attack.

During the preparations for the attack, radio silence is ordinarily imposed to maintain secrecy; dependence is placed primarily on wire systems supplemented by motor messengers and couriers. As soon as the attack is launched, radio becomes one of the principal means of communication, especially in the forward area where the fire of hostile artillery and the movement of vehicles will cause frequent interruption of wire communications.

ASSEMBLY FOR ATTACK

■ 447. In offensive operations against an unshaken enemy, deployment for attack directly from march columns without organizing the attack in an *assembly position* runs great risk of loss of control of troops and of deficient support of the attacking echelon by artillery, cavalry, tanks, and heavy infantry weapons.

■ 448. The infantry division ordinarily organizes its attack in the assembly position. (See par. 339.) The *development order* for the attack prescribes the infantry assembly posi-

tions, the position areas of the artillery, the security measures to be taken, the missions of the units already engaged, and the instructions for further reconnaissance. In addition, the order provides for certain essential administrative details so that the necessary preparations can be made. An effort is made to give as many of the necessary instructions as practicable in the development order so that the order for the attack may be concise.

■ 449. As each unit arrives in its *assembly position*, march conditions cease. Measures are immediately taken for security and for clearing the roads. A plan of traffic circulation is made and traffic is regulated in and out of the assembly position. It is essential that all units be met by guides before reaching the assigned assembly position in order that movement of units marching at the rear of the column be uninterrupted. Communication is established without delay between the division command post and the major subordinate units.

For selection of the assembly position and security during the development, see paragraphs 335 to 340.

■ 450. While units are moving into their assembly positions, the division prepares its combat orders and *completes arrangements* for the execution of its plan of maneuver, which include the necessary arrangements for coordinating the action of the troops in the attacking echelon and the artillery; assignment of artillery units to direct and general support; attachment of tank units to the infantry; provision for the establishment of signal communication; and such other measures as may be necessary to assure the success of the attack. Commanders of troops in the attacking echelon and the commanders of artillery units which support them make arrangements for coordinating the action of their units. Battle reconnaissance is initiated by all unit commanders at the latest when they arrive in the assembly position.

When the terrain affords insufficient cover, and a long approach march must be made by bounds from the division assembly position, battalions may find it necessary to occupy another assembly position for the purpose of organizing their attack. The final assembly position of an infantry unit must

not lie in advance of the last cover affording protection from hostile small-arms fire; it should also, when practicable, afford cover from both ground and air observation.

If the plan of attack involves an enveloping maneuver, the assembly positions of the enveloping force are set off at a sufficient interval from the troops in the holding attack so as to preclude interference between units when deployed for attack.

■ 451. Whenever practicable, the artillery is so deployed that it can protect the occupation of assembly positions and support the subsequent attack from the same position areas. When, because of unfavorable terrain and the effect of hostile fire, the assembly positions of the attacking troops are too distant from the enemy, the artillery of direct support must displace forward by echelon in order to be in close liaison with the attacking echelon in its final assembly positions.

While the infantry is organizing its attack, the artillery completes preparation of fire and arrangements for supporting the attack. Artillery airplanes are placed at the disposal of the senior artillery commander in order that the hostile artillery and large troop assemblies may be located and fire conducted on important targets at long range.

The result of the complete development of the command is to distribute the troops in accordance with the commander's plan of action in an approach formation adapted to minimizing the effects of hostile artillery fire and air attack.

MEETING ENGAGEMENT

■ 452. GENERAL.—A *meeting engagement* is a collision between two opposing forces each of which is more or less unprepared for battle. Ordinarily, the collision is unexpected and caused by uncertainty or obscurity in the situation. This aspect is more often present in the operations of smaller units and in situations where the means of reconnaissance have been unable to function.

A meeting engagement may also ensue when each opponent is cognizant of the other, yet one or both decide to attack without delay to retain some tactical advantage, to gain a decisive terrain feature, or simply out of a feeling of

superiority; or it may occur when one opponent decides to deploy hastily for defense while the other attacks before this defense can be organized. (See par. 519.)

453. In a meeting engagement, immediate orders and rapidity of action are essential; by a prompt exercise of initiative, endeavor must be made to throw the enemy on the defensive and prevent him from organizing his defense. A great advantage accrues to the force which first succeeds in making effective preparations for battle. Action cannot be delayed awaiting the results of detailed reconnaissances. Prompt estimate of the situation, quick decision, and an early development and deployment of march columns are essential to success.

The tactical situation which develops as the result of first contact has a strong influence on the subsequent course of action. Unless commanders are well forward when the enemy is engaged, units may easily get out of hand and a severe handicap be placed upon their troop leading.

454. The meeting engagement calls for the widest possible exercise of *initiative* by division and subordinate commanders in the execution of the general mission assigned to the command. Information gained by reconnaissance agencies (aviation, cavalry, motor elements, advance guard) during the advance of the division affords a basis for the commander's preliminary disposition, and may enable him to determine the general line of engagement with the enemy and the plan of attack. As a rule, however, the enemy's intentions will remain obscure and will seldom be clarified until after the initial engagement.

If an important terrain feature lies in the common zone of advance, the enemy's capabilities for a rapid advance to seize this objective must be considered; if there is no suitable terrain objective and the enemy lacks readiness for deployment, it may be assumed that he will act with due caution.

When timely information of the enemy is lacking, subordinate column commanders must be relied upon to exercise their initiative and make important decisions in consonance with the general mission of the command and the intentions

of the superior commander. It is the duty of the latter to regain control, as quickly as possible, of the operations which his subordinates have initiated and to coordinate their actions without delay.

■ 455. DEVELOPMENT AND DEPLOYMENT.—The employment of the advance guard and the artillery constitutes the commander's first problem and the basis for the employment of the infantry of the main body.

The initial orders for a development are ordinarily issued in fragmentary form to the various elements of the command. The sequence in which orders are issued is based upon the priority of execution and the time required for execution.

■ 456. When hostile resistance is encountered, it is the special mission of the *advance guard* to secure possession of terrain that will afford good observation for the artillery and heavy infantry weapons, and to gain time and space required for the development and deployment of the main body. Ordinarily, this mission requires aggressive action against the enemy's leading troops; however, unfavorable terrain or an encounter with superior hostile forces may make a defense or a limited retirement advisable in order to preserve the commander's freedom of action.

As a general rule, the advance guard most effectively performs its mission when, after securing possession of the essential terrain features, it is disposed so as to cover the deployment of the main body. Its artillery, deploying on a broad front, opens long-range fire on enemy columns forcing them to an early extension and interdicting the principal routes of approach.

The *divisional cavalry*, after withdrawal from the front of the advance-guard infantry, is employed on the flanks either to screen our own dispositions or to execute reconnaissance against the hostile flanks and rear, or it may be held in mobile reserve.

■ 457. The early entry into action of at least a part of the *artillery* with the main body is essential in order to protect the development of the infantry into its assembly positions,

give support and cohesion to the battle front, and gain an early preponderance over the hostile artillery.

Occupation of temporary firing positions or of positions in readiness by a portion of the artillery may be necessary in order to insure that as far as practicable infantry does not come under hostile fire without artillery protection. The mass of the artillery occupies its firing positions as soon as practicable.

The employment of the artillery in a meeting engagement varies considerably with the situation, the principal factors being the previous distribution of the artillery to the several march columns, the nature of the initial contact with the enemy, the location of the infantry assembly positions, the terrain, and the ability of the artillery to concentrate its fire on the decisive objective.

Although initially the separate column commanders are permitted to employ their attached artillery as the local situation may require, direct control of the artillery is obtained by the division commander at the earliest practicable moment. As the first reinforcing batteries go into action, he gradually centralizes control of the mass of the artillery in the hands of the division artillery commander.

■ 458. The division commander develops the *infantry* of the main body by assigning march objectives to the larger infantry units. Such objectives are usually the sections of the assembly position to be occupied by the units concerned. If the situation requires a reinforcement of the advance guard in order to seize or hold an initial tactical advantage, the necessary troops are promptly committed to action.

■ 459. Should the commander decide that rapidity of action is essential in order to retain a tactical advantage, he may forego an occupation of assembly position and issue the necessary orders to the larger infantry units while they are in march columns. Such action is also indicated when occupation of an assembly position may be endangered by hostile air attack or long-range artillery fire.

A plan of development once begun can still be modified if a change in the situation makes this desirable. For example, the division commander may deploy certain units

for attack before a development into assembly positions, already ordered, is completed; or having deployed the leading units for attack directly from march column, the remainder of the command may be developed into an assembly position in order to obtain better coordination in the attack.

■ 460. The action of the main body is prepared at an early stage of the advance by the command and artillery reconnaissance details marching with the divisional cavalry or other leading elements of the division. (See par. 166.) Their *reconnaissance* forms the basis for the deployment of the artillery and the development of the main body. The reconnaissance details operate in accordance with instructions of the division commander and the commander of the artillery based on the information obtained by the reconnaissance aviation, the divisional cavalry, and other agencies of information.

The division commander endeavors to clarify the situation by intensifying reconnaissance during the development of the main body. He gives the division aviation, the cavalry, and the advance guard the necessary instructions to this effect and in addition sends staff parties to points on the front about which he particularly desires information. He indicates the essential elements of information desired so that the activities of the reconnaissance agencies will be properly oriented and coordinated. Reconnaissance seeks especially to discover the weak points in the enemy's dispositions, the location of his flanks and his artillery positions, and the most favorable routes of hostile approach. Artillery airplanes are placed at the disposition of the artillery commander as soon as the artillery deploys for action.

■ 461. An advanced message center is located as soon as possible in order to permit of the prompt establishment of signal communications. The necessary instructions are given for the employment of signal troops.

Service trains are directed to proceed to designated rendezvous positions. Officers of the supply and evacuation services initiate reconnaissance for the location of their respective installations and establishments.

462. ORDERS FOR ATTACK.—After considering the information of the enemy and friendly troops, his mission, the terrain, and the recommendations of the artillery commander and other staff officers, the commander makes his decision, completes his plan of attack, and issues his attack order so that it will reach units by the time they arrive at march objectives or assembly positions.

The plan of attack is based upon an envelopment or a penetration. (See pars. 415–422.)

The *attack order* gives such information of the situation as is essential for the proper guidance of subordinate commanders, states the general plan of attack, gives instructions relative to reconnaissance and security, assigns zones of action, objectives, and other missions to the several units of the division, and gives the location of the division command post, the axis of signal communication, and the advanced message center if one is to be established.

Depending on the maneuver to be executed, a general line of departure is designated from which the attacking troops are launched at a prescribed hour, or separate lines of departure and hours are assigned to the several attacking units.

463. When the necessity for protection by the advance guard ceases, its units are assembled when relieved and placed in reserve or returned to the control of their organic commander.

464. CONDUCT OF THE ATTACK.—The commander of each infantry unit directs its advance in the assigned zone of action in accordance with his plan of maneuver. Each assault unit provides reconnaissance elements to reconnoiter its zone of action, and supports the action of these reconnaissance elements with its heavy infantry weapons. In order to keep troops well in hand, it is advisable to regulate the advance of units prior to contact with the hostile main forces by successive bounds from one terrain line to the next, and with reference to a designated base unit. Terrain features which afford extended observation, or which are otherwise of tactical importance, constitute the objectives of each bound.

Each infantry battalion of the attacking echelon directs its movement to the most advanced position in which it can make its final preparations under cover from hostile small-arms fire.

■ 465. Artillery supports the infantry attack by successive concentrations as far as practicable in accordance with the requests of the infantry commanders. The division commander regulates concentrations of artillery fire so as to bring the greatest possible volume of fire on objectives of decisive importance at the critical moments of the attack. Economy of ammunition generally requires artillery fire to be delivered in short bursts. Infantry units must take immediate advantage of artillery fire effect to gain ground to the front.

■ 466. The conduct of the attack in advancing from the first firing positions of the infantry is executed in accordance with paragraphs 436 to 439. These principles apply whether the deployment for attack is made from an assembly position or directly from march column. The *assault and the continuation of the attack* are executed in accordance with the principles enunciated in paragraphs 488 to 496.

ATTACK OF AN ORGANIZED POSITION

■ 467. PRELIMINARY OPERATIONS.—In the general case, the enemy will attempt to screen his main position and deceive the attacker as to his dispositions by the employment of covering forces. Therefore, a thorough *reconnaissance* of the hostile position and its foreground is of primary importance. This reconnaissance seeks especially to determine the location, depth, and extension of the hostile battle position, the hostile occupation of the foreground of the position, gassed areas, and the general deployment of the hostile artillery.

It involves also a thorough study of the map and air photographs of the enemy's combat zone, and the combined use of all available air and ground reconnaissance agencies, including the special means at the disposition of the artillery and Signal Corps.

■ 468. If our air reconnaissance and the action of our advanced detachments fail to establish definitely the main hostile position or its organized outpost, these leading troops are strongly reinforced by artillery and heavy infantry weapons, and if necessary by tanks; rifle reinforcements are reduced to a minimum. As thus reinforced, the leading troops execute a *reconnaissance in force* against critical points in the enemy's outpost zone in order to break through the hostile screen and drive in the enemy's covering forces. Their general mission is to seize the terrain which will permit the proper deployment of the command, especially of the artillery, and give an insight into the hostile battle position.

■ 469. The action of the leading troops results in a series of engagements for the possession of important points in the foreground of the hostile battle position. The result of these preliminary operations determines either that the leading troops have established sufficiently close contact with the main enemy forces or that a further advance of the leading troops is required. This advance is usually made by bounds until the leading troops finally encounter a well-organized system of defensive fires of the hostile artillery and heavy infantry weapons, which circumstance may be taken as a reliable indication that the hostile battle position has been developed. The leading troops establish themselves on the critical points which they have reached and take over the security of the deployment of the mass of the artillery.

During these preliminary operations, the cavalry seeks to locate the flanks of the hostile position. The main body of infantry is held back in a position of readiness beyond the range of hostile artillery fire. Measures are taken to protect the troops against mechanized attack and hostile air observation and attack.

■ 470. The continued advance of the leading troops eventually places them in a position which faces the terrain of attack. The hostile outpost is driven in and *battle reconnaissance* is continued to obtain information to be used as a basis for the conduct of the attack. This reconnaissance provides more detailed information for the assignment of objectives in the plan of fire of the artillery and heavy infantry weapons.

Reconnaissance of the terrain of attack is executed with a view to determining the most favorable routes of approach to the hostile position, the nature and strength of barriers and obstacles, and the possibilities for employment of tanks.

Air photographs of the hostile main position are taken and distributed to subordinate commanders. They furnish indications of the enemy's attention to particular sections of the front where decisive operations may be contemplated.

The terrain of the attack is studied both on the ground and on air photographs to determine the terrain compartments which the defender will organize for defense and cover with defensive fires, and the lateral compartments in which the attacker can best advance by flanking fire and maneuver.

Artillery conducts reconnaissance to determine the possibilities of artillery observation and fire, and the location of its firing positions and the routes of approach thereto.

Reconnaissance of the hostile position is intensified with especial reference to the features affecting the cooperation of the arms and the commander's decisions relative to his plan of action. For the latter purpose, determination of the weak points in the enemy dispositions is of especial importance.

■ 471. By artillery fire and the fire of heavy infantry weapons delivered from different directions, and by raids made on the hostile outpost or battle position, the enemy is tempted to disclose his dispositions for defense and his plan of defensive fires; or he may be deceived as to the plan of attack.

■ 472. In the attack of a defensive position on a stabilized front, the location and extent of the enemy's defensive positions are fully known and the approach to the hostile position has already been effected. The prolonged period during which the opposing forces have been in contact makes available more detailed information relative to the enemy's defensive dispositions and his plans for defense. In case of a relief of units prior to the attack, the information is transmitted to the relieving units.

¶ 473. PREPARATIONS FOR THE ATTACK.—Based on the mission, the terrain, and the results of reconnaissance, the main attack is made either as an envelopment or a penetration. The necessary orders are issued for the preparations for the attack, the completion of signal communication, the organization for combat of the artillery, and the regulation of its fire. Ordinarily, the corps gives the divisions general instructions regulating the employment of the division artillery during the preparatory phase.

¶ 474. All preparations for the attack are as far as practicable completed before the occupation of final assembly positions by the attacking troops. Preparatory measures most likely to betray the imminence of the attack are deferred as long as possible.

Strict surveillance is imposed on the use of radio communication; restrictions are also imposed on those activities within our front lines and in rear areas, which may disclose preparations for the attack to hostile air reconnaissance.

In the determination of priorities for the execution of *preparatory measures*, especial attention is given to measures which will insure the continuity of the attack.

¶ 475. The *positions of the artillery* are selected so that its fire can be concentrated on the objectives of the attack. Defilade, concealment from air reconnaissance, and requirements for observation are also considered. Sufficient time must be allowed for the preparation of fire, the establishment of communications, and the organization of the artillery ammunition supply.

The artillery usually moves into position by echelon; the movement is frequently wholly or partly executed at night. Units assigned to positions screened from hostile air reconnaissance are moved first. The movement of the artillery is so regulated as to avoid interfering with the infantry in its occupation of final assembly positions. In order that artillery support may be continued as long as possible without change of position, the division artillery is emplaced as far forward as practicable. It will frequently be advantageous to emplace units that are to remain longest in position in the

most advanced locations. Long range artillery is placed well forward so as to be able to take under fire the most distant echelons of the defender's light and medium artillery.

■ 476. The first *mission of the artillery* is to protect the approach march and assembly for attack of infantry units. During this phase, the hostile artillery and observation posts constitute its principal initial objectives. All means at its disposal are employed by the artillery for the preparation and registration of fire.

In preparing for its employment, the artillery gives special consideration to those measures which will enable it to attain surprise in the opening of effective fire, gain fire superiority over the hostile artillery, and concentrate the mass of its fire on the decisive objectives of the attack. Special observation units (sound and flash) reach their maximum use in the attack and defense of organized positions.

■ 477. Infantry commanders must receive early information relative to their *assembly positions* and *zones of action* in order that they may make their own reconnaissances and formulate tentative plans of action.

Protected by the leading troops, infantry usually moves at night into its final assembly positions, preparatory to an attack at or shortly before daybreak. Movement of the infantry units into their assembly positions by day is generally practicable only when visibility is poor or when an overwhelming artillery support is available.

The *final assembly positions* of the infantry must be well forward but not beyond the last cover or trenches affording protection from hostile small-arms fire; they should also provide suitable observation for the artillery in direct support and the heavy infantry weapons in immediate support of the attack.

When tanks are to be employed, their assembly positions and routes of approach are reconnoitered, marked, and when necessary, prepared. Reconnaissance agencies, both ground and air, investigate the suitability of areas within the hostile lines for the use of tanks.

■ 478. In the attack on a stabilized front, reconnaissance continues throughout the period of preparation in such manner that the appearance of normal activity is maintained. Information collected by reconnaissance is disseminated to the units concerned in the form of intelligence summaries and maps, and air photographs.

Commanders of supporting aviation units are given an opportunity to familiarize themselves with the terrain in the zone of attack.

■ 479. PLAN OF ATTACK.—Based on the objective to be taken, the resistance anticipated, and the forces available, the division commander decides on his general plan of attack, including the front on which the main attack is to be launched, and issues the necessary orders for the organization for combat of the principal infantry and artillery groupings, their missions and zones of action, and for the supporting operations of the other arms and services.

If the division is operating in close proximity to adjacent divisions as part of a corps, the corps commander may prescribe initially the organization for combat and employment of reinforcing artillery units, and regulate the fire missions to be executed by the division artillery outside the division zone of action; or he may issue other instructions required to coordinate the fires of the artillery of adjacent divisions.

■ 480. The division plan of attack constitutes the basis for the *infantry plan of maneuver* and *artillery plan of fire*. Infantry and artillery commanders make detailed arrangements for coordinating the action of their units to carry out the common mission. (See pars. 435, 436.)

In coordinating their respective plans, it is essential that subordinate infantry and supporting artillery commanders carefully study the successive compartments of terrain in which hostile resistance may be encountered and identify the successive intermediate objectives of the attack.

It is of prime importance that agreement be reached as to the known targets to be taken under fire respectively by the artillery and the heavy infantry weapons, and the areas to be kept under surveillance by these supporting weapons for targets appearing after the attack is launched, especially

those targets in adjacent zones which are dangerous to the advance of the infantry. In general, associated infantry and artillery commanders must arrange for mutual reinforcement of fire so that should the support given by either the artillery or the heavy infantry weapons be deficient, due to change of position or difficulties in conduct of fire, the other will compensate for this deficiency by increasing the intensity and effectiveness of its fire on the critical targets.

■ 481. During the advance of the infantry from its assembly positions, the hostile artillery constitutes the principal target of our artillery fire. Superiority over the hostile artillery is indispensable for the success of the infantry attack; it can rarely be attained after the infantry attack is launched.

As a rule the known and located hostile batteries are silenced early in the artillery preparation and their neutralization is then maintained by a portion of the corps artillery in order that the mass of the corps artillery may be employed for counterbattery fire as new hostile batteries appear. If our counterbattery fire is unable to gain superiority over the hostile artillery, then the neutralization of the hostile observation just prior to the attack becomes of great importance.

■ 482. The duration of the *artillery preparation* varies with the situation. A prolonged preparation is destructive of the effect of surprise and gives the enemy time to assemble reserves and take other countermeasures. The length of the preparation is influenced by the extent to which tanks are to participate in the attack and the role assigned to them. According to circumstances, the duration of the artillery preparation may vary from 15 minutes to several hours.

The nature of the artillery preparation depends upon its purpose and the circumstances attending each particular case. Concentration of effect is greatly favored by dividing the preparation into *phases*.

In general, the object of the *first phase* of the artillery preparation is to neutralize the defender's artillery, dislocate the most important hostile agencies of command and

fire control, isolate the defender's forces from their communications with the rear, and protect our own troops from the enemy's counterpreparation fires. Artillery fire of the first phase of the preparation thus comprises counterbattery fire, destruction or neutralization fire on command posts, message centers, and signal communications; interdiction and destruction fire on enemy communications, and protective fire on the hostile centers of resistance.

In the *subsequent phase* of the preparation, sufficient artillery continues counterbattery fire to maintain neutralization of the hostile artillery. The fire of the mass of the remaining artillery is concentrated on the hostile centers of resistance. Heavy infantry weapons execute interdiction and destruction fires on hostile accessory defenses and sensitive points in the advanced zone of resistance.

483. CONDUCT OF THE ATTACK.—The *hour of attack* is determined by the time required to make the essential reconnaissance; the time required by the cooperating arms to coordinate their plans; and the time required by the infantry to organize its attack in the final assembly positions. It is published to the command in orders at the latest practicable moment.

The infantry advances to the attack from its final assembly positions so as to cross the *line of departure* at the prescribed hour. If the line of departure is at a considerable distance from the final assembly positions and the intervening terrain is open and easily dominated by hostile artillery fire, it will be necessary to make the advance to the line of departure under cover of darkness or a smoke screen.

484. *Infantry units* are distributed in depth to provide flexibility of maneuver and continuity in the attack. The heavy infantry weapons, initially emplaced well forward, follow by echelon close behind the leading companies.

In case of an attack over difficult terrain against an unshaken enemy, any mass formation of infantry units during the advance runs grave risks of incurring heavy losses from hostile counterpreparation fires and air attack. The leading infantry echelon is therefore thinned out initially, and the fire power of the assault echelon is gradually built up in front as the enemy discloses his plan of defensive fires.

When the hostile artillery and heavy infantry weapons have been located and our artillery and heavy infantry weapons have succeeded in gaining fire superiority, the infantry reinforces its leading echelon and closes to assaulting distance under the protection of this supporting fire.

■ 485. When the attack does not succeed in reaching or penetrating the hostile position during the day, the infantry intrenches itself at the points which it has reached. The night is utilized to extend the advance; strong patrols with machine guns are sent forward to occupy advance positions; the infantry intrenches itself in a new position under the protection of its patrols. Several progressions of this character may be necessary to bring the troops within assaulting distance of the hostile position. These night advances must be coordinated with the artillery preparation for the following morning.

■ 486. During the attack, the *supporting fires* of the artillery and heavy infantry weapons are concentrated against the fronts where the infantry has succeeded in making greatest progress. The fire of the heavy infantry weapons is placed on those areas and targets which cannot be effectively engaged by the artillery. When the infantry arrives at close range of the hostile position, the fire of all the artillery, including the artillery of general support, is concentrated on the hostile centers of resistance. Artillery ground and air observers observe fire effect and adjust the fire upon the enemy elements which offer most serious resistance to the assaulting troops.

■ 487. The fires of the artillery in support of the attack comprise *accompanying fire* in direct support of the infantry and *protective fire* directed against those points in the terrain compartment of the zone of attack from which the enemy can bring fire to bear on the attacking infantry or carry out observation for the direction of the fire of his artillery.

The purpose of the *accompanying fire* is to prevent the enemy from manning his defensive works in time to meet the assault. Its progression to successive objectives is arranged between associated infantry and artillery com-

manders and may be regulated by a time schedule based upon the probable rate of advance of the assaulting troops, by signal given by the assaulting troops, or by a time schedule based upon a desirable duration of the artillery fire.

Protective fire on critical points in the hostile position is lifted to correspond with the infantry advance. Its principal purpose is to protect the attacking echelon from hostile long range and flanking fires and from counterattack.

A part of the division artillery prepares for early movement forward in order to maintain close support of the assault units as the attack progresses. Engineer units supplied with the necessary matériel and transportation are attached to the artillery when necessary to assist in its forward movement across the combat zone. The artillery remaining in position continues its fire up to the limits of its effective ranges.

■ 488. THE ASSAULT.—In case of a strong resistance and well-organized defense, it will be necessary for the superior commander to prepare the assault of the first hostile organized line of resistance by concentrating the fire power of the supporting artillery and all available heavy infantry weapons in order first to neutralize the enemy and wear down his power of resistance before launching the assault. Thereafter, the hostile resistance is broken by a series of local assaults delivered by units of varying strength on their own initiative. Each unit delivers the assault at the earliest moment that promises success.

The commander of a unit preparing to deliver an *assault* either arranges for its delivery on a time schedule, or notifies the artillery liaison officer that he is about to assault by a prearranged signal (i. e., radio or rocket). The artillery increases the intensity of its fire and then progressively increases its range. Under the cover of the supporting fire of artillery and heavy infantry weapons, the assaulting unit advances as close to its objective as possible, and when the supporting fires are lifted from the objective overruns the hostile resistance in a single rush. Any delay in launching the assault allows the enemy to man his defenses and resume the fire of automatic weapons.

■ 489. During the attack, the artillery must employ all means at its disposal (observers, liaison detachments, artillery airplanes, wire and radio communication to infantry assault units, etc.) to obtain exact information of the location of the front line infantry; infantry must cooperate by employing all its means of transmitting information to the artillery (display of panels, flares, various means of signal communication, etc.). Artillery never attempts to deliver fire of direct support in ignorance of the location of the infantry; when uncertain as to the infantry situation, it either executes such change of position as will bring it into closer contact with the infantry or transfers its fire to more distant targets.

■ 490. In an attack on a stabilized front, the approach has already been effected and the attack opens with a coordinated assault. The assault frequently takes place at daybreak at an hour fixed in the orders of higher commanders. The hour of attack is kept secret until the latest practicable moment.

Each infantry unit follows the accompanying fires of its supporting artillery and heavy infantry weapons and pushes on to its successive objectives without deviating from the prescribed general direction of attack. Engineers attached to assault infantry units destroy the enemy obstacles that impede the infantry advance and assist in the forward displacement of the heavy infantry weapons.

■ 491. When the infantry approaches to assaulting distance, the division commander sends out *infantry airplanes* on contact and liaison missions to observe the situation of our own and the hostile advanced infantry. They report to the division commander and the commanders of infantry units the points on the front where the attack is stopped, those where penetrations have been effected, hostile counterattacks, and other features of the situation of our own and the hostile advanced infantry. Command airplane observers inform higher commanders as to developments farther in rear of the battle front—shifting of hostile reserves, arrival of reinforcements, train movements, etc. These reports and information received from other sources enable commanders

to direct the movements of reserves toward those portions of the hostile front that offer the greatest prospects for decisive success and to support the attacking troops in repulse of counterattacks.

When *pursuit aviation* is committed to action by higher commanders, it is concentrated to protect those portions of the front where the plan of attack seeks to secure decisive results. Pursuit aviation is launched either at the hour fixed for the assault or during the artillery preparation. Successive formations of pursuit aviation advance at least as far forward as the position areas of the hostile artillery, driving the hostile aviation from the air and crippling the action of the hostile artillery by attacking hostile observation airplanes and balloons engaged in the adjustment of artillery fire.

The action of *combat aviation* placed in support of ground troops is closely coordinated with the plan of attack. Its first objectives are hostile reserves and tanks forming for counterattack and troop columns moving into the zone of action of the main attack. During battle, support aviation is especially useful as a means, immediately available to the division or corps commander, to exploit a success, to restore an adverse situation, or to reinforce ground troops in overcoming unexpected resistance.

■ 492. CONTINUATION OF THE ATTACK.—The general attack after the assault of an organized position usually breaks up into a series of *separate combats* throughout the depth of the hostile position. These separate combats are directed by subordinate commanders within their zones of action and supported by all the means at their disposal. Their first task is to penetrate the position as far as the line of hostile artillery. As far as practicable, resistances are either outflanked by fire or reduced by envelopment.

The utmost importance attaches to maintaining the *continuity and direction of the attack* by the use of reserves and the timely displacement of the supporting artillery and heavy infantry weapons. Reserves sent in at points where the greatest progress is being made protect the flanks of the leading units and support them in the repulse of counter-

attacks. Artillery and air observers especially observe for probable assembly areas of hostile reserves so that enemy preparation for counterattack may be broken up by artillery fire and air attack. If the attack is unable to make further progress, the terrain already captured is organized for defense and held until the attack can be renewed.

■ 403. The enemy's reaction following the successful assault of his main line of resistance, the road conditions, and the possibility of maintaining ammunition supply largely determine when and in what strength the artillery will be moved into advanced positions.

The artillery endeavors to execute its missions with the fewest possible changes of position. Frequent changes of position reduce the volume of fire support; the occupation of new positions and renewal of preparations for fire require considerable time. Nevertheless, change of position should unhesitatingly be made when fire effect or deficiency in the means of communication with the infantry requires it. Changes of position are generally effected by echelon and are prepared by timely reconnaissance of advanced positions.

The artillery supports the action of infantry in repelling counterattacks, in attacking any rearward position on which the enemy may attempt to reconstitute his defense, or in exploiting a decisively successful attack by pursuit.

■ 404. If the tide of battle turns against the enemy, he may endeavor to disengage his forces from action either to renew the defense on a rearward position or to fight a delaying action until battle can be renewed under more favorable conditions. Ordinarily, the enemy will strive to hold out until nightfall and effect his withdrawal from action under cover of darkness.

Frequently the enemy will disclose his intentions to withdraw by the action of his front line units and the decreased intensity of his artillery fire. Troops in contact must, therefore, exercise the greatest vigilance in observing the conduct of the enemy in their front, pressing their attack with energy and maintaining close contact with the enemy. At the same time, reconnaissance aviation keeps rear areas under observation for indications of retrograde movements of artillery and trains.

■ 495. If the enemy succeeds in withdrawing his major forces from action, the commander must intensify reconnaissance by all available agencies to obtain the necessary information on which to decide whether to pursue or to renew the attack. Aggressive night action may prevent the enemy from reconstituting his defense on a rearward position. However, if the enemy does succeed in occupying a new position, the attacker must ordinarily wait until daylight before advancing in force. In the face of the enemy's countermeasures, and especially the counterpreparation fires of his artillery and heavy infantry weapons, the mass of the infantry must advance by bounds and establish itself in assembly positions favorable for the attack against the new hostile position.

In general, the attack of the enemy's rearward position cannot be launched until the mass of the attacker's artillery has been displaced forward to advanced positions. It is of great advantage to the attacker if he can regroup his forces during the exploitation of the previous success and renew the attack with the main effort on another part of the front. Engineers must be well forward; preparations for the attack shortened; only the most essential signal communications are established. Every effort is made to exploit the moral ascendency by a quick and powerful blow before the enemy can reconstitute his defense.

■ 496. In case the enemy is fighting a delaying action on an extended front, the attacker will ordinarily attain his objective more quickly by concentrating adequate forces on a decisive part of the front and pushing home this attack with energy and dispatch. Any endeavor to outflank the enemy by a wide enveloping maneuver usually loses time and thereby plays into the enemy's hands, whereas an attack pushed deeply and energetically through the hostile front will force the enemy to an early evacuation of the whole front.

PURSUIT

■ 497. The important decision confronting a commander during the progress of a successful attack is when to exploit that success by pursuit. Overconfidence in an impending

victory may lead to a premature pursuit and result in a serious reverse.

In general, a pursuit is not launched until the enemy is decisively defeated. A commander is able to recognize the arrival of this moment by various indications, among them the continued advance of his troops in a decisive direction and the capture of critical objectives; reports from front line troops that they have penetrated the hostile position, captured prisoners and abandoned weapons, and reached the position area of the hostile artillery; the diminution of hostile artillery fire; the relaxation or cessation of hostile countermeasures; and reports from reconnaissance aviation and adjacent commanders that the enemy is withdrawing.

■ 498. When a commander recognizes that the enemy is having difficulty in maintaining his position, he takes steps to press the advantage gained by ordering the timely forward displacement of his artillery and by directing all subordinate commanders of the attacking echelon to engage their reserves and maintain the *continuity of the attack* and exert a relentless pressure on the defeated enemy.

Effective pursuit requires the impulsion of *leadership* and exercise of *initiative* to the highest degree in all echelons of command. When their troops are victorious all commanders of troops in the attacking echelon press forward to spur on their troops and clinch the advantage gained by the use of their reserves. Pursuit of a decisively defeated enemy must be pushed to the utmost limit of the physical endurance of the troops and no oportunity given him to reorganize his forces and reconstitute his defense.

■ 499. The object of the pursuit is the annihilation of the hostile forces. This cannot be accomplished solely by a straight pushing back of the hostile forces on their lines of communication. *Direct pressure* against the retreating forces must be combined with an *outflanking or encircling maneuver* designed to place our own troops across the enemy's lines of retreat. By the concentrated employment of every agency of destruction and terrorization at the disposal of the field forces, the shaken morale of the defeated enemy is converted into panic, and the incipient dissolution

of his organization is transformed into rout. *Encirclement* of the retreating forces or *double envelopment* of the separate elements thereof is always attempted wherever conditions permit.

■ 500. In anticipation of the hour for launching the pursuit the commander causes suitable *preparatory measures* to be taken. Reserves are regrouped; control of the supporting artillery is decentralized; distant objectives are assigned to the principal tactical groupings; missions are assigned to combat aviation and the artillery in general support to obstruct movement on hostile avenues of withdrawal; preparations are made for launching one or more forces of great mobility in the encircling maneuver to strike the enemy in flank and rear and cut off his retreat; adequate provision is made for resupply of ammunition to all troops engaged in the pursuit.

■ 501. The pursuit is conducted on a broad front. *Reserves* sent in to exploit the success do not require the depth required in the attack of an unshaken enemy.

Troops before whom the enemy is giving way attack him on the front and send in their reserves to gain his flank and rear or break through his covering troops.

The forces engaged in the direct pressure and in the encircling maneuver are assigned directions, zones of action, and objectives designed to bring the pursuit to a decisive conclusion. According to circumstances, such directions and zones of action may be around the flanks or through the wider gaps which defeat has opened in the hostile dispositions, or in continuation of the zones of action of units exhausted by the attack. Motor transportation is employed to expedite the shifting of reserves and the movement of foot troops of the encircling force.

■ 502 So far as is permitted by the air situation, the action of supporting *combat aviation* is concentrated on centers of communication in the enemy's rear area, hostile columns in retreat and hostile reserves endeavoring to reconstitute the defense. It seeks to block defiles on the enemy's line of retreat and disrupts traffic on the main roads and railroads in the enemy's rear area.

Reconnaissance aviation reconnoiters the roads in the enemy's zone of retreat paying especial attention to the location and movement of hostile reinforcements.

■ 503. Because of its long range, flexibility, and continuity of action, *artillery* fire in pursuit constitutes a very effective means of defeating the enemy's attempts to reorganize his forces for defense or for movement in retreat.

The employment of field artillery is based upon the maximum exploitation of the mobility and the range of lighter pieces and the long range of the heavier types. So long as the withdrawing enemy can be engaged with observed and planned fire, a portion of the field artillery remains in position to take under fire the more distant objectives. Long range artillery working with observation aviation and balloons continues its fire on the enemy communications up to the extreme limit of its ranges.

The artillery attached to the pursuing forces, in addition to supporting directly the action of these tactical groups, takes under fire hostile elements attempting to re-form colums in rear of the enemy's covering troops, and gradually takes over the missions of the field artillery remaining in position.

■ 504. Whenever practicable, *mobile forces* in the *encircling maneuver* advance along roads paralleling the enemy's line of retreat and attempt to cut him off at defiles, bridges, and other critical points. These mobile forces have attached the necessary engineer, antiaircraft, chemical, and antimechanized elements. Reconnaissance aviation is placed at the disposal of the commander of the mobile forces. When these pursuing forces are unable to outdistance the enemy they push through to a critical locality to engage the enemy's main forces and attack the enemy in flank, cooperating with the forces in the direct pressure.

■ 505. In a pursuit it is important that the advance in the decisive direction be maintained and that hostile rear guards or flank positions be not allowed to draw the pursuing forces from this decisive direction. Every effort must be

made to strike the main hostile forces by pushing forward reserves and, when necessary, by constituting a new striking force to continue the pursuit.

When the enemy succeeds in establishing himself in a position from which he cannot be quickly dislodged, the superior commander must take prompt measures to coordinate the attack again, supporting it with all available artillery fire concentrated on the critical terrain.

■ 506. The enemy's attempts to organize his retreat under the cover of darkness must be frustrated. Under no circumstances must he be allowed to break contact. Units which have advanced without serious opposition continue their march during the night. Other units organize successive limited attacks against the enemy in their front. Combat aviation searches enemy routes of retreat with flares, and bombs all enemy columns discovered.

During a *night pursuit*, the leading infantry and cavalry detachments push their advance along all available roads, followed by the main pursuing forces. The attached field artillery advances by echelon going into successive positions from which it can interdict the enemy's routes of retreat either by map firing or fire conducted by artillery liaison observers which accompany the leading detachments. Prompt report is made when objectives are reached so that artillery fires may be coordinated.

The effect of artillery fire is supplemented by air attacks on critical points in the enemy's rear area.

■ 507. The situation during pursuit generally requires extensive reliance upon *radio* transmission for *communication* with the leading troops. The importance attached to hostile interception of radio communications in other situations does not obtain in equal degree in the pursuit. Every effort is made, however, to intercept the enemy's messages and communications. The construction of wire lines is concentrated upon the most important axis. Effort is made to establish command posts or advanced message centers close behind the leading troops.

■ 508. Adequate provision for the *supply* of ammunition to the pursuing troops is essential to the success of pursuit. Wherever practicable, the service trains of large units deliver ammunition direct to troop units; transloading to combat trains is reduced to a minimum. The division commander must relieve the pursuing columns of all worries concerning supply and evacuation.

CHAPTER 12

THE DEFENSIVE

GENERAL PRINCIPLES

■ 509. The general object of defensive combat is to gain time pending the development of more favorable conditions for undertaking the offensive or to economize forces on one front with a view to concentrating superior forces for a decision elsewhere.

Regardless of the considerations which dictated the adoption of a defensive attitude, the *tactics of defensive combat* are essentially to develop the maximum fire power against an advancing enemy, reduce our own losses by a better knowledge and utilization of the terrain, and thereby stop the enemy's advance or create a situation which favors a successful counterattack.

■ 510. The mission and the situation generally impose more or less definite limitations in respect to the locality where resistance may be offered. Within these limitations, the commander selects a position that will enable the defending forces to offer battle under the most favorable conditions.

The *position* on which battle is offered must conform to the operative objective sought and should facilitate future action without jeopardizing the success of the defense. It must be appropriate to the available troops and the contemplated defensive operations. It must force the enemy to a direct attack or a time-consuming maneuver. A flank position must draw the enemy from his original direction of advance. A position that can be readily turned has no defensive value.

■ 508. Adequate provision for the *supply* of ammunition to the pursuing troops is essential to the success of pursuit. Wherever practicable, the service trains of large units deliver ammunition direct to troop units; transloading to combat trains is reduced to a minimum. The division commander must relieve the pursuing columns of all worries concerning supply and evacuation.

CHAPTER 12

THE DEFENSIVE

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511. The defense, no less than the offense, must wherever possible act with the effect of *surprise*. The visible lines of a defensive system must not betray the defensive dispositions but rather serve as a mask concealing the real defensive organization. Every available means must be employed to mislead the attacker as to the position on which the defense intends to make its principal effort.

512. The character of the *terrain* exercises a decisive influence on the conduct of the defense. Ridges and valleys generally parallel to the front of advance constitute obstacles to the progress of an offensive and are natural lines of resistance for the defense. Natural obstacles (e. g., river lines, woods, swamps) frequently determine the general location of a defensive position, especially if the situation requires that protective measures be taken against tanks and mechanized units.

Commanding elevations and ridges delimit the compartments of terrain and form the framework of the system of observation, command, and fire control in combat. They determine directly the location of the observation posts and positions of the artillery and heavy infantry weapons, and indirectly the location of infantry defensive and assembly positions.

As a general rule, long gentle slopes afford better conditions for defense than commanding elevations. Positions along commanding heights are especially suited for delaying action. Successive ridges perpendicular to the axis of hostile advance afford observation and fields of fire favorable for a defense in depth.

513. In principle, the enemy is brought under effective *fire* as early as practicable unless the situation requires that fire be withheld to obtain surprise. The intensity of the fire is so regulated that the enemy is subjected to heavier fire the nearer he approaches the defensive position.

The fire of infantry weapons forms the basis for defensive fires. Artillery fire is coordinated with the infantry plan of fire and is especially concentrated on the critical localities and on ground which is dead to or beyond the range of the fire of infantry weapons. The effective control of this fire

requires a good observation service and efficient signal communications.

The organization of systematic *flanking fire* constitutes the basis of defensive dispositions. Adjacent units mutually cover their fronts with flanking fire. Flanking defenses, however, require frontal protection, especially at night and during periods of low visibility; frontal and flanking defenses must mutually supplement each other. Dead spaces in bands of machine-gun fire are covered by the fire of other weapons. Fire effect is increased by obstacles which hold the enemy under frontal and flanking fire. Sectors of the defensive position especially exposed to hostile fire may be left unoccupied, except at night and during periods of low visibility, and defended by flanking fire from adjacent sectors.

■ 514. *Persistent gas* has especial defensive value by reason of the fact that concentrations established before the hostile attack retain their effectiveness during the course of the attack. During retrograde movements, persistent gas mines may be effectively employed between successive positions to contaminate localities and deny the use of abandoned areas to the enemy.

■ 515. The *fortification* of a position is limited only by the time and facilities available. Protection is, however, to be sought more in the distribution of defenses in depth and in width, their adaptation to the terrain, and concealment from hostile observation than in the strength of construction. Measures for increasing the effect of fire and for providing adequate signal communication take precedence over measures for maintaining the fighting power of the troops by field fortification.

■ 516. The development of a hastily occupied defensive position into a more strongly fortified defensive system is dependent upon the situation and the time and material available for construction. The degree of fortification varies, depending upon whether it is carried out on a stabilized front or immediately following an indecisive battle; or is executed in accordance with deliberately prepared plans or with improvised plans.

■ 517. The selection of a *rear position* at such distance from the main position that the attacker cannot direct the fire of his artillery upon it without displacing his batteries facilitates the conduct of a flexible defense. The amount of field fortification to be accomplished will depend upon the situation and the time available. The forces necessary for the construction of the rear position must not be obtained at the expense of jeopardizing the defense of the main battle position.

Withdrawal to a rear position is as a rule advisable only when the situation indicates that the enemy has massed a powerful concentration of artillery and tanks to support a renewed attack, and that heavy losses and defeat will result before reinforcements can arrive. (See pars. 554, 555).

■ 518. Measures are taken without delay to insure the security of the position in those directions from which a hostile attack is apprehended. These *security measures* are continued during the organization of the position so that troops may obtain the maximum amount of rest and occupy their positions in an orderly manner in case the enemy attacks.

The defense must gain contact with the enemy at the earliest opportunity and maintain such contact in order not to be taken by surprise. Every available means of reconnaissance is employed to locate the enemy and determine the direction of his advance and the distribution of his forces. As a rule, the enemy will seek to avoid disclosing the distribution of his forces and the front of his main effort until his deployment for attack is completed.

■ 519. If contact with the enemy has not been made, the commander is ordinarily free to make a detailed *reconnaissance of position*, select the terrain on which to defend, and decide on the best distribution of troops. In this case the command is usually developed into an assembly position preliminary to deployment for defense.

If, however, the defense must be assumed hastily as the result of tactical disadvantages in a meeting engagement, there will be little time for a detailed reconnaissance or a deliberate occupation of position. The defense is then as-

sumed directly from the development or from an advance in several columns. In unfavorable terrain, the commander must decide whether to delay the enemy while organizing his defense on more favorable terrain in rear, or to attack with a view to seizing the terrain to his front on which to organize the defense.

If the situation is obscure and the enemy's direction of advance or his capabilities are still undetermined, the commander may find it tactically advantageous in view of his mission to take up a *position in readiness* while making all preparations for assuming the defense on the most favorable terrain in accordance with the development of the situation.

Whatever the tactical situation may be, the commander must leave no doubt in the minds of his staff and subordinate commanders as to his intentions either to defend and hold a position, or to conduct a delaying action and retire to another position in rear.

■ 520. If, during the course of an attack, it becomes necessary to pass to the defensive, the leading infantry elements intrench themselves at points they have reached. The assault echelon is then thinned out and a distribution of forces made so as to organize the defense in depth. In order to establish the defense on favorable terrain and take advantage of the possibilities of flanking fire, it may be necessary to move certain elements to the front or rear for short distances.

■ 521. Whenever practicable, the defense is conducted along *mobile* lines. Mobility is acquired by increasing the defensive strength of a position, by improving facilities for movement within the position, by distribution of forces in depth, and by holding out reserves. Operative considerations may, however, require a rigid defense of certain critical sectors, the loss of which would render the general defensive front untenable or otherwise seriously affect the conduct of the operations on other sectors of the front. Mobile and rigid defense are so combined that possession is retained of the points essential to the maneuver of the defensive forces, the maximum forces are made available for counteroffensive purposes, and the enemy is kept in ignorance as to the character of the resistance with which he is confronted.

522. The conduct of the defense must be aggressive. It must be prepared to take advantage of errors or failures on the part of the enemy. The *counterattack* is the decisive element of defensive action. It is seldom feasible to hold a defensive position merely by passive resistance. A commander with an offensive mission may decide to assume the defensive because of temporary combat inferiority, or in order to create a situation which will place the enemy at a tactical disadvantage and thus offer opportunity for a decisive counteroffensive. In both cases, an early resumption of the offensive is contemplated. By inducing the enemy to attack first, the commander hopes to fix and exhaust him and then, when the enemy is disorganized, to launch the counteroffensive. (See pars. 94 and 413.)

In general, such a defense, if voluntarily adopted, demands the highest type of leadership and tactical skill. It promises decisive results only if the enemy acts as hoped and if secrecy and deception, the essentials of the requisite element of surprise, are achieved.

DEFENSIVE POSITION

523. SELECTION OF A DEFENSIVE POSITION.—The defense is built around a series of tactical localities, the retention of which will insure the integrity of the position. A defensive position comprises a *zone of resistance* consisting of a number of mutually supporting defensive areas, disposed irregularly in width and in depth, each organized for all-round defense as a *center of resistance* with its trenches, obstacles, and emplacements.

A line joining the forward edge of the most advanced centers of resistance constitutes the *main line of resistance;* it is the line in front of which all elements of the defense must be able to concentrate their fire to break up the hostile attack.

The distance between successive echelons of the defense should not exceed mid effective range of small arms fire; it should, however, be sufficiently great to prevent any echelon from falling into the zone of dispersion of artillery fire directed against a more advanced echelon. This distribution in depth will diminish the effects of hostile fire, and

provides for continuity in defensive fires and movement against the enemy, even though he succeeds in penetrating the zone of resistance.

■ 524. The general considerations governing the selection of the defensive position are given in paragraph 510. Within the limits fixed by those considerations, the *main line of resistance* is selected with a view to using the terrain to the greatest advantage. From the viewpoint of terrain, the most important factors are adequate protection for artillery observation, good fields of fire, concealment from hostile observation, and the presence of natural obstacles.

Observation is desired to the limit of range of the weapons in front of the main line of resistance and within the zone of resistance as well. Adequate observation posts for artillery are essential, and the main line of resistance must be so located that the essential observation will be retained even though the enemy succeeds in penetrating the position.

In selecting the main line of resistance, the defender seeks terrain which will permit the most effective exploitation of the fires of artillery and infantry weapons. Clear fields of fire at close and mid effective range for small arms are important and usually lead to the selection of a main line of resistance on a forward slope. Consideration of concealment from hostile observation may, however, make it desirable to select a reverse slope. Such a line is generally practicable only when possession of the crest to the front is not essential to the observation of artillery fire. When the main line of resistance is located on the forward slope, the zone of resistance may be extended to the rear to include the reverse slope; when located on the reverse slope, the front-line battalions push some of their machine guns forward to the crest with a view to firing on attacking troops during their approach to the position.

Natural obstacles, such as streams with steep banks, swamps, and bodies of water, serve to retard the enemy's advance. Natural obstacles which will stop tanks may be of prime importance. Not infrequently the commander selecting the main line of resistance may have to decide whether a natural obstacle or observation is the most important consideration.

■ 525. All parts of a position will not have the same degree of *defensive strength*. Avenues of approach which enable the attacker to reach the main line of resistance under cover are sources of weakness in the position. Rifle units of sufficient strength to meet the enemy in close-range combat must be near at hand. These same avenues of approach may, however, be entirely unsuited for enemy tank attacks. On the other hand, clear fields of fire over which the enemy must advance for some distance under the defender's fire are sources of strength, so far as a defense against foot troops is concerned, but may furnish excellent terrain for hostile tank attack. The defender must be prepared to meet that form of attack which will best fit the terrain.

The defensive strength of the position has a direct bearing upon the *depth of the zone of resistance*. Portions of the front which have great defensive strength can be held with fewer men, or units can be assigned wider sectors, while the reverse is true in weak portions of the front. There is thus a variation in the troops which can be made available for rearward centers of resistance. Adverse weather conditions, close terrain, and exhausted troops call for a greater density of troops forward toward the main line of resistance, thus decreasing the number available for extending the disposition in depth.

■ 526. A position combining all defensive advantages will seldom be available. The weak points of a position are strengthened by appropriate measures; a short field of frontal fire is compensated for by the organization of dense flanking fires and heavy artillery concentrations; exposure to hostile observation by distribution in depth, construction of numerous dummy works and masks; deficient observation by increased strength of local garrisons, etc.

■ 527. Occupation of Position.—The occupation of a defensive position is preceded by a more or less detailed reconnaissance as permitted by the situation. Commanders of large units usually determine the general location of the position from the map. Whenever practicable, the division commander, accompanied by the principal members of his staff and the commanders of the major elements of his

command, precedes the troops for the execution of a detailed reconnaissance on the ground.

A *general reconnaissance* by the division commander and his artillery and infantry commanders, fixing in a general way the observation stations required for the artillery and the location of the zone of resistance, is followed by the assignment of *zones of reconnaissance* to subordinate infantry and artillery commanders. This reconnaissance bears not only on the defensive position but also on the avenues of approach afforded the enemy.

Basing his action on his mission, his personal reconnaissance, the reconnaissance reports of his subordinates, and the available information of the enemy and friendly troops, the commander forms an estimate of the enemy's capabilities and the probable front of hostile attack, and makes his decision as to the location of the main line of resistance, the employment of the artillery, the assignment of sectors, the strength and location of the reserve, and the measures necessary for security. Successive reconnaissances by lower commanders finally fix on the ground the distribution of smaller units and the detailed location of their combat emplacements. Exact information as to the trace of the main line of resistance is furnished to the artillery.

■ 528. In order to form an estimate of the capabilities of the enemy, reconnaissance during the occupation and preparation of the defensive position seeks especially to determine the principal routes of hostile approach, terrain available for hostile observation, deployment of the hostile artillery, assembly positions of the hostile infantry, and the corridors of terrain and lines of approach most advantageous to the hostile attack.

■ 529. The *assignment of large units* to the various sectors of a defensive front is based chiefly upon operative considerations. (See par. 510.)

The *distribution of troops* of a *division* for the defense of its sector is based chiefly upon the relative defensive strength of the various parts of the position (see par. 525), the possibility of augmenting such strength by field fortifica-

tions, and the fire effect that can be developed in defense of the various parts of the position.

The width of sectors assigned to infantry units in the defense varies with the defensive strength of the various parts of the position, the relative importance of the sectors, the degree of control required, and the number and strength of units available for the entire defense. The necessity for control and the fields of fire offered by the terrain restrict the intervals which may be permitted between tactical localities with consequent restriction on the width of sectors. Some variation in the width of sectors may arise from the necessity for adjusting sectors to fix responsibility for defense of terrain corridors. By adaptation of the width of sectors to their natural strength, there results an economy of force which enables the commander to hold out the maximum strength for counteroffensive purposes.

The natural corridors of the terrain through which the enemy will press his attack have a decisive influence on the location of *boundaries* between sectors. Boundaries are located so that there will be no question of responsibility for the defense of a critical avenue of hostile approach. As a rule, high ground dominating a terrain corridor is included in the sector of a unit assigned to its defense; localities which facilitate cross fire between mutually supporting strong points are also included in the sector.

In the outpost zone, boundaries usually follow ridge lines in order to facilitate the coordination of artillery fires. The extension of boundaries to the rear is influenced largely by the existing road net and routes for movement within the position.

■ 530. The occupation of the defensive position by large units is, wherever practicable, covered by *outposts* located at sufficient distance from the main line of resistance to prevent the occupying forces from being taken under observed fire by hostile light artillery. (See pars. 302–334.)

The strength and composition of the outpost, its most advanced line of resistance, and its conduct in case of attack depend upon the situation, the terrain, and the mission of

the command. On a broad front, a different conduct may be prescribed for different sectors. If the position of the outpost is not within effective range of the artillery supporting the defense of the main position, some light artillery is attached to the outpost.

■ 531. The division commander determines the general distribution of the *artillery* and its subdivision for combat (direct and general support). (See pars. 41–43, 45.) The weaker the artillery the greater the need for its concentrated employment under the immediate direction of the division artillery commander. Centralized control of the artillery is also the rule prior to the actual engagement of the infantry.

The *echelonment in depth* of the artillery takes into consideration the range of the several classes of material, the location of the objectives of the different artillery groupings, and the possibilities of neutralization by hostile counter-battery fire. The echelonment is limited by consideration that the entire artillery, including the rearmost echelon, must be able to concentrate its fire in front of the main line of resistance and that the foremost echelon should, as far as practicable, be able to fire with observation from a rearward observation post in case of failure of observation in the battle position.

In order to assure that the batteries of direct support are not put out of action at an early moment and the infantry thus deprived of direct artillery fire support, they generally occupy a rearward position in order to be able to fire within the battle position. If necessary, some of these batteries are emplaced temporarily in advanced positions in the outpost zone in order to bring the approaching enemy under early fire without disclosing the eventual distribution of the artillery.

The more distant objectives of the artillery of general support usually require that its batteries be established in positions well to the front. In order to reach objectives deep in the hostile combat zone, it is often advisable to locate elements of long-range artillery temporarily in the most advanced positions.

532. *Antiaircraft artillery* is disposed initially so as to protect as far as practicable the organization and occupation of the battle position with special attention to the position area of the artillery.

Throughout the defense, protection for the artillery and the means of ammunition supply should be furnished. When the commander has determined on what front the enemy is making his main attack, the antiaircraft artillery concentrates its efforts on protecting from air observation and attack the threatened parts of the defensive position and the employment of reserves for counterattack.

If sufficient antiaircraft artillery is available, some units are assigned to the local defense of important roads and installations (railheads, ammunition establishments, airdromes, etc.). Maximum use is made of all passive measures of antiaircraft defense. The antiaircraft intelligence service gives prompt warning of the approach of hostile aircraft to all units concerned.

533. *Engineers* are employed to impede the advance of the enemy by the execution of demolitions and by the creation of a zone of obstacles. They increase the defensive powers of the other arms by the construction of field works requiring special equipment or training, by technical assistance in other works of organization of the ground, and by furnishing them with the necessary tools and engineer supplies.

In general, engineers are withdrawn to and employed in rear areas when the actual combat for the defense of the battle position begins. They are later available for use as reserves. (See pars. 74, 75, and 80.)

534. The direction from which the main attack may be expected chiefly determines the initial location of the *reserve*. According to circumstances, it is echeloned for protective purposes in rear of an exposed flank, held in a position in readiness from which it can deliver a prepared counterattack, or so disposed that it can take up the counteroffensive by striking in flank a hostile attack which breaks down in front of the main line of resistance.

Tanks are essentially offensive weapons. They are held in reserve in a covered position out of effective artillery range until the situation is favorable for their employment. They constitute a powerful reserve in the hands of the division commander either to engage hostile tanks or to support a general counterattack or counteroffensive.

Reserves must be prepared either to occupy a defensive area to check an enemy penetration or to deliver a counterattack to restore the main defensive position. To meet such contingency, reconnaissance is conducted and plans are prepared, based on the probable lines of action which may develop during combat.

■ 535. ORGANIZATION OF A POSITION.—In the initial deployment for defense, combat groups construct squad and individual trenches which are organized into *strong points*. These strong points are irregularly grouped and unequally spaced so as to take best advantage of terrain conditions. Sited primarily with a view to frontal and mutual flanking fire, they are combined into *centers of resistance* held by larger tactical units. The contour of the main line of resistance is thus irregular in trace, with elements sited for frontal and flanking fire. Machine guns are so sited that as nearly as practicable they cover the entire front of the main line of resistance with continuous bands of fire, and are at the same time capable of delivering long-range fire during the hostile approach and of taking under enfilade fire hostile elements which succeed in penetrating the main line of resistance.

The general trace of *obstacles* depends chiefly upon the flanking fire and defenses. By a proper coordination of enfilade fire, demolitions and obstacles, and a suitable arrangement of gaps, attempt is made to canalize the hostile attack into avenues of approach where it will come under the destructive fire of all available weapons. Artificial obstacles in the front of the main line of resistance should be concealed from hostile observation; concealment of obstacles in front of the outposts is impracticable when in contact with the enemy.

In moving situations time will rarely be available for the construction and camouflage of *communication trenches*.

They are, however, indispensable in the prolonged occupation of a position since they greatly facilitate the exercise of command, the movement of troops, and the functioning of supply. Their construction for the purpose of affording a covered approach to the defensive position from the rear is advisable, however, in cases where natural or artificial masks cannot be relied upon for concealment from hostile ground observation. This consideration and the labor involved may lead to the construction of communication trenches only over exposed stretches on the routes of approach from the rear; in such cases the routes of approach are conspicuously marked. Communication trenches should be so sited that they will afford no indication to the enemy as to the location of the combat emplacements.

Dummy works, properly constructed, serve to mislead the enemy and disperse his fire. To be effective, they must closely resemble genuine works; dummy works easily recognizeable as such give the enemy valuable negative information. They must bear evidence of an attempt at camouflage.

536. Troops, divided into reliefs for the purposes of work, carry out the organization of the position in accordance with a systematic *plan of construction*. The priority of tasks in the main and outpost positions is determined by the principle that *fire effect takes precedence over cover*. After the location of combat emplacements has been fixed, first priority is ordinarily given to clearing the field of fire, removal of objects masking our own observation and those within the position capable of serving as reference points for hostile observation and fire, and the determination of ranges to points in the foreground. These measures are ordinarily followed by provisions for camouflaging the works to be constructed; then the construction of the various defensive works and obstacles, followed by the marking and preparation of routes of approach for reserves and ammunition supply.

Artillery and heavy infantry weapons give first priority to the construction of observation and command posts and signal communications. For the protection of guns, more reliance is placed upon camouflage and provision for numerous alternative positions than upon the fortification of gun emplacements.

■ 537. In the *development of the defensive position*, measures to augment the strength of the main battle position and to provide facilities for the whole position are given priority. These measures include the preparation or construction of observation and command posts, signal communications, obstacles, gun positions, shelters, supply and ammunition dumps, and communication trenches.

Great care is taken to camouflage the most important works and construct the more visible features of the position in such manner that they will not disclose the distribution of troops.

The artillery gives early attention to developing the means of observation and fire control, and providing the necessary roads for the supply of ammunition. Shelter is constructed for the personnel, and provision is made for camouflage of ammunition and its protection against weather.

Signal communications are strongly reinforced. Units are connected by wire lines not only with the rear but also laterally; the importance of lateral lines consists not only in affording direct communication between adjacent units but also in making available numerous alternative lines of communication between advanced units and the rear in event of the failure of a direct line.

■ 538. The *priority of work* in the construction of a *rear position* is largely determined by the time required for the construction of the various essential works and the extent to which they lend themselves to camouflage. Important works requiring a considerable period for their construction come first in order of priority; works that would disclose the position to hostile air reconnaissance are omitted. After reconnaissance and determination of the method of occupation of the position, command posts, observation posts, obstacles, and shelters for the troops are constructed; the construction of fire and communication trenches is deferred until troops occupy the position.

CONDUCT OF THE DEFENSE

■ 539. The defense of a position, whether it be hastily prepared or strongly fortified, is conducted in accordance with the same principles. The details of execution may vary

depending upon the commander's intentions, the strength of the position, the means available for its defense, and the action of the enemy.

■ 540. The commander provides for the coordination of the fire action of the infantry and the artillery in his *plan of defense*. To assure this coordination, both in time and place, requires centralized control of fire by all unit commanders.

■ 541. Constant reconnaissance and observation of the enemy's dispositions are conducted with a view to securing the earliest possible indications of the enemy's offensive preparations and the data required for the conduct of fire.

The enemy's radio traffic and reconnaissance operations are closely observed to determine his front of advance and the distribution of his forces. Air reconnaissance provides the information concerning the situation in rear of the enemy's leading elements.

A study of the terrain in which the enemy must carry out his preparations for attack will give valuable indications as to the enemy's assembly positions, the location of his artillery, terrain favorable for tank attack, and the area most advantageous for the main attack.

At the same time measures for counterreconnaissance are taken by all troops and agencies in order to screen from the enemy the preparations and dispositions made for defense.

■ 542. When the situation permits, *mobile covering detachments*, strongly reinforced by heavy infantry weapons and artillery, operate well in front and toward exposed flanks of the defensive position. By their fire, disposition, and movements they endeavor to deceive the enemy as to the defensive dispositions, lead him in a false direction, and cause him to deploy prematurely and on incorrect lines. Deploying on a broad front, they occupy successive positions on commanding ground and take advantage of every opportunity to open heavy surprise fire on formed bodies of hostile troops, without, however, allowing themselves to become closely engaged.

■ 543. The situation determines whether the *outposts* are to retain their position after the occupation of the main line of resistance has been completed. When the flanks of the

outpost are not protected by other troops, the danger of envelopment will usually require an early withdrawal of the outpost troops.

When the flanks of the outpost are protected by other troops, the outposts are ordinarily instructed either to hold their positions for a definite period or to withdraw on orders of the higher commander. In the latter case they are withdrawn when the enemy has deployed his artillery for the attack of the outpost position, thus imposing on him the necessity for a displacement of his artillery for the attack of the battle position; in this case relatively strong outposts are required.

In withdrawing on the battle position the outposts conduct a delaying action. The withdrawal of the outposts must be so arranged that they will neither interfere with nor be endangered by the fire from the main position. Coordination in this respect is facilitated by the use of prearranged signals and previously designated routes of withdrawal.

When decision is made to withdraw the outpost without awaiting the hostile attack, the foreground of the battle position is temporarily held by combat outposts detailed by the leading infantry units. (See par. 329.)

Whether or not an outpost position is held, the essential consideration is to maintain contact with the enemy and keep him in doubt as to the character of the first resistance he will encounter and the position on which the principal defensive effort will be made.

■ 544. The division artillery commander prepares the *artillery plan of employment* in accordance with the instructions of the division commander.

His first task is to provide as completely as possible for the immediate fire support of the infantry holding the main line of resistance.

The effective employment of the artillery requires careful planning especially in the selection and concealment of OP's and firing positions, the preparation of fire, the occupation of position, and the measures taken for ammunition supply.

In order to maintain itself in action in the face of hostile superiority, the artillery must fully exploit its mobility. If there are indications that the location of certain batteries

has been discovered by the enemy, such batteries effect a change to one of their alternative positions during the night.

In quiet periods, artillery units assigned to counterbattery and harassing missions take advantage of their mobility. For the delivery of fire, they occupy during the night previously surveyed positions removed from their regularly assigned emplacements; after delivery of fire, they are withdrawn from their temporary positions.

545. Higher commanders determine the conditions under which artillery fire is to be opened during the hostile approach. In determining the time for opening fire, consideration is given to the fact that premature opening of fire by the mass of the artillery gives the enemy information relative to the location of the position and the deployment of the artillery and that he may employ weak detachments for the purpose of inducing the defender to open fire and reveal his dispositions. Fire is not opened by the mass of the artillery until targets of sufficient importance are disclosed.

546. The *artillery plan of fire* prior to the engagement of the infantry is based primarily upon the execution of a *counterpreparation* which seeks to break up or cripple the hostile attack before it can be launched.

It is important to take hostile artillery under fire at an early moment, to interdict hostile routes of approach, and to dislocate as far as practicable the hostile system of command and fire control.

The artillery of the attacker is most vulnerable from the moment it comes within range of the defender's artillery until it has completed its deployment. During this period it constitutes the principal objective of the defender's artillery fire and air reconnaissance. The fire of all available artillery is concentrated with a view to crippling the hostile artillery as far as practicable before it can get into action. *Counterbattery* continues to be the principal mission of a portion of the artillery, especially the long-range medium artillery, throughout the battle.

The corps gives the division instructions regulating the employment of the divisional artillery in the execution of its more distant missions. The corps reinforces the action of

the divisional artillery and extends its objective zone in depth by the use of the longer-range matériel at its disposal. Long-range destruction and interdiction fire is directed especially on sensitive points in the enemy's rear areas and on his lines of communication (railheads, bridges, crossroads, supply establishments, airdromes, etc.).

Combat aviation extends in depth, and reinforces, when necessary, the counterpreparation fire of the artillery. Air attack against hostile ammunition dumps, supply establishments, airdromes, railroad installations, etc., may have important effects in delaying or dislocating the hostile preparations for attack. Combat aviation searches hostile lines of communication and attacks enemy columns, reserves, supply trains, etc., discovered in movement.

■ 547. When the imminence of the infantry attack is discovered, *counterpreparation fire* is directed upon the known or probable assembly positions of the attacking troops.

In case the enemy succeeds in launching his attack in spite of the counterpreparation, *barrage fire* is placed close in front of our own advanced infantry. If the attack succeeds in penetrating the line held by the combat outposts, the barrage is transferred in front of the main line of resistance.

Plans for the delivery of counterpreparation and barrage fires are designed to provide concentrations of fire only on the critical zones or fronts. Distribution of fire along the entire front is ineffective. Since the high rate of artillery fire, especially in barrage fire, may lead to a greater consumption of the ammunition than can be supplied, it is essential that front line troops carefully consider the emergency in their calls for artillery support.

Barrage fires are delivered either on the request of the front line troops, or on report by artillery observers that a hostile attack is being launched. Counterpreparations are general or local; the former are fired on the order of the superior commander; the latter on the request of subordinate commanders or on report by artillery air observers of the development of a hostile attack.

Heavy infantry weapons and a portion of the machine guns participate in counterpreparation and barrage fires; their fire plans are coordinated with those of the artillery in the division plan of defense. Provision may be made for reinforcing counterpreparation and barrage fires by artillery normally assigned to other missions, or by the artillery of adjacent divisions; their fire is ordinarily superimposed on that of the batteries normally assigned to missions of direct support.

■ 548. When the front and direction of the main hostile attack have been determined, the defense at once takes steps to meet it. Fire on the advancing infantry is continued, more machine guns participate, the combat outposts are withdrawn, and the defense on the threatened front is reinforced. The minimum reinforcement is employed to increase the strength of the troops holding the main line of resistance; the bulk of the available reinforcement should be held in mobile reserve prepared for aggressive action.

■ 549. *Infantry* defends its position by employing all the weapons at its disposal; it does not rely solely upon artillery fire for the repulse of the hostile attack. As the enemy comes within range, the heavy infantry weapons, including those of units in reserve, are brought into action. As the enemy attack draws closer, the light weapons of the infantry engage in the fire fight until finally the enemy is stopped or is driven back with the bayonet.

■ 550. A unit intrusted with the defense of a strong point or center of resistance under no circumstances abandons it unless authorized to do so by higher authority. Local commanders take the necessary steps to maintain their positions, rectifying gaps in their dispositions or plan of fire by the action of their supports. Plans are made for the employment of local reserves. As the area of their probable employment becomes apparent reserves are moved to be more readily available for action.

Measures are taken to insure security against mechanized attack. The artillery of direct support assists the infantry

in antitank defense. In addition, when a strong hostile mechanized attack is impending, a few mobile batteries are prepared for prompt movement to any part of the position where hostile tanks may succeed in penetrating the position. (See par. 260.)

■ 551. Should the enemy succeed in penetrating the position, the defender first seeks through fire to annihilate the enemy elements which have penetrated. The fire of the supporting artillery is called down on the rear of the hostile elements in the gap while local reserves supported by the heavy infantry weapons *counterattack* against the flanks of the gap to thrust back the enemy before he has had time to establish himself.

Should these measures for restoring the battle position fail, or should the enemy succeed in making a deep penetration and establish himself on the position, the defender seeks to strengthen the flanks of the gap and maintain his hold on the supporting points on both sides thereof, resisting all attempts to widen it. The situation is thus first stabilized in order to establish a firm base from which to launch a general counterattack.

The higher commander must then decide whether to make a *general counterattack* to defeat the enemy and restore the battle position, or to transfer the main line of resistance to a rearward echelon of the zone of resistance.

As a rule, a general counterattack requires a careful preparation and strong forces. Assembly positions, zones of action, objective, and time of attack are clearly specified. Employment of tanks, support of combat aviation and artillery, and the use of gas and smoke are regulated and controlled by the superior commander. Whenever practicable, the counterattack is launched against the flanks of the hostile salient. If it is desired to use the tanks in the main effort of the counterattack, careful consideration must be given to the suitability of terrain for tank attack and the adaptation of the plan of supporting fire to their scheme of maneuver.

■ 552. If the hostile attack breaks down in front of the main line of resistance, the enemy will be unable to withstand a

determined *counteroffensive*. The defense must be prepared to change to the offensive and exploit the results of successful defensive action, should a favorable opportunity present itself. Although the enemy will be somewhat disorganized, his artillery will still be superior and his troops will be distributed in depth. In view of the uncertain results which a frontal attack offers, an enveloping attack is to be preferred. If this is impracticable, the defender should take advantage of his temporary freedom of action and maneuver his command for an entirely new operation.

¶ 553. When the battle is interrupted by nightfall, combat outposts are established by the leading companies or battalions immediately in front of the main line of resistance. (See par. 329.) Any enemy elements which have penetrated the zone of resistance are ejected by local counterattack, if necessary by night attack. Provision is made for patrolling and illuminating the foreground and the intervals between tactical localities. Garrisons of strong points may be reinforced. Machine guns are laid for their final protective fires. Provision is made to place the defensive fires of artillery and heavy infantry weapons in front of the outpost line. These fires cover those areas that cannot be reached by rifle and machine-gun fire and should be prepared while there is still some daylight. They are delivered on prearranged signals from the outpost.

¶ 554. When the enemy succeeds in establishing himself on favorable ground at close range from the main line of resistance, it may be advisable to redistribute the defending forces in depth. In such case the main line of resistance may be transferred to a rearward echelon of the zone of resistance, and the original main line of resistance held by combat outposts; or the defense may be transferred to a rear position in which case the preparations for a withdrawal from action (see pars. 557–565) and a renewal of the defense on the new position must be prepared in advance. Withdrawal to a rear position is as a rule advisable only when the situation clearly shows that the first position is untenable or will soon become untenable.

■ 555. When battle ends indecisively and a stabilization of operations gradually develops, the decision must be made whether to push the outpost forward and continue to hold the present position, making the necessary rectifications; or to hold the old position as an outpost position and transfer the principal forces to a rear position (see par. 517) which then becomes the main battle position. In either case a redistribution of forces is necessary.

Measures are taken for the development and strengthening of the new defensive position. Obstacles are reinforced; additional mine fields are constructed; defense against chemicals is more thoroughly organized; shelter is provided for men and ammunition, and measures are taken to provide for the rest and comfort of troops.

■ 556. Where a stabilized situation develops or a defense continues for a prolonged period, the necessity for conservation of the fighting power of the troops requires provision for the periodic *relief of units* in line. For the sake of continuity in the execution of the plan of defense, it is as a general rule advantageous to avoid relieving the artillery and the infantry at the same time. The relief is preceded by a detailed reconnaissance of the sector by officers of the relieving unit. The execution of the relief takes place under the direction of the commander of the unit to be relieved; he remains responsible for the defense of the sector until the relief has been completed.

WITHDRAWAL FROM ACTION—RETIREMENT

■ 557. WITHDRAWAL FROM ACTION.—A withdrawal from action is the operation of breaking off combat with a hostile force. The general purpose of the operation is to regain or preserve freedom of action. Withdrawal may be either voluntary or forced. Although usually considered in connection with the defensive, a *withdrawal from action* may be required in a variety of situations. It is voluntary when existing combat has accomplished the mission, or when successful combat is suspended to permit disengagement of troops for employment elsewhere. It is forced when unsuccessful combat is broken off to permit disengagement of

troops as a preliminary to a delaying action or the renewal of the defense on a rearward position, or to avoid decisive defeat by effecting a retirement.

■ 558. The heavier the previous fighting and the closer the engagement with the enemy, the more difficult will be the process of breaking off combat. This operation is facilitated by concealment of dispositions and movements, by surprise in the delivery of fire and, when practicable, by local counterstrokes.

■ 559. A withdrawal by daylight involves such heavy losses and so great a degree of disorganization that it is usually preferable to hold out at all costs until nightfall and effect the withdrawal under the cover of darkness. As a rule, only rearward echelons can be withdrawn by day.

The commander who orders a withdrawal designates a *rearward or assembly position* on which the troops will prepare for a renewal of resistance or under the protection of which the troops may, if circumstances so require, be assembled for further retrograde movement.

■ 560. The troops engaged stubbornly hold their positions. If this is impossible, they avoid a decision by a delaying action and await the arrival of darkness before actually breaking off combat.

The commander makes special provision for holding as long as possible the road centers that control the communications to the rear, and the features of the terrain that afford extended observation over the areas in rear of the battle front.

Successful counterattacks create the conditions most favorable to the withdrawal. In this connection, combat aviation, mechanized units, and chemical troops can be of material assistance.

Pursuit aviation seeks especially to relieve the lines of retreat from air observation and the pressure of hostile combat aviation. The attack of balloons and observation airplanes adjusting hostile artillery fire is also of great importance.

If the commander still has a reserve available it is preferable to move it and a part of the artillery to occupy the rearward position and cover the withdrawal of the troops closely engaged, provided the mission can be performed from the new position.

When the rearward or assembly position lies at a considerable distance from the battle front, the commander selects a suitable covering position and details, from any available reserves, a mobile *covering force* strong in machine guns to occupy it and cover the withdrawal of the troops engaged. Artillery and antimechanized weapons are attached to the covering force.

If the withdrawal is effected under cover of darkness, the troops in contact may be able to provide the necessary security for the withdrawal. In any event, the commander must indicate the course to be followed and provide for disengaging his forces and insuring freedom of action to the disengaged troops.

■ 561. As soon as practicable the commander makes the necessary arrangements for clearing the rear of the combat zone and for starting unengaged units toward the rearward position. He takes the necessary precautions to prevent betraying his intentions to the enemy.

In his *order for the withdrawal* the commander assigns sectors and routes of withdrawal to the units of the command, prescribes the strength and conduct of the security forces, fixes the priority in withdrawal of units, sends ahead signal troops for the establishment of signal communication, and takes the necessary steps to clear the routes for the movement of the troops. Prompt starting of trains to the new areas, evacuation of the wounded, and the removal of supplies, energetic measures for the maintenance of traffic control, construction of the necessary bridges, and preparations for the execution of demolitions on the routes of withdrawal are of primary importance. Effective measures are taken for antiaircraft and antimechanized defense.

Wire lines not absolutely necessary are taken up; preparations are made to destroy those which must remain in operation. Strict measures are instituted to regulate or silence radio communication.

The new command post is designated early and preparations are made for establishing a landing field nearby.

562. In case the decision is made for *defense on a rearward position*, this new position is selected at such distance that the enemy will be compelled to regroup his forces, displace his artillery, and renew his preparations for attack. As a rule the commander determines the location of the position and the general distribution of troops thereon from the map. He then issues the necessary orders for reconnaissance of the position and routes thereto by reconnaissance parties of subordinate units.

563. The *withdrawal* of the greater part of the forces engaged commences at nightfall; only weak elements are left in immediate contact with the enemy. These outpost elements, formed from troops nearest the enemy, are well supplied with ammunition and pyrotechnics. In view of the broad front upon which they are deployed, a single commander ordinarily cannot maintain effective control. The orders of the superior commander must, therefore, regulate the artillery support to be provided, coordinate the action of the elements holding the various sectors of the outpost, fix the time of their withdrawal, and prescribe their action in case of hostile attack. They may be directed to withdraw either at a prescribed hour or when forced to do so by the enemy's advance.

The withdrawal is executed on a broad front; troops retire in small columns and after passing the covering position are assembled into larger units at designated initial points. Engineers keep the routes of withdrawal open and furnish guides to bridges when necessary.

The elements left in contact with the enemy screen the withdrawal by simulating great activity. By heavy firing from different positions, reconnaissances of strong combat patrols, and sending up numerous rockets and flares, they endeavor to create the impression of heavily held lines.

564. A part of the artillery remains in position to support the elements still in contact; it increases its fire activity to deceive the enemy and assists the front line troops in breaking off combat. Well-supplied with ammunition and pro-

tected for all-round defense, these guns remain in action to the last possible moment and do not hesitate to sacrifice themselves if necessary to insure the withdrawal of the security detachments left in contact with the enemy. The remainder of the artillery is withdrawn by echelon to the rearward or covering position, priority in movement being given to the heavier calibers.

■ 565. The position of the *covering force* is selected so that it will cover the routes of withdrawal and the assembly position of the main body. Under certain conditions, the occupation of a flank position may be advisable in order to force the enemy to execute a time consuming maneuver.

It is the mission of the covering force to cover the withdrawal of the main body of the artillery remaining in position and the outpost left in contact with the enemy. The successful accomplishment of this mission depends largely on the efficient execution of a systematic plan of artillery and machine-gun defensive fires.

When the withdrawal of the main body is assured, the covering force follows it to the rearward position or joins the march column.

■ 566. RETIREMENT.—Without competent orders to do so a decision to retire is justified only when *all* possibilities of accomplishing the assigned mission have been exhausted and a continuation of the battle will lead either to excessive losses or a decisive defeat.

No commander is authorized to order a retirement on his own initiative simply because of local misfortune or reverses suffered by an adjacent unit, or when such retirement will jeopardize the rest of the command. In a crisis, a commander must persevere and show a resolute will. (See pars. 103, 104, 108.)

■ 567. Having disengaged his forces from action, the most important consideration for a commander is to place *distance* and a *rear guard* between his main body and the enemy and regain his freedom of action.

Trains are put in march without delay, if necessary under escort, and sent to the next bivouac area. In their retire-

ment they establish dumps of ammunition, rations, and other supplies en route to meet the needs of the retreating troops.

As fast as troop units arrive in the assembly positions they are formed into small march columns and set in motion to the rear. The retirement is made on a broad front, using all available roads.

■ 568. A *rear guard* is detailed and assigned to a position from which it can cover the formation of the march columns and their uninterrupted retirement. Initially this rear guard consists of the troops which covered the withdrawal, reinforced by contingents of other arms as required by the situation. (See pars. 288, 561.)

When there is danger of a hostile encircling maneuver in pursuit, *flank guards* composed of mobile troops with engineer and antimechanized units attached are detailed to cover the exposed flank.

■ 569. In a retirement, clearing the *routes of march* for our troops and organizing an effective *zone of obstacles* to delay the enemy's pursuing columns are of greatest importance.

Engineers are sent back early to reconnoiter and improve the routes of retirement, repair bridges, and prepare obstacles and demolitions to be made effective by the rear guard. The location of these obstacles, and the nature of the demolitions and contaminations prepared, are carefully noted and measures taken to prevent their endangering our own troops.

Staff officers accompanied by detachments of military police are sent to critical localities to regulate traffic and prevent congestion, especially in towns and at bridges and defiles. Strong antiaircraft and antimechanized protection is established at these critical localities until they are cleared by the main body.

■ 570. As the distance from the enemy increases, the small columns of the main body are consolidated into larger march columns constituted as combat teams. During the march to the rear, a constant effort is made to increase the distance from the enemy and gain greater freedom of action for the commander. This will necessitate night and forced marches

as well as effective security measures to protect the flanks of the zone of retirement.

■ 571. The employment of *combat aviation* under control of the superior commander to assist in delaying the hostile pursuit is coordinated with the action of the rear and flank guards.

■ 572. The *subsequent action* of the rear guard is governed by circumstances. (See pars. 291–294.) The rear guard retires by bounds; it regulates its halts by the progress and security of the main body, and arranges its rests so as to take advantage of the cover and protection afforded by the terrain.

DELAYING ACTION

■ 573. A recourse to *delaying action* ordinarily implies either a lack of readiness for battle or a hostile superiority of force. Its purpose is to gain time while avoiding decisive action. This is attained by deceiving and containing the enemy.

Delaying action is often used in the opening phases of battle to gain time for the unified employment of the entire command; it may also be called for in later phases pending completion of preparations for counteroffensive action. (See pars. 94, 413, 522.) It finds especial application in the operations of cavalry, covering forces, and other security detachments. (See pars. 31, 292, 542.)

■ 574. Delaying action is based on a *limited resistance* on a defensive position with the intention of renewing this resistance in *successive positions* if necessary. The defense in each position must force the enemy to an early deployment and to time-consuming preparations for battle. Ordinarily combat is broken off in each position before troops become closely engaged. The situation may, however, require a *strong resistance* on some position or even a *counterattack* in order to accomplish the delaying mission.

The delaying measures are continued *between positions* in order to gain time for organizing the resistance on the next position. Because of the retrograde and long-range nature of combat, delaying action is most effectively executed by troops possessing a high degree of mobility and great fire power especially at the longer ranges.

575. In open terrain, the important consideration in the selection of a delaying position is a good field of fire at long range; field of fire at close range is of less importance. In close and wooded terrain, observation and field of fire are equally unfavorable for both sides; the defender can, however, make full use of the cover, concealment, and obstacles offered by the terrain, whereas the attacker is restricted in movement and unable to exploit fully his superiority of means.

The ground in rear of the position should favor a withdrawal by screening the troops from hostile view and fire as soon as the position is vacated.

In delaying action, field fortifications are reduced to the minimum; full use is made of obstacles, demolitions, and chemical interdictions in front and on the flanks of the position and in the areas between successive positions. (See par. 514.)

576. The *conduct of delaying action* is facilitated in open terrain by selecting successive positions at such distance apart that the enemy will be forced to displace his artillery in order to attack the next position in rear. In wooded terrain the infantry bears the brunt of combat, and successive positions may be much closer together.

In each position, the main line of resistance should insure facilities for artillery observation and for the delivery of effective long-range fire by heavy infantry weapons. In general, the depth of the zone of resistance is not very great. The firing positions of the artillery and heavy infantry weapons are located close to the line of resistance.

577. The *duration of the defense* in each position and the amount of delay obtained between positions depend upon the terrain, the facilities for observation, the effectiveness of obstacles, and the action of the enemy. The commander exerts his influence through the distribution of troops, the employment of the artillery and reserves, and the allotment of ammunition made for the defense in each position. The duration of the defense in each position is so regulated that the withdrawal can be made in an orderly manner and effective resistance organized on the next position in rear before the enemy is able to renew his attack.

■ 578. In fighting a delaying action, some troops are disposed on the rear position to cover the *withdrawal* from the positions in front. As a rule, the longer a delaying action is continued, the greater must be the strength of the combat echelon deployed on the rear position. Since this can be done only at the expense of the combat echelon deployed on the forward position, the width of the sector must be progressively reduced. The withdrawal from one position to the next is executed as discussed in paragraphs 562 to 565, inclusive.

■ 579. The commander controls the operation by prescribing the time of withdrawal and the time by which each successive position is to be occupied. In open terrain it is better to make a timely and simultaneous withdrawal from each position. In close terrain or when a command is deployed over a wide front this may be impracticable; the decision as to the time of withdrawal is then left to subordinate commanders; the commander exercising control by prescribing a general terrain line to which units will eventually withdraw or in front of which the enemy will be held until a designated hour.

■ 580. In order to coordinate the operations, the combat zone is subdivided into *sectors* the boundaries of which are extended to the rear to include initially the *first two delaying positions*, and later the *final position* in the commander's plan of action. In favorable terrain the width of sectors in delaying action may be taken as about double those suitable for defense. (See par. 529.)

To each sector a tactical grouping is assigned and given a combat mission. The strength and composition of each grouping is determined by the mission assigned, the terrain, the width of the sector, and the nature of the hostile threat. Mutual support between adjacent groupings is coordinated by the superior commander.

■ 581. In each sector, the *defense* is made by combat groups at extended intervals holding the natural strong points of the terrain and supporting each other with flanking fire.

In close terrain or during periods of low visibility, close contact between adjacent strong points is maintained by combat patrols. Supports protect the flanks of the strong points; reserves are posted well to the rear to cover the withdrawal of the forward elements.

The artillery in general support prepares a plan of interdiction fires covering the principal hostile avenues of approach and is prepared to engage the more distant targets; it is employed to reinforce the artillery in direct support in accordance with the requirements of the situation.

Engineers are employed to construct a barrier zone of obstacles and demolitions in front of the first delaying position and in the area between successive positions. Antimechanized units are attached to the outpost and to the principal combat groups covering the hostile avenues of approach. In case of an exposed flank, a mobile flank guard is detailed with engineers and antimechanized units attached.

582. As in the defense of any position, an *outpost*, strong in heavy infantry weapons, is deployed well in front of the first delaying position to harass and delay the enemy's advance and to keep him in doubt as to the location and character of the first resistance he will encounter.

The *defense of the position* is begun by the artillery in general support which lays down interdiction fires on the routes of hostile approach and covers the withdrawal of the elements of the outpost. As the enemy develops his columns preliminary to deployment for attack, the artillery in direct support joins in the counterpreparation fires placed on the hostile assembly positions. From the beginning of the action, the fire of the artillery is directed principally against the hostile infantry and mechanized units.

As the enemy drives in the outpost, all elements in front of the line of resistance retire in rear of the position. The defense of the line of resistance is based primarily on the fire of the artillery, light machine guns, and heavy infantry weapons. For this purpose, a plan of defensive fires is prepared in which the fire missions of the various weapons are properly combined and coordinated.

■ 583. Whenever practicable, the *withdrawal from position* is effected under cover of darkness. If a protracted resistance is necessary to accomplish this, measures are taken to extend the depth of the zone of resistance.

If the withdrawal must be made in daylight, the artillery and heavy infantry weapons are disposed in depth. A daylight withdrawal may also be facilitated by organizing an *intermediate delaying position* to be occupied by reserves assigned to cover the withdrawal of troops in front. The subsequent withdrawal of the troops from the intermediate delaying position is in turn covered by other troops on the next delaying position in rear. The retirement may thus be executed by the alternate withdrawal of successive echelons from one delaying position to the next.

The loss of a defended tactical locality to the enemy does not necessarily involve an early withdrawal along the whole front. Adjacent combat groups should take advantage of such situations to punish an impetuous enemy by heavy flanking fire and by local counterattacks whenever the conditions are favorable.

■ 584. Timely measures are taken for reconnaissance and for preparations necessary for the occupation of the successive delaying positions in rear.

Provision is made for the establishment of *wire communication* from the higher commander to the sector commanders and the senior artillery commander. Of especial importance is the efficient operation of the artillery wire net in order that the flexibility of artillery fire may be exploited to the maximum. In the case of distant or detached combat groups, communication is limited to radio.

The wire systems of subordinate units are limited to the most essential lines in order to reduce the work of recovery of wire and the amount that must be abandoned. Full use is made of prearranged visual signals and of mounted and motorcycle messengers.

■ 585. *Support aviation* available to the commander is employed to delay the hostile pursuit by harassing and interdicting hostile columns at critical localities.

586. The greatest importance attaches to keeping the enemy in doubt as long as possible concerning the location of the successive delaying positions and the delaying nature of the operations being conducted. The *antiaircraft artillery* is, therefore, employed to interfere with the operations of hostile reconnaissance aviation and to protect the defiles and critical localities in rear from hostile air attack.

CHAPTER 13

SPECIAL OPERATIONS

NIGHT COMBAT

587. GENERAL.—Night combat is characterized generally by a decrease in the effectiveness of aimed fire and a corresponding increase in the importance of close combat and the fire of fixed weapons capable of being laid on definite targets or areas by day; by difficulty in movement, troop leading, and the maintenance of direction, cohesion and communication; and by a more highly sensitive morale of the troops.

Decrease in the effectiveness of fire permits the use of closer formations without exposure to excessive losses; difficulty in the maintenance of control and direction indicates the necessity for designating limited objectives which may be approached by well-defined routes; the more sensitive morale of the troops increases the effects of surprise obtained by the offense and the importance of security measures on the part of the defense.

Night conditions decrease the effectiveness of air reconnaissance, but are especially favorable to air bombardment.

588. *Surprise* is the most essential feature of night combat. Whether made during daylight or darkness, preparations for night combat must be such as to avoid betraying the locations or intentions of the troops. The operation itself must be conducted with precision and secrecy.

589. An unexpected collision of troops at night, or combat which extends into the night, usually develops into a standing fire fight and a suspension of movement. As a rule,

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night combat can be conducted only when there is time to prepare and distribute a well-conceived plan.

In many respects, a fog produces conditions of combat similar to darkness; the same principles therefore apply. Because of the uncertain duration of a fog, every operation based on the utilization of the concealment provided by fog calls for a rapid execution. This also applies to artificial fogs created by chemicals.

■ 590. In night combat, the influence of all unit commanders on their troops is greatly diminished. Tactical operations and troop leading are surrounded with greater difficulties; the frictions and accidents of combat exercise a greater influence than in daylight operations.

■ 591. ATTACK.—Night attacks are made to complete or exploit a success, to gain important terrain for further operations, or to attract hostile reserves. They always involve an element of chance because of loss of control, interference with friendly troops, and vulnerability to counterattack. The best available troops should be employed.

The difficulties of night attacks increase with the size of the command. They are therefore usually undertaken only on a limited scale and with limited objectives. In connection with major atacks, the night is utilized chiefly for the execution of preparatory measures and the placing of the troops in their assembly positions; the attack is usually launched at or shortly after daybreak.

Simplicity of plan, surprise, and careful preparation are prerequisites for a successful night attack; these conditions apply also to raids, forays, and reconnaissances in force conducted at night.

Night attacks are often the manifestation of an aggressive leadership, which, undismayed by foreseen difficulties, is determined to bring about a conclusion without delay. The morale of the troops and the quality of the leadership, especially in the lower grades, rather than numbers, are likely to measure the success attained.

■ 592. The hour at which a night attack is to be made depends upon the object sought. The exact hour of attack is kept secret as long as possible.

An attack launched during the first hours of darkness frequently strikes the enemy before he has had time to organize his position or his artillery support. It may also anticipate possible night operations on the part of the enemy. It may be delivered after victorious combat in order to frustrate the enemy's attempts to organize a withdrawal at nightfall.

An attack during the last hours of darkness may be advantageous as a preliminary operation to a general attack at daybreak because it gives the defender no time to reorganize.

■ 593. The decision to attack should be made while there is still sufficient daylight to make all preliminary *reconnaissances* and necessary *preparations*. A thorough knowledge of the terrain and of the enemy's position is necessary for subordinate commanders. The orders for a night attack must therefore be issued in ample time. The most favorable time for beginning the reconnaissance is shortly before dusk, so that both the day and night aspects of the terrain may be studied. Easily identified direction points are located and provision is made for guides.

■ 594. Night attacks are made preferably by fresh troops or by reserves of troops in contact with the enemy. When made by troops already in contact with the enemy, many details of execution are left to the commanders of front line units.

When fresh troops are designated to make a night attack their approach march is protected by troops already in contact with the enemy.

Subordinate commanders must be carefully instructed concerning the terrain, the objective, and the direction of attack. Routes of approach are carefully marked, guides are provided, and compass directions are given.

■ 595. *Orders* for night attacks are formulated with more than usual detail. Routes of approach, assembly positions, and objectives are designated with the utmost exactness; the bounds of movement in approach, the occupation of assembly positions, and the delivery of the assault are regulated in accordance with precise time tables. The assault may be launched by prearranged signals.

In the conduct of night attacks, only the simplest *formations* are employed. The smaller units normally advance in

column until close to their objectives, when dense skirmish lines are formed and the enemy rushed with the bayonet without firing. The assaulting lines are followed closely by their supports and local reserves, formed in small columns. All vehicles and animals are left at the assembly positions.

The heavy infantry weapons of the assault echelon are placed in position for flank protection and then advance with the reserves. When the terrain is favorable for overhead fire, they may be emplaced in a rearward position to support the attack, precautions being taken not to endanger the attacking troops.

The larger tactical units are formed in assault columns, and each column is given a definite direction and objective. Communication is maintained between columns, and every precaution is taken to avoid their colliding with one another.

Silence, secrecy in preparation, and cohesion in execution are essential to success. Lights are forbidden; bayonets are fixed; rifles are unloaded, especially for supports and reserves. Measures are taken for mutual identification of the troops in the dark.

■ 596. The particular circumstances attending each situation will usually indicate whether the infantry assault should be prepared by artillery fire. Where *artillery support* is indicated, a short but violent preparation will generally suffice. This preparation is lifted in accordance with a time schedule. In any case, the artillery holds itself in readiness to intervene promptly and energetically in accordance with a plan of fire prepared during the hours of daylight to box off the zone of attack. In addition the artillery neutralizes located hostile artillery.

■ 597. On capturing their objectives, units are at once reorganized and promptly disposed to meet a counterattack. Their further detailed conduct is prescribed in the orders for attack.

■ 598. DEFENSE.—In night combat, the defense has the advantage of better knowledge of the terrain and an organized plan of defensive fires covering the principal avenues of hostile approach.

599. Vigilant outguards, active patrolling well to the front, and illumination of the foreground must be relied upon to give timely warning of attacks. Front line strong points are usually occupied in greater density than by day. When a hostile attack is suspected or known to be in progress, supports and local reserves are brought closer to the main line of resistance.

600. Obstacles and the fire of fixed weapons are the principal means used in breaking up the assault. Infantry does not open fire until the enemy is close enough to offer an unmistakable and profitable target. Local supports and reserves, using the bayonet only, counterattack, preferably against the enemy's flanks.

601. As a rule, delaying action at night can be executed only by small units or detachments which operate and retire along well-defined routes. Rearward movements are carefully regulated to avoid losses by fire from friendly troops in rear.

RIVER CROSSINGS

602. GENERAL.—Owing to the restrictions which they impose upon movement and maneuver, river lines exercise considerable influence on military operations. They constitute obstacles to an attack and natural lines of resistance for a defense; they assist in screening against hostile ground reconnaissance and in providing security against hostile mechanized attack.

603. The attack and defense of river lines require *special preparations,* both technical and tactical, proportionate to the size of the river and the strength of the command. Data relative to rivers in the theater of operations are contained in maps, air photographs, and terrain studies furnished to the commander of the field forces on the outbreak of hostilities. These data are supplemented by research conducted throughout operations.

604. *Reconnaissance* of a river line is essential both in attack and defense. The strength of a river line increases with the width and depth of the river and the velocity of the current. Other considerations which have a tactical and

technical bearing are the condition of the banks, the topography of the terrain adjacent to the river line, the presence of islands and tributaries, the nature of the river bottom, the character of the approaches to the river bank, the practicability of fords, and the danger to be apprehended from ice floes, freshets, etc.

Stream lines which ordinarily are of little tactical significance may become formidable obstacles as the result of freshets, high water or artificial damming. In winter, troops may cross on ice of sufficient thickness; on the other hand, ice conditions may greatly increase the difficulty of crossing.

Streams with soft bottoms and steep banks are effective obstacles against tanks and mechanized units.

■ 605. ATTACK.—The defenses of a river line can sometimes be turned. By demonstrations carried out at various points on the river line, an attempt is made to deceive the enemy as to the projected point of crossing while a strong mobile force makes an unopposed crossing elsewhere, turns the hostile flank, and launches an attack before the enemy can readjust his dispositions.

When the enemy is near but not actually holding a river line, an effort is made to anticipate him in the possession of the necessary crossing. Mobile forces are advanced as quickly as possible on a broad front to seize the desired crossings and occupy the dominating terrain on the far side in order to protect the crossing of the main body.

When, however, the enemy is already in possession of a river line which cannot be turned, the crossing must be forced. Hostile troops are promptly driven across the river, and preparations to force a crossing are initiated systematically. Secrecy, feint attacks, speed of movement, and concealment of preparations are then important in order to deceive the enemy as to the front on which the actual crossing will be made.

■ 606. *Reconnaissance* of river lines across the routes of advance is begun by staff and engineer officers with covering forces at an early stage of the operations. Air photographs showing the nature of the river and the bridge destructions effected by the enemy enable the high command to make an early estimate as to the possibilities of crossing and the

means required. Ordinarily, ground reconnaissance of the river line can be executed only after hostile covering forces on the near side of the river have been driven across the river.

Reconnaissance by staff and engineer officers provides more detailed information and furnishes the basis for the selection of the crossing points and the execution of the necessary preparatory measures. Based on the results of these reconnaissances and the tactical situation, decision is made as to the front or fronts on which the crossing will be forced.

■ 607. In the selection of *fronts* and *points of crossing*, consideration is given to both tactical and technical requirements.

The existence of a good bridgehead position on the far side of the river enables the first troops across to execute more effectively their mission of covering the bridge construction and the passage of the main body. Sites that permit a covered approach favor surprise effects. Connection with the road net on the far side of the river facilitates the progression of troops and transportation after the crossing has been effected; for this reason, old bridge sites are frequently advantageous.

Ground dominating the opposite bank permits the support of the crossing by overhead fire. Observation points on the near side which give an extended view of terrain on the far side of the river greatly facilitate artillery support.

Places where the river forms a salient toward the attacking forces favor concentration of fire effect and the delivery of flanking fire against hostile troops occupying the salient; such salients also enable the first troops crossing to secure their flanks by resting them on the river. Locations which minimize the possibility of interruption of the crossing by means of mines, logs, fire-brands, etc., floated downstream by the enemy, are desirable.

■ 608. In a river crossing the principal objective is to gain the far side of the river as quickly as possible and establish a *bridgehead* which will protect the bridging operations and the crossing of the remainder of the command. A sufficient

force for the establishment of a bridgehead is first ferried across.

Since the initial ferrying operations require much time, and place a heavy demand on engineer troops and matériel, the early capture of any existing bridges by advanced detachments of the command is of great importance; engineers are attached to repair any damaged bridges which have been seized.

■ 609. Having selected the front or fronts on which the crossing is to be made, the higher commander decides on his plan of action for the crossing and directs the preparation of the necessary preliminary measures. Troops are distributed into bridgehead troops, supporting troops, reserve and engineers, each under a designated commander.

■ 610. As a rule, the *bridgehead troops* are composed of several tactical groupings to each of which a zone for reconnaissance and crossing is assigned. These tactical groupings consist chiefly of infantry to which accompanying artillery and engineer troops with the necessary material for ferrying are attached. The crossing zones are selected with a view to utilizing favorable terrain, making the initial crossing on a broad front by ferrying, and deceiving the enemy as to the front of the main crossing.

■ 611. The supporting troops consist chiefly of artillery, combat aviation, and the heavy infantry weapons of units in reserve. It is their mission to protect the crossing and hold down the fire of hostile artillery and of hostile infantry holding the river line. The artillery is so emplaced that it can, without change of position, furnish protective fire to the bridgehead troops during their crossing and occupation of a bridgehead position. Heavy infantry weapons deal chiefly with hostile infantry holding the river bank. Early provision is made for antiaircraft defense on the front of the crossing; pursuit protection is provided by the combat aviation at the disposal of the higher commander.

■ 612. The *reserve* usually comprises a major portion of the command; it usually crosses by bridges except when the crossing of the entire command is to be effected by ferry.

It also serves the usual purposes of a reserve. When crossings at several points are attempted, reserve troops are crossed at the points where success has been attained.

■ 613. A strong reserve of *engineer troops* and *material* is made available from the beginning of the operation and held in readiness in a covered position. This engineer reserve serves the purpose of providing an adequate force for the bridging operations, replacing engineer losses in men and matériel, and of reinforcing the means of crossing at decisive places or at crossing points where success has been attained. The movement and secret assembly of engineer matériel for the crossing usually must be done at night and requires careful preparation.

■ 614. The engineer commander is charged with all preparatory measures for the crossing and for the distribution of engineer troops and matériel, the construction and guarding of bridges, and the regulation of traffic thereon. (See pars. 380–382.)

Based on the recommendations of the engineer commander, engineer troops and matériel are attached to the tactical groupings of the bridgehead troops for the ferrying operations. These troops revert to the control of the engineer commander upon the completion of the ferrying operations and are then available for the bridging operations.

The command post of the engineer commander is connected by signal troops with the command posts of the superior commander and the larger tactical groupings constituting the bridgehead troops.

■ 615. The commander of each tactical grouping and of the supporting troops assigns *reconnaissance missions* to his staff and subordinate commanders. This reconnaissance bears not only on the crossing places of the bridgehead troops and the positions and preparation of fire of the supporting troops but also on the routes of approach, assembly positions of units, concealed distributing points of engineer matériel, and all preparatory measures preliminary to the execution of the crossing.

Signal officers reconnoiter the front of crossing to locate all existing wire lines on the near side of the river and

additional wire lines to be established, and determine the possibilities of their extension on the far side. Radio traffic is suppressed or reduced to the minimum in order to preserve the element of surprise.

The results of reconnaissance are coordinated and evaluated at the headquarters of the commander concerned.

■ 616. When the necessary preparations have been made, the superior commander gives the order for the *execution of the crossing*. Secrecy in preparation and deception of the enemy as to the time and place of crossing are essential.

The occupation of positions preparatory to forcing a crossing usually takes places at night. The various elements of the command are so distributed laterally and in depth that when the first troops have crossed, an orderly progression of the required troops and matériel will follow. The successive movements of elements of bridgehead troops from their assembly positions to the boats are so regulated as to avoid lateral movements and the massing of troops on the river bank. Measures for the regulation of traffic and the suppression of noises during the approach are of great importance.

■ 617. In close proximity to the enemy, the situation usually restricts the crossing of the first troops to the hours of darkness; in order to facilitate the advance to the bridgehead position, it is usually best to commence the crossing shortly before dawn.

The bridgehead troops effect their crossing on a broad front; the first waves cross simultaneously in assault boats to selected points on the farther bank and push forward to positions from which they can cover the crossing of succeeding waves. Over narrow streams foot bridges are used.

Heavy infantry weapons, accompanying artillery, ammunition, means of signal communication, and combat vehicles follow on ferries as soon as they are constructed and launched. After ferrying operations have begun the general use of foot bridges and assault boats may be suspended.

Feints or secondary crossings and *demonstrations* are frequently employed to divert the enemy's attention from the

place where the principal crossing is to be effected and to induce him to divide his forces.

Smoke can conceal ferrying and bridging operations from ground observation but ordinarily not from air observation. It is frequently used during daylight hours in connection with feints and to screen the initial ferrying operations. When smoke is used, special measures must be taken to mark plainly the ferry landings and bridge sites, and the routes leading thereto.

■ 618. The supporting troops make the necessary provision for the *antiaircraft defense* of the ferrying operations and the subsequent construction of the bridges. Every effort is made to place a portion of the antiaircraft artillery on the far bank before the bridging operations are begun. The displacement of the antiaircraft artillery is made in such a manner that an effective protection will be established for the bridges as long as required.

When the enemy holds the opposite bank in force and has organized it defensively, an *artillery preparation and support* similar to that required in the attack of a defensive position are usually necessary. Provision is made for the early displacement of a portion of the artillery to the opposite bank.

■ 619. When sufficient forces have been assembled, the bridgehead troops push forward, supported when necessary by the fire of the artillery, to their bridgehead positions. The first objective of their attack must be visible from the artillery observation posts on the near side of the river. Liaison observers of the artillery, with the necessary means of signal communication, accompany the assault waves of the infantry to insure continuity of artillery support during the advance to the bridgehead positions.

■ 620. The position finally occupied as a *bridgehead* is established at a distance from the river sufficient to protect the bridging operations from hostile ground observation, and the crossing of the remainder of the command from undue interruptions and losses from hostile artillery fire. As soon as the infantry assault waves advance from their first objective, the artillery begins the displacement of indi-

vidual batteries across the river to provide close support for the infantry. Later the mass of the artillery is advanced, the displacement being begun by the rearmost batteries and in such a manner as to provide continuity of artillery fire support. In this connection provision must be made for adequate ammunition supply and reliable signal communications.

■ 621. Initially, communication between forces on opposite sides of the river is established by radio. Measures are taken as soon as practicable to establish *signal communication* between adjacent bridgeheads and between the advanced message center of the command and elements of the command across the river.

■ 622. When the bridgehead troops have advanced sufficiently to seize the terrain on the far bank dominating the bridge sites, the superior commander issues his orders for the engineers to commence the *bridging operations*. Ferrying is continued until the ponton equipment is needed for bridge construction.

The greater the number of bridges made available, the quicker the crossing. The construction of bridges from local materials requires much time, labor, and technical experience. Quicker results are obtained with ponton bridge equipment (light and heavy) and fabricated military bridges.

In major operations, the construction of bridges adequate for the passage of tanks, artillery, and motor transportation will ultimately be necessary.

As a rule, the construction of bridges during daylight hours cannot be accomplished without strong antiaircraft protection. Hostile artillery fire and air attack may make it necessary to effect the entire operation by ferrying.

Air attack may compel the temporary suspension of ferrying and bridging operations. Whenever the enemy takes a bridge under effective fire, bridging operations generally must be suspended until the hostile fire can be neutralized. The decision to resume bridging operations at the same site or to transfer operations to another bridge site depends upon the damage done by the hostile fire, the availability of suitable auxiliary bridge sites, and the time required to make the change. The removal of a bridge, its transfer to another

bridge site, the construction of new approaches, and the detouring of traffic will ordinarily take considerable time. Whenever practicable, auxiliary bridge sites are reconnoitered and prepared.

■ 623. DEFENSE.—A river line may be employed as an obstacle in front of a defensive or delaying position, or as an aid to counteroffensive action which seeks to strike the enemy while his forces are astride the river. In the first case a river line loses much of the value as an obstacle if the enemy is not forced to make a direct attack; in the second case it becomes an obstacle to our own troops if successful counteroffensive action is to be followed by an exploitation.

Holding a river line in such force as to leave available insufficient *reserves* destroys the flexibility of the defense and exposes it to immediate defeat as soon as the river line has been pierced. Holding the river line with inadequate forces leads to general overextension with consequent weakness along the entire line. In general, the river line itself is not employed as a main line of resistance unless sufficient forces are available to provide for a strong defense at the river's edge and at the same time leave available sufficient forces in reserve.

■ 624. When the *river line* is used *as an obstacle* in front of a position, the main line of resistance is placed on or near the river bank. Defenses are so located that the opposite bank and its approaches are held under fire and the enemy's attempts to cross are frustrated in their beginning. Salients in the river line and open terrain dominated by the enemy's observation posts are lightly held and covered by the concentrated fire of weapons in rear positions.

Covering forces and *reconnaissance detachments* remain on the enemy's side of the river to maintain contact with the enemy and determine his assembly positions and probable crossing places. When forced to retire, these leading elements withdraw across the river to positions on the flank or to areas protected from hostile fire. Timely measures are taken to prepare the crossings for destruction after the last elements have withdrawn across the river. On wide rivers

the *outpost* keeps contact with the enemy by use of patrol boats.

Engineers block the hostile avenues of approach and crossing places with obstacles and mines. Floating mines, rafts, and firebrands are prepared and held in readiness upstream. Preparations are made for illuminating the water area at night.

■ 625. A part of the artillery is placed in position in rear of the outpost to cover the most likely crossing places and the enemy's probable assembly positions and avenues of approach. The remainder of the artillery is held in readiness for movement to prepared positions to support the defense when the main crossing is discovered.

The principal mission of the antiaircraft defense is to prevent hostile air reconnaissance, especially in those sectors which are favorable for crossing. Preparations are made to reinforce the antiaircraft defense in the critical sectors so that hostile air reconnaissance can be effectively combatted as far forward as practicable.

■ 626. Signal communications are established so as to insure rapid communication with the outpost and covering forces and the quick transmission of orders to the reserve and the artillery.

The mobility of the troops held in reserve is increased by the assignment of motor transportation. When the enemy's main crossing is discovered, these reserves are moved to the threatened sector and employed in a general counterattack as required by the situation.

Support aviation operates against the enemy's ferries and bridges, and troops assembled for crossing.

■ 627. When the *river line* is to be held *as a delaying position* in a retrograde movement, the withdrawing columns are directed to cross at the available bridges which are not under hostile artillery fire. If the crossing places are insufficient, the construction of additional bridges or ferries may be necessary. Antiaircraft defense is established on both banks of the river line to protect the bridges and crossing places.

Trains, motorized columns, and a part of the artillery are moved across first. Routes leading to and from the bridge

approaches and crossing places are plainly marked; staff officers with detailed instructions for march sequence and future action direct units to their destination; strict measures are taken to regulate traffic during the retirement across the river.

As soon as it has moved across the river, a part of the artillery is placed in position to protect the crossing places and cover the retirement of the remainder of the command. This echelon is later reinforced by the remainder of the artillery when it displaces to the rear. At the earliest practicable moment, a plan of artillery defensive fires is prepared which will take advantage of the long range and flexibility of artillery fire to lay down interdiction and counterpreparation fires on the hostile routes of advance and assembly positions. For conduct of delaying action see paragraphs 573 to 587, inclusive.

■ 628. Unless the situation and the strength of the available forces indicate the advisability of holding the *river line as a line of resistance*, it is usually best to hold the mass of the forces in readiness at such distance to the rear that they can intervene promptly at any point where a crossing may be attempted. The river line is then held by relatively weak detachments; stronger detachments with reserves are posted at the most probable points of crossing. The operations of the advanced detachments are organized in accordance with the principles governing outposts. It is their mission to force the enemy to disclose the full power of his supporting fires, to discover hostile crossings, and to prevent hostile troops from establishing themselves in bridgehead positions before the arrival of the main reserves.

The advance of the main reserves to the attack is made as soon as the hostile main crossing is recognized. The plan for counteroffensive action is prepared beforehand; success depends upon the commander's ability to launch the attack at the proper time and in the decisive direction; it must be launched before the enemy has established himself in a bridgehead position. To this end, efficient signal communications must be assured and reserves must be prepared to move promptly and rapidly.

The mass of the artillery is so emplaced that it can concentrate its fire in the critical area and support the attack in the decisive direction. Since the mass of the hostile artillery will still be on the far side of the river, much importance attaches to the neutralization of hostile air and ground observation regulating the enemy's artillery fire. Decisive results are promised by the employment of tanks and mechanized units against hostile units already in the bridgehead and by air attack of bridges and of troops engaged in ferrying operations.

COMBAT IN WOODS AND TOWNS

■ 629. GENERAL.—Combat in woods and towns presents certain common characteristics similar to those of night combat, among them reduced effectiveness of fire and observation, increased importance of close combat, and difficulty in control of troops. Fighting is at close range, and the outcome depends largely upon the initiative and independent action of subordinate leaders. Combat is usually so strenuous that the effective strength of units is soon used up.

■ 630. Woods and towns constitute natural strong points and offer concealment against air and ground observation and protection against tanks and mechanized attack; they facilitate the construction of obstacles, barricades, and traps, and, therefore, have a strong defensive value. On the other hand, they attract artillery fire and air bombardment and prolong the contaminating effect of chemicals; they exert a baneful attraction for troops which can easily lead to the dissipation of a command unless energetic countermeasures are taken by subordinate commanders.

■ 631. Woods and towns are especially favorable to delaying action as they keep the attacker in ignorance of the strength of the forces confronting him and provide desirable cover for screening the withdrawal.

■ 632. Against towns and villages, the massed fire of artillery produces great moral, material, and incendiary effect; the fire hazard is very great and must be guarded against. Against woods, the fire of artillery, except for chemicals, is employed most effectively against the salients and edges.

The outcome of the action is usually decided by the close combat of foot troops. The hand grenade, mortar, and the rifle with bayonet are the most effective weapons. Machine guns are effective, but ordinarily can fire only at short range. Because of the difficulty of placing artillery fire where needed, infantry must depend largely upon its own heavy weapons.

633. TOWNS.—In the *attack* of a town, the attacker seeks to avoid the populated area with his main forces by advancing on one or both sides and to gain the exits on the far side. The enemy within the town is blinded with smoke and neutralized with high explosives and chemicals. When a frontal attack of a town cannot be avoided, the attacker concentrates on capturing the near side, pushes rapidly through the town, and captures the exits on the far side. The town is then mopped up.

634. The larger the town and the longer it has been held by the enemy, the more thorough must be the preparations for attack. Early visual and photographic reconnaissance is made to determine the defensive organization of the area and the nature of defensive works and to furnish the artillery with suitable firing charts for selection of targets and conduct of fire.

635. When the enemy has organized the town into a strongly fortified area which cannot be turned or outflanked, the advance may have to be made frontally by bounds, each organized locality being systematically bombarded by the mass of the artillery and heavy infantry weapons before the infantry launches its assault. The density of the assault echelon is reduced to prevent crowding; reserves are held well to the rear prepared to intervene should the assault be repulsed. When the fire of the supporting artillery and heavy infantry weapons is lifted, the assault echelon pushes through to the far side of the organized area; supports and reserves mop up and organize the area for defense against hostile counterattack. The attack is continued through the town to the far side in a similar manner.

■ 636. On the *defensive*, towns are often included in the organization of the defensive position, especially when there is danger of a tank or mechanized attack.

In organizing a town for defense, the main line of resistance is established either within or in front of the town. After clearing the fields of fire, its defensive capabilities are developed by systematically organizing first the outlying buildings and enclosures so as to form salients from which the front and the flanks of the town can be covered by flanking fire. Obstacles are then constructed within the town and groups of buildings are organized defensively to oppose any effort to penetrate.

■ 637. In order to prevent the enemy from passing by on either side of the town and effecting capture by attack against the flank and rear, a *mobile reserve* is held outside the town in a concealed position in readiness, prepared to break up the enemy's outflanking maneuver and stop his advance on one or both flanks.

■ 638. WOODS.—The attacker usually seeks to turn isolated wooded areas included in the enemy's defensive position by passing them on either or both flanks while neutralizing their edges by fire or smoke. The artillery blinds the enemy's observation by smoke and neutralizes the hostile weapons that are capable of delivering flanking fire against the enveloping attack. Small wooded areas may be neutralized with chemicals; our own troops must then avoid them during the advance.

■ 639. When enveloping action is inexpedient, the woods must be attacked frontally. The attack is directed first against the salients which are neutralized by the fire of heavy infantry weapons and the artillery. This supporting fire is maintained until the assault echelon is ready to rush the salients, when it is lifted to the reentrants of the woods, or to suitable objectives within or on the far side of the woods.

The near edge of the woods is carried like any other position and is then used as a line of departure for the *advance through the woods*. The dispositions to be taken for this second phase of the attack depend largely upon the character of the woods. In sparse woods, formations are employed re-

sembling those on open ground, but with greater density in the leading echelon. In dense woods, small columns are more effective in the leading echelon. Special measures are taken to insure the maintenance of direction, cohesion, and intercommunication between the columns. Supports are formed in column and closely follow the assault units. The vulnerability of the flanks to counterattack requires special measures for their protection.

640. All commanders must be watchful to prevent combat groups from assembling on or near roads and trails since these will be covered by the enemy's system of defensive fires. The enemy's strong points are outflanked by an advance straight through the woods off the roads and trails. To avoid confusion and prevent friendly troops from firing into each other, it may be necessary to regulate the advance by bounds. Reserves are held well back so that they will not become involved in the fighting of the assault echelon and can be engaged where the greatest progress is being made.

641. Before *debouching* from the woods and while still far enough from the edge to be concealed from the enemy's view, dispositions adapted to fighting on open ground are taken, and arrangements are made for support by heavy infantry weapons and artillery. As the edge of the woods presents a well-marked target for hostile fire, the attacking forces in making their egress quickly vacate the edge of the woods and establish themselves promptly in a selected position farther to the front.

The movement of combat vehicles must be carefully regulated so as not to block the routes of advance through the woods. If the woods are not too extensive, vehicles can be held on the near side until the assault echelon has reached the far side.

642. As a *defensive position*, the edge of the wood has the objection of presenting a clearly defined target to the attacking forces. The main line of resistance is therefore established either well in front of the edge or deep within the woods. Since a position in the interior of the woods has the disadvantages of restricted view and limited field of fire, the observation elements of the outpost are advanced close to the

edge of the woods. The routes forward and to all positions in rear are reconnoitered and made known to all concerned.

While holding up the attacking units in front by means of obstacles, the *defense* seeks to break up the cohesion of the attacker's dispositions, lead him into false directions, and take the attacking troops under flanking fire. The use of natural or cleared lanes through the woods assists greatly in the development of flanking machine gun fire and in detecting and holding up a hostile advance. Supports and local reserves are posted with this latter use in view. Full advantage is taken of the opportunities for ambush, surprise, and counterattack against the flanks.

In wooded areas, close support by artillery becomes difficult. Fields of fire of all flat-trajectory weapons are seriously impaired. The fire of high-angle weapons is not equally affected; a little clearing will always permit howitzers and mortars to be used.

■ 643. When there is a possibility that the enemy may launch his attack on either side of a wooded area, preparations are made to repel the hostile groups with flanking fire from the flanks and salients. Combat groups are located in the area outside the woods to oppose the enemy's outflanking maneuver and hold up his advance. Tanks held concealed in the woods, with routes reconnoitered and prepared, will provide power to the counterattack of the defender.

■ 644. Numerical superiority is of little advantage in the close combat which usually develops in fighting in woods. When close contact is imminent, bayonets are fixed and preparations made to engage the enemy with rifle and machine-gun fire and to meet him in hand to hand combat with hand grenades and the bayonet.

COMBAT IN MONTAINOUS TERRAIN

■ 645. GENERAL.—Mountainous terrain offers no insuperable obstacles to the conduct of military operations even in cold weather if the troops are properly equipped and clothed, and are inured by previous training. In general, mobility is retarded, movement is restricted, fire power and effect are re-

duced, and communications and supply are made more difficult.

The direction of movement is determined in general by the courses of the valleys. The mountain passes which connect these valleys become important terrain objectives. Whereas the principal routes of movement usually are in the valleys, most of the fighting takes place on the adjacent heights and connecting saddles which dominate the valleys.

■ 646. Because of the rugged nature of the terrain, displacement of weapons and reserves is usually very difficult. Adjacent units and columns are often unable to render mutual support. Units on opposite sides of a valley may, however, be in a favorable position to observe, and to keep each other informed of the dispositions and movements of the enemy opposite the adjacent unit.

Restrictions of terrain and difficulties of deployment place a limitation on the strength and composition of forces that can be employed. Wide separation of columns and the insufficiency or failure of communications require commanders of tactical groupings to be well forward. The broken nature of the terrain offers opportunities for surprise action by small combat units.

When formulating plans for operations in mountainous terrain, the possibility of sudden changes of weather must always be considered. Fogs develop quickly and low clouds may suddenly obscure observation. Special arrangements are therefore made for periodic weather reports. Once decided upon, a plan of operations is executed promptly, or measures are taken to adapt the operations to the probable changes in weather.

■ 647. *Close reconnaissance* is conducted principally by patrols equipped with portable radio and visual means of communication. Reconnaissance is tedious and fatiguing; it must be initiated early and pushed well to the front. Unless this is done much valuable time may be lost by units in circuitous and fatiguing marching as the result of taking the wrong direction. Local guides may be advantageously employed. Air reconnaissance is difficult but of great importance.

■ 648. The sparse settlement of mountainous regions is usually a reliable index of the scarcity of local facilities and supplies. Careful arrangements must therefore be made for supply and evacuation, both of which may present great difficulties. The supply of small isolated columns may in an emergency be effected by transport aviation.

■ 649. *Foot troops* equipped with pack transport are the most reliable combat means in mountain warfare. Great dependence is placed upon the individual rifleman and his ability to overcome the most difficult obstacles. The rugged nature of the terrain offers favorable opportunities for overhead and flanking fire of machine guns without frequent change of position.

Both in the attack and the defense, the bulk of the heavy infantry weapons is located well forward. Since good observation posts are usually available, supporting weapons avoid positions on or near the skyline.

■ 650. The cannon best adapted for *artillery support* in mountainous terrain is the howitzer. In order to obtain angles of elevation and fall sufficiently large to clear masks and reach objectives defiladed by steep slopes, flat-trajectory cannon can be used only at long ranges. Horse-drawn and motorized artillery units are emplaced near the roads; pack artillery is capable of following infantry and taking defiladed positions in the more difficult terrain overlooking the valleys.

Control of artillery is decentralized. Because of the difficulties in the conduct of artillery fire with air observation, greater dependence is placed on ground observation in mountainous terrain. Observation posts must be reconnoitered and established early and provision made for liaison observers with the infantry to assure close and timely support.

■ 651. The hazards of flying in mountainous regions place a great restriction on the use of low-flying *combat aviation*. The restricted road net offers a favorable opportunity for blocking critical road junctions by bombardment aviation. Reconnaissance and liaison aviation is of particular value because of the difficulty of performing these missions by ground agencies.

The restricted field of observation and fire and the difficulty of occupying positions off the main roads limit the employment of *antiaircraft artillery* to the defense of the intersections and exits of the principal valleys.

652. *Tanks and mechanized units* suffer so many restrictions in mountainous terrain that their effective employment is generally very limited. Furthermore, measures for antimechanized defense and for blocking vehicular movement are relatively simple in mountainous terrain. The numerous draws and valleys present many opportunities for contamination by chemicals.

653. In mountainous terrain, the radio provides the quickest and most reliable means of *signal communication*. The establishment and maintenance of wire communication outside the axis of movement in the valleys ordinarily require so much time and effort that reliance must be placed on visual means and messengers.

654. In general, the same combat principles for the employment of the combined arms in lowland operations apply also to mountain warfare.

655. MARCH AND SECURITY.—On the march, security detachments are stronger and distances between subdivisions of a command are greater than in ordinary terrain. Since displacements within a march column are difficult during the march, the column is organized into suitable tactical groupings before the beginning of the march. All available roads and trails are used for movement.

Because of the difficult routes followed by flank security detachments and the fatiguing nature of their operations, it is usually necessary to provide relieving detachments at lateral or branch valleys. Consideration must be given to the fact that such detachments are ordinarily unable to rejoin their units until after the completion of the march.

The main body as a rule moves by bounds. On long marches and after steep climbs, short rests are taken in addition to the regular scheduled halts. In bivouac, security is provided by posting outguards on all roads and trails.

■ 656. ATTACK.—Since the defense will find difficulty in shifting its reserves in mountainous terrain, an attack based on an envelopment holds the best prospects of success. If this is impracticable, the task of the attacker ordinarily resolves itself into forcing one of several mountain defiles. The successful forcing of one defile usually opens the way for flanking action against the other defiles and for blocking the enemy's withdrawal and retreat.

■ 657. In difficult mountainous terrain, the reinforced infantry battalion is ordinarily the largest combat unit that can be employed as a whole in the attack. The attack usually breaks up into a series of separate combats of the leading smaller units. These units advance by bounds and by infiltration and enveloping action seek to outflank and capture the hostile strong points on the successive spurs and ridges. They are supported by the heavy infantry weapons and the artillery which direct their fire to neutralize the enemy's observation and strong points. Full use is made of the protection afforded by the dead spaces in front of the hostile position and the cover offered by the draws in the gaps between adjacent strong points.

■ 658. The objectives of the attack are the critical terrain features which dominate the exits into the lowland, or the passes or divides which separate the important watersheds. Depending upon the mission, the commander may be more concerned with cutting off the enemy's withdrawal and retreat than in simply inflicting a defeat and driving the enemy back. In this case combat action is directed toward blocking those valleys which constitute the enemy's principal routes of withdrawal and retreat.

■ 659. DEFENSE.—On the defense, greater infantry combat strength is required in mountainous terrain than in ordinary terrain. The danger of envelopment requires the defense to cover a broad front; the tactical consequences of a penetration require this front to be held in greater strength. The requirements of decentralization resulting from deficient communications and the rugged nature of the terrain (see par. 646) prevent the defense from developing the maximum fire power through concentration in time and place.

It is important to delay the enemy as far in front of the position as possible. The more difficult the prospect of the defense of the battle position, the more important becomes this delay. Covering detachments or outposts are pushed well to the front to force the enemy to an early deployment, to delay his advance in the valleys by obstacles and chemical contaminations, and to deceive him as to the location of the battle position.

¶ 660. The battle position is held by combat groups defending the strong points in each terrain compartment. All strong points are organized for all-around defense. The gaps between adjacent strong points are closed by connecting groups armed with machine guns, and are covered by other strong points on dominating terrain in rear.

¶ 661. The artillery, from positions in rear of the main line of resistance, supports the action of the covering detachments and covers their subsequent withdrawal by interdiction fires on the defiles of the hostile routes of advance and counterpreparation fires on the open areas of the valleys into which the enemy endeavors to develop his columns. In the defense of the battle position, the artillery concentrates its fire primarily on the critical localities in the gaps between adjacent strong points, leaving the supporting fires in close defense of these strong points to the heavy infantry weapons. The observation and liaison service of the artillery must be well distributed and so organized that it can keep under surveillance the withdrawal of our advanced covering detachments and the movements of the enemy.

¶ 662. From the beginning of the action, the defense must plan to maintain the integrity of its position by local counterattacks in case the enemy penetrates between adjacent strong points. These counterattacks are prearranged as to direction, objective, and supporting fire so that they can be launched on short notice when the enemy is exhausted and spent in his attack. Because of the local nature of combat, a general counterattack is seldom possible. The reserves will ordinarily be held well forward.

GUERRILLA WARFARE

■ 663. *Guerrilla warfare*, as a type of warfare practiced by recognized belligerents, has its principal application to partisan forces operating against a greatly superior enemy, or to the operations of large forces engaged in suppressing an organized uprising. The partisan operations are conducted for the purpose of harassing or delaying larger forces, causing losses through attrition, interdicting communications, or making incursions on the enemy's lines of communication and supply. The operations of larger forces against an organized uprising are conducted for the purpose of suppressing resistance, occupying the disaffected territory, and reestablishing constituted authority.

■ 664. In the conduct of guerrilla warfare the mobility, enterprise, and reliability of the troops employed are more important than their numerical strength. In general, the best results are obtained by the employment of numerous small detachments under capable and versatile subordinate leaders, all operating under the direction of an experienced superior commander.

■ 665. In planning the guerrilla operations, the essential requirements are good intelligence of the enemy's columns or dispositions and a thorough knowledge of the terrain and road net. Good maps, air photographs, and trustworthy local guides facilitate the terrain reconnaissance. The enemy is kept under constant observation and surveillance to determine his dispositions and to obtain information as to his capabilities.

■ 666. The *attack* on the enemy is made by surprise obtained by deception and ambush. An attempt is made to cut off and surround some part or element of the hostile command; a general engagement is, as a rule, avoided.

After the execution of the attack, all detachments and raiding parties repair without delay by different routes to a prearranged rendezvous or assembly position known to all. The information obtained from prisoners often leads to an estimate of the situation on which the next enterprise is based.

667. The action of all detachments must be coordinated as to time and space. In the case of raiding parties operating against the enemy's rear, arrangements must be made to provide them with the supplies and equipment essential for an absence of several days.

The plan of the commander must provide for assembling the bulk of his command after each enterprise in order to prevent its dispersion and to insure proper direction in the conduct of the subsequent operations. To uphold his leadership and to promote a high morale in his troops, an able commander will avoid decisive action unless assured of a commensurate success in each enterprise he undertakes.

668. In the conduct of operations, full use is made of obstacles to delay the enemy in front while attacking him in flank and rear. Raiding parties operating in the enemy's rear may seriously interrupt the enemy's system of supply by destroying bridges and attacking supply trains. Every effort is made to keep in communication with these raiding parties so that their subsequent activities may be properly directed.

669. By feint and demonstration, by changing methods of combat, and by spreading false information, the attacker attempts to mislead the enemy and create the conditions which favor surprise. An active counterreconnaissance is conducted to defeat the enemy's reconnaissance detachments; his main body is harassed and held in suspense by repeated threats and raids. Whenever practicable, movements and attacks are made at night; during daylight hours, the main forces remain concealed, leaving only reconnaissance patrols in contact with the enemy.

670. In *combatting guerrilla warfare* the factors which usually present the greatest difficulties are deficient communications, scarcity of local resources, and the lack of information.

When roads and trails are few and poor, movement of troops off the principal routes will be difficult. Provision must then be made for pack transport for some parts of the command. The construction and improvement of roads and trails are major tasks of immediate importance.

Scarcity of local resources may impose serious administrative and supply difficulties on the command. A scarcity of water may limit the number and size of troop units that can be employed. Special attention must be given to sanitation and medical aid. Success depends in large measure on the initiative and self-reliance of subordinate leaders.

■ 671. The lack of reliable information requires the early organization of an efficient intelligence service. When maps are unreliable or unavailable, great reliance must be placed on air photographs. Through engineer reconnaissance accurate information is obtained of routes, resources, water supply, terrain, and topography. Reconnaissance detachments obtain information concerning armament, strength, and distribution of the enemy. When operating in foreign territory, special intelligence agents are employed to study the national characteristics of the people, their leaders, their political attitude, and religious practices.

■ 672. As a rule, the enemy will avoid any operations on a large scale and base his tactics on striking a quick blow with surprise against isolated detachments and unprotected columns or convoys. In general, the enemy has the advantage of mobility, better knowledge of the terrain, and relative freedom from a line of communications and supply. While he may be well supplied with small arms he is unlikely to be equipped with aircraft, artillery, and mechanized vehicles.

■ 673. Larger forces engaged in the suppression of guerrilla warfare have the advantage of superior organization, armament, and equipment but are handicapped by lack of reliable information, by dependence on a complex system of supply, and difficulty in bringing the enemy to a pitched battle.

Vigorous and bold action by mobile forces is ordinarily the quickest and surest way of defeating the enemy bands. The greatest difficulty lies in bringing the enemy's principal forces to decisive battle. Usually, this can be accomplished only by an advance along all available routes against the enemy's principal villages and strongholds. Since the attacker is greatly superior in strength and means of combat, encirclement by double envelopment should always be attempted in order to bring about a decisive result.

674. Until the enemy's principal forces are located, only *reconnaissance* and *liaison aviation* are employed for tactical reconnaissance, for mapping by air photography, and for liaison and communication between separated columns. Transport aviation may be employed for evacuation and for supply of isolated columns. Premature air attack by combat aviation may cause dispersion of the hostile forces, thereby protracting the operations and postponing decisive battle.

Mechanized cavalry is valuable whenever terrain is suitable for its employment. In arid country, entire dependence may be placed on mechanized cavalry supported by combat aviation. The principal objective then is the seizure and control of the sources of water upon which the enemy is dependent.

675. The defense against the forays and raids of guerrilla bands is the responsibility of each column commander. Constant vigilance and adequate measures for security are necessary. If hostile raiding parties penetrate into the rear area of the command, an effort is made to cut them off and surround them. For this purpose it may be necessary to detail a special security detachment and hold it in readiness at some convenient road center in rear for rapid movement to intercept and destroy the enemy before he makes good his escape. To insure the prompt transmission of information, arrangements are made for rapid means of communication with the security detachment.

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