

KASSERINE PASS BATTLES



Doctrines and Lessons Learned Volume II, Part 1



U.S. ARMY
CENTER OF MILITARY HISTORY

Contents

1. FM 100-5, *Field Service Regulations: Operations* (Extract), 1941
2. Training Circular No. 31, Employment of Larger Armored Units, 1941
3. FM 100-15, *Field Service Regulations: Larger Units* (Extract), 1942
4. FM 17-10, *Armored Force Field Manual: Tactics and Techniques* (Extract), 1942

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FM 100-5, *Field Service Regulations: Operations*
(Extract), 1941

WAR DEPARTMENT,
WASHINGTON, May 22, 1941.

FM 100-5, Field Service Regulations, Operations, is published for the information and guidance of all concerned. It contains the doctrines of leading troops in combat and tactics of the combined arms and constitutes the basis of instruction of all arms and services for field service. Additional doctrines pertaining to the defense of coast lines and landing operations on hostile shores are discussed in other manuals.

Field Service Regulations will be interpreted in the light of FM 27-10, Rules of Land Warfare. FM 100-5, Field Service Regulations, Operations, should be studied in connection with FM 100-10, Field Service Regulations, Administration, and FM 100-15, Field Service Regulations, Larger Units.

While the fundamental doctrines of combat operations are neither numerous nor complex, their application is sometimes difficult. Knowledge of these doctrines and experience in their application provide all commanders a firm basis for action in a particular situation. This knowledge and experience enable the commander to utilize the flexible organization with which he is provided to group his forces into task units most suitable for the accomplishment of his mission.

Set rules and methods must be avoided. They limit imagination and initiative which are so important in the successful prosecution of war. They provide the enemy a fixed pattern of operations which he can more easily counter.

It is a function of command to coordinate the tactics and technique of the various arms and services so as to develop in the forces employed on a given task the teamwork essential to success.

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BY ORDER OF THE SECRETARY OF WAR:

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CHAPTER 4
THE EXERCISE OF COMMAND

DOCTRINES OF COMBAT

■ 112. The *ultimate objective* of all military operations is the destruction of the enemy's armed forces in battle. The ability to select objectives whose attainment contributes most decisively and quickly to the defeat of the hostile armed forces is one attribute of the able commander.

■ 113. Simple and direct plans and methods with prompt and thorough execution are often decisive in the attainment of success.

■ 114. Unity of command obtains that *unity of effort* which is essential to the decisive application of full combat power of the available forces. Unity of effort is furthered by full *cooperation* between elements of the command.

■ 115. Through offensive action a commander exercises his initiative, preserves his freedom of action, and imposes 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. The selection by the commander of the right time and place for offensive action is a decisive factor in the success of the operation.

Numerical inferiority does not necessarily commit a command to a defensive attitude. Superior hostile numbers may be overcome through greater mobility, better armament and equipment, 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.

■ 116. Concentration of superior forces, both on the ground and in the air, at the decisive place and time and their employment in a decisive direction, creates the conditions essential to victory. Such concentration 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.

■ 117. Surprise must be sought throughout the action by every means and by every echelon of command. It may be obtained by fire as well as by movement. Surprise is produced through measures which either deny information to the enemy, or positively deceive him, as to our dispositions, movements, and plans. Terrain which appears to impose great difficulties on operations may often be utilized to gain surprise. Surprise is furthered by variation in the means and methods employed in combat and by rapidity of execution.

Surprise often compensates for numerical inferiority of force.

Surprise finds the enemy in a state of mental, moral, or physical unpreparedness. Every effort should be made to deny him time to take effective countermeasures. The effect of surprise may be lost through dilatory methods of execution.

■ 118. To guard against surprise requires a correct estimate of enemy capabilities, adequate security measures, effective reconnaissance, and readiness for action of all units. Every unit takes the necessary measures for its own local ground and air security. Provision for the security of flanks and rear is of especial importance.

COMMAND

■ 119. Command is the authority which an individual in the military service lawfully exercises over subordinates by virtue of rank or assignment.

Command and leadership are inseparable. Whether the force is large or small, whether the functions of command are 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.

■ 120. Decision as to a specific course of action is the responsibility of the commander alone. While he may accept advice and suggestions from any of his subordinates, he alone is responsible for what his unit does or fails to do.

■ 121. A willingness to accept responsibility is the foremost trait of leadership. 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 action taken. The criterion by which a commander judges the soundness of his own decision is whether it will further the intentions of the higher commander. Willingness to accept responsibility must not manifest itself in a disregard of orders on the basis of a mere probability of having a better knowledge of the situation than the higher commander. The subordinate unit is a part of a tactical team employed by the higher commander to accomplish a certain mission, and any independence on the part of a subordinate commander must conform to the general plan for the unit as a whole.

■ 122. The commander's mission is contained in the orders which he has received. Nevertheless, a commander of a subordinate unit cannot plead absence of orders or the non-receipt of orders as an excuse for inactivity in a situation where action on his part is essential, or where a change in the situation upon which the issued orders were based renders such orders impracticable or impossible of execution. If the situation does not permit communication with the superior commander and the subordinate commander is familiar with the general plan of operations or the mission of the whole command, he should take appropriate action and report the situation as early as practicable.

■ 123. The situations that confront a commander in war are of infinite variety. In spite of the most careful planning and anticipation, unexpected obstacles, frictions, and mistakes are common occurrences in battle. A commander must school himself to regard these events as commonplace and not permit them to frustrate him in the accomplishment of his mission.

■ 124. Personal conferences between the higher commander and his subordinates who are to execute his orders may at times be advisable, that the latter may arrive at a correct

understanding of the plans and intentions of their superior. Commanders do not justify their decisions to subordinates, nor do they seek the approval of subordinates for their actions.

■ 125. All the troops assigned to the execution of a distinct mission should be placed under one command, to function as a task force for the duration of the operation. So long as a commander can exercise effective command, he does not disturb the established chain of command in his force. In some situations, conditions dictate that attachments must be made to subordinate commands. Such attachments may be necessary in marches, during periods of development, in rapidly changing situations, or in the later stages of any action, and, in general, when better support or coordination can be effected.

■ 126. A commander who is advanced to a higher command should be relieved from the responsibility of direct command of his former unit.

ESTIMATE OF THE SITUATION

■ 127. In any tactical operation the commander must quickly evaluate all the available information bearing on his task, *estimate the situation*, and reach a decision.

■ 128. The commander's estimate of the situation is based on the mission of the unit, the means available to him and to the enemy, the conditions in his area of operations including terrain and weather, and the probable effects of various lines of action on future operations. (See FM 101-5.) On the basis of these factors he considers the lines of action open to him which, if successful, will accomplish his mission, and the lines of action of which the enemy is physically capable and which can interfere with such accomplishment. He analyzes the opposing lines of action, one against another, to arrive at conclusions as to the probability of success for each of his own lines of action. On the basis of this analysis he then considers the relative advantages and disadvantages of his own lines of action, and selects that line of action which most promises success regardless of what the enemy may do. If two or more lines of action appear equally promising, he chooses that one which will most favor future action.

■ 129. The estimate often requires rapid thinking, with consideration limited to essential factors. In campaign, exact conclusions concerning the enemy can seldom be drawn. To delay action in an emergency because of insufficient information shows a lack of energetic leadership, and may result in lost opportunities. The commander must take calculated risks.

■ 130. In considering the enemy's possible lines of action, the commander must guard against the unwarranted belief that he has discovered the enemy's intentions, and against ignoring other lines of action open to the enemy. Even when the weight of evidence warrants the belief that the enemy is committed to a definite line of action, the commander must bear in mind that a change in the enemy's plans may occur at any time.

■ 131. Because of their great mobility and rapid striking power, the capabilities of the opposing air and armored forces and the possible effect of their employment must be continually evaluated. In estimating the capabilities of air, armored, and motorized forces, both friendly and hostile, the commander must be provided with full and up-to-date information on the existing and probable future weather conditions and their effect, both ground and air, on employment of such forces.

■ 132. The estimate of the situation culminates in the decision. A decision once made is not changed without some compelling reason. In combat the will and energy of the commander must persist until the mission is accomplished. Estimation of the situation is, however, a continuous process, and changed conditions may, at any time, call for a new decision. Too stubborn an adherence to a previous decision may result in costly delay, loss of opportunity for decisive action, or outright failure.

TERRAIN

■ 133. That part of the commander's estimate dealing with *terrain* often exercises a decisive influence upon his decision and plan. Proper evaluation and utilization of the terrain reduce the disadvantage of incomplete information of the enemy. The more important features to be considered in evaluating terrain include not only natural ground forms such as mountains, ridges, streams, bodies of water, woods,

and open spaces, but also artificial features such as roads, railroads, and towns. The commander seeks always to utilize the terrain to his own advantage and to the enemy's disadvantage.

■ 134. While the mission of a force is the basic factor in the commander's estimate, this may frequently be resolved into terms of terrain. Thus, in the defense, it may be vital to hold certain dominating ground, or to protect a certain defile. Similarly, in the offense, success may hinge on the capture of such features which then become the immediate objective of the attack. Where possible, it is an aid to proper evaluation of the terrain to reduce the mission to terms of terrain.

■ 135. Maps are the basis for terrain studies, but should be checked by air reconnaissance, air photographs, and ground reconnaissance. Map errors must be expected. Moreover, changes in the terrain, especially in the road-net and drainage system, occur continually.

■ 136. *Terrain* can always be evaluated in terms of the following five factors: observation, fields of fire, concealment and cover, obstacles, and routes of communication.

a. Observation of the battlefield is essential in order to bring effective fire to bear upon the enemy, to control the maneuver of one's own troops, and to prevent surprise by the enemy. It is obtained from commanding elevations.

b. Fields of fire are essential to the defense. On the offensive, the commander seeks to make his main attack in areas lacking in good fields of fire to the defender. Best fields of fire are found in level or uniformly sloping stretches of open ground.

c. Concealment and cover may occur together. Concealment is protection against observation from the ground and air. Cover is protection against fire. The ideal defensive position is one having concealment and cover within but none in front of it. The attack is best favored by terrain affording good concealment throughout the depth of the advance. Concealment and cover, from ground weapons, are to be found in broken wooded terrain.

d. Obstacles are terrain features which impede the movement of military forces. They are of increasing importance in modern warfare where masses of mechanized units are employed. Although chiefly of advantage to the defense, they

may be of great importance in protecting the flanks of attacking units. Some of the common terrain obstacles are mountains, rivers, bodies of water, marshes, gullies, steep inclines, and extensive woods.

e. Routes of communication include roads, railroads, waterways and airways and their facilities. They are important in both offensive and defensive operations for the movement of troops and supplies. Troops in small bodies move across country readily, but in the operations of large bodies of troops, routes of communication are of vital importance.

■ 137. Features such as bridges, streams, woods, and towns divide practically all terrain into more or less separate areas. Such an area frequently consists of a valley lying between two ridges, or an open space between two woods. When the terrain features enclosing the area prevent direct fire and observation into it from positions outside, the area is called a *compartment*.

A compartment of which the longer axis extends in the direction of movement of a force, or leads toward or into a defensive position, is called a *corridor*. In general, a corridor favors the attack because it limits observation and direct fire from the flanks by the defender. From the standpoint of terrain, it is desirable that boundaries between tactical units in the attack should coincide generally with the boundaries of corridors in order that a single unit may control the terrain features from which direct fire can be brought to bear on troops within the corridor.

In the defense, boundaries are usually located within corridors. To assure unity of defensive dispositions, the boundary within the corridor should be so located as to include within the sector of a tactical unit of appropriate size avenues of approach to the position. To locate boundaries within an avenue of approach divides responsibility at critical areas.

A compartment which extends across the direction of movement of a force, or which extends parallel with a defensive front, is called a *cross-corridor*. Cross-corridors favor the defense. However, ridge lines perpendicular to the direction of advance permit an attacker to deal successively with elements of the hostile position. During the advance, these crests offer the attacker facilities for observation and fire, as well as shelter behind which he may reorganize his units.

■ 138. See FM 101-5 for a detailed discussion of terrain.

CONDUCT IN BATTLE

■ 139. The commander's decision for his unit as a whole, and the missions to subordinate units in support of the decision, are communicated to subordinates by clear and concise orders, which gives them freedom of action appropriate to their professional knowledge, to the situation, to their dependability, and to the teamwork desired.

■ 140. After providing for the issuance of 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 established signal communication. 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.

■ 141. Whenever the commander leaves his command post, he should orient his staff as to further plans to be made or measures to be taken in anticipation of future contingencies, and should inform his staff where he can be reached.

■ 142. During the decisive phase of battle, the place of the commander is near the critical point of action.

■ 143. A commander influences the course of subsequent action by his leadership, by the use of his reserves, by the concentration of artillery and other supporting fires, and by the employment of combat aviation and armored units.

■ 144. The duration of a tactical operation can seldom be predicted. Successful engagements sometimes progress so slowly that the gains made are not immediately apparent. At other times, they progress so fast that the gains made can be capitalized only by the most aggressive and farsighted leadership.

Troops are used up rapidly in the decisive phases of combat. This attrition must be anticipated by the commander and his staff who take timely measures for replacement of men, units, transport, and weapons, and for replenishment of ammunition and other supplies. When the situation permits, troops which have been heavily engaged are rested and reorganized before being assigned a new and important mission.

STAFF

■ 145. The staff assists the commander, to the extent that he may require, by providing information, data, and advice; by preparing detailed plans and orders in accordance with his directions; and by exercising such supervision over the execution of his orders as he may prescribe. A staff officer, as such, does not exercise command.

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

■ 147. 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 avoid this expansion.* He must organize his headquarters so as to maintain its readiness for prompt movement.

■ 148. The organization, functions, and duties of the various sections of the staff and the employment and duties of liaison officers are prescribed in FM 101-5.

COMBAT ORDERS

■ 149. The authority to issue orders is an inherent function of command. Orders are normally issued to next subordinate commanders. Bypassing the normal channels of command is resorted to only in urgent situations; in such cases both the commander issuing and the commander receiving the order should notify intermediate commanders of its purport as soon as possible.

■ 150. Orders may be either complete or fragmentary.

The order is *complete* when it covers all essential aspects and phases of the operation. Complete orders include missions to all subordinate units charged with the execution of tactical operations in carrying out the commander's plan.

Fragmentary orders are used when speed in delivery and execution is imperative. Fragmentary orders are issued successively as the situation develops and decisions are made, and consist of separate instructions to one or more subordinate

units prescribing the part each is to play in the operation or in the separate phases thereof. This procedure will be usual in divisions and smaller units. Fragmentary orders may be either oral or written. They are concise but not at the expense of clarity and omission of essential information. Instructions issued in fragmentary orders may be repeated in a complete field order or in an annex if considered desirable.

■ 151. Orders should be originated sufficiently early and transmitted in such form as to permit subordinate commanders the maximum periods to reconnoiter, to estimate their own situations, to issue their orders, and to prepare their troops for the contemplated operation. Commanders should be alert to forestall delays in the successive dissemination of orders in their lower echelons.

■ 152. In many situations it may be necessary or desirable to issue an order to warn of impending operations (warning orders). A warning order contains information which enables subordinate commanders to make preparations for a contemplated operation. Its principal purpose is to gain time for preparatory measures and to conserve the energy of the troops.

■ 153. 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.

■ 154. Orders must be clear and explicit and as brief as is consistent with clarity; short sentences are easily understood. *Clarity is more important than technique.* The more urgent the situation, the greater the need for conciseness 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 an 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. Expressions such as "attack vigorously," if used in orders, are not only verbose and meaningless, but tend to weaken the force of subsequent orders in which such expressions do not appear.

■ 155. Orders should prescribe only so far as conditions can be foreseen. Orders which attempt to regulate matters too far in the future result in frequent changes. Frequent changes in orders 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.

■ 156. As a rule it is desirable to keep contemplated operations secret as long as possible and to confine knowledge thereof to a few staff officers and senior commanders. 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. Ignorance of his intentions may often lead to inactivity on the part of subordinates.

■ 157. It is impossible to prescribe detailed 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. To the extent practicable, however, it has been found efficient and convenient to classify combat orders according to their purpose and scope and, for some of these, to adopt a standard sequence of composition. This makes for ease of understanding, the avoidance of omissions, and ready reference. Moreover, experience has shown that an order which can be misunderstood will be misunderstood and that, to obviate this danger, it is necessary to follow certain rules relating to the designations of boundaries, details of time and place, military terminology, abbreviations, designations of units, and the like. For details relating to these matters, see FM 101-5.

■ 158. *Annexes* may be issued to accompany combat orders, either for brevity, clarity, or simplicity—for example, maps, overlays, photographs, and sketches—or to amplify particular aspects of the operation, if the volume of detail is too great for inclusion in the order itself. The more mobile the operation, the less opportunity there will be for annexes. Where an annex has limited distribution, certain instructions

contained therein must be repeated in order to insure coordination.

■ 159. In every unit, *standing operating procedure* is prescribed by the commander whenever practicable. This procedure covers those features of operations which lend themselves to a definite or standardized procedure without loss of effectiveness. The adoption of such procedures 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. (See FM 101-5.)

COMMAND POSTS

■ 160. For convenience of operation in campaign, the headquarters of a large unit is divided into a forward and a rear echelon. When desirable, headquarters of smaller units may be similarly divided.

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 which have administrative duties.

■ 161. The *command post* is the location of the forward echelon of a headquarters. All agencies of signal communication center at the command post.

■ 162. In the selection of a command post, consideration is given to the disposition of troops in the plan of operations, routes of communication, requirements of signal communication, space for staff activities, cover, and concealment. In the case of divisions and larger units, the presence of existing wire lines is important.

Remote location of a command post with respect to subordinate units places an unnecessary burden on the means of signal communication, delays the transmission of orders and information, and makes tactical control difficult.

Through the use of motor transport a command post can be moved quickly over a considerable distance. Frequent changes in the location of the command post are avoided, particularly in large units. In large units, before a change of location is made, the necessary means of signal communication for the new command post must be established.

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

■ 164. Each large unit announces the location of its command post and, when practicable, the location of the command post of each of its major subordinate units. In rapidly moving situations, it may be necessary to direct subordinate units to select and report the locations of their own command posts. In closely coordinated operations requiring the movement of command posts, each large unit may designate its own axis of signal communication by naming the probable successive locations of its command post, so far as such locations can reasonably be foreseen, and may similarly assign an axis of signal communication to each of its major subordinate units.

■ 165. On the march, a command post may move by bounds along a designated route, or it may move at a designated place in a column.

■ 166. In combat, the location of command posts for small units in proximity to a good observation post, and for large units in proximity to a suitable landing field is desirable.

■ 167. The ability of mechanized units and parachute troops to strike quickly in rear areas indicates the necessity of locating command posts well forward, both in the offense and defense. A forward location assures a certain degree of all around protection by the combat troops; the command post will not so easily be cut off from the units it controls and the nerve center of the command is favorably located to meet rapidly changing situations.

■ 168. The maintenance of secrecy as to the location of command posts, particularly of large units, is of great importance. They are the special objectives of hostile airplanes, mechanized units, parachute troops, and cavalry. This threat makes it necessary not only to provide security against surprise attack from either the air or ground, but also to use great care not to disclose their locations to such troops. Concealment from the air is of major importance. Traffic in and out of command posts is rigidly controlled. Landing fields, dropping and pick-up grounds, and radio stations are placed at a distance. Signs to mark their locations and the

routes thereto are used sparingly—when the danger is great, not at all; in place of signs, guides are posted to point the way and messengers are given more precise instructions.

SIGNAL COMMUNICATION

■ 169. The efficient exercise of command and the prompt transmission of information and instructions require the establishment of reliable means of signal communication. Signal communication is effected by technical means and by messengers. Entire dependence cannot be placed upon any one means; alternate means must be provided. (See FM 24-5 and FM 11-5.)

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

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

■ 171. The various means of signal communication are so employed that they supplement each other. Those requiring great expenditure of effort and matériel are not installed when the service required can be effectively performed by less elaborate means.

■ 172. When headquarters are in movement, signal communication is maintained between and within columns by means of vehicular radio, airplanes, and motor or mounted messengers.

■ 173. The command posts and advance message centers are the control points in the initial installation of the signal communication system. 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, in order to facilitate the prompt establishment of signal communication. The necessary instructions therefor are prepared by the unit signal or communication officer, in accord-

ance with the directions of the commander. Communication officers of higher units maintain close cooperation with the signal or communication officer of the subordinate unit.

■ 174. *Message centers* are operated at the command posts of all units down to and including battalions, and at the rear echelons of headquarters of large units, by the signal communication personnel of the command. Message centers assist the commander and staff by coordinating the transmission of outgoing orders, reports, and other messages with the available signal agencies, and by expediting the delivery of incoming messages. In general, the cryptographing and de-cryptographing of messages are the responsibility of the message center.

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

Advance message centers are frequently employed in the reconnaissance operations of large units as collecting points for messages of several reconnaissance detachments.

■ 176. The message center is not responsible for those messages which are—

a. Transmitted directly by the writer to the addressee by telephone or personal agency.

b. Handled by the military or civil postal service.

c. Local messages between staff sections of the same headquarters located at the same place.

■ 177. The message center transmits messages in accordance with the classification as to urgency indicated by the writer. For classification of messages in accordance with the urgency of handling, see FM 101-10.

■ 178. The writer does not ordinarily designate the particular means by which a message is to be sent. If he desires a message transmitted by a particular means, he so marks it.

■ 179. Means of signal communication include wire, radio, visual and sound communication, pigeons, airplanes, and messengers.

■ 180. Wire communication (telephone, telegraph, and telegraph printer) constitutes the basic technical means of

signal communication for the infantry division and the larger unit headquarters. It will not, however, always be available for signal 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, 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.

Although wire communication is a relatively safe means, there is always the possibility of hostile interception. When such interception is practicable it is inadvisable to employ wire communication for the transmission in clear text of plans which are not to be executed immediately.

■ 181. Radio communication is especially applicable in spanning distances between widely separated mobile forces, between ground and air, and in the fire-swept zone of the forward area. It is less vulnerable than wire communication to hostile fire, and is, therefore, a valuable supplement to wire systems in combat. It is subject, however, to static, to hostile interference, to interception, and to location by the enemy.

Interception of radio messages must be presumed. 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. Radio transmission in the clear is justified in situations when the time available to the enemy is insufficient for exploitation of the information contained in the message.

During certain phases of operations, use of radio must be rigidly restricted or it may even be prohibited by higher commanders.

■ 182. Visual signal communication (lamps, flags, pyrotechnics, panels) is not suitable for long messages or over long distances but finds especial application for communicating within and between small units and with airplanes by a few short signals in accordance with a prearranged code. (See FM 24-5.)

- 183. Sound communication is used chiefly to spread an alarm, as a means to attract attention, and to transmit short, prearranged messages.
- 184. Homing pigeons are a means of communicating from front to the rear when other means have failed.
- 185. Airplane messengers may be employed 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 otherwise accomplished.
- 186. Signal communication between airplanes and ground is accomplished by means of radio, visual signals, and drop and pick-up messages. In combat, dropping and pick-up grounds are established near unit command posts as required. On the march, they are established near the location of higher commanders and at points along the route of march. Dropping and pick-up grounds are identified by the display of panels. Moving vehicles designated to receive dropped messages are provided means by which they can be easily identified from the air. Airplanes in flight may be used to relay radio messages between ground forces.
- 187. Sole reliance cannot be placed upon the technical means of signal communication. Their absence or failure to function does not relieve the commander of his responsibility of keeping higher, lower, and adjacent units informed of the situation. Each commander provides for the transmission of orders, information, and reports by means of messengers.
- 188. Messengers are dispatched by the most efficient means of transport available. In hostile territory it may be advantageous to use airplanes or armored vehicles, or to provide an armed escort. In combat, mounted, bicycle, motorcycle, and motor messengers are employed as far forward as hostile fire and the terrain will permit. Runners are used in the more advanced units.
- 189. For covering long distances, relays of messengers may become necessary. When relays are established, relay (connecting) posts are generally placed at well-marked points on the messenger routes.
- 190. Important messages are often sent by two or more messengers, who travel separately. Officers are employed for

- the transmission of important messages when explanation relative to the situation or additional information is required.
- 191. The officer or noncommissioned officer dispatching a messenger gives him necessary instructions (destination, route, rate of movement, dangerous points to be avoided, place where he is to report after delivery of the message). This is of especial importance when secrecy precautions prevent the use of directional signs. (See par. 168.)
 - 192. Messengers have the right-of-way and must be given all practicable assistance. All commanders will assist messengers in expediting delivery of messages.

by hostile aviation and troops at loading and unloading points afford excellent objectives for attack either from the air or from the ground.

In flight, security is provided for such movements by flying in formation under escort of pursuit aviation, by dispersing, or by flying at night or under other conditions of low visibility.

Loading and unloading points in areas under our control are protected by pursuit aviation and ground forces, including antiaircraft artillery and antitank weapons.

Unloading points within the hostile lines are protected by pursuit and bombardment aviation and by parachute troops dropped in advance augmented, when necessary, by detachments landed on the ground by airplanes. Surprise, boldness, and detailed planning are the essence of such operations.

CHAPTER 9 THE OFFENSIVE

SECTION I

GENERAL

THE OBJECTIVE

■ 450. An objective sometimes may be attained by maneuver alone; ordinarily it must be gained by battle. A sound tactical maneuver has a great influence on the successful outcome of battle.

■ 451. The purpose of offensive action is the destruction of the hostile armed forces. To facilitate the accomplishment of this purpose the commander selects a *physical objective* such as a body of troops, dominating terrain, a center of lines of communication, or other vital area in the hostile rear for his attack. The attainment of this objective is the basis of his own and all subordinate plans. This objective should have the following characteristics:

a. Its capture must be possible within the time and space limits imposed by the assigned mission.

b. Its capture should assure the destruction of the enemy in his position, or the threat of its capture should compel the enemy to evacuate his position.

c. It should produce a convergence of effort.

d. It must be easily identified.

e. Its capture should facilitate contemplated future operations.

■ 452. The objective having been selected, all components are directed in coordinated effort towards its attainment. Actions which do not contribute to this purpose are avoided.

■ 453. Sound tactical maneuver in the offensive is characterized by a concentration of effort in a direction where success will insure the attainment of the objective. On the remainder of the front are used only the minimum means necessary to deceive the enemy and to hinder his maneuver to oppose the main attack.

DISTRIBUTION OF FORCES

■ 454. In the offensive, troops are distributed into two or more principal tactical groupings: one or more *main or decisive attacks* in which the *greatest possible offensive power is concentrated* to bring about a decision, and one or more *secondary or holding attacks* whose mission is to render maximum assistance to the main attack.

Main attack groupings are designed to secure the objective and to destroy the hostile force. Secondary attack groupings are designed to *hold the enemy* in position, to *force him to commit his reserves* prematurely and to an indecisive location, and to *prevent him from reinforcing* the front of the main attack.

■ 455. In each tactical grouping, the mass of the available means of combat is concentrated in a *main effort* and is applied in a *decisive direction*.

■ 456. *Main attacks* are characterized by narrow zones of action, by strong support of artillery, tanks, and other supporting weapons, by effective support of combat aviation, and by deep echelonment of reserves.

■ 457. *Secondary attacks* are characterized by lack of depth, reduction of reserves to the minimum, maximum fire power in the attacking echelon, and by wide zones of action for the attack units. They will therefore usually be assigned limited objectives initially.

■ 458. When it is impracticable to determine initially when or where the main attack is to be made, the commander retains his freedom to act by disposing his forces in great depth, by holding out strong reserves, and by maintaining close control of his supporting weapons.

■ 459. Attacking echelons once committed to action lose their immediate availability for employment in the execution of other missions. Deployed and under fire, they can change front only at the risk of incurring heavy losses. The commander can materially influence the course of an action once begun through the employment of reserves, fire support, and combat aviation.

■ 460. In selecting the direction for the main attack, the terrain must be carefully studied. The choice of the front

on which the main attack and the main efforts of subordinate units are made often is determined by the possibilities which the terrain offers for effective employment of artillery and mechanized units.

Selection of the direction of the main attack also is influenced by the time available for movement before the attack must be launched. In many situations the most rapid and decisive results are to be expected when the main attack is composed principally of large armored units or when such units lead the main attack. Air superiority and effective support of the armored units by combat aviation are essential to the sustained drive of the armored units.

FORMS OF OFFENSIVE ACTION

■ 461. Attack maneuvers are classified as *envelopments* and *penetrations*.

■ 462. In an envelopment, the main attack is directed against the flank or rear of the initial disposition of the enemy's main forces and toward an objective in rear of his front lines. It seeks to surround that portion of the enemy's forces in front of the objective. It is assisted usually by a secondary attack directed against the enemy's front.

A successful envelopment depends largely on the degree of surprise attained and on the ability of the secondary attack to contain the bulk of the enemy's forces. Surprise is secured by maneuvering to avoid observation by the enemy and by deceiving him. Superior mobility increases the prospect of success.

An envelopment avoids attacking on ground chosen by the enemy, and forces him to fight in two or more directions to meet the converging efforts of the attack. An envelopment which strikes the defender's flank or rear so as to avoid any part of his organized front and small-arms fire from that front is preferable. It minimizes losses, handicaps the defender's ability to meet it promptly, compels the defender to meet an attack on ground chosen by the attacker and when successful is more decisive.

■ 463. A *turning movement* is an enveloping maneuver which passes around the enemy's main forces, striking at some vital point deep in the hostile rear. The force making the maneuver usually operates so far from the secondary attack that the

principal tactical groupings are beyond mutual supporting distance (the distance by which forces may be separated and yet permit one to move to the aid of another before it can be defeated by an enemy force); hence, each grouping must be strong enough or mobile enough to avoid defeat in detail. When conditions favor such action, all combat elements of the command may be employed in the turning force, leaving only reconnaissance elements confronting the hostile dispositions. The turning movement is adapted particularly to highly mobile commands, such as cavalry, armored and motorized forces, and forces transported by aircraft. It is invariably employed by highly mobile forces in situations in which the vital objective in the hostile rear can be seized by such a maneuver before it is necessary to involve the enveloping force in a major engagement with the enemy. Deception, secrecy, and mobility are vital to successful execution of a turning movement.

■ 464. When the enemy takes up a defensive position, the commander of the attacking forces should consider the possibility of turning the enemy out of his position and forcing him to withdraw and fight on ground more favorable to the attacker.

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 more mobile attacking forces executes a turning movement against his lines of communication.

■ 465. A *double envelopment* is executed by three principal tactical groups, two enveloping attack forces and a secondary attack force. A simultaneous envelopment of both flanks generally requires considerable superiority.

The command seeking to attack by double development must be deployed or capable of deploying on a broad front against an enemy on a much narrower front or with little capability or room for maneuver. The maneuver is executed by fighting a holding battle with the center while enveloping forces strike on both hostile flanks. When mobile forces are available in reserve, they may complete the envelopment by an attack from the rear. When conditions favor it, this form of maneuver should be used because of the decisive results it promises.

■ 466. An *envelopment of one flank* is executed by two principal tactical groups, the main or enveloping attack force and the secondary attack force. After an initial envelopment of one flank, favorable conditions for passing to a double envelopment through the use of reserves may be created when the success of our troops has placed the enemy in a disadvantageous situation.

■ 467. The enemy's preparations to meet an envelopment of his flank ordinarily cannot be organized as completely as the defense of his front, especially if the envelopment is launched from a locality deep on the hostile flank or rear.

The defender strengthens an unsupported flank by reserves echeloned in depth and in width. When threatened with envelopment he moves them to meet the maneuver. He may attempt to envelop the attacking forces, or to 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 secondary attack. It usually is better to take advantage of the enemy's extension and consequent weakness by retaining a deep formation and to penetrate his thinly held front than to overextend in an effort further to outflank the position. When the enemy extends his position beyond the enveloping forces, particular attention must be paid to protecting the exterior flank by the use of the general reserves of the higher commander.

■ 468. In a *penetration* the main attack passes through some portion of the area occupied by the enemy's main forces and is directed on an objective in his rear. It is characterized by the complete rupture of the enemy's dispositions; the seizure of the objective by operations through the gap; and the envelopment of one or both flanks created by the breakthrough.

The essential conditions for success are surprise, sufficient fire power, especially combat aviation and artillery, to neutralize the front of penetration, favorable terrain within the hostile position for the advance of the attacking troops, and strength to carry the attack through to its objective.

■ 469. When the situation does not favor an envelopment, the main attack is directed to penetrate the hostile front.

Conditions which demand a penetration are enemy's flanks unassailable; lack of time to make an enveloping maneuver. Conditions which favor a penetration are overextension of the enemy; terrain and observation favorable for more effective cooperation of the combined arms. Such an attack often can be organized more quickly than can an envelopment.

■ 470. In the penetration of a defensive position, the main attack is 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, mechanized units, and supporting combat aviation available largely determines the width of the front of penetration. The wider the front of penetration, the deeper can it be driven and the more difficult will it be for the enemy to close the gap. The deeper the penetration, the more effective will be the action of mobile reserves in seizing the objective and rolling up the hostile flanks.

The greatest distribution in depth is placed opposite the prospective front of penetration. The distribution of troops provides for three separate impulses; a break through the hostile position, a widening of the gap thus created by enveloping one or both interior hostile flanks, and the seizure of the objective and exploitation of the success.

The sequence of these impulses depends on the situation. In some situations it is practicable through the existence of weaknesses or gaps in the enemy's front for mobile troops (armored, motorized, or cavalry divisions) to break through and to proceed straight to the objective, while operations of local envelopment and exploitation are performed by less mobile troops. In other situations foot troops must break through, the more mobile troops being held initially in reserve and used later to operate through the gap created by the foot troops.

■ 471. The mission of the attacking echelon of troops is to break through 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 their strength to the attack of the flanks of the gap. Hostile counterattacks against the flanks of the pene-

tration are met by reserves, by the fire of the artillery, and by combat aviation.

The missions of rolling up the flanks of a gap created by penetration and of exploiting the break-through are assigned to reserves. Cavalry, armored and motorized units are especially suitable for seizing the objective and for exploitation. These units are supported by combat aviation operating against hostile reserves and artillery and other important objectives. Troops transported by air may be used to support these operations.

■ 472. In large commands, a penetration often is initiated by launching simultaneously two or more powerful attacks (a *multiple penetration*) against weak localities on the hostile front. Strong localities are contained initially by secondary attacks. When the penetrating attacks have advanced far enough to permit, the interior strong localities are reduced by maneuver, and the penetrating attacks are united into a single main attack. The pinching out of strong hostile localities often is facilitated by launching multiple penetrations in converging directions. The doctrines applicable to a single penetration govern the organization and conduct of a multiple penetration.

■ 473. Whether the maneuver adopted is an envelopment or a penetration, success will depend primarily on intelligent, energetic, and coordinated execution. This execution must be based on a sound plan which is influenced largely by the objective and direction of the main attack.

The doctrines which underlie the employment of the combined arms in the offensive are conservation of the combat power of troops in the attack echelon, provision of assistance for them to close with the enemy, and thereafter support of their attack until the enemy's power of resistance is broken.

FRONTAGES AND DEPTHS

■ 474. The *frontage* assigned to any unit in an attack varies with the mobility, type of armament, mission and combat power of the unit, the terrain, the amount of fire support available, and the probable hostile resistance. As a general guide, an infantry battalion at full strength in a main attack seldom is assigned a *frontage* less than 500 yards or more than 1,000 yards measured on the front of the hostile position.

■ 475. Units are distributed in *depth* to provide flexibility of maneuver, continuity in the attack, and security. For infantry units, depth of formation for combat rather than a wide extension of front is necessary in the initial deployment. The progress of battle will call for maneuvers that cannot be clearly foreseen. This condition can be met only by initial distribution in depth.

Laterally the distribution of troops in attack is governed principally by the doctrine of the main attack and main effort. It is influenced also by the relative advantages offered by different sections of the terrain. When the situation requires an unusually wide extension of the command, the increase is effected by widening the gaps between units.

RESERVES

■ 476. The initial strength and location of the *reserve* will vary with its contemplated missions, the type of maneuver, possible hostile reaction, and clarity of the situation. After the attack is launched the *reserve* and the fires of supporting arms are the principal means available to the commander for shaping the course of action and for enforcing favorable decision.

The primary mission of the reserve is to enter the action *offensively* at the proper place and moment to clinch the victory. Hence its initial strength and location are controlled largely by the maneuver to be executed.

■ 477. In a penetration the reserve must be large enough to exploit the break-through by enveloping one or both of the flanks created and by operating deep in the hostile rear.

To facilitate its rapid movement through the gap the reserve is located generally in rear of the main attack.

■ 478. In an envelopment the reserve must be large enough to extend the envelopment or to exploit a successful enveloping action by operating against the hostile rear. To favor the envelopment the reserve is disposed toward the flank enveloped.

■ 479. When open flanks exist or when there is danger of a hostile threat some reserves are disposed to meet dangerous contingencies.

■ 480. When the situation is relatively clear and enemy capabilities are limited the reserve may consist of a small fraction

of the command disposed to favor the maneuver. When the situation is obscure the reserve may consist initially of the bulk of the command, centrally located and prepared to move to any point on the front or flanks.

■ 481. The location of the reserve should combine a maximum of protection for itself against hostile observation and air and mechanized attack with a road net which facilitates rapid movement to any point of possible employment. Motor vehicles should be held available for the movement of reserves lacking organic means of rapid movement.

■ 482. Choosing the proper time at which the reserve should be used is often the commander's most difficult and most important decision.

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 dribbles is avoided. Commanders endeavor to reconstitute reserves from troops which the course of the action has made available.

COORDINATION

■ 483. The commander is responsible for coordination of the action of all elements of his command.

■ 484. In all cases the highest degree of coordination permitted by the situation and time element is sought. The considerations discussed below are applicable in general to situations in which thorough coordination can be prescribed. In other situations they are applied to the degree practicable.

■ 485. Against a strong enemy a decision to develop and deploy for attack directly from march columns risks loss of control and sacrifices some of the capabilities of artillery, tanks, and other supporting weapons. Ordinarily an attack in a moving situation may be organized and *coordinated* in *assembly positions*.

■ 486. From a march formation the commander develops the main body for a coordinated attack by assigning march objectives to the larger units, usually the assembly positions they are to occupy, and routes or zones of advance thereto. The development order announces the missions of units

already engaged, the missions of the artillery, the dispositions of the main body, the security measures to be taken, and instructions for further reconnaissance. It provides for essential administrative details so that the necessary preparations can be made. Instructions given in the development order are as complete as possible so that the attack order may be brief. For movement to assembly positions and security during development, see paragraphs 364-369, and 436-438.

■ 487. The location of assembly positions is dependent on several factors. Darkness, cover from observed hostile artillery fire, a thorough knowledge of the situation, and a plan of attack already decided, favor advanced positions located in conformity with the plan of maneuver. Conditions the reverse of these indicate the selection of assembly positions well back.

Units of high mobility such as tanks, cavalry, and armored forces may complete their development and preparations for battle at greater distances from the hostile front.

If the plan of attack involves an enveloping maneuver, the assembly position of the enveloping force is set off at a sufficient interval from the troops in the secondary attack to preclude interference between units when deployed for attack.

■ 488. Subordinate commanders assigned assembly positions may in turn assign more advanced assembly positions to the component units of their commands as knowledge of the situation and of plans becomes available. The final assembly position of an infantry battalion in the attack echelon usually is in the most forward concealed position available in rear of the line of departure. It should afford cover from hostile small-arms fire.

■ 489. While units are moving into and during the occupation of their assembly positions the commander prepares his orders and completes arrangements for the execution of his plan of maneuver.

Commanders of troops in the attack echelon and the commanders of units designated to support them coordinate the action of their units. Reconnaissance is initiated by all commanders prior to arrival in their final assembly positions.

■ 490. As each unit arrives in its assembly position, measures are taken immediately for security and for clearing the roads.

Signal communication is established without delay between the superior command post and the major subordinate units. Equipment not essential to combat is disposed of, extra ammunition is issued to troops, reconnaissances are completed, coordination of the plans of maneuver and plans of fire of subordinate units is completed, and attack orders are issued promptly.

■ 491. Development of the command terminates with the troops distributed in accordance with the plan for their employment, and in an approach march formation favoring rapid deployment.

■ 492. Should the commander decide that rapidity of action is essential to retain a tactical advantage, he may dispense with assembly positions, decentralize operations to combat teams or task forces, and issue orders to those units to develop and attack.

■ 493. Subordinate units to be deployed for attack ordinarily are assigned a *zone of action* and a *direction of attack* or an *objective*. Zones of action regulate the limits for battle reconnaissance and combat of the unit. It is not necessary that troop formations extend across the entire zone of action of a unit as part of the zone of action can often be covered by fire, by small patrols, or by both. 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 are 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 ordinarily is not bounded. In some situations, the designation of the objective is sufficient to indicate the zone of action. In large units the designation of objectives and boundaries may be made from the map; in small units these designations are made on the ground. *Points designated should be identified easily on the ground.*

Zones of action should extend through the depth of the hostile position at least as far as the location of the hostile artillery. Important localities and terrain corridors commensurate with the size of a tactical unit should lie wholly within the zone of action of that unit. If it is desired that an adjacent unit render special assistance to another in the

attack, this assistance should be clearly stated. During the progress of combat and especially when reserves are committed to action appropriate changes in zones of action are made.

To take advantage of favorable routes of approach units may move temporarily into adjacent zones. Such movement must not interfere with the action of adjacent units or result in a dangerous massing of troops. The emplacement and movement of artillery and other supporting weapons in zones of action adjacent to the zone of the units they support are permissible, but must be carefully coordinated. (See par. 538.)

The battalion is ordinarily the smallest unit which is assigned a zone of action. Smaller units are usually assigned directions and objectives.

When lateral boundaries are not clearly defined they are supplemented by assigning compass directions of attack. This is particularly important in small units.

When tactical groupings are separated initially by wide intervals and the direction of their subsequent maneuvers cannot be foreseen, designation of a boundary between them may be withheld until a later phase of the action. In such situations it frequently will be necessary to establish a limiting line between them for coordination and control of their supporting fires.

■ 494. A *line of departure* usually is designated from which the attacking troops are launched at the prescribed hour or separate lines of departure and hours are assigned to the several attacking units. The purpose of the line of departure is to coordinate the advance of the attack echelon so that its elements will strike the enemy in the order and at the time desired. This line should be recognized easily on the ground and should be approximately perpendicular to the direction of attack.

■ 495. The *time of attack* is the hour at which the attack is to be launched. If a line of departure is prescribed, it is the hour at which the line is to be crossed by the leading elements of the attack. It is determined by the time required for commanders to make the necessary reconnaissance, prepare plans, and issue orders; for the cooperating arms to coordinate their plans; and for the attack echelon to organize its attack and move to position.

The secondary attack may precede the main attack to force the enemy to commit the greatest possible portion of his forces against that attack, or the main and secondary attacks may be launched simultaneously.

Unity of effort is promoted by assigning subordinate units objectives which insure mutual support and 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 be such as to build up the main effort of the tactical grouping in accordance with the intentions of the superior commander.

The commander must endeavor constantly to prevent the attack from breaking up into a series of uncoordinated combats.

■ 496. The *degree of surprise* attained is dependent in a large measure on the coordination and timing of the measures taken to deceive the enemy. Ruses, demonstrations, feints, and other measures for deception executed at the wrong time and place will be obvious to an alert enemy and will warn him of the impending attack. Superior mobility and speed of execution may be determining factors in achieving surprise.

■ 497. The best guarantee for success in the attack is effective cooperation between the troops in the attack echelon, the supporting artillery, and any supporting combat aviation. The superior commander coordinates the fire support of his artillery with the plan of maneuver of the attacking troops. Acting through the commander of supporting combat aviation he coordinates the fire support of the combat aviation with the fire of his artillery, his plan of maneuver, and his plan of employment of mechanized units.

■ 498. To assure close cooperation with the attacking troops, *artillery units* assigned to direct support of designated units maintain constant connection with supported units through common command posts or by liaison agents. 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.

■ 499. The command post of the division artillery is at the division command post. The same rule applies in the case

of the senior artillery commander of a smaller force of combined arms.

Subordinate artillery commanders establish their command posts where they can exercise tactical command and fire direction most effectively. If an artillery commander locates his command post at a place other than the command post of the supported unit, he establishes liaison and maintains signal communication with the commander of the supported unit.

■ 500. The commander of the supported unit informs the supporting artillery commander of the situation, his plan of attack, and the artillery support desired. The supporting artillery commander informs the commander of the unit of the number and general location of his batteries, the present location of the artillery observation posts and those that must be seized during the advance, the terrain which the artillery commands with observation and fire, and the means by which the artillery can most effectively support the attack. (See par. 528.)

Based on this exchange of information, the associated commanders arrange the plan of fire support to be given by the artillery during the attack.

The artillery commander must comply with the requests of the supported unit commander 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 reports the situation to the commander ordering the mission and then complies with the resulting decision. If the urgency of the situation precludes 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.

As a rule a liaison section is assigned to each infantry battalion or cavalry regiment. A mutual obligation rests upon the commanders of supported and supporting units that liaison once established is maintained. It is essential that the supporting artillery know at all times the location of the leading elements of the attack echelon and be kept informed of the plans of the supported unit.

■ 501. The fire of other supporting weapons is coordinated with that of the artillery. The fire of these weapons supple-

ments the artillery fire of direct support chiefly by engaging targets in the immediate foreground whose neutralization by artillery might endanger the attack echelon, and targets within range on which artillery fire cannot be placed.

■ 502. The action of *combat aviation* in support of ground troops is closely coordinated with the plan of attack. Its first objectives are those hostile elements, the destruction or neutralization of which will contribute most toward a successful attack. During battle, combat aviation is especially useful as a means, immediately available to a commander, to exploit a success, to correct an adverse situation, to attack reserves or reinforcements or to support ground troops in overcoming unexpected resistance. *Its employment to complement the fire of artillery in a crisis or in fast moving situations is habitus especially in attacks by tanks and armored forces.*

■ 503. To assure effective cooperation, supporting combat aviation should operate from landing fields within short flying time of the zone of action and must be included in the air-ground radio net and wire net of supported units. To facilitate coordination of its effort with that of the ground troops, a liaison officer from supporting combat aviation should be with the supported unit. Supported ground troops must keep supporting combat aviation informed of the location of leading elements and of plans of maneuver and fire. It is especially important that adequate means of identification of friendly ground troops be carefully arranged and coordinated.

■ 504. An integration of the attack into a unified whole requires complete coordination and cooperation, prior to and during the operation, between supporting tanks, artillery, and combat aviation. (See chs. 2 and 16.)

■ 505. Because of the difficulty of establishing and maintaining effective chemical concentrations in mobile operations, use by the attacker of *chemical agents* other than smoke is limited. Smoke must be carefully employed in respect to both time and space and must be closely coordinated with other supporting fires and with the action of tanks and supporting aviation. Under favorable conditions of wind and weather, smoke is used to blind hostile observation posts, anti-tank guns and infantry supporting weapons, to conceal the

approach of the attack echelon, and to protect the flanks of the attack. It is especially useful during short periods when troops must cross exposed ground.

■ 506. As soon as the commander has made his decision, he completes his plan of attack and issues his *attack order*, wherein he prescribes the necessary coordination for the action. (See FM 101-5.)

■ 507. When conditions limit the ability of the commander to exercise a timely and direct influence on the action, the initiative of subordinates must be relied upon to a great extent. The commander issues less detailed orders to those tactical groupings over whose action he can not exercise a direct influence and attaches to them the means necessary to accomplish their tasks. He remains with and personally directs the action of the troops whose mission is of decisive importance to the action. This method of conducting an operation is most prevalent in pursuits, in opening phases of a meeting engagement, during crises of battle, and in envelopments in which the main and secondary attacks are separated by wide intervals. The greatest degree of coordination possible is prescribed initially; complete coordination is accomplished as soon as the course of action permits. (See par. 125.)

■ 508. Coordination is assured by *command and staff visits* to subordinates to see that orders are understood and are being carried out.

SECTION II

ATTACK IN WAR OF MOVEMENT

■ 509. A *meeting engagement* is a collision between two opposing forces more or less unprepared for battle. Ordinarily, the collision is caused by uncertainty or obscurity in the situation. This aspect is often present in the operations of small units and in situations where the means of reconnaissance have failed or are unable to operate.

A meeting engagement may ensue when each opponent is cognizant of the other, yet both decide to attack without delay to retain some tactical advantage, to gain a decisive terrain feature, or from a feeling of superiority. It may occur when one opponent decides to deploy hastily for defense while the other attacks before this defense can be organized.

■ 510. In open warfare, *immediate orders* and *rapid action* are essential. By the prompt exercise of initiative, endeavor must be made to deprive the enemy of his freedom of action and prevent the coordinated employment of his forces. A great advantage accrues to the force which first succeeds in making effective preparations. Action cannot be delayed awaiting the results of detailed reconnaissances. Prompt estimate of the situation, quick decision, and prompt attack are essential to success.

The tactical situation which develops on first contact has a strong influence on the subsequent course of action. Commanders must be well forward when the enemy is engaged; otherwise, units may be employed improperly.

Opportunities for decisive action must be exploited immediately. The rapidity of modern combat frequently makes the time element decisive.

■ 511. Open warfare requires the widest possible exercise of *initiative* by commanders of all echelons in the execution of the general mission assigned to the command.

Information gained by reconnaissance agencies during the advance 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.

■ 512. As soon as the prospect of an engagement becomes apparent, the superior commander initiates plans for the operation and disposes his command to facilitate its rapid entry into action. One or more advance message centers are established to facilitate prompt signal communication.

Early and rapid transmission of orders to elements of the main body is essential to an orderly and timely employment of the command, and may be vital, particularly in columns of high mobility.

■ 513. Initial orders 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, and the time required for, execution.

■ 514. When timely information of the enemy is lacking, subordinate commanders are relied upon to exercise their initiative and make important decisions in consonance with

the general mission and the intentions of the superior commander. Without delay, the superior commander coordinates the action which his subordinates have initiated. (See par. 507.)

■ 515. Employment of the *advance guard* is the commander's first problem and is the basis for the employment of the remainder of the main body. When contact is imminent or when entering the zone of effective hostile artillery fire the advance guard moves forward on a broad front. When hostile resistance is encountered, the advance guard must secure possession of terrain that will afford good observation for the artillery and other supporting weapons, and gain the time and space required for the development and deployment of the main body. These missions require aggressive action against the enemy's leading troops. Unfavorable terrain or an encounter with superior hostile forces may make a temporary defense or a limited retirement advisable to preserve the commander's freedom of action. However, all advance-guard actions are characterized by speed and aggressiveness, by broad fronts, and by small or no reserves.

The advance guard performs its mission most effectively when, after securing possession of the essential terrain features, it is disposed to protect the deployment of the main body. Its artillery deploys on a broad front, opens long-range fire on enemy columns forcing them to an early deployment, and interdicts the principal routes of approach.

The advance guard is strongly reinforced by artillery from the main body and by supporting combat aviation. It is reinforced with other elements of the main body only when the situation *clearly* demands it.

■ 516. *Cavalry*, after withdrawal from the front of advance-guard infantry, may be employed on the flanks to screen our own dispositions, to execute reconnaissance or harassing action against the hostile flanks and rear, or may be held in reserve.

■ 517. The speed of modern offensive operations demands that supporting artillery be prepared to react immediately with fire when opportune targets are presented. To do this artillery observation and positions must be as far forward as possible.

Early entry into action of the bulk of the artillery with the

main body is essential to protect the development, to give support and cohesion to the advance-guard action, and to gain an early superiority over the hostile artillery.

It may be necessary for a portion of the artillery to occupy temporary firing positions to insure that troops do not come under hostile fire without artillery protection.

■ 518. The artillery preferably is deployed initially so that it can protect the development and support the attack from the same position areas. When initial positions are too distant, the artillery in direct support must so displace forward as to assure close support of the attack echelon.

While other troops are organizing their attack, the artillery completes preparation of firing data and arrangements for supporting the attack. Observation aviation is placed at the disposal of the artillery commander in order that the hostile artillery and large troop assemblies may be located and fire conducted on important targets at long range.

■ 519. In accordance with his estimate of the situation, the commander develops the main body and organizes a coordinated attack, or attacks directly from march columns with a part of his command and organizes a more coordinated attack with the remainder, or attacks with his whole force from march columns as units become available. (See pars. 485-487, 492, and 507.)

■ 520. Regardless of whether the attack is launched from assembly positions or directly from march columns, the method of approach to the hostile position is the same. Each battalion of the attack echelon moves to the most advanced position in which it can make its final preparations under cover from hostile small-arms fire.

The commander of each attack unit directs its advance in the assigned zone of action so as to be able to cross the line of departure at the prescribed hour. Each attack unit reconnoiters its zone of action and supports the reconnaissance elements with its supporting weapons. To keep troops in hand prior to contact with the hostile forces, a base unit is usually designated on which the other units regulate their advance from one terrain line to the next. Terrain features which afford extended observation, or which are otherwise of tactical importance, are the objectives of each bound.

■ 521. Whether an offensive battle is the result of a meeting engagement or is based on the attack of an organized position, the *conduct of the attack* from the time the enemy is engaged until he is defeated is essentially the same. What difference there is exists in the coordination, power, and speed developed in the opening phases. (See pars. 535-572.)

SECTION III

ATTACK OF AN ORGANIZED POSITION

PRELIMINARY OPERATIONS

■ 522. Ordinarily the defender will attempt to screen his main position and deceive the attacker regarding his dispositions by the employment of covering forces. A thorough reconnaissance of the hostile position and its foreground is of primary importance. This reconnaissance seeks to determine the location, depth, and extension of the hostile position, the hostile occupation of the position, contaminated areas, the location of the hostile artillery, and natural and artificial tank obstacles. It involves a thorough study of the map and air photographs of the enemy's combat zone, and the use of available air and ground reconnaissance agencies.

■ 523. If air reconnaissance and advance detachments fail to establish definitely the main hostile position, the leading troops are reinforced strongly by artillery, combat aviation, other supporting weapons, and, if necessary, by tanks. Rifle reinforcements are held to a minimum. The reinforced leading troops execute a *reconnaissance in force* against critical points in the enemy's outpost zone to drive in the enemy's covering forces and determine the hostile main position. Their mission is to seize the terrain which will permit the proper deployment of the command and permit observation of the hostile battle position.

When the leading troops finally encounter a well-organized system of defensive fires of hostile artillery and other supporting weapons, it may be taken as a reliable indication that the hostile battle position has been reached. The leading troops establish themselves on the critical points and cover the deployment of the mass of the artillery.

■ 524. During these preliminary operations, cavalry and other troops seek to locate the flanks of the hostile position. The

leading elements are protected from hostile counterattack by strong supporting fires and by the presence of other units moved to concealed positions within supporting distance. The remainder of the command is held in readiness beyond the range of effective hostile artillery fire. Necessary measures are taken to protect it against air attack and attack by mechanized units.

■ 525. Reconnaissance is continued to obtain information as a basis for the conduct of the attack. This reconnaissance provides more detailed information for the assignment of objectives and as a basis for the plan of fire of the artillery and the other supporting weapons.

Reconnaissance of the terrain must determine the most favorable routes of approach to the hostile position, the nature and strength of obstacles, and the possibilities for employment of mechanized units.

Air photographs of the hostile main position are distributed to subordinate commanders.

The terrain over which the attack must pass is studied on the ground and from air photographs to determine the terrain compartments which the defender has organized for defense and can cover with defensive fires, and the areas in which the attacker can advance best 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.

■ 526. Determination of the weak points in the enemy dispositions is of vital importance. By fire of artillery and other supporting weapons delivered from different directions, and by feints and raids, effort is made to ascertain the enemy's dispositions and his plan of defensive fires.

PREPARATIONS FOR ATTACK

■ 527. Based on the estimate of the situation, the main attack is made either as an envelopment or a penetration. A carefully coordinated attack is required. Orders are issued for the preparations for the attack and for the measures for secrecy and deception to be adopted.

Preparations for the attack include the completion of the signal communication system, organization of the command

for combat, provision for ammunition supply, and the regulation and coordination of supporting fires of all arms.

Special consideration is given during the preparation to measures designed to insure the continuity of the attack. Adequate provision is made for placing in readiness the necessary material and engineer units to destroy obstacles, assist the advance of tanks and heavy weapons, and for the construction of roads connecting our own system with that of the enemy.

All preparations for the attack are completed as far as practicable before the occupation of final assembly positions. Preparatory measures likely to betray the imminence of the attack are carried out secretly or are deferred as long as possible.

Restrictions are imposed on those activities within our front lines and in rear areas, which may disclose, to hostile reconnaissance, operations for the attack. Strict surveillance is imposed on the use of radio communication.

■ 528. The plan of attack consists of the *plan of maneuver* and *plan of fire*. The attack unit, artillery, and supporting combat aviation commanders make detailed arrangements for coordinating the action of their units to carry out the common mission. (See pars. 498-500.)

In coordinating their plans, it is essential that the supported and supporting commanders carefully study the successive compartments of terrain in which hostile resistance may be encountered and identify the successive intermediate objectives of the attack.

An agreement is reached relative to the known targets to be taken under fire respectively by the artillery, by combat aviation, and by the other supporting weapons. Areas to be kept under surveillance for targets appearing after the attack is launched, especially those targets in adjacent zones which are dangerous to the advance, are agreed upon. Associated commanders must arrange for mutual reinforcement of fire.

■ 529. Attack unit commanders must receive early information of their *assembly positions* and *zones of action* in order that they may make their own reconnaissances and formulate plans.

Attack units usually move at night into final assembly positions, preparatory to an attack the next morning. Move-

ment of units into their assembly positions by day generally is practicable only when visibility is poor or when overwhelming artillery and combat aviation support is available.

When tanks are employed, their assembly positions and routes of approach are reconnoitered, marked, and prepared.

■ 530. The first *mission of the artillery* is to protect the movement into and the assembly positions of attack units. During this phase, hostile artillery and observation posts constitute its principal targets. Registration fires should be conducted so as not to disclose the impending attack. The artillery gives special consideration to those measures which will 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.

■ 531. *Artillery positions* are selected so that fire can be concentrated on the objectives of the attack. Defilade, concealment from air reconnaissance, and proximity to observation are sought. Sufficient time is allowed for the preparation of firing data, establishment of signal communication, and organization of the artillery ammunition supply.

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 artillery is regulated to avoid interfering with the attack echelon in its occupation of final assembly positions. Long-range artillery is placed well forward to be able to take under fire the most distant echelons of the defender's light and medium artillery.

■ 532. During the advance of the attack echelon from 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 attack. It rarely can be attained after the attack is launched.

Located hostile batteries are silenced early in the artillery action. Their neutralization then is maintained by a portion of the artillery in order that the mass may be employed on other missions until again required for counterbattery fire as new hostile batteries are located. If counterbattery fire is unable to gain superiority over the hostile artillery, neutralization of the hostile observation just prior to the attack is of great importance.

■ 533. Artillery fires prior to the hour of attack may be limited to normal fires already in progress, or the attack may be preceded by an *artillery preparation*.

The duration of the preparation varies with the situation. A prolonged preparation is destructive of surprise and gives the enemy time to take countermeasures. The length of the preparation is influenced also by the extent to which tanks are to participate in the attack and the role assigned to them. The duration of the artillery preparation may vary from 15 minutes to several hours.

The nature of the artillery preparation depends upon its mission. Concentration of effect is greatly favored by dividing the preparation into *phases*.

The object of the *first phase* of the preparation is to neutralize the defender's artillery, destroy the most important hostile agencies of command and fire control, isolate the defender's forces from the rear, disrupt assembled hostile mechanized forces and protect our troops from the enemy's counterpreparation fires. Artillery fire of the first phase comprises counterbattery fire; destruction fire on command posts, observation posts, and signal communication installations; interdiction and destruction fire on enemy routes of communication; destruction fire on mine fields and hostile obstacles; and concentrations on the hostile defense areas and assembled mechanized units.

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 defense areas.

■ 534. During the preparation, other supporting weapons fire on sensitive points in the advanced zone of resistance. Supporting bombardment aviation is concentrated against hostile artillery, signal communication centers, and reserves, with particular attention to mechanized units which cannot be covered effectively by artillery. During the last few minutes of the preparation bombardment aviation is concentrated upon the hostile defense areas.

CONDUCT OF THE ATTACK

■ 535. The attack is characterized by the positive action of fire and movement, combined and controlled to create a preponderance of force in the decisive direction.

■ 536. The attacking echelon advances from its final assembly positions so as to cross the line of departure at the prescribed time. Any mass formation of units runs grave risks of incurring heavy losses from hostile counterpreparation fires and air attack. The leading echelon is therefore thin initially; its fire power is gradually built up as the enemy discloses his plan of defense.

When *fire superiority* has been gained, the leading echelon closes to assaulting distance.

■ 537. Superiority of fire rests chiefly upon the mutual support of units in the attacking echelon, and the coordination of their action with the fire support of artillery, bombardment aviation and supporting tanks. It depends not only on volume of fire but also on its direction and accuracy.

Fire effect is increased by enfilade action. Flanking or oblique fire is especially effective when frontal fire is delivered simultaneously against the same objective. A convergent fire forces the enemy to defend himself against attack from several directions and creates a powerful moral as well as material effect.

Units seek to gain flanking fire by enveloping action. Flanking fire is also secured through the lateral echelonment of supporting weapons with respect to the units they support. 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 attack echelon. Light machine guns of rifle units follow the leading elements closely in order to take advantage of and deliver flanking fire through the gaps along the front. Units which have succeeded in gaining advanced positions deliver flanking fire across the front of adjacent rearward units.

Lateral echelonment of artillery for purposes of flanking fire increases the difficulties of fire control and of liaison between the artillery and supported units. The fire of supporting artillery is more reliable and effective when its positions and observation posts are in the zone of action of the supported unit.

■ 538. The attacking echelon advances to assaulting distance of the hostile position under its own and supporting fires. Until the main hostile resistance is broken, attack 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 an attack 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 units.

■ 539. Troops transported by air may be employed to seize, hold, or destroy objectives which contribute directly to the success of the main attack.

■ 540. Artillery and other supporting weapons insure continuity of support by displacing forward in groups (by echelon), while the bulk remains in position and maintains fire. Fire is lifted successively to more distant targets as the attacking echelon becomes endangered by it. When supporting artillery, heavy machine-gun, and mortar fires are lifted from the hostile position to permit the attacking echelon to close with the enemy, the loss of this support must be compensated for by the increased fire of the lighter weapons and by the cooperative action of tanks. (See ch. 16.)

■ 541. Artillery supports the attack through the depth of the hostile position by successive concentrations in accordance with the requests of the supported commanders. Concentrations of artillery fire are regulated to bring the greatest possible volume of fire on objectives of decisive importance at the critical moments of the attack. Attack units take immediate advantage of artillery fire effect to gain ground to the front. The artillery is prepared for early movement forward to maintain close support as the attack progresses. Essential fire missions of units being displaced are distributed to units in position.

■ 542. Artillery must employ all means at its disposal (observers, liaison sections, airplanes, wire and radio communication to attack units) to obtain exact information of the location of the front line. The attacking units must cooperate by employing all means of transmitting information to the artillery (display of panels, pyrotechnics, and various other means of signal communication). When uncertain as to the location of the attack echelon, direct support artillery takes immediate steps to establish close contacts with those elements.

■ 543. During the attack, the supporting fires are concentrated against the fronts where the attacking echelon is making the greatest progress. Artillery fires are supplemented by fires of other supporting weapons. The fire of these weapons is used to increase the density of the artillery fire or is placed on those areas and targets which can not be effectively engaged by the artillery. When the attack echelon arrives close to the hostile position, the fire of all artillery, including that in general support, is concentrated on rearward hostile defense areas.

■ 544. The primary purpose of close supporting 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 supporting and supported commanders. It may be regulated by a time schedule based upon the probable rate of advance of the attacking troops, by signal given by assaulting troops, or by a time schedule based upon a desirable duration of the fire.

Other fire is placed on critical points in the hostile position to protect the attack echelon from hostile long-range and flanking fires and from counterattack. It is lifted to correspond with the advance of the attacking echelon.

■ 545. Each attack unit uses the close supporting fires of its artillery and other supporting weapons to close with the enemy and to push on to its successive objectives without deviating from the prescribed general direction of attack.

■ 546. Combat aviation supports the attack through the depth of the hostile position. Commanders of the supporting aviation thoroughly familiarize themselves with the terrain in the zone of the attack. Supporting combat aviation is concentrated over that part of the hostile front where the attack seeks decisive results. Its operations are coordinated to provide the maximum support at the time the ground forces launch the attack.

■ 547. The attack must not permit its advance to be long arrested by hostile chemical concentrations. Contaminated terrain which cannot be avoided is posted and passed with the protection of gas masks.

■ 548. 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 may find a favorable opportunity to attack the hostile resistance in flank. In a penetration, once minor resistances have been overrun, the outflanking action of small units is the most effective means of reducing the stronger hostile defense areas.

■ 549. An attack seldom is executed exactly as planned. As long as the enemy has any freedom of action, unexpected difficulties are encountered which culminate in a crisis. The approach of this critical phase of the attack must be recognized by the commander so that timely measures can be taken to shape the course of action to secure a favorable outcome or to prevent a reverse. (See pars. 476-482.)

■ 550. When the attacking echelon approaches assaulting distance, observation aviation is employed to observe especially the situation of our own and the hostile advanced elements. Observers on this mission report to the division commander and the commanders of infantry units the points where the attack is stopped and those where penetrations have been effected, hostile counterattacks, and other features of the situation of our own and the hostile advanced elements. Other observers continue to inform higher commanders concerning developments farther in rear of the battle front such as shifting of hostile reserves, arrival of reinforcements, train movements, and the like. From these reports and other information, commanders 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. Combat aviation is effectively employed to attack enemy reserves and counterattacking forces.

■ 551. In an attack of a stabilized front, the approach has already been effected and the attack opens with a coordinated assault. The hour of the assault is fixed by the commander of the whole front from which the assault is to be launched. The exact day and hour is kept secret until the latest practicable moment.

■ 552. On a stabilized front, the period during which the opposing forces have been in contact makes available more detailed information of the enemy's defensive dispositions. The completeness of information will depend upon the length of time the front has been stabilized and the efficiency of intelligence measures. Available information is augmented by continuous reconnaissance. Reconnaissance throughout preparation for the attack is conducted in such manner that the appearance of normal activity is maintained. Information is disseminated in the form of intelligence summaries, maps, and air photographs.

THE ASSAULT

■ 553. Against a strong resistance and well-organized defense, the superior commander will prepare the assault of the first hostile organized line of resistance by concentrating the firepower of all supporting weapons, including combat aviation, to neutralize the enemy and wear down his power of resistance before launching the assault. After the first onrush, a series of local assaults delivered by units of varying strength on their own initiative continues the action. Each unit delivers its assault at the earliest moment that promises success.

The commander of the unit will have arranged to deliver the assault on a time schedule, or will notify the supporting weapons, by a prearranged signal, that he is about to assault. The intensity of supporting fires is increased. Under cover of the supporting fire, the assault unit advances close to its objective. When the supporting fires are lifted from the objective the assault unit overruns the hostile resistance in a single rush. Any delay in launching the assault after the fires lift allows the enemy to man his defenses.

CONTINUATION OF THE ATTACK

■ 554. After the assault of an organized position the attack often breaks up into a series of separate combats which are continued throughout the depth of the hostile position. These combats are directed by subordinate commanders within their zones of action and are supported by all the means at their disposal. The first task is to capture assigned objectives. Resistances are reduced by fire or are outflanked.

The utmost importance attaches to maintaining the continuity and direction of the attack by the timely movement

and employment of reserves and by the timely displacement of the artillery and other supporting weapons. Reserves are disposed behind points where the greatest progress is being made, to protect the flanks of the leading units and support them in the repulse of counterattacks. Artillery and air observers search 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 captured terrain is organized for defense and held until the attack can be continued.

■ 555. The enemy's reaction following the successful assault of his main line of resistance, road conditions, and the possibility of maintaining ammunition supply determine when and in what strength the artillery will be moved into advanced positions.

Artillery executes 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 fire require considerable time. Nevertheless, change of position should unhesitatingly be made when fire effect or deficiency in liaison with the attacking echelon requires it. Changes of position generally are effected by echelon after timely reconnaissance of advanced position.

Artillery promptly fires upon enemy troop assemblies, troops forming for counterattack, and on any rearward position on which the enemy attempts to reconstitute his defense.

■ 556. If the tide of battle turns against the enemy, he may endeavor to disengage his forces and renew the defense on a rearward position or he may fight a delaying action until battle can be renewed under conditions more favorable to him. Ordinarily, the enemy will strive to hold out until nightfall and effect his withdrawal under cover of darkness.

Frequently the enemy will disclose his intentions to withdraw. Attacking troops must exercise great vigilance in observing the conduct of the enemy in their front, press their attack with energy and maintain close contact with him. Observation aviation searches the rear areas for indications of retrograde movements of artillery and trains.

■ 557. If the enemy succeeds in withdrawing his major forces from action, the commander intensifies reconnaissance to obtain the necessary information on which to decide what

line of action to follow. Aggressive action may prevent the enemy from reconstituting his defense on a rearward position. If the enemy succeeds in occupying a new position during darkness, a renewal of the attack in force must be delayed until daylight.

It may be of great advantage to regroup the attack forces during the advance to the new position and launch the main attack on another part of the front. Effort is made to exploit the moral ascendancy by a quick and powerful blow before the enemy can reconstitute his defense. The action of tanks or armored forces and combat aviation at this time may be decisive.

■ 558. If the enemy is fighting a delaying action on an extended front, the objective ordinarily will be attained more quickly by concentrating on a decisive part of the front and attacking with energy and dispatch. An attack pushed deeply and energetically through the hostile front will force the enemy to an early evacuation of the whole front.

■ 559. In case of a break-through, armored units penetrate deeply into the hostile position and attack the enemy's reserves, artillery, and command and signal communication centers. The gap is widened by attacking its flanks. Other mobile forces are sent through the gap to exploit the advantage gained and to attack the enemy in rear and prevent his escape. The maximum efforts of combat aviation are concentrated on supporting and cooperating with the forces exploiting the break-through.

■ 560. When the attack does not reach its objective or does not break through the hostile position during the day, foot troops intrench themselves at the points reached. The night is utilized to extend the advance. Strong patrols with machine guns are sent forward to occupy advanced positions. The foot troops advance and intrench in a new position under the protection of these patrols. Several advances of this character may bring the troops within assaulting distance of the hostile position. These night advances must be coordinated with the artillery and supporting combat aviation.

RELIEFS TO CONTINUE THE ATTACK

■ 561. In offensive combat, a relief may be necessary to continue the momentum of the attack with fresh or more ex-

perienced troops; to change the direction of the attack, or to extend an envelopment; or to initiate a strong offensive on a front where stabilization has existed.

■ 562. When a relief is necessary, warning orders are issued by each commander (higher commander, relieving unit, and unit to be relieved) to each of his subordinate units. Warning orders include: approximate hour the movement for the relief is to begin; zones in which relieving units are to operate; and the restrictions imposed upon reconnaissance parties as to size, routes, and hours of operation.

■ 563. Personal reconnaissance by the commander and staff of the relieving unit and prior conference with the commander and staff of the relieved unit are highly desirable. When neither is possible, relieving units move forward to attack without delay, reconnoitering as they go. As they move forward, commanders make every effort to locate commanders of units to be relieved.

■ 564. A plan is formulated and orders are issued covering the movement of relieving units. Fundamentally the operation is the same as the development of a command for combat. In the preparation of the plan, restrictions imposed by higher authority because of other traffic in the zone of advance to relief, the greater road spaces that may be required because of increased distances between units, the road net, and practicability of cross-country movement, must be considered. The plan must be flexible as to times and routes of movement. The size of the unit involved and the speed with which the relief must be conducted will govern the thoroughness with which the details of the plan are prepared.

■ 565. In accordance with the plan of the higher commander, commanders and staffs of both the relieving and relieved units arrange and agree upon such details as guides, use of roads, fire support to be furnished by the relieved unit, security measures which will be provided for the incoming troops by the unit to be relieved, transfer of the existing signal communication system, administrative matters, and the time command passes to the relieving unit.

■ 566. Units to be relieved furnish guides. Guides meet the relieving unit before it enters the area and conduct it to assembly positions. Whenever possible, guides are furnished for units down to and including the platoon.

■ 567. The plans for executing the relief must be in harmony with the plans for continuing the attack.

When the relief is executed in darkness, troops relieved are withdrawn promptly from the zone of action before the attack is continued. Artillery of the relieved unit (and frequently other supporting weapons) may be held in position to support the attack.

When the relief is executed in daylight, troops relieved or passed through remain in position and continue the fire support of the new unit until their fires are masked and until the attack has progressed far enough for the relieved troops to be assembled and reorganized without undue casualties.

■ 568. If the exact location of forward elements to be relieved is known, and if relief is effected at night, the line of departure for the attack is the line held by the forward elements. When the exact location of the most advanced elements of unit to be relieved is unknown, the line of departure must not be forward of the line held by most advanced elements whose location is known. In daylight and terrain permitting, a line of departure between the forward elements to be relieved and a covered position close in their rear may be better than a line coinciding with the front-line elements.

■ 569. To disclose the fact that a relief is in progress invites disaster—a heavy bombardment by air and artillery, a counterattack, or both, at a time when congestion and traffic circulation are doubled.

■ 570. In reliefs on a scale large enough to require more than a single night, troops, animals, and vehicles of the relieving unit are concealed during periods of visibility. The relief is carried out by echelon. To prevent the discovery of the relief through the capture of prisoners by the enemy during an intervening day or night, front-line elements are relieved during the last night preceding the resumption of the attack.

When the relief is made in daylight, woods, fog, and defilade are utilized in the approach. Smoke is placed on hostile observation posts and hostile forward elements. Mobility, ruses, feints, and demonstrations are exploited.

■ 571. During the course of the relief, artillery maintains its normal fires, but is prepared to execute counterbattery and protective fires along the front of the relief in the event of a counterpreparation or of attack by the enemy.

■ 572. The principal task involved in a passage of lines is the preparation for continuing the attack. Therefore, the incoming commander must assume command of the zone of action before his troops reach their attack positions.

SECTION IV

ATTACK FROM THE DEFENSIVE

PLANNED DEFENSIVE-OFFENSIVE

■ 573. A commander with an offensive mission may decide to assume the defensive initially because of temporary combat inferiority in numbers or dispositions, or to create a situation which will place the enemy at a tactical disadvantage and offer opportunity for a decisive counteroffensive. In either case, an early adoption of the offensive to attain the objective is contemplated. By inducing the enemy to attack first, the commander hopes to fix and exhaust him and then, when he is disorganized, to launch the counteroffensive.

This type of action demands the highest type of leadership and tactical skill and troops with a high order of training. The major problem for the commander lies in timing the attack.

■ 574. The selection, occupation, and organization of the defensive position conform to the general doctrines discussed in sections I and II, chapter 10, except that organization of the ground is not as complete as is required for a protracted defense and a larger proportion of the close-combat elements of the command are assembled concealed in a position favoring the execution of the contemplated counteroffensive.

■ 575. Conduct of the defense conforms to the doctrine discussed in section II, chapter 10.

As soon as the purpose of the initial defense has been accomplished, the counteroffensive is launched. Thereafter, the conduct of the action is that of the attack.

THE COUNTEROFFENSIVE

■ 576. A defending force frequently has an opportunity to adopt the offensive. When a general counterattack launched by the defender throws the attacker back following an apparently successful advance, or when a hostile attack breaks down in front of the main line of resistance, the enemy seldom will be able to withstand a determined counteroffensive. The enemy artillery fire still may be superior but his attacking echelon will be disorganized and signal communication in his forward area will be disrupted. If the defender seizes the initiative and passes to an offensive before the attacker can recover from his disorganization and can properly dispose his reserves, results often are decisive. The defense must be prepared to pass to the offensive and exploit the results of successful defensive action.

■ 577. The general doctrines governing the preparation for and conduct of an attack are applicable to the counteroffensive.

SECTION V

PURSUIT

■ 578. The pursuit is launched when the enemy is no longer able to maintain his position and endeavors to escape by retreat. A commander recognizes success by the continued advance of his troops in a decisive direction and the capture of critical objectives; by the number and morale of captured prisoners; by the number of abandoned weapons; by the numbers of hostile dead; by the diminution of hostile artillery fire; by the relaxation or cessation of hostile countermeasures; and from reports that the enemy is withdrawing.

■ 579. When a commander recognizes that the enemy is having difficulty in maintaining his position, he utilizes all means to maintain the continuity of the attack and exert a relentless pressure on the defeated enemy.

Effective pursuit requires leadership and exercise of initiative to the highest degree in all echelons of command. All commanders in the attack echelon spur on their troops and clinch the advantage with their reserves. Pursuit of a defeated enemy is pushed to the utmost limit of endurance of troops, animals, and vehicles. No opportunity is given him to reorganize his forces and reconstitute his defense.

■ 580. The object of the pursuit is the annihilation of the hostile forces. This can seldom be accomplished 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 *enveloping or encircling maneuver* to place troops across the enemy's lines of retreat. *Encirclement of both flanks* of the retreating forces or of their separate elements is attempted wherever conditions permit.

By the coordinated employment of every available agency of destruction and terrorization, the shaken morale of the defeated enemy is converted into panic. The incipient dissolution of his organization is transformed into rout.

■ 581. In anticipation of the time for launching the pursuit the commander causes preparatory measures to be taken. These measures include necessary plans and orders in all echelons. Reserves are regrouped. Artillery and other necessary units are attached to the direct pressure forces for the pursuit. Distant objectives are assigned to the principal tactical groupings. Missions are assigned to combat aviation and to 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 encircling maneuvers to strike the enemy in flank and rear and cut off his retreat. General reserves are especially appropriate for this mission. (See par. 507.)

■ 582. The pursuit is conducted on a broad front. Motor transportation is employed to expedite the movement of foot troops.

Troops before whom the enemy is giving way send in their reserves to gain his flank and rear or break through his covering troops.

■ 583. The forces engaged in the direct pressure and in the encircling maneuvers are assigned directions, zones of action, and objectives designed to bring the pursuit to a decisive conclusion. 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 may be a continuation of the existing zones of action.

■ 584. Supporting combat aviation concentrates on lines of communication centers in the enemy's rear area, on hostile columns in retreat and on hostile reserves endeavoring to

reconstitute the defense. It blocks defiles on the enemy's line of retreat and disrupts traffic on the main roads and railroads in the enemy's rear area.

Observation aviation reconnoiters the roads in the enemy's zone of retreat to keep contact with retreating columns and to locate any movement of hostile reinforcements, and keeps ground commanders informed of the hostile activities and movement within their zones of action.

■ 585. The employment of artillery is based upon the maximum exploitation of the mobility 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 artillery remains in position to fire on the more distant targets. Long-range artillery working with observation aviation and balloons continues its fire on the enemy lines of communication up to the limit of its range.

The artillery attached to the pursuing forces, in addition to its supporting action, fires on hostile elements attempting to form columns in rear of the enemy's covering troops, and gradually takes over the missions of the artillery remaining in position.

■ 586. The purpose of the encircling maneuver is to get in rear of the defeated enemy and halt his retreat so that he may be destroyed between the direct pressure and encircling forces.

When practicable, mobile forces in the encircling maneuvers advance along roads paralleling the enemy's line of retreat to cut him off at defiles, bridges, and other critical points. When the encircling forces cannot outdistance the enemy they push through to a critical locality and engage the enemy's main forces in flank.

Combat aviation; armored, mechanized, and motorized units; and cavalry are employed in the encircling maneuvers.

Troops transported by air for employment at critical defiles deep in the hostile rear pending the arrival of more powerful, mobile encircling forces may contribute decisively to a successful pursuit.

■ 587. The advance in the decisive direction must be maintained. Hostile rear guards or forces on flank positions must not turn pursuing forces from the decisive direction. Every effort must be made to block the main hostile force. When

necessary, a new encircling force to continue the pursuit is constituted.

When the enemy succeeds in establishing himself in a position from which he cannot be dislodged quickly, the superior commander takes prompt measures to coordinate the attack again, supporting it with all available means. (See pars. 557 and 558.)

■ 588. 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.

During a night pursuit, the leading detachments push their advance along all available roads, followed by the main pursuing forces. The attached artillery advances by echelon, going into successive positions from which it can interdict the enemy's routes of retreat by map firing or by fire directed by 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 complemented by combat aviation which searches enemy routes of retreat with flares, and bombs enemy columns and critical points in the enemy's rear area.

■ 589. Pursuit requires extensive reliance upon radio for communication with the leading troops. The importance attached to hostile interception of radio communication in other situations does not obtain in equal degree in pursuit. Effort is made to intercept the enemy's radio messages. The construction of wire lines is concentrated along the more important axes. Command posts or advance message centers are established close behind the leading troops.

■ 590. Adequate provision for the supply of ammunition and motor fuel to the pursuing troops is essential to the success of the pursuit. The commander must relieve the pursuing columns of all worries concerning supply and evacuation.

SECTION VI

SECURITY IN THE OFFENSIVE

■ 591. Success or failure of an offensive is dependent in a large measure upon the action taken to protect the command from hostile reaction. Open flanks are highly vulnerable. The best security is to keep the enemy so heavily involved that he has no time or means available to endanger the success of the attack. Security of attack forces is assured by a timely search for information in all directions from which a hostile threat may come, by the proper disposition of security forces of ample mobility and combat power, and by prompt dispatch of accurate information and orders to security forces. This is particularly true in security against hostile forces of great mobility such as air, tank, motorized, and cavalry units. In offensive operations, the service of security is performed in accordance with the general doctrines discussed in chapter 6.

■ 592. In offensive operations, the mass of available means for defense against air and mechanized attack is disposed to favor the main attack. The combat means for defense against air attack are supplemented by utilization of cover, defilade, dispersion, and night movements to the maximum. The combat means for defense against attack by tanks or other mechanized forces are supplemented by utilization of natural and artificial obstacles to protect the flanks and rear of the command, by dispersion, and by night movements. (See chs. 6 and 10.)

■ 593. Antitank guns in each echelon of troops are disposed to cover the most likely avenues of approach of hostile mechanized units; the bulk of the antitank guns are held mobile, prepared to meet a hostile mechanized attack at any point. Protection against mechanized attack is best assured by meeting the attack with the combined action of tanks and mobile antitank guns supported by every available and effective means of fire support, to isolate and destroy the hostile mechanized forces.

■ 594. In offensive operations, the greatest need for security exists during critical phases of the battle. Security is enhanced by meeting possible threats with heavy fire before they can develop. The action of combat aviation against

highly mobile threats and against close, less mobile threats is particularly effective, especially if hostile troops or vehicles are in close formation.

SECTION VII

TERMINATION OF OFFENSIVE ACTION

■ 595. An offensive action once begun is halted only by hostile reaction or by other elements in the situation which demand it.

If, during the course of an attack, it becomes necessary to pass to the defensive, the leading foot elements intrench themselves on the ground then held. The leading echelon then is thinned out and forces are redistributed to organize the defense in depth. It may be necessary to move some elements to the front or rear for short distances to establish the defense on favorable terrain and secure flanking fire. Any major adjustments attempted in daylight will probably result in heavy casualties. The general position of attacking units is maintained until darkness, when the selected defensive position is occupied and organized as described in chapter 10.

If the situation demands major adjustments in daylight, they are accomplished under protection of fog or smoke, and of a maximum of fire support by artillery, combat aviation, and other supporting weapons.

■ 596. If, during the course of an attack, it becomes necessary to break off the action and withdraw, the command initially passes to the defensive. The completeness of the defense is dependent upon the situation and whether the initial defensive and the withdrawal must be executed in daylight or darkness. Thereafter, the withdrawal is executed according to the doctrines discussed in chapter 11.

CHAPTER 10

THE DEFENSIVE

SECTION I

ORGANIZATION FOR DEFENSE

GENERAL

■ 597. 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 for the purpose of concentrating superior forces for a decision elsewhere.

Under the first of these objects, a commander may assume the defensive pending the arrival of reinforcements, or he may be thrown on the defensive by inferiority in numbers, disposition, or training. He may take up a defensive position and invite attack as part of a deliberate plan to win the battle by a counteroffensive.

Under the second object, the defensive is usually expressed in the mission received from higher authority. This mission may be to hold a vital area pending completion of the maneuver of other forces to protect a flank, or to contain an enemy force while an offensive is being conducted on another part of the front or in another theater.

■ 598. Our defensive doctrine contemplates the organization of a *battle position* to be held at all costs and the use of covering forces to delay and disorganize the advance of the enemy and to deceive him as to the true location of the battle position. (See par. 610.)

RECONNAISSANCE AND SELECTION OF POSITION

■ 599. The mission, the situation, and the terrain limit the choice of localities where the defense may be offered.

Commanders of large units usually determine the general location of the battle position from the map.

The position on which battle is offered must conform to the object of the defense and should facilitate future maneuver without jeopardizing the success of the defense. It must

force the enemy to a direct attack or a time-consuming maneuver, as a position that can be readily avoided has no defensive value. A flank position must draw the enemy from his original direction of advance.

■ 600. Reconnaissance of the position is as detailed as the situation permits. It includes a study of the principal routes of hostile approach, terrain available for hostile observation, and the corridors most advantageous to the hostile attack. A study of the terrain in which the enemy must carry out his attack will give valuable indications of his possible assembly positions, the location of his artillery, the terrain favorable for attack by his mechanized forces, and the area most advantageous for his main attack.

■ 601. If contact with the enemy has not been made, the commander ordinarily is 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 usually is developed into an assembly position preliminary to deployment for defense.

■ 602. 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 regarding the location of the main line of resistance and the regimental reserve line, the employment of the artillery, the assignment of sectors, the strength and location of the general reserve, the antimechanized defenses and other measures necessary for security. Successive reconnaissances by lower commanders fix on the ground the distribution of smaller units and the location of their combat emplacements. Exact information as to the trace of the main line of resistance is furnished to the artillery.

■ 603. In the hasty assumption of the defensive from a march formation, reconnaissance usually must be curtailed and the defense assumed directly from the development.

Depending on the mission and the situation, it may be advisable for a commander initially to attack to seize terrain to his front on which to organize the battle position. In other situations he may employ a covering force, organizing the battle position on terrain in rear.

■ 604. *Continuous reconnaissance and observation* of the enemy's dispositions are conducted to secure the earliest possible indications of the enemy's offensive preparations. Air reconnaissance provides the information concerning the situation in rear of the enemy's leading elements.

■ 605. The character of the *terrain* exercises a decisive influence on the selection of position. 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. Such ridges often afford observation and fields of fire favorable for a defense in depth.

Natural obstacles (e. g., river lines, woods, swamps) are important factors for consideration, especially if the situation requires that protective measures be taken against mechanized units, or other mobile forces, such as horse cavalry or motorized 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 other supporting weapons, and indirectly the location of defensive and assembly positions.

As a general rule, long gentle slopes afford better conditions for defense than abrupt elevations. However, positions along commanding heights are suited for delaying action.

■ 606. The *battle position* is so selected as to use the terrain to the greatest advantage. The extent of the position must be appropriate to the available troops.

The most important terrain factors are—adequate artillery observation, good fields of fire, concealment from hostile observation, and the presence of natural obstacles. The relative importance of these terrain factors depends upon the strength, composition, armament, and mission of the defending force, together with a consideration of the enemy's capabilities.

In selecting the forward limit of the battle position, the defender seeks terrain which will permit the most effective employment of the fires of artillery and other weapons. Clear fields of fire for small arms are important and usually lead to its location on a forward slope. Consideration of concealment may, however, make it desirable to select a reverse slope.

Such a location is practicable when possession of the crest to the front is not essential to the observation of artillery fire.

When the forward limit of the position is on the forward slope, the defense areas of front-line battalions may be extended to the rear to include the reverse slope. When it is located on the reverse slope, front-line battalions establish strong detachments from their reserves on the forward crest to fire on attacking troops during their approach to the position.

Observation to the limit of range of the weapons is desired in front of the main line of resistance, as well as within the battle position. Adequate observation posts for artillery are essential. The battle position must be so located that the essential observation will be retained even though the enemy succeeds in penetrating into the position.

Maximum advantage is taken of *natural and artificial obstacles* to stop attack by mechanized units or limit the directions of their movement. Towns, villages, and cities have considerable defensive strength against mechanized attack. They are, however, vulnerable to air attack, especially by incendiary bombs.

■ 607. All parts of a position will not have the same defensive strength. Avenues of approach which enable the attacker to reach the position under concealment or cover are sources of weakness. These avenues of approach may, however, be unsuited for enemy tank attacks. Clear fields of fire over which the enemy must advance for some distance under the defender's fire are sources of strength in a defense against foot troops, but may furnish excellent terrain for hostile mechanized attack. The defender must be prepared to meet that form of attack which the terrain favors.

■ 608. A position combining all defensive advantages will seldom be available. The weak points of a position are strengthened. A short field of frontal fire is compensated by dense flanking fires and heavy mortar and artillery concentrations; exposure to hostile observation, by distribution in depth and construction of dummy works and masks; deficient observation, by increased strength of local garrisons. Persistent chemicals, demolitions, and mines can be used effectively to strengthen exposed flanks and to contaminate and block covered avenues of approach leading into the position.

■ 609. The defense, no less than the offense, must effect *surprise*. The visible lines of a defensive system must not betray the defensive dispositions. They should mask the real defensive organization. Every available means must be employed not only to mislead the attacker as to the location of the position but also as to the strength and disposition of the defending force. Deception, delay, and security are obtained through the use of covering detachments.

TACTICAL ORGANIZATION

■ 610. The defense is built around a series a tactical localities, the retention of which will insure the integrity of the position. A battle position comprises a zone of resistance consisting of a number of mutually supporting defense areas disposed irregularly in width and in depth, each organized for all around defense with trenches, obstacles, and emplacements. Tactical unity is maintained in each defensive area.

A line joining the forward edge of the most advanced organized defense areas is called 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 contour of the main line of resistance is thus irregular in trace, with elements on it sited for frontal and flanking fire. A line designated to coordinate the locations and actions of the regimental reserves in the battle position is called the *regimental reserve line*.

■ 611. Between the main line of resistance and the regimental reserve line, company supports and battalion reserves organize the ground. The distance between successive echelons on the battle position (units on the main line of resistance, company supports, battalion reserves, and regimental reserves) should not exceed the 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 diminishes the effect of hostile fire and provides for continuity in defensive fires and movement against the enemy, even though he succeeds in penetrating into the battle position.

■ 612. The natural defensive strength of the position has a direct bearing upon the distribution of troops for its defense, both as to frontage and depth. 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 reserves. Close terrain and exhausted troops require a greater density of troops forward toward the main line of resistance.

■ 613. The *width of sectors* assigned to infantry units varies with the natural 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. The necessity for control and the character of fields of fire affect the intervals which may be permitted between tactical localities. Some variation in the width of sectors may arise from the necessity for adjusting them 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 use as reserves.

■ 614. Sectors are delimited in orders by *boundaries*—lines indicated on the map or ground extending from rear to front. Boundaries are located so that there will be no question of the responsibility for the defense of the key terrain which dominates a critical avenue of hostile approach. While it is frequently impossible to include both the avenue of hostile approach and the adjacent dominating terrain in the sector of the small units, the boundaries of sectors assigned to battalion and larger units should be located to insure unity of defensive dispositions and fires in defense of these critical localities.

Boundaries are extended forward of the battle position to the limit of the range of the weapons with which the unit is equipped. Boundaries may be extended forward to include the outpost line in order to delineate the outpost responsibility of units on the battle position. The extension of boundaries to the rear is influenced largely by the existing road net and routes for movement within the position.

■ 615. The division commander determines the distribution of the *division artillery* and its subdivision for combat (direct

and general support). Since the rapid concentration of artillery fire on important objectives is essential to a successful defense, when the situation permits, control of the artillery under the direction of the division commander is preferable. Every effort is made to meet the hostile main attack with the mass of the artillery fire.

The *echelonment in depth* of the artillery takes into consideration the range of the various weapons, the location of the targets, and the possibilities of neutralization by hostile counterbattery fire. The echelonment is limited by the considerations that the entire artillery must be able to concentrate its fire in close support of the main line of resistance, that the foremost echelon can fire deep in the hostile zone, and that the rearmost can support the rear defense areas of the battle position.

■ 616. The battle position is protected by outposts whose mission is to provide time for the main force to prepare itself for combat, to deceive the enemy as to the location of the battle position, to force early development by the enemy, and to provide a deeper view within the terrain over which the attacker will advance.

Whenever practicable the outposts are 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. Outposts will ordinarily not be established beyond the effective range of the light artillery of the battle position.

The outpost line of resistance and the ground between the outpost and the battle position are organized for delaying action to the extent permitted by the time and labor available.

■ 617. When forced to withdraw under hostile pressure, the outposts conduct a *delaying action*. Every effort is made to deceive the enemy as to the exact location of the battle position. The withdrawal of the outposts must be so arranged that they neither will interfere with nor be endangered by the fire from the main position. Coordination is facilitated by the use of prearranged signals and previously designated routes of withdrawal.

■ 618. Whenever practicable, an advanced *covering force* is employed in front of the outpost. The mission of this covering force is to inflict the maximum delay on the enemy, to

permit the defender to utilize advanced artillery observation, to permit the laying of mines, demolitions, and obstacles in front of the outpost and the battle position, and to deceive the enemy as to the actual location of the battle position. Similarly, such forces may be employed on exposed flanks.

■ 619. Natural terrain obstacles, such as water courses, heavily wooded areas, and swamps, are particularly favorable areas for the operations of advanced *covering forces*.

The initial position of the advanced covering force and the terrain between this force and the outpost are organized to the extent practicable in the time available.

■ 620. The advanced covering force should be mobile. The use of cavalry, mechanized and motorized troops and engineers is indicated. It should have strong artillery and anti-tank support. Organic artillery may be reinforced by artillery from the main force, temporarily emplaced in advance of the battle position.

■ 621. The advanced covering force fights delaying action in its withdrawal. It avoids serious engagement with the enemy.

■ 622. The direction from which the main attack may be expected and the commander's plan of maneuver determine 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 launch the counteroffensive by striking a hostile attack in flank.

■ 623. *Large horse cavalry units* should rarely be called on to defend a position. Cavalry seeks to accomplish defensive missions by delaying action or by defensive-offensive tactics. When required to defend in position, it operates in general as does infantry.

■ 624. *Corps and division cavalry* is employed on reconnaissance missions with especial attention to locating the mass of the hostile force. It may be reinforced by motorized infantry, artillery, and engineers, and employed as a mobile covering detachment. (See par. 598.) During battle it continues reconnaissance and security missions, especially to the flanks. It may be held in mobile reserve or used to harass enemy flanks and rear when the situation permits.

■ 625. *Mechanized* units are not normally employed to hold defensive positions. They may, however, be employed well forward, supported by combat aviation, to cover the occupation of a position by other troops. They employ delaying action to accomplish this mission. (See ch. 11.) Should the situation demand it, they may be required to hold an area pending the arrival of other troops. In performing such a task, they operate similarly to horse cavalry except that larger reserves are withheld initially for the purpose of counterattack. When supporting infantry, they constitute a powerful striking force and are held initially in reserve prepared for rapid entry into combat when an opportunity for a counterblow is presented.

■ 626. *General reserves* may be called upon to relieve units on the battle position, participate in a major counterattack or counteroffensive, extend the flanks of the battle position, or occupy a rear position.

Prior to commitment to a definite line of action, they are held mobile, prepared to participate in battle in accordance with the plan of maneuver of the superior commander. While so held, they are disposed for all around defense against attack by hostile mechanized forces which may succeed in passing through or around the battle position. Necessary measures are taken for protection against hostile aircraft and for countering an attack by troops transported by air.

ORGANIZATION OF FIRE

■ 627. Coordination of the fire of the infantry, artillery, antitank, antiaircraft, and other weapons is carefully planned and expressed in orders. Plans provide for bringing the enemy under effective fire as early as practicable unless the situation requires that fire be withheld to obtain surprise, and for so regulating the intensity of the fire that the enemy is subjected to progressively heavier fire as he approaches the defensive position.

■ 628. The organization of systematic *flanking fire* by machine guns supplemented by other small arms constitutes the basis of defensive dispositions. Adjacent units, in addition to defending their own fronts, mutually cover one another's fronts with flanking fire. 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.

Machine guns are distributed in width and depth in each battalion defensive area to take full advantage of terrain. As far as practicable, their fire should cover the entire front of the main line of resistance with continuous bands of fire. Some machine guns are sited to take under flanking fire hostile elements which succeed in penetrating the main line of resistance. Some of the heavy machine guns are located where they can develop long range fire during the hostile approach without disclosing the location of the main line of resistance.

Artillery fire is coordinated in the defensive 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 other supporting weapons. The effective control of this fire requires good observation and efficient signal communication.

■ 629. All possible measures are taken to insure security against mechanized attack. *Antimechanized defense* is organized throughout the depth of the position. The main effort is made in areas which are favorable to the employment of mechanized forces. Battalion and regimental antitank guns from concealed positions defend the forward part of the battle position, while antitank weapons of higher units are echeloned farther in rear. Positions and routes for these weapons are reconnoitered and the guns are held in readiness prepared for rapid movement to any threatened part of the front. (See also ch. 6 and sec. V, ch. 10.)

Through a judicious combination of antitank weapons and obstacles, aided by artillery fire, combat aviation, and tanks, attacks by mechanized forces are broken up and halted as soon as they are disclosed.

■ 630. The division artillery commander prepares the general plans for the employment of artillery in accordance with instructions of the division commander. Coordination between artillery fires and those of other weapons is essential. It is effected principally through liaison between artillery units and the units they are designated to support. The close sup-

port of the main line of resistance is a governing consideration in the formulation of all artillery plans.

■ 631. The *artillery plan of fire* is based primarily upon the execution of a counterpreparation to break up or cripple the hostile attack before it can be launched. Fire is not opened by the mass of the artillery until targets of sufficient importance are disclosed.

It is important to take hostile artillery under fire at an early moment, to interdict hostile routes of approach, and to dislocate 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 one of the principal targets of the defender's artillery fire and aviation. The fire of all available artillery is concentrated to cripple the hostile artillery before it can get into action. *Counterbattery* continues to be the principal mission of a portion of the artillery, especially the medium artillery, throughout the battle.

The corps gives the division instructions regulating the employment of the division artillery in the execution of its more distant missions. The corps reinforces the action of the division artillery and extends its sector of fire in depth by the use of the artillery 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 (bridges, crossroads, and supply establishments).

■ 632. *Combat aviation* extends in depth and reinforces the fire of the artillery. Air attack against hostile ammunition and other supply establishments, airdromes, railroad installations, and bridges have important effects in delaying or dislocating the hostile preparations for attack. Other remunerative targets for combat aviation are enemy columns, artillery in position, reserves, and mechanized forces.

■ 633. *Antiaircraft artillery* is disposed initially to protect the organization and occupation of the battle position.

When the commander has determined on what front the enemy is making his main attack, the antiaircraft artillery concentrates its efforts on preventing air observation and attack on the threatened parts of the defensive position and on protecting the employment of reserves for counterattack.

If sufficient antiaircraft artillery is available, some units are assigned to the defense of important roads and installations (railheads, ammunition establishments, and airdromes). The antiaircraft intelligence service gives prompt warning of the approach of hostile aircraft to all units concerned. (See par. 67.)

Antiaircraft artillery weapons are sited so they may be employed against attack by mechanized vehicles when this can be done without interference with their normal missions. In the event of simultaneous attack from hostile aircraft and mechanized vehicles, fire must be concentrated against the more dangerous threat.

ORGANIZATION OF THE GROUND

■ 634. The organization of a position is limited only by the time and facilities available. Protection is to be sought in the distribution of defenses in depth and in width, their adaptation to the terrain, concealment from hostile observation, and in the strength of construction. From the beginning, great care is taken to conceal the most important works by *camouflage* or natural terrain features. Measures for increasing the effect of fire and for providing adequate signal communication take precedence over the construction of field fortification.

■ 635. Troops carry out the organization of the position in accordance with a *plan of construction* expressed in orders in the form of priorities. After the location of combat emplacements has been fixed, priority is given to clearing the field of fire, to removal of objects masking our own observation, and to the determination of ranges to points in the foreground. Primary consideration should be given to provisions for camouflaging the works to be constructed. These measures are followed ordinarily by the construction of the various defensive works and obstacles, and by the preparation of routes of approach for reserves and for ammunition supply. Work may proceed simultaneously on several items.

Artillery and heavy weapons units give priority to the construction of *observation and command posts* and *signal communication systems*, and provision for the supply of ammunition. Shelter is constructed for personnel and provision is made for camouflage of ammunition dumps and the protec-

tion of ammunition against the weather. For the protection of guns, more reliance is placed upon camouflage and provision for alternate positions than upon the fortification of gun emplacements.

■ 636. In the construction of *obstacles*, wire entanglements are sited so that their outer edges can be swept by flanking fire. Other obstacles are coordinated with demolitions. All obstacles are covered by fire to hinder their removal. They should be concealed from hostile observation.

■ 637. *Dummy works* serve to mislead the enemy and disperse his fire. To be effective, they must closely resemble genuine works; dummy works easily recognizable as such give the enemy valuable negative information. They must bear evidence of an attempt at camouflage.

■ 638. Channels of signal communication are increased and alternate channels provided. 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 signal communication between adjacent units but also in making available numerous alternative channels of signal communication between advanced units and the rear. Alternate command posts are selected and organized.

■ 639. *Engineers* are employed to impede the advance of the enemy by the execution of demolitions and by the creation of a zone of obstacles, including mine fields. When necessary, they defend the demolitions and obstacles which they construct. 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.

They may also be employed in the siting or preparation of rear positions. In emergencies they may participate in the defense as infantry.

■ 640. The activities of the *chemical troops* and engineers are closely coordinated. Persistent chemicals, if to be used, have especial defensive value by reason of the fact that concentrations established before the hostile attack retain their effectiveness during the course of the attack. Barriers of persistent chemicals are placed to protect portions of the

front and flanks of the position and to cover defiles, vital roads, road junctions, and wooded stream lines across or along favorable routes of hostile approach. When these barriers can be placed without hostile interference, persistent chemical mines are employed; when the area is controlled by the enemy, aviation, artillery, or chemical mortars are used. In deciding to use persistent chemicals, the commander must carefully evaluate its effect on his contemplated future operations.

■ 641. 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 extent of its organization will depend upon the situation and the time available. The forces employed in the construction of the rear position must not be obtained at the risk of jeopardizing the defense of the main battle position.

■ 642. 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. This may take place on a front which has stabilized after an indecisive battle, or is out of contact with the enemy.

■ 643. The development of such a defensive position aims first of all to strengthen the main line of resistance, battery positions, and the command and control facilities of the entire position. The means employed include numerous communication trenches; obstacles, including tank barriers and mines; shelter for troops; observation and command posts, including alternate locations; signal communication; gun positions; and supply dumps. These works differ from those in mobile situations in the elaborateness and permanency of their construction. In areas of resistance in rear of the main line of resistance, permanent works are constructed to limit hostile penetration. All works are concealed or camouflaged.

In the siting of emplacements for defending troops, extreme care must be taken that there are no undefended approaches from any direction that would permit hostile elements to work their way in close enough to destroy the occupants with hand grenades or other close-combat weap-

ons. Provision must be made for protecting the rear against attack by troops transported by air, and by highly mobile forces.

■ 644. *Communication trenches* greatly facilitate the exercise of command, the movement of troops, and the functioning of supply. In moving situations, time will rarely be available for the complete construction and camouflage of such trenches. They are indispensable in the prolonged occupation of a position. They are first constructed over exposed stretches on the routes of approach from the rear; their entrances are conspicuously marked. As a general rule, communication trenches should not be employed as combat emplacements. They should be so sited that they will not indicate to the enemy the location of combat emplacements. Their use, however, as part of a switch position in case the main line of resistance becomes untenable, should be considered.

■ 645. The nature of *overhead cover* varies with the location of the troops to be sheltered. The only forms of protection having permanent value against fire are dugouts and concrete or steel shelters sufficiently resistant to withstand high-powered artillery fire and bombs from the air. Deep dugouts in the front lines do not permit the prompt egress of troops, and in case of attack may become traps. Overhead cover for front-line troops is designed chiefly to afford splinter-proof protection and shelter from the weather. Lack of strength is compensated for, as far as possible, by the increased number and smaller size of the shelters.

■ 646. Overhead cover is an essential means of conserving the fighting capacity of the troops in the prolonged occupation of a position.

Reserves within range of hostile artillery fire and subject to the attack of combat aviation are, as far as practicable, sheltered in bombproof dugouts.

■ 647. In a stabilized situation, the problem of drainage assumes great importance; the siting of works with a view to effective *drainage* is always given due consideration.

■ 648. In addition to the depots of large units, small dumps of ammunition, rations, and materials needed in the construction and defense of the position are established in the sectors of small units.

■ 649. The *priority of work* in the development of a position which is out of contact with the enemy is determined largely by the time required for the construction of the essential works and the extent to which they lend themselves to camouflage. Provision must be made for camouflage before the work is begun. Camouflage is then carried on continuously throughout the work.

After reconnaissance and determination of the method of occupation of the position, command posts, observation posts, signal communication facilities, obstacles, and shelters for the troops are constructed. Adequate forces must be concentrated early on important works requiring a considerable period for their construction. To avoid disclosing the position, the construction of fire and communication trenches may be deferred until troops occupy the position.

SECTION II

CONDUCT OF THE DEFENSE

■ 650. The defense is conducted along *mobile* lines. Mobility is obtained by the use of covering forces, by improving facilities for movement within the battle position, by distribution of forces in depth, and by holding out reserves capable of rapid movement. Covering forces delay, deceive, and disorganize the enemy; units in organized areas of the battle position hold their positions at all costs; reserves maneuver behind the pivots thus established. Mobile and rigid defense are so combined that possession is retained of the areas essential to the maneuver of the defensive forces, the maximum forces are made available for counterattack or counter-offensive purposes, and the enemy is deceived as to the character of the resistance with which he is confronted.

■ 651. 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 by passive resistance only.

■ 652. The integrity of the battle position is maintained by a combination of fighting in place and counterattack.

Regardless of the considerations which dictated the adoption of a defensive attitude, the *tactics of defensive combat* are essentially to develop the maximum firepower against an

advancing enemy, to reduce our own losses by a better knowledge and utilization of the terrain, and thereby to stop the enemy's advance or throw him back by counterattack.

■ 653. 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, such batteries effect a change to one of their alternative or supplementary positions.

In quiet periods, artillery units assigned to counterbattery and harassing missions may be moved to previously surveyed positions for the delivery of fire. This movement, occupation of position, delivery of fire, and return to position are generally accomplished during hours of darkness.

■ 654. When the imminence of the hostile attack is discovered, *counterpreparation* fires are directed upon the hostile attack formations, artillery, and command, observation, and signal communication systems to break up the attack before it starts. A general counterpreparation involving all of the artillery with the command is fired on the order of the superior commander. Local counterpreparations designed to cover only the points threatened by a local attack are fired on the order of subordinate commanders.

■ 655. If the enemy succeeds in launching his attack in spite of the counterpreparation, the artillery seeks to keep him under fire in considerable depth by placing defensive concentrations on his advancing attack echelons and on his reserves, and by continuing counterbattery fire. These fires are delivered on the request of supported unit commanders, or of observers following the progress of the attack with air or ground observation.

■ 656. Finally, defensive concentrations and barrages are fired close to our troops. They strengthen the fire of other weapons covering the most dangerous avenues of approach to the positions. Barrages generally are delivered on pyrotechnic signal from the front-line troops, but may be executed on report from artillery observers that the hostile attack is threatening the integrity of the position.

Since a uniform distribution of artillery fire along the entire front is generally ineffective, plans for the delivery of concentrations and barrages are designed to provide fire on

critical areas or fronts. These fires, especially the barrages, are delivered at a high rate, and involve a great expenditure of ammunition. Hence, it is essential that front-line units carefully consider the emergency in their calls for artillery support.

Provision should be made for reinforcing counterpreparation and barrage fires by artillery normally assigned to other missions, or by the artillery of adjacent divisions.

■ 657. In addition to the artillery, *other supporting weapons* participate in counterpreparation and barrage fires. Their fires are coordinated with those of the artillery in the plan of defense.

■ 658. *Infantry* defends its position by employing all the weapons at its disposal in cooperation with artillery fires, supported by combat aviation, both pursuit and bombardment. As the enemy comes within range, the infantry heavy weapons, including those of units in reserve, are brought into action.

■ 659. A unit intrusted with the defense of a tactical locality *under no circumstances abandons it* unless authorized to do so by higher authority. Important localities on the main line of resistance must be defended to the last man. Local commanders take the necessary steps to maintain their positions, rectifying gaps in their dispositions or fires by the use 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.

■ 660. When the front and direction of the main hostile attack have been determined, the defense takes final steps to meet it. *Combat aviation* attacks those hostile elements which constitute the greatest threat to the defense. *Artillery* and other supporting weapons deliver fires on the attacking infantry. As the hostile attacking elements come within effective small-arms range, and are unmasked by the withdrawing outposts, the defending force increases its fire with all available weapons. Threatened sectors not fully garrisoned are occupied. *Chemical troops*, from positions well forward, supplement the fires of artillery and other supporting weapons with fires on avenues of approach and on known or probable areas occupied by the attacking troops. The bulk

of the available reserves are held mobile, prepared for aggressive action.

As the enemy attack draws closer, machine guns switch their fires to their final protective lines; all weapons participate in the fire fight, until finally the enemy is stopped or driven back.

■ 661. Reconnaissance is conducted and plans are prepared for the employment of *reserves*, based on the probable lines of action which may develop during combat. Reserves must be prepared to occupy a previously reconnoitered defensive area to check a hostile penetration or an envelopment of the position, or to deliver a counterattack for the purpose of maintaining or restoring the main defensive position. Reserves are committed to the position only to the extent necessary to stabilize the situation and establish a firm base from which to launch a counterattack. Motor transportation is used to increase the mobility of reserves.

■ 662. *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 commander either to engage hostile tanks or to support a general counterattack or counteroffensive.

■ 663. Should the enemy succeed in penetrating or outflanking the position, the defender seeks through *fire and maneuver* to eject the hostile elements which have so advanced. The fire of the supporting artillery is concentrated on the hostile elements which have entered the position. Local reserves, supported by all available weapons and protected by smoke from chemical mortars, *counterattack* against the flanks of the gap to thrust back the enemy before he has had time to establish himself. Such local counterattacks must be launched during the period of temporary confusion and disorganization which occurs when the attacking troops have entered the position and have not had time to reorganize and establish themselves. *This period is relatively short. Consequently, the counterattack must be delivered without delay, on the initiative of the local commander.* The object of such counterattack is to stabilize the situation on that particular part of the position and prevent widening of the gap, or, in case of a small penetration, to eject the enemy. Surprise,

boldness, and rapidity are the principal factors which lead to successful execution. Anticipatory planning to include reconnaissance will facilitate greatly the prompt delivery of the counterattack. If the enemy is given time to reorganize and to place his machine guns and antitank guns in position to defend the ground he has gained, the opportunity to counterattack by local reserves probably has passed. Then only a well-prepared counterattack by larger reserves strongly supported by combat aviation has much chance of success.

■ 664. Should the enemy succeed in penetrating through the position with a strong mechanized attack, it is essential that units on the battle position close the gap thus created without delay, and before succeeding hostile units can exploit the success attained. The shoulders of the salient must be held at all costs. Local commanders must react promptly and on their own initiative rectify the situation.

■ 665. If the enemy has attained such success that local commanders are unable to eject him, the higher commander must decide whether to *counterattack with reserves* at his disposal to restore the battle position, to continue battle on the battle position and prevent further enemy advance, or to withdraw to a prepared position in rear.

Time is required for the preparation of a major counterattack. Sufficient reserves must be assembled to carry the attack forward. Adequate fire support must be arranged. Assembly positions, zones of action, objectives, and time of attack are clearly specified. Surprise is an important factor. Employment of artillery, chemical troops, mechanized units, and combat aviation is regulated and controlled by the higher commander. Whenever practicable, the counterattack is launched against the flanks of the hostile salient. *Advance planning* for such an operation is essential in order to reduce to a minimum the time required in final preparation.

In reaching a decision to withdraw to a rearward position, the commander must carefully evaluate the time required to reach and organize such a position and the effect of hostile mechanized and air attacks on his withdrawing forces. The rapidity and power with which mechanized units and combat aviation can strike indicate the necessity for the organization and occupation of the rearward position prior to the withdrawal of the forces directly engaged with the enemy. Re-

serves of higher commanders are suitably employed on such rearward positions. To order a withdrawal to an unorganized and unoccupied rear position in the face of attacks by mechanized forces and combat aviation invites disaster for the entire command.

■ 666. When the battle is interrupted by nightfall, combat outposts are established by front-line battalions. (See par. 678.) Provision is made for patrolling and illuminating the foreground and the intervals between defense areas. Front-line garrisons may be reinforced. Machine guns are laid for their final protective fires. Provision is made to place the defensive fires of artillery and other supporting weapons in front of the combat outposts. 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 combat outposts.

■ 667. 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 shifted to the rear 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 and a renewal of the defense on the new position must be made in advance. (See ch. 11.) 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.

■ 668. When a stabilization of operations gradually develops, the decision must be made whether to push an 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. 641), 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.

■ 669. 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. If time permits, all commanders down to and including platoon leaders should visit the position prior to the relief. Commanders familiarize themselves not only with the disposition of the defending force, but with the known hostile dispositions on their part of the front. Arrangements are completed for the transfer of supplies and special equipment to be left on the position by the unit relieved. Sufficient guides are detailed from the unit to be relieved to meet each infantry platoon or similar element of the relieving force and conduct it to its position.

■ 670. *Secrecy* in planning and conduct of the relief is essential to its successful accomplishment. The relief should be carried out under cover of darkness, and in sufficient time to permit the bulk of the relieved force to be beyond artillery range prior to daylight. Careful planning and proper supervision will prevent congestion of incoming and outgoing troops at critical points.

■ 671. 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.

SECTION III

TERMINATION OF THE DEFENSE

■ 672. An attacking enemy, through his own maneuvers, losses, errors, exhaustion, or other cause, may be placed in such an unfavorable position that superiority passes to the defender. The latter then has a prospect of success in a *counteroffensive*, which aims at a tactical decision, the defeat and possible destruction of the opposing force. It is conducted as an offensive operation. (See ch. 9.)

■ 673. Should the situation change to one requiring a retrograde movement, the operation is conducted as indicated in chapter 11.

SECTION IV

SECURITY IN THE DEFENSE

■ 674. Prompt and continuing *security measures* are taken in those directions from which the enemy is capable of attacking. Measures for counterreconnaissance are taken by all troops and agencies in order to screen from the enemy the preparations and dispositions made for defense.

■ 675. The enemy will seek to avoid disclosing the distribution of his forces and the front of his main attack until his deployment is completed. 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. Additional information relating to the outlines of the enemy's dispositions and the direction of his main attack are sought during the delaying action of the covering forces.

■ 676. If the outpost is at a considerable distance from the battle position, the foreground of the battle position is temporarily occupied by *combat outposts*, detailed from each battalion holding a sector of the main line of resistance.

■ 677. The *mission of the combat outposts* is to provide local security and gain time for troops responsible for the defense of the main line of resistance, and to deceive the enemy regarding where the main resistance is to be encountered. As long as the main outpost position is held, combat outposts of battalions on the main line of resistance may be relatively weak. The approximate strength of combat outposts may be directed by the higher commander. When there are no friendly troops in front of them, combat outposts maintain close contact with the enemy.

■ 678. As a rule a combat outpost is established by each front-line battalion or squadron in contact with the enemy. When battle is interrupted by nightfall, combat outposts push their patrols forward in close contact with the enemy. The action of the combat outposts in adjacent sectors is coordinated by adjacent and higher commanders.

SECTION V

ANTIMECHANIZED DEFENSE

■ 679. Defensive measures against mechanized units comprise special weapons, or the special use of existing weapons, natural and artificial obstacles, organization of the ground, and a warning system. (See ch. 6.) Antimechanized defense must be organized in depth.

■ 680. The antitank gun is of first importance in antimechanized defense. Employment of antitank guns is based on a minimum of guns in position initially to cover obstacles and as a first echelon of defense, and a maximum of guns as a mobile reserve. Based on information of hostile mechanized forces, reserve guns are moved rapidly to previously reconnoitered locations and so disposed in depth as to permit timely and powerful reinforcement of areas threatened by hostile mechanized attack.

Guns intended solely for antimechanized use are kept concealed until their special target appears; their effectiveness is jeopardized if their location is prematurely disclosed. Close-in protection of antitank guns must be provided by other troops.

■ 681. Weapons whose primary missions are against objectives other than mechanized units are used also against mechanized vehicles to the limit of their effectiveness. Small-arms and machine-gun fire has a limited effect, interfering primarily with the enemy's observation. High explosive and incendiary hand grenades are effective against certain types of armored vehicles.

■ 682. In the use of all direct laying weapons, fire against mechanized vehicles is withheld until they have come within effective range.

■ 683. All supporting *artillery* must be prepared to assist in antimechanized defense. In both offensive and defensive action provision should be made for the rapid concentration of as much artillery fire as possible on all areas favoring the assembly and maneuver of mechanized units, particularly on any defiles leading to such areas. Antitank weapons furnish the main defense against armored vehicles. However, when a strong hostile mechanized attack is imminent, light artillery

may be moved to positions from which to counter the hostile mechanized vehicles by direct laying.

■ 684. *Antiaircraft artillery weapons* are suitable for use against mechanized vehicles. Every effort is made to assist in antimechanized security by siting antiaircraft artillery weapons so that they may be employed against mechanized attack. In the event of simultaneous attack by hostile aircraft and mechanized forces, fire must be concentrated against the most dangerous threat. For maximum effect against mechanized vehicles, special armor-piercing ammunition must be provided.

■ 685. *Large tank units* and *armored divisions* are effective means to counter hostile mechanized and armored forces. They must be used offensively in large groups on definite counterattack missions, usually for maneuver to deliver a surprise blow against the flanks and rear of the hostile mechanized force. Their employment must be closely coordinated with and supported by ground forces, antimechanized means, and combat aviation.

■ 686. *Combat aviation* is a powerful weapon against mechanized forces. Bombing, chemical, and direct fire attacks will be effective under many conditions. It has the mobility and fire power to strike and break up mechanized threats before they arrive within range of artillery and antitank guns.

■ 687. *Chemical* agents may be used to restrict possible assembly areas for armored units, to cause casualties to units in movement, and to render difficult the removal of obstructions or repair of demolitions. Ordinarily persistent chemicals will be most effective, unless their use will interfere with subsequent operation of friendly troops. Under such circumstances the use of lung irritants, tear, sneeze, or vomiting gas may be advantageous.

Improvised combustibles and explosives thrown by individuals against the most vulnerable portions of enemy armored vehicles are valuable means of supplementing close-in antimechanized defense.

■ 688. *Mines* are an effective means of defense against mechanized forces. They can be laid or buried without prohibitive expenditure of time and labor. They usually are laid in irregular checkerboard order, in three or more rows, avoiding

any strictly geometrical pattern. Mine fields are installed within the defended area as well as in front of it.

Mines are useful for quickly blocking defiles and favorable avenues of hostile approach. The location of mines must be coordinated with natural or artificial obstacles and with the fire of antitank guns and other weapons. They should be concealed, supplemented by dummy mine fields, and covered by fire to prevent removal by the enemy.

Mine fields, contaminated areas, and obstacles restrict the movement of the troops which they are designed to protect. A record must be maintained of the location and extent of such obstacles so that the necessary precautions may be prescribed for the safety of troops.

■ 689. *Natural obstacles* to mechanized attack include buildings and walls, water courses, lakes, marshes, mountainous country, stumps, rocky ground, and thick woods. Few areas can be classed as tankproof. Undue reliance on natural obstacles must be guarded against. Guided by these considerations, the defensive possibilities of terrain must be studied constantly from the viewpoint of antimechanized defense in order to utilize existing natural obstacles to the maximum.

■ 690. *Artificial obstacles* consist principally of mine fields, antitank ditches, post obstacles, barricades, and demolitions. (For details, see FM 5-30.) The location of artificial obstacles must be coordinated with natural obstacles and with the fire of antitank and other weapons. The main effort in the construction of artificial obstacles is made on those parts of the front possessing natural obstacles which are susceptible of improvement; the bulk of the antitank guns are placed to cover the avenues favorable for tank action. It is important that obstacles be covered by fire to prevent hostile crews from removing the obstructions. Obstacles located well to the front or flanks at critical points where the fire of antitank guns or artillery is impracticable may serve to canalize, halt, or delay mechanized units, thereby providing favorable targets for combat aviation. Removal of obstacles can be impeded by contamination with persistent chemical agents. In general, obstacles, demolitions, mines, and persistent chemical contaminations are located where the enemy will come upon them suddenly and be unable to avoid them.

If the hostile mechanized attack succeeds in entering or breaking through the battle position, it must be stopped, thrown back, or destroyed, either by antitank units, by mechanized counterattack, or by both means. Effort is made to break the hostile forces into small groups which can be destroyed more easily.

■ 691. It may be impracticable or inadvisable to direct the main effort of the counterattack against the enemy's mechanized force. A mechanized attack once launched and initially successful proceeds with such rapidity that an attempt to direct countermeasures against the mechanized vehicles may result in a direct pursuit rather than an attack. A counterattack against the base or flank of a salient may often be more effective than one against its point.

■ 692. A counterattack directed at the rear of a mechanized attack will usually meet other mobile supporting troops rather than mechanized units.

Such a counterattack employs all available arms, including the mechanized forces of the defender. It has the characteristics of a mechanized attack, that is, it leads with mechanized units and exploits with motorized, horse, and foot troops. It seeks to close the gap created by the hostile mechanized force and to isolate and eventually destroy the enemy's advanced elements, including his mechanized forces. However deeply these last may penetrate and however great the damage they may do, once their supply lines are cut they will be immobilized and, in the end, destroyed.

■ 693. All available *fire support* is used in the counterattack. If the counterattack is directed against the enemy's mechanized force, this fire support should be strong in antitank cannon.

■ 694. *Supporting combat aviation* is used at the crisis of the action to the limit of its availability. It may be directed against enemy front-line units in direct support of ground units engaged in counterattack, or to cause confusion in rear areas, interfere with maneuver, and disrupt routes of communication. It is employed on missions which further the attainment of the objective of the supported forces. It is not used on missions divergent from this purpose.

■ 695. The counterattack is conducted by units initially in reserve. The introduction of enemy mechanized forces into the situation affects the composition, location, and equipment of these reserves. They should be highly mobile and strong in mechanized and motorized elements and antitank weapons. They should be located to permit timely and rapid movement toward any point where an enemy mechanized attack may be expected.

CHAPTER 11

RETROGRADE MOVEMENTS

GENERAL

■ 696. A retrograde movement is any movement of a command to the rear, or away from the enemy. It may be forced by the enemy or may be made voluntarily. It may be classified as a withdrawal from action, a delaying action, or a retirement.

■ 697. Retrograde movements are made to accomplish one or more of the following purposes:

- a. To disengage from battle.
- b. To avoid battle in a disadvantageous situation.
- c. To draw the enemy into a situation unfavorable to him.
- d. To gain time without fighting a decisive engagement.
- e. To conform to the movement of other troops.
- f. To permit the employment of a portion of the command elsewhere.

■ 698. Retrograde movements in the face of the enemy are difficult maneuvers and require constant control and supervision by all leaders. Mechanized forces and combat aviation have increased the difficulties in executing these maneuvers and the necessity of organizing and occupying rear positions prior to the retrograde movement. (See par. 665.) Prompt reorganization of units, careful attention to the feeding and care of the men, and the presence of higher commanders well forward, will tend to counteract the detrimental effects of this type of action.

■ 699. *Demolitions, obstructions, and contaminations* are used to the maximum in all retrograde movements in order to delay hostile pursuit, to assist in flank protection, and to destroy materials and resources that may have to be abandoned. Plans for this work must be prepared well in advance.

■ 700. *Combat aviation* is employed against hostile observation aviation and to delay the hostile follow-up or pursuit by harassing and interdicting hostile forces at critical local-

ities. Its action must be coordinated with that of flank and rear guards.

■ 701. In retrograde movements, maximum advantage must be taken of available motor transportation to expedite the rapid movement to the rear of units which have withdrawn from action. Security forces should consist of highly mobile units.

■ 702. A hostile force, strong in mechanized and motorized units and combat aviation, may be expected to follow up or to pursue any retrograde movement relentlessly both by day and by night. (See also par. 665.) This necessitates continuous ground and aerial reconnaissance to both flanks and rear, rapid movement under cover of darkness, strong anti-aircraft defense, and continuous all-around antimechanized defense particularly on exposed flanks. Close support by combat aviation is essential. Mobile reserves, particularly mechanized and antitank units, are held out in order to counteract wide and rapid movements to our flanks and rear, or penetration through our front, and to counter any attacks by troops transported by air.

WITHDRAWAL FROM ACTION

■ 703. 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.

■ 704. A *daylight withdrawal* usually involves such heavy losses and so great a degree of disorganization that it is preferable for large units 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 successfully by day. Small mobile forces may execute daylight withdrawals.

■ 705. The heavier the previous fighting and the closer the engagement with the enemy, the more difficult will be the withdrawal.

■ 706. A withdrawal is facilitated by concealment of dispositions and movements, by bad weather, by rapidity of movement, by the careful preparation of plans, and by counterattacks.

Successful counterattacks often create conditions most

favorable to the withdrawal. Because of their mobility and fire power, combat aviation and mechanized units are especially suited to support counterattacks.

■ 707. The commander who orders a withdrawal designates a *rearward position* on which the troops will prepare for a renewal of resistance or under the protection of which the troops may be assembled for further retrograde movement. The rearward 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. The commander usually determines the location of the position from the map. He then issues the necessary orders for reconnaissance of the position and routes thereto.

The commander makes special provision for holding the road centers that control the lines of communication to the rear, and the features of the terrain that afford extended observation over the areas in rear of the battle front.

■ 708. In a daylight withdrawal, in addition to the rearward position, the commander selects a suitable covering position and details, from any available reserves, a mobile *covering force* strong in fire power to occupy it and *cover the withdrawal of the troops engaged*. Artillery, engineers, anti-aircraft automatic weapons, antitank weapons, and chemical troops are attached to the covering force.

■ 709. The mission of the covering force is to stop, restrict, or divert the advance of the enemy in order to permit the main body of our troops to disengage, assemble, and move to the rear. The successful accomplishment of this mission depends largely on the composition and location of the covering force and on the efficient execution of a systematic plan of artillery and machine-gun defensive fires. Often the mission can be best accomplished by counterattack.

■ 710. The *position* of the *covering force* in a daylight withdrawal 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.

When its mission is accomplished, the covering force withdraws to the rearward position.

■ 711. In his order for the withdrawal the commander indicates the rear position, assigns zones or routes of withdrawal to the units of the command, prescribes the strength and conduct of the covering forces, fixes the hour and the priority of withdrawal of units, orders the establishment of essential signal communication, and takes the necessary steps to clear the routes for the movement of troops. Prompt starting of trains to the new areas, evacuation of the wounded, removal or destruction of supplies, energetic measures for the maintenance of traffic control, construction of necessary bridges, and preparations for the execution of demolitions on the routes of withdrawal are of importance. Adequate measures are taken to insure secrecy and for antiaircraft and antimechanized defense. 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. (See FM 101-5.)

■ 712. It is best usually to withdraw the least heavily engaged units first. When the terrain is favorable and the security of the command permits it, all subordinate units may be withdrawn simultaneously. However, it usually is necessary to move certain units ahead of others in order to avoid congestion and to insure a smooth execution of the movement. This procedure also gives greater security to the command because the units remaining temporarily in place cover the withdrawal of those first to move. In some situations, counterattack may make it possible to withdraw first those units which are hardest pressed, or which are exposed to the most dangerous threats. However, when necessary to protect the command as a whole, these hard-pressed units must stay to the last. It is better to run the risk of losing certain units than to jeopardize the whole command.

■ 713. The zone of action for the withdrawal should provide the best and most direct routes to the rear position. The movement of subordinate units is coordinated by assigning to them zones of action or definite routes. Generally, zones of action are assigned to the main combat units, especially if they may have to fight while moving back. Routes generally are assigned to trains and to those units which move to the rear under control of the higher command; such units may

include artillery, tanks, and reserves. The zones of action or routes so assigned should usually extend to the rear position. If the rear position is distant, the zones or routes should be indicated back to a distance of 1 day's march.

■ 714. At *night* the *withdrawal* of the greater part of the forces engaged commences shortly after nightfall. Small detachments are left in immediate contact with the enemy. These detachments, formed from troops nearest the enemy, should be well-supplied with automatic weapons, ammunition, and pyrotechnics. In view of the broad front upon which they are deployed, a single covering force commander ordinarily cannot maintain effective control. The superior commander, therefore, provides artillery support, coordinates the action of the elements holding the various sectors, indicates the time of their withdrawal, and prescribes their action in case of hostile attack. They may be directed to withdraw either at a prescribed hour or upon order.

■ 715. The detachments left in contact with the enemy at night, screen the withdrawal by simulating normal activity. By firing from different positions, reconnaissance of combat patrols, and sending up pyrotechnics, they endeavor to create the impression of normally held lines.

Whenever practicable, the foot elements of these detachments should be furnished motor transportation for movement to the rear. Motor transportation is especially desirable when the distance of the retrograde movement is great.

■ 716. Whether the rearward position is organized for defense or is the area in which the command will be assembled for further retrograde movement, the commander makes provision for a covering force in front of this position. The mission of this covering force is to cover the withdrawal of the detachments left in close contact with the enemy and of the artillery supporting these detachments. It has the further mission of protecting the assembly of the main body for further retrograde movement or to serve as an initial outpost if the rearward position is to be defended.

■ 717. At *night* the withdrawal of front line units is executed on a *broad front*. Troops withdraw initially straight to the rear and then move to designated assembly areas where small units are reformed and preparations are made for further rearward movement and assembly into larger units.

■ 718. At night a part of the artillery remains in position to support the elements still in contact. It increases its fire activity to deceive the enemy as to the amount of artillery in action and assists the troops in contact in breaking off combat. Well supplied with ammunition and protected for all-around defense, this artillery sacrifices itself if necessary to insure the withdrawal of the supported elements. The remainder of the artillery is withdrawn to the rearward position, priority in movement being given to the heavier calibers.

■ 719. During withdrawals *antiaircraft artillery* furnishes protection for the assembly areas, the heads of columns, and, particularly, critical localities along the routes of withdrawal.

■ 720. *Cavalry* protects withdrawing troops by reconnaissance, protection of the flanks and delaying action.

■ 721. Continuous reconnaissance is made to facilitate the employment of antitank units to protect withdrawing troops against mechanized attack.

■ 722. *Tanks* are useful in daylight withdrawals, particularly in counterattacks, to assist other ground units in breaking contact with the enemy. When practicable, their action is coordinated with that of *combat aviation*. They are not ordinarily used in night withdrawals.

■ 723. Persistent chemicals may be used to deny or make costly the use of probable approaches. Smoke may be useful in covering the daylight withdrawal of a unit over terrain exposed to enemy fire.

■ 724. In addition to their primary mission of effecting road blocks and demolitions, *engineers* reconnoiter, repair, and mark roads. In certain situations, they reconnoiter and stake out rear positions and furnish guides. They assist the rearward movement of artillery, mechanized, and other units; destroy materials to be abandoned; act as part of a covering force; and constitute an emergency reserve.

RETIREMENT

■ 725. A *retirement* is a retrograde movement in which a force seeks to regain freedom of action, the movement being part of a well-defined plan which has for its purpose the refusal of decisive combat under the existing situation. A retirement may be made in one stage or in several stages,

depending upon the distance involved. When a withdrawal from action precedes the retirement, the actual retirement begins when march columns are formed.

■ 726. 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 to 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.

■ 727. In retirements following a withdrawal, the most important considerations for a commander are to place *distance*, *obstacles*, and a *rear guard* between his main body and the enemy and to regain his freedom of action.

Trains are put in march without delay, if necessary under escort, and sent to the rear to a selected bivouac area. During their retirement they establish dumps of ammunition, rations, fuel, and other supplies en route to meet the needs of the retiring troops.

Antiaircraft protection of important defiles on the route of retirement is established.

As fast as troop units arrive in assembly areas, they are formed into small columns and set in motion to the rear.

■ 728. *Road march formations* usually are taken up when the zone of effective hostile light artillery fire is passed. Formations are modified to meet existing conditions of terrain, visibility, intensity of enemy fire, activity of enemy combat aviation, and tactical requirements for control and rapidity of movement.

■ 729. During the initial phase of retirement made from contact, the division generally assigns specific *routes* to the trains, the artillery, and other auxiliary troops, and indicates when the routes will be cleared for the other troops. A *zone of action* usually is assigned to each combat unit comparable to an infantry regiment in size.

■ 730. As the distance from the enemy increases, small columns are consolidated into larger columns constituted as combat teams. During the march to the rear, constant effort is made to increase the distance from the enemy. This will

necessitate *night and forced marches* as well as effective security measures to protect the rear and the flanks and to delay the enemy.

■ 731. The actual terrain *objective* toward which a retirement is directed, depends upon the mission of the command and the purpose of the movement. It should be such as to favor the future action of the command. Factors which influence the selection of this objective are the actual and potential strength of the enemy; reinforcements that may become available; the time when the enemy can arrive at critical localities on the route of the retirement; and the extent that terrain and the weather favor hostile movement and interfere with friendly movements.

■ 732. The *formation and number of columns* to be employed during retirement depend principally upon the number of roads available and the hostile interference. It generally is desirable to move the major fractions of a deployed force to the rear simultaneously and abreast of each other. However, a hostile threat to a flank may make it necessary for one fraction to hold in position until the movement of the others is well under way. A restricted road net, or defiles in the zone of movement, may necessitate withdrawals of fractions successively. If a flank is threatened during the retirement, the adoption of an echeloned formation may be appropriate.

■ 733. The retirement order of a small command usually designates the time when each subordinate unit commences its movement. In commands the size of a division or larger, the commander usually designates the time that major portions of the command pass initial points or lines and, when appropriate, the hour that certain lines or assembly areas must be cleared. (See FM 101-5.)

■ 734. Clearing the *routes of march* 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 executed by the rear guard. Pertinent information of the location of obstacles and of the nature of the demolitions and contaminations prepared is furnished to the retiring troops. Measures are taken to prevent their en-

dangering our own troops and to insure their execution at the proper time. Chemical troops with chemical mines may be attached to the engineers for the contamination of obstacles and demolitions.

■ 735. *Traffic* is regulated at critical points to prevent congestion, especially in towns, at bridges, and at other defiles. Strong antiaircraft and antitank protection is established at these critical localities until they are cleared by the main body.

■ 736. Security detachments are provided with sufficient *artillery* to support them in the execution of their missions. The remainder of the artillery is so disposed in the retiring columns as best to protect the main body or support the security detachments.

■ 737. The *antiaircraft artillery* is disposed to protect the most vital points on the routes of the retiring columns. As the retirement progresses, the antiaircraft artillery moves rapidly by bounds from area to area, and frequently is given priority on the roads.

■ 738. During a retirement, *cavalry* is employed on security missions, and frequently may constitute or be attached to the rear or flank guards. Reconnaissance, particularly to obtain information of any hostile movement directed toward the flanks, is important and is assigned to the cavalry or to the security detachment controlling the cavalry.

■ 739. *Observation aviation* must keep under observation any hostile forces that are in position to interfere with the retirement, especially on the flanks. It should maintain close liaison with the security detachments. Airplanes usually are placed at the disposal of the artillery with rear guards to observe their long-range fires.

Combat aviation is employed to delay the hostile pursuit. Its action is coordinated with that of the security detachments.

■ 740. *Engineers* accompany or precede the main columns to facilitate their movement. Suitable detachments are attached to rear and flank guards to assist in delaying the enemy. Some engineers may be employed in certain situations to reconnoiter and stake out rear defensive positions.

■ 741. A retirement generally offers opportunities for the use of *chemicals* of all kinds. Smoke may assist security detachments in concealing their movements during successive withdrawals.

■ 742. In retirement orders, present command posts and the next ones to be occupied should be specified. Axes of *signal communication* should be indicated as far to the rear as it is practicable to foresee them.

SECURITY DURING RETIREMENT

■ 743. *All-around security* must be provided. In a short retirement which can be completed in one night, the covering force for the withdrawal usually gives sufficient protection for the movement. (See par. 716.) If the movement continues after daylight, a rear guard normally should be formed to protect the march of the main bodies. Initially this rear guard consists of the troops which covered the assembly of the main body reinforced by contingents of other arms as required by the situation.

■ 744. The *mission of the rear guard* is to protect the main body from 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. When necessary for the security of the main body, the rear guard sacrifices itself in the execution of its mission.

■ 745. A *rear guard* covering the retirement of a combined force consists principally of infantry strong in automatic weapons, supported by artillery. Units of other arms are added in accordance with the requirements of the situation. Antitank weapons, mechanized units, signal troops, chemical troops, and engineers may be included.

The ability of cavalry to conduct delaying action makes it an important element of a rear guard. When the main body has succeeded in gaining sufficient distance from the enemy, cavalry may constitute the principal element of the rear guard.

■ 746. 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.

■ 747. 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 other supporting weapons to force the enemy to deploy and thus to 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 withdraws successively from position to position as the enemy approaches.

The successive 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 changes of position by the artillery of the rear guard are reduced to a minimum. A rear guard position should favor withdrawal by affording covered routes.

■ 748. When the enemy presses his pursuit closely, greater resistance is offered. Advantage is taken of favorable opportunities to punish overhasty pursuit by counterattack. Attack against the flanks of pursuing columns by mechanized troops or cavalry is an effective means of disorganizing the pursuit. The most favorable time for offering a determined resistance is during the late hours of the day to permit withdrawal of the rear guard under cover of darkness.

■ 749. 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 reverse order of march, comprising the reserve, the support, and the rear guard cavalry or motorized detachment. The support provides a rear party and necessary flank patrols.

Because of the direction of march, infantry reconnaissance during the retirement is much more restricted than in case of an advance guard. Chief reliance for the execution of the necessary reconnaissances must be placed upon cavalry, mechanized units, and observation aviation. Mobile troops especially observe and forestall attempts to pass the flanks of the rear guard.

■ 750. When there is likelihood of attack by mobile troops against the heads of the retreating columns, *advance guards* are detailed. They are composed of mobile troops reinforced by antitank and engineer detachments. If there is no threat against the heads of the columns, the principal missions 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. For the latter purpose, military police are attached.

■ 751. Flank security is of especial importance during a retirement. When there is danger of an encircling maneuver in pursuit, *flank guards* composed of mobile troops with engineer, antitank, and chemical units attached, are detailed to cover the exposed flank. When opposed by an enemy strong in mechanized and air forces special attention must be paid to the security of the routes of retirement and the area or position to which the troops are retiring. Under such conditions it will normally be necessary to employ forces other than those retiring to occupy and organize the rear position before it is reached by the retiring forces. When conditions permit, the rear position is organized behind strong natural obstacles.

DELAYING ACTION

■ 752. Recourse to *delaying action* ordinarily implies either lack of readiness for battle or hostile superiority of force. Its purpose is to gain time while avoiding decisive action.

Delaying action may be 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. *It finds especial application in the operations of covering forces and other security detachments.*

In offensive operations delaying action by a portion of the command to delay the arrival of hostile reinforcements may be of decisive importance.

■ 753. Delay of an advancing enemy may be accomplished by offensive action, by defensive action in one position, by delaying action in successive positions, or by any combination of these methods.

■ 754. Skillful use of *terrain* has a decided influence on all delaying operations. A series of parallel ridges across the lines of hostile advance; unfordable streams, swamps, lakes, and other obstacles on the front and flanks; high ground with good observation and good fields of fire at long range; concealed routes of withdrawal immediately behind delaying positions; and a good road net all favor the execution of delaying action.

■ 755. In situations where the enemy has freedom of maneuver and mobile troops and the flanks of a delaying force are open to hostile attack, the *protection of the flanks and rear* is of vital importance. Since the enemy may succeed in pushing by the flanks or in executing a wider maneuver with mobile forces to strike in rear of an occupied delaying position, the commander must make provision to block or destroy such forces.

Ground and aerial reconnaissance forces must be continuously on the alert to locate such threats to flanks and rear.

■ 756. *Delaying action in successive positions* is based on limited resistance on a position, with the intention of renewing this resistance in successive positions if necessary. The defense on each position must force the enemy to early deployment and to time-consuming preparations for battle. Combat ordinarily 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 resistance on the next position. Because of the retrograde and long range nature of such combat, delaying action is executed most effectively by troops possessing a high degree of mobility and great fire power, especially at longer ranges.

In general, contact is made as far forward as possible and continuous light resistance is offered in order to compel the enemy to employ his whole force and to consume a maximum of time. *No more ground than necessary* is given up. The ability to execute planned withdrawals under conditions that permit orderly movement to the rear must, however, be retained.

■ 757. 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 is unable to exploit fully his superiority of means.

The ground in rear of the position should favor a covered withdrawal by screening the troops from hostile view and fire as soon as the position is vacated.

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.

■ 758. The *conduct of delaying action* is facilitated in open terrain by selecting successive positions on high ground 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 other supporting weapons. In general, the depth of the zone of resistance is not great. The artillery and the other supporting weapons are located close to the line of resistance.

■ 759. When the enemy has superiority in combat aviation, or mechanized forces, or both, the commander must ordinarily delay on a position until nightfall and then withdraw under cover of darkness to the rear position. Considerable distance between positions enables the commander to utilize fully the hours of darkness for withdrawal. In such situations, selection of positions strongly protected by natural obstacles which facilitate defense on a broad front becomes a primary consideration.

■ 760. 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 delay-

ing action may be taken as about double those suitable for defense.

A tactical unit is assigned to each sector and is given a combat mission. The strength and composition of each unit is determined by the assigned mission, the terrain, the width of the sector, and the nature of the hostile threat. Mutual support between adjacent units is coordinated by the next higher commander.

Decentralization of operations to combat team commanders will be frequent when operating on a broad front. Continuous liaison between adjacent combat teams, and between combat teams and the higher commander, must be maintained.

■ 761. The defense is conducted in each sector by small units holding the natural strong points of the terrain and supporting each other by flanking fire. In close terrain or during periods of low visibility, close contact between adjacent units is maintained by combat patrols. Local reserves protect the flanks of front line defense areas and cover the withdrawal of forward elements.

■ 762. *Artillery* in general support prepares a plan of interdiction fires covering principal hostile avenues of approach and is prepared to engage distant targets. It is employed to reinforce the artillery in direct support in accordance with the requirements of the situation. Special attention will be given to interdiction of hostile movements toward the flanks and rear.

Light artillery will often be attached to the unit it supports.

■ 763. *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. Anti-tank units are attached to units covering the hostile avenues of approach. To protect an exposed flank, a mobile flank guard is detailed with engineers and antitank units attached.

■ 764. Chemical troops may be employed to place barriers of persistent chemicals on the front and flanks of each position.

■ 765. The *antiaircraft artillery* is employed primarily to protect the artillery, reserves, and critical defiles in rear from hostile air attack.

■ 766. A mobile *reserve*, reinforced by tanks, artillery, anti-tank units, engineers, and chemical troops is prepared to move rapidly to counter mobile threats.

■ 767. As in the defense of any position, an *outpost*, strong in automatic weapons, is deployed well in front of the delaying position to harass and delay the enemy's advance and to keep him in doubt as to its location. Artillery support for the outpost will be provided by units supporting the delaying position.

■ 768. 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.

■ 769. In fighting a delaying action, some troops are disposed on the rear position to cover the *withdrawal* from the positions in front.

■ 770. Timely measures are taken for reconnaissance and for preparation 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 to the senior artillery commander. Of especial importance is efficient operation of the artillery wire net in order that the flexibility of artillery fire may be exploited to the maximum. Signal communication to distant or detached units is ordinarily limited to radio and messengers.

The wire systems of subordinate units are limited to essential lines. Full use is made of prearranged visual signals and of mounted and motorcycle messengers.

■ 771. 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 often 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, and the decision regarding the time of withdrawal is then left to subordinate commanders. The commander exercises control by prescribing a general terrain line to which units eventually will withdraw or in front of which the enemy will be held until a designated hour.

■ 772. Whenever practicable, *withdrawal from a position* is effected under cover of darkness. If protracted resistance is necessary to accomplish this, measures are taken to extend the depth of the zone of resistance and to utilize to the maximum natural obstacles.

■ 773. If the withdrawal must be made in daylight, artillery and other supporting weapons are disposed in depth. *Combat aviation* and *tanks* are employed against those hostile elements which most seriously threaten the success of the operation. A daylight withdrawal may also be facilitated by organizing an *intermediate delaying* (covering) position to be occupied by reserves assigned to cover the withdrawal of troops in front (see par. 708). Subsequent withdrawal of the troops from the intermediate delaying position is in turn covered by other troops on the next delaying position in rear. 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 units should take advantage of such situations to punish an impetuous enemy by heavy flanking fire and by local counterattacks whenever conditions are favorable.

and the time element in signal communication and staff action may be so short, that the air unit must be attached to the ground unit for operational control for definite limited periods.

■ 1042. Support of *troops transported by air* requires extremely close coordination and close control. Such operations require special air force support, including convoy by pursuit aviation, to prevent hostile air action against the expedition while in flight, and on the ground after landing. Preliminary air attack on the landing area and its vicinity may be required to destroy or disorganize local defenses. During the landing and subsequent ground operations, supporting air operations include the laying of a smoke screen and the attack of defending or counterattacking units, both ground and air. While in flight, control of the movement is a responsibility of the air commander.

CHAPTER 15

THE DIVISION

SECTION I

INFANTRY DIVISION

■ 1043. The infantry division is the basis of organization of the field forces. It is the basic large unit of which corps (except armored and cavalry) and armies are formed. It is the smallest unit that is composed of all the essential ground arms and services and which can conduct, by its own means, operations of general importance. It can strike or penetrate effectively, maneuver readily, and absorb reinforcing units easily. It can act alone or as part of a higher unit.

The combat value of the infantry division derives from its ability to combine the action of the various arms and services to maintain combat over a considerable period of time. In active operations the division should be reinforced with air observation means.

When operating alone, additional aviation, engineer, anti-tank and supply means will normally be required by the division.

■ 1044. There are two types of infantry divisions in the United States Army, which for convenience are designated as the "square" and the "triangular" division. The square division retains the brigade organization for infantry and artillery components, each infantry brigade consisting of two infantry regiments, the artillery brigade of three regiments. In the triangular division, on the other hand, there is no brigade organization. Three infantry regiments and four field artillery battalions comprise the major combat elements.

All organic transportation of the square and the triangular infantry divisions is motorized. Neither of these divisions is provided, however, with sufficient transportation to move all its elements simultaneously.

The triangular division organization eliminates the brigade echelon in the chain of command with a corresponding acceleration of order transmission. The field artillery bat-

talions operate directly under the orders of the division artillery officer representing the division commander.

■ 1045. The doctrines of operations and combat by ground, nonmechanized forces discussed in earlier chapters of this manual are applicable to the infantry division.

■ 1046. When a division is operating as part of a higher unit, restrictions on the freedom of action of the division commander are often necessarily imposed by the higher commander. In an advance the corps commander will ordinarily prescribe a zone of advance for each division of the corps. The road net within the zone may largely influence the march formations and supply arrangements within the division. The corps may also prescribe the general line which advance guards of the divisions will cross at a given time at the beginning of the march, the extent of the march, as well as any special formation of the corps for the advance.

Further coordination may be obtained by designating lines which the various divisions must clear by specified times and by designating rear boundaries for divisions at the completion of each stage of the march.

■ 1047. The army or corps has reconnaissance elements which operate in advance of the divisions. While cooperation and contact between these reconnaissance elements and those of the division are necessary, their presence in no way relieves the division commander of responsibility for reconnaissance by, and security for, his own command.

■ 1048. In combat the mission assigned the division may require the division to act in close coordination and cooperation with adjacent divisions or to operate at a distance from the main force. The decisions and actions of the division commander in either situation are predicated upon the greatest assistance to the successful execution of the task of the higher commander.

■ 1049. In all operations the personal reconnaissance of the division commander is of the highest importance. He makes use of all available means of transportation to reach vantage points from which he can gain direct information and exert his influence most effectively and expeditiously on the operations. He must be provided with alternate means of signal communication so that his orders can be speedily transmitted.

SECTION II

MOTORIZED DIVISION

■ 1050. The *motorized division* is a triangular infantry division which has sufficient additional organic motor transportation to permit the *simultaneous* movement of all its elements.

■ 1051. The motorized division is a specially equipped, highly mobile unit intended primarily for employment by higher commanders. It has greater capability than the normal infantry division for rapid movement under suitable conditions but, when dismounted, maneuvers and fights in the same manner as the normal division. The characteristics of the motorized division make it especially suited to execute the following types of operations:

To provide close support of armored or tank units; to consolidate and hold gains made; to protect the flanks and rear of armored or tank units and permit their continued advance; to relieve armored units when terrain renders their operations unremunerative; and to protect armored or tank elements when withdrawn or halted periodically to refuel or to reorganize.

To seize and hold important localities pending arrival of less mobile forces.

To exploit success achieved by armored, tank, parachute, and other units.

To execute envelopments and turning movements either in close cooperation with armored and other mobile units or, under favorable conditions, independently against hostile flanks and rear or strategic localities.

To constitute a powerful mobile general reserve for use either offensively or defensively as the situation demands.

■ 1052. Except in emergency situations, motorized divisions should be employed on missions which permit initially the utilization of their inherent mobility, primarily in support of, or in cooperation with, other mobile forces. When an independent or semi-independent mission is contemplated for a motorized division, provisions should be made for reinforcing it with reconnaissance and security means, tanks, additional motorized engineers, artillery, or other necessary units.

March procedure must insure proper control and direc-

tion, both day and night, by means of vehicular radio, periodic reports, control posts, guides, direction signs, and other expedients. Additional control and coordination of reconnaissance, security, and combat teams may be assured by designation of phase lines.

Maximum exploitation of the mobility of the motorized division by day will be contingent upon control of the air for the area of movement by motor. At all times, dispositions must be made with due consideration of hostile air observation and attack. An adequate observation and warning system must be in operation continuously and include both ground and air elements. Vehicular antiaircraft weapons must be manned and alert for prompt action at all times during movement and at halts. Maximum use of cover, concealment, and camouflage must be habitual. Distances between columns and vehicles in column are increased, but with due regard for the greater time length of the columns and its effect on the tactical employment of the division.

Close cooperation and coordination of reconnaissance and security agencies of all echelons are essential to assure rapid, uninterrupted, and secure movement of motorized units.

Reconnaissance and security groups obtain and transmit timely information of terrain, routes, and enemy dispositions so as to prevent delay or countermarching of other elements. Engineer reconnaissance agents should accompany divisional ground reconnaissance groups.

■ 1053. The motorized division operates normally as two or more closely coordinated combat teams which may advance by separate routes or zones previously examined by reconnaissance agencies. When the situation calls for a strong attack, the division is assembled for concerted action by appropriate maneuver, so as to develop its full power.

Operations must be conducted with the maximum speed consistent with conditions of terrain, roads, and the tactical situation. For this reason engineers must march well forward in order to insure expeditious advance in difficult areas and negotiation of difficult points. Similarly, commanders must habitually move near the head of respective groups. Decisions must be timely. Orders must be brief, normally oral and fragmentary, and transmitted by the most rapid means available—radio, visual signals, staff officer, or vehicular messenger.

While speed and boldness must characterize the operations of motorized divisions, development for combat must be with a proper appreciation of vulnerability to hostile combat aviation, artillery, and mechanized units. In the approach march, motors move across country when practicable with security provided by reconnaissance vehicles. Assembly areas or detrucking points should provide maximum security and cover for personnel and vehicles, and be reasonably secure against effective hostile artillery fire. Parks for personnel carriers must be properly concealed and camouflaged. Park locations should facilitate protection without necessity for detachment of combat elements for that purpose. Anticipatory measures for further movement of vehicles from assembly areas or parks must be habitual to include liaison agents and communication with combat elements, reconnaissance of forward and rear routes, and preparation of routes by engineers.

Motorized divisions which are supporting armored units must provide close support and prompt relief in order to facilitate the continued rapid advance of the armored troops.

In situations where further operation of the motorized division is unprofitable, it should be relieved promptly by less mobile troops and released for use where its mobility can be utilized.

In exploiting a break-through, motorized divisions may be used in support of, or in conjunction with, armored divisions.

■ 1054. The mobility of the motorized division provides higher commanders a powerful, flexible means to meet crises in defensive situations and to launch surprise counterblows.

The special characteristics of a motorized division make it especially suitable for execution of delaying missions, except against armored units.

In order to capitalize the mobility of the motorized division, close control of and coordination of combat teams should be emphasized. This involves both communication means and technique and proper use of liaison agents within the division and with other units.

SECTION III

CAVALRY DIVISION

■ 1055. The *cavalry division* is a tactical and administrative unit consisting of a division headquarters and headquarters

troop, two brigades, mechanized reconnaissance, antitank, artillery, engineer, signal communication and service elements. Scout cars, primarily for distant ground reconnaissance, motor trucks for supply, and motorized elements for command and signal communication purposes are all organically assigned. Specially equipped trucks are organically contained in the division to transport a limited number of horses, men and equipment. Its organization is such, however, that it can continue to operate effectively without the motor elements.

The cavalry division may be assigned independent missions which require operations far from other troops. It may constitute part of a cavalry corps; it may be assigned or attached to a corps, an army, or group of armies, or it may be held in general headquarters reserve.

■ 1056. Cavalry is most effectively employed in those areas where the terrain is definitely unfavorable to the operation of mechanized units or in areas known to be free of hostile mechanized forces. If employed in areas where hostile mechanized forces are likely to be encountered, the cavalry division should be strongly reinforced by mechanized and antimechanized means.

■ 1057. The *primary mission* of Cavalry is combat. The mobility of the cavalry division permits it to extend the scope of operation of less mobile ground troops and secure freedom of action for them. In a war of movement, cavalry is employed initially for surprise thrusts into enemy territory, for reconnaissance, and for screening and covering other forces. Thereafter, its most effective employment is in large groups for swift and decisive action. Its main strength must not be dissipated through indiscriminate detachments, nor sacrificed through prolonged performance of missions which can be performed more satisfactorily by other arms.

■ 1058. Cavalry ordinarily executes *reconnaissance* in cooperation with aviation. Aviation locates the enemy at a distance and orients the ground reconnaissance elements, thereby conserving their energy and speeding up their execution of reconnaissance.

■ 1059. The cavalry division executes *reconnaissance* for larger units in accordance with instructions from the higher

commander. These instructions include all pertinent information about the enemy and friendly troops, the missions of the larger units, the intentions of the higher commander, the mission of the cavalry division expressed in terms of the information required, the area to be reconnoitered and the cooperation and coordination between the cavalry division, reconnaissance aviation, and other reconnaissance agencies.

The higher commander assigns to the cavalry division a zone of reconnaissance which ordinarily does not exceed 25 to 30 miles in width. The cavalry division commander redistributes this zone to reconnaissance detachments varying in strength and composition according to the enemy opposition expected and the relative importance of their missions.

In distributing forces for reconnaissance and in assigning missions, the division commander estimates the relative importance of factors affecting the mission of the division and assigns greater strength and a more aggressive mission to detachments operating in decisive zones.

The cavalry division commander indicates the general axes or zones for reconnaissance detachments within the division zone of action and the lines to be reached at designated times by elements of the detachment. The distance between the reconnaissance detachments and the main body of the division varies with the situation; at times it may become several days' march. Reconnaissance detachments are not responsible for the immediate security of the division. This must be provided by the detail of the necessary covering forces.

When reconnaissance detachments are operating at considerable distance from the division, or when secrecy considerations necessitate radio silence, the establishment of advance message centers will facilitate the forwarding of information and reduce the burden on the reconnaissance elements. Under such circumstances, the protection of the advance or relay stations devolves upon the division commander.

When the distance between the main opposing forces is so reduced that the mobility of the cavalry cannot be utilized, the division should be rapidly shifted and, depending upon the situation, directed against the enemy flanks or rear, disposed to protect a flank, or placed in reserve.

■ 1060. A cavalry division protects the disposition and action of other ground forces by *counterreconnaissance* or

screening, which may be conducted either offensively or defensively. In executing a counterreconnaissance mission the division seeks to defeat or neutralize enemy ground reconnaissance forces.

In the performance of counterreconnaissance the cavalry division ascertains at the earliest practicable time the location and activity of the enemy cavalry or other major ground forces whose operations may jeopardize the main forces.

A screening mission is most effectively accomplished by the early defeat of the enemy ground reconnaissance forces. The dispositions of the division in offensive counterreconnaissance are similar to those prescribed for reconnaissance. Reconnaissance detachments operate aggressively and locate the main enemy forces to obtain information for the division upon which it can base further operations. In defensive counterreconnaissance, which is most effective when established along a continuous obstacle, patrols are pushed to the front; and the division commander disposes his forces so as to block the main routes of approach.

When screening the concentration of large forces, cavalry divisions usually act defensively. The screen utilizes available obstacles to the maximum and is established at a sufficient distance to the front to keep enemy ground reconnaissance agencies from observing the location and disposition of the forces being concentrated.

■ 1061. Large bodies of horse cavalry usually *maneuver* mounted and fight dismounted. Cavalry uses the mobility of its horses to gain the advantage of surprise against the hostile flanks and rear from which dismounted fire attacks can be employed effectively and decisively.

Terrain may be the controlling factor. Where concealment exists for a dismounted advance, losses are minimized. Conversely, where there is no concealment or cover, a quick mounted dash from a concealed line of departure often results in fewer losses.

Long mounted advances against troops in position, and mounted attacks against prepared positions, or against troops in position and able to employ their combat power effectively, should not be made.

■ 1062. The dispositions of the cavalry division for *attack* usually include a pivot of maneuver about which the com-

mand operates, a maneuvering mass charged with the main attack, and a reserve.

As soon as contact is foreseen, the division endeavors to secure points of observation and to deny them to the enemy.

In a meeting engagement, the advance guard establishes the pivot of maneuver. In a more deliberately prepared attack, a special force may be detailed to establish it. The pivot of maneuver engages the enemy's attention and pins him to his position by a fire attack or by a combination of fire attack and maneuver.

The maneuvering mass contains the main offensive power and often constitutes the greater part of the division. The division commander assigns to the leader of this fraction the accomplishment of the vital offensive action and allows him sufficient liberty of action to take full advantage of the developments of the situation. He informs him of the general plan, the mission of the maneuvering mass, and the duties of the other elements of the division. He usually specifies the general location, and the route thereto, from which the attack of the maneuvering mass is to be launched.

■ 1063. The *reserve* is kept mounted or close to its horses. Its initial location depends upon its contemplated employment. The division commander uses the reserve promptly to strike at a weak area in the hostile dispositions, to push through a success gained either by the pivot or the maneuvering force, or to pursue a defeated enemy. Should the attack fail, the reserve may be employed to cover the reorganization, to assist in holding the position gained, or in occupying a rear position when a withdrawal follows.

■ 1064. When a cavalry division is to be employed in the *exploitation* of a break-through, it is moved to the vicinity of the main effort of the attack which is expected to break through the enemy's defenses. The breach should be sufficiently wide to enable the cavalry division to pass through without receiving severe fire from the flanks. The mission assigned the division on clearing the breach is clear-cut, aggressive, and should be relentlessly carried out.

■ 1065. When the cavalry division constitutes an encircling force *in pursuit*, it seeks to block the enemy retreat, especially at defiles and other critical areas; it delivers attacks against

the enemy flanks, and carries out destruction on his lines of retreat.

■ 1066. When the cavalry division is acting alone, it seeks to destroy the hostile retreating force by direct pressure and encircling pursuit. (See ch. 9.)

■ 1067. Cavalry divisions may be employed on the *defensive* to seize and hold a position pending the arrival of other forces, to cover a withdrawal, to delay the enemy's advance, or to fill a gap in the line of battle.

■ 1068. Within the scope of its powers and limitations, cavalry operates, in defensive combat, the same as infantry.

Due to organization and characteristics, cavalry units usually occupy comparatively broader fronts with less depth than do corresponding infantry units.

In defensive combat the position or area to be defended is prepared for defense and occupied by a small proportion of the available cavalry force consisting principally of horse elements, while the bulk of the command including the mechanized elements, by maneuver and threat, or actual attack, endeavors to block or divert the enemy at a distance. Even when it is necessary for cavalry to defend a particular area or position, its best chance of success lies in initial dispositions in advance of the final defense area. In this manner, inherent mobility will be used to best advantage. Against an enemy strong in cavalry, the division reserve should be large.

■ 1069. In executing *missions of delay* the cavalry division employs defensive tactics, offensive tactics, or a combination of the two, consisting of frontal delay and flank attack.

It avoids decisive combat.

Every effort is made to surprise the enemy by the choice of delaying positions and by the forms of action used.

The maximum amount of time is gained by forcing the enemy to reconnoiter, maneuver, and deploy.

The delaying force checks the enemy by bold and aggressive action, mounted and dismounted.

It usually withdraws before suffering serious loss unless its missions require more determined resistance.

Surprise attacks delivered over previously reconnoitered ground on the heads of hostile columns as they emerge from defiles, woods, or villages, have excellent chance of success.

SECTION IV

ARMORED DIVISION

ORGANIZATION

■ 1070. The *armored division* is the basic large armored unit of the combined arms. It comprises troops of the essential arms and services so organized and equipped as to make it tactically and administratively a self-contained unit, capable to a considerable extent of independent action.

■ 1071. The armored division is a powerfully armed and armored, highly mobile force. Its outstanding characteristics are its battlefield mobility and its protected fire power. Other important characteristics are: extended radius of action; shock power; logistical self-containment; and great sensitiveness to obstacles, unfavorable terrain, darkness and weather.

■ 1072. The armored division is organized primarily to perform missions that require great mobility and firepower. It is given decisive missions. It is capable of engaging in all forms of combat, but its *primary role is in offensive operations against hostile rear areas*.

■ 1073. Two or more armored divisions may be organized into an armored corps. (See FM 100-15.)

■ 1074. The armored division consists fundamentally of five echelons: *command, reconnaissance, striking, support, and service*. The component arms and services are organized, equipped and trained to operate within the division framework in accordance with their tactical role. When operating separately or as part of an armored corps, the division is reinforced by the attachment of such additional arms and services and by the support of such aviation as the mission and situation demand.

■ 1075. The *command echelon* is organized and equipped for great speed in the conduct of operations. Plans must be simple and flexible. Rapidly changing situations require advance planning, preparation of terrain studies, and *close contact* with developments in forward areas in order to make changes in the initial plan and expedite the announcement of subsequent decisions and orders. Maximum use is made of

standing operating procedure, air liaison, and special pre-arranged signals.

■ 1076. The *reconnaissance echelon* performs ground reconnaissance for the armored division. If necessary, it fights for information. It works in close cooperation with observation aviation, troops transported by air, and supporting ground units. Its reconnaissance is characterized by fast, bold, aggressive action and by prompt transmission of information procured. Success of armored operations depends largely on prompt and aggressive exploitation of the results of reconnaissance. In many situations, the reconnaissance echelon seizes terrain objectives in advance of the division pending the arrival of other elements. Under certain conditions it executes delaying missions. During combat it may be assigned reconnaissance or security missions or may be held initially in division reserve to meet emergencies.

■ 1077. The *striking echelon* is the main attack force of the armored division. It consists of tank regiments reinforced as the situation requires by other elements organic to the division. Reconnaissance and heavy weapons elements are included in the tank organizations.

■ 1078. The *support echelon* consists of infantry carried in armored vehicles. It is reinforced by artillery and other organic elements of the division in accordance with the mission and tactical situation. Its basic role is to support closely the striking echelon by offensive or defensive action.

■ 1079. The *service echelon* assures prompt supply, evacuation, maintenance, and administration of the division. (See FM 100-10.)

■ 1080. The *artillery* components are organized and equipped to render immediate, controlled fire support to the various elements of the division. Timely support is facilitated by the organization and equipment of armored artillery and the transmission of information by radio.

Once the attack is in progress, the speed of the striking force may make its support by artillery impracticable. Combat aviation must take over and execute the missions assigned to artillery in more slowly moving operations.

■ 1081. *Engineer units* facilitate the movement of the armored division by removing, or assisting in the passage of, obstacles and mine fields; by strengthening bridges; and by constructing, repairing, and maintaining crossings. Demolitions and natural and artificial obstacles are used to hinder or canalize movements of hostile forces. Engineers engage in combat when necessary for the accomplishment of their assigned work.

■ 1082. The *signal troops* of the armored division are organized for the rapid establishment and maintenance of signal communication. Because of its speed, radio is the principal means used, but all practicable means are provided. Effective signal communication between armored units and supporting artillery and combat aviation is vital in armored operations.

■ 1083. *Combat aviation* is employed against hostile aviation to prevent air observation and attack of the division. During battle it is used for direct support of operations. Its missions include attacks on hostile command and supply installations; attacks on hostile reserves and formed bodies of troops, particularly hostile armored units; attacks on hostile antitank weapons, artillery, and other ground weapons; attacks on targets of opportunity and critical points in the enemy position and the maintenance of air superiority in the decisive areas.

■ 1084. *Observation aviation* performs command, reconnaissance, observation, liaison, and signal communication missions and cooperates closely with the division reconnaissance echelon. Air observation of artillery fire is necessary if fire is to be delivered on targets which cannot be observed from the ground. Observation aviation maintains effective liaison and coordination between the tanks, artillery and combat aviation.

■ 1085. *Troops transported by air* may be employed in conjunction with the operations of the armored division to land in advance of it, to secure terrain objectives on the routes of march or to seize vital points in rear of the hostile front.

■ 1086. Attached *antiaircraft units*, equipped with weapons suitable for both air defense and antitank employment, pro-

vide protection of areas and installations vital to the operations.

■ 1087. Attached *chemical units* are charged with the planning, execution, and supervision of chemical operations. They are employed to supplement organic means of the division in the execution of smoke missions during operations.

RECONNAISSANCE

■ 1088. Speed of movement of the division and of the enemy requires air and ground reconnaissance forces to operate at great distances from the main body. The distance at which air reconnaissance operates is never less than the operating range of hostile armored forces. These distances at which the division reconnaissance battalions operate are influenced by the imminence of contact with hostile ground forces and the characteristics of these forces. Reconnaissance agencies of lower units search the area intervening between the division reconnaissance battalion and the main body. When the threat of hostile air attack is present, air reconnaissance includes the known location of the threat and is extended to such distance as will afford the division and supporting pursuit aviation ample warning of an air attack.

When necessary, the air reconnaissance effort is supported by combat aviation; ground reconnaissance units of the division are given such additional support from other elements of the division as the situation and mission demand.

■ 1089. In conjunction with the execution of specific missions, all reconnaissance elements report information of terrain, roads, signal communication facilities, landing fields and supplies observed. Ground reconnaissance elements should include engineer personnel whose mission is to determine the condition of roads and bridges and furnish timely information of any repairs or construction required. Negative reports must be submitted with the same promptness as is positive information.

SECURITY

■ 1090. Security depends largely on the efficacy of concealment, of supporting combat aviation and antiaircraft artillery, and of ground security detachments in preventing discovery in bivouac and during movement.

Timely warning from far reaching, aggressive, air and ground reconnaissance is vital to protection against surprise. Natural barriers, with their crossings or passes destroyed or blocked, and defended, provide a high degree of ground protection with economy of force for both the division and its lines of communication. Camouflage, dispersion, concealment, and high speed in movement, combined with the aggressive employment of combat aviation and antiaircraft weapons, afford the best security against air attack.

■ 1091. Precautions and protection against attack, principally against air attack, are stressed during periods of refueling and maintenance. Congestion must be avoided. Maximum use is made of concealment and cover.

■ 1092. In cooperation with large forces, security may be provided initially by other troops so that the armored operations may come as a complete surprise to the enemy. During subsequent operations, the superior commander may prescribe security measures to be performed by other troops for the protection of the combat elements of the division, the mobile supply base, and the lines of communication. In all situations, columns or groupings of the division are responsible for their own local security.

■ 1093. Bridges over unfordable streams, passes through mountains, and other defiles are seized in advance of the main body and protected against both ground and air attack. Existing natural barriers paralleling the direction of advance are used to establish protected corridors for security of the division and its lines of communication.

■ 1094. Usually *security detachments* for daylight movements are composed of tank units reinforced by other arms. During night movements, during extended periods of tank maintenance and refueling, or when terrain is occupied for protection, infantry and machine guns are the principal component. Security detachments for the movement are smaller and operate at greater distances between elements than for cavalry or foot divisions.

■ 1095. During movement, *frontal security* is normally performed by column advance guards.

In proximity to hostile armored forces, column advance guards are stronger and operate at a greater distance from the main body than when opposed by other hostile forces. Zones of responsibility are assigned by division to column commanders.

■ 1096. During movement, *flank security* is provided where practicable by utilizing natural and artificial obstacles, protected by detachments and by flank guards detailed by column commanders.

■ 1097. During long halts, and in bivouac, the division secures itself principally by far reaching reconnaissance, by skillful use of terrain and natural and artificial barriers, by depth of disposition in the halt area, by an outpost and by local security measures. In proximity to the enemy or behind the enemy lines, all around security is provided. Infantry, with artillery, antitank and engineer units, constitutes the principal element of the outpost.

■ 1098. The area selected for a halt to assemble, reorganize, rest, or refuel should permit rapid communication with reconnaissance elements, and should provide natural terrain barriers to hostile attack, particularly in the presence of hostile armored units. The halt area may be utilized as a base for the continuance of operations.

■ 1099. Based on information received from its reconnaissance and security agents, the armored division dispatches troops and combat aviation, if available, to destroy a known, potential hostile threat before that threat can become a real danger to the division.

MARCHES

■ 1100. The armored division normally marches in multiple columns to facilitate readiness for action and protection against hostile air and armored force attack. In the presence of hostile aviation, secrecy, surprise and protection are favored by night marches. When tactical considerations govern, march columns are constituted in accordance with the probable employment of the striking and support echelons in combat. Mobility is exploited to achieve surprise.

■ 1101. The tank elements usually lead when the column contains both tank and infantry units. However, during hours

of darkness, when the situation is obscure, when the plan of maneuver contemplates the commitment of the infantry prior to the tanks, and when the employment of the tanks cannot be reasonably foreseen, infantry is placed in the lead.

OFFENSIVE OPERATIONS

■ 1102. Tactical operations of the armored division are characterized by bold maneuvers executed at high speed to create a preponderance of power in the decisive area. Combat action is further characterized by the maximum coordination possible initially, followed by decentralization of means and reliance upon the initiative of subordinates.

Operations are predicated upon deliberate, detailed planning and rapid, aggressive execution. Completeness of plans is limited only by the time available.

The timely personal influence of the commander must be exerted in all operations. He must have at his disposal various means of rapid transportation and signal communication to enable him to exert this influence.

■ 1103. All armored force attacks contemplate the rapid transfer of shock power and protected fire power into the vital part of the hostile rear area from an unexpected direction. The attack is launched in mass in a decisive direction with such speed and violence that the enemy is afforded no time or opportunity to organize and coordinate his reaction before the armored attack mission is accomplished. Such attacks produce early, hostile demoralization and decisive results.

■ 1104. The mobility of the armored division permits great latitude in the choice of direction and method of attack. Whether the attack will be executed as a turning movement, envelopment, or penetration, will be largely determined by the hostile dispositions and organization of the ground, the terrain, the time factor, and lines of communication within the hostile area.

■ 1105. Four conditions should be present or be created for successful offensive action: air superiority, surprise, favorable terrain, and the absence or neutralization of massed enemy defensive means.

■ 1106. In order to obtain surprise, all preparatory movements are carefully concealed and measures are taken to prevent hostile ground and air observation of the division. The mobility of the armored division is exploited to keep the enemy in doubt as long as possible as to the area of its employment. Radio often is silenced prior to the attack. After the attack is launched the element of surprise may be retained by sustained speed and power.

■ 1107. Areas favorable for attack are determined from the information obtained by map study, from reconnaissance agencies, from higher and adjacent units, and from troops already in contact with the enemy.

Armored units can be employed on comparatively rough terrain. Localities with heavy timber, high boulders and stumps, steep slopes, marshes, deep or muddy bottom streams, and streams with abrupt banks are, however, obstacles to armored vehicle operations. Defended towns or cities are avoided.

■ 1108. Ground antitank measures include natural and artificial obstacles, demolitions, strongly organized localities, mine fields, antitank weapons, artillery and armored units. The attack is planned so as to neutralize, blind or overcome the hostile antitank defenses in the zone of attack and to strike at defensive weakness.

■ 1109. In attack the combat elements of the armored division generally are disposed into three parts: a striking force (striking echelon), a supporting force (support echelon), and a reserve.

■ 1110. When the initial terrain is unfavorable for tank operations or when hostile antitank defenses are strong, the support echelon of the armored division may attack in advance of the striking force to secure ground favorable for the initiation of the tank attack. If operating in close cooperation with other troops, the entire armored division may be held out until the difficult zone has been taken by other troops or has been disrupted by artillery and air attack.

When conditions permit the striking echelon to lead the attack the support echelon follows the striking force to occupy and hold objectives seized by the striking force.

■ 1111. Reserves are employed to protect the flanks of the attack and to maintain its continuity and direction.

■ 1112. Except when the attack is launched by passing through foot troops already in position, the division as a whole usually assumes attack formations directly from march columns. Ordinarily, a short halt is necessary for subordinate units to designate objectives on the ground.

■ 1113. Zones of action and a line of departure often are prescribed for coordination. Attacking tank units are disposed in approach march formation when they cross the line of departure. As soon as resistance is encountered by covering detachments, the leading tank waves assume attack formations.

■ 1114. Prominent terrain features may be designated as phase lines to coordinate the effort of all troops, including supporting combat aviation.

■ 1115. The depth and frontage of the initial combat formation depend primarily upon known hostile dispositions and characteristics, the terrain, and distance to the objective.

The attack of the striking force must be organized and launched with sufficient depth to insure sustained striking power. It is delivered on the minimum frontage necessary to overcome resistance to its advance.

■ 1116. The attack is rapid, deep and sustained until the decision is won. It is characterized by the employment of the striking echelon in mass in a series of waves, by rapid concentrations of artillery, heavy machine-gun and combat-aviation fire on critical objectives, and by proper timing in the engagement of reserves.

■ 1117. Each subordinate tank unit in the attack is assigned a direction and one principal objective. Suitable objectives are those hostile elements or installations, the destruction of which will disrupt most effectively the enemy operation.

■ 1118. The situation, hostile dispositions and characteristics, the number of objectives which can be assigned definitely to major tank units, the direction of advance to the assigned objectives, and the terrain may admit an attack in column or waves or they may require echelonment of the waves on one or both flanks.

In an obscure situation the main attack is launched in a deep column of deployed tank units. This formation is flexible, is easy to control during later deployment, and makes available the means with which to meet unforeseen contingencies.

■ 1119. The infantry element of the support echelon is transported in armored personnel carriers. It remains mobile as long as the situation permits. When assigned the mission of following the striking echelon, it follows closely; prepared to overcome the remaining hostile resistance in the areas over which the tanks have passed, to occupy and hold the ground gained, or to cover the reorganization of tank units during the course of the attack. Prior to the attack by the striking echelon, it may be used to develop the enemy situation with a secondary attack supported by artillery, combat aviation, engineers, and, when necessary, by some of the tanks.

■ 1120. The attack of the armored division requires careful coordination of the supporting fires of the artillery, heavy infantry weapons, including mortars, and combat aviation to prevent concentration of hostile mobile antitank weapons in the zone chosen for the offensive, and to neutralize enemy weapons dangerous to the attack.

At times preparatory fires may be omitted in order to attain surprise.

■ 1121. The artillery covers the development of the division. It may be employed to neutralize hostile rear defenses until the engagement of the tanks or to concentrate on areas secure from tank attack. In support of the division attack the artillery fires are directed to the neutralization of the antitank defense and artillery which constitute the greatest threat to the advance. Frequently small artillery units are pushed forward, prior to the attack, in order to deliver direct fire on targets of opportunity. Prearranged signals and messages are used to facilitate cooperation between the tanks and supporting weapons.

■ 1122. In a meeting engagement with unarmored troops the attack is pushed to conclusion without delay. The attack is launched promptly and aggressively in order to afford the enemy no time to develop and concentrate his defensive means. Tank attacks on a broad front against a flank will

engage a greater number of enemy troops simultaneously and permit a maximum use of shock and fire power. If flank attacks are not practicable, frontal attacks with deployment on a narrow front in great depth are made from march columns.

■ 1123. In a meeting engagement with hostile armored units the advance guard, supported by artillery and combat aviation, attacks to limit hostile maneuver to the front and to deceive the enemy regarding the direction, time and strength of the main blow. The situation may favor the main blow as a follow through of the advance guard action. Otherwise, the division seeks to launch its striking force against the flanks and rear of the hostile force to surround and destroy it.

Supporting combat aviation attacks hostile tanks, artillery, antitank weapons, reserves, and reinforcing troops.

■ 1124. In an enveloping attack by the division acting alone, against an enemy in position, the support echelon may attack to fix the enemy front while the striking echelon makes the main attack. In cooperation with other large unarmored units, the entire armored division is employed to make or lead the enveloping attack while other units hold the enemy in position.

When the direction of the envelopment has been determined, the striking echelon preceded by its reconnaissance units and covering detachments, develops and maneuvers rapidly to launch its attack. Elements of the support echelon not required for the secondary attack, follow the striking echelon closely.

■ 1125. The armored division penetrates an enemy position on a narrow front and then extends to attack the enemy rear in order to destroy his defense and exploit the success.

■ 1126. In penetrations of organized positions in cooperation with other large units of the combined arms, the zone of the initial break-through may be neutralized or breached by other troops. The armored division is then employed to continue the attack and complete and exploit the hostile disruption. It is followed immediately by other highly mobile units to extend, widen, or hold the breach. Motorized divisions are especially suitable for this purpose.

■ 1127. Delay in launching the armored division through a neutralized zone or a breach affords the enemy time in which to organize and coordinate countermeasures and may result in a serious reverse.

The shoulders of the gap must be held securely, either by troops of the support echelon or by other troops. The passage of the armored division through the breach must be effectively protected against antitank gun fire and hostile air and ground reaction. Once the breach has been effected, the enemy must not be permitted to close it. Flank attacks continue to widen the breach.

Hostile counterattacks against the flanks of the penetration are met by combat aviation, by reserves, and by the fire of artillery, antiaircraft artillery and antitank weapons.

■ 1128. When forward progress of attacking units is stopped by hostile resistance, fire of artillery and combat aviation is concentrated on the resistance, and flanking movements are initiated at once.

Elements of the support echelon, reinforced by combat aviation, artillery, and engineers, may be employed to advance the attack beyond terrain obstacles or ground unfavorable for tank action.

■ 1129. Some reorganization of assault units is often necessary after each tank objective is overrun. The leading waves may be passed through by other tank units. Every effort must be made to maintain the continuity and speed of the attack.

■ 1130. If the tank attack is unsuccessful initially, the advance elements of the support echelon strong in machine guns and antitank guns immediately establish a position behind which the tanks withdraw and reorganize for further effort. The supporting artillery and combat aviation protect the reorganization.

■ 1131. When the armored division has passed through the hostile organized resistance, its ground reconnaissance elements are dispatched at once toward the objective. These elements, working in close cooperation with the air reconnaissance, report hostile reserves and artillery, hostile command and supply installations, and unfavorable terrain. Appropriate targets are attacked.

■ 1132. The division must provide flank protection. Flank protection is aided by the speed of the advance, the utilization of natural barriers on the flank and by the support of combat aviation.

■ 1133. When the striking echelon captures its objective, the necessary reorganization is initiated at once under the protection of the support echelon, artillery and combat aviation.

Reorganization and consolidation of the objective are limited to the essentials. An advance to a second objective or exploitation of the success is begun without delay. Exploitation often will be executed in close cooperation with other highly mobile troops which have been moved close behind the armored division in its attack.

Extended exploitation may be initiated immediately after passage of the hostile organized resistance without waiting for reorganization or consolidation of the objective. This is particularly true in attacks against inferior hostile troops and against troops weak in aviation and mechanized units.

■ 1134. The armored division may be employed to exploit its own success and the successes of other troops by rapid attacks from the rear to overrun the hostile artillery, to destroy reserves and command and supply establishments, to break up hostile counterattacks, and to block strong reserves moving to restore the battle position or to occupy rear positions.

■ 1135. In exploiting a break-through the armored division is effectively employed to operate at great distances in the hostile rear areas to block routes of hostile movement, to attack strategic reserves, and to seize vital areas. In such operations, the division normally constitutes a part of a larger armored force which is closely followed by other mobile units, such as motorized divisions. Since the purpose of these operations is the complete destruction of the enemy, by placing a powerful striking force in his rear, the division moves through the area of the break-through at the greatest possible speed. Troops transported by air may be suitably employed in advance of the armored divisions. Opportunities for decisive exploitation by armored forces must be created.

■ 1136. Before directing exploitation or pursuit, the commander of the armored division must assure the required

supply of ammunition and motor fuel in combat elements. His plan must include provision for both supply and motor maintenance during the subsequent operations. Normally, little dependence should be placed on procuring motor fuel locally.

■ 1137. Once undertaken, pursuit must be boldly pushed with the utmost vigor and ruthlessness. Acting alone, the division organizes all combat elements for pursuit by direct pressure and by encirclement. A strong encircling force is provided. The tank units with the direct pressure force seek to pass through gaps which the attack may have opened in the hostile dispositions or to gain the rear of the enemy's covering force in order to attack the withdrawing hostile elements. The encircling force moves to strike the heads of the retreating columns by placing itself across the line of retreat on terrain favorable for its operation.

■ 1138. In a pursuit, when operating with large forces, the armored division reinforced with highly mobile units is normally employed as an encircling force.

■ 1139. In all pursuit operations, combat aviation acting in conjunction with the pursuing armored units materially assists in obtaining decisive results.

DEFENSIVE OPERATIONS

■ 1140. The employment of the armored division on a defensive position seriously restricts the use of its mobility and should be resorted to only in emergency.

■ 1141. Opposed to greatly superior armored forces, the division avoids decisive combat if its mission permits such action. If its mission requires it to gain time, it either occupies terrain unfavorable for hostile tank attacks or employs delaying tactics. When a position must be defended by the division against superior hostile armored troops, every advantage is taken of obstacles to protect the position and restrict the direction of the hostile attack.

The position selected should afford room for maneuver, suitable terrain for counterattacks and concealed routes of withdrawal. The units of the support echelon organize defense areas disposed in depth so as to take full advantage of

obstacles. The tank units prepare plans for counterattacks and for ambush against hostile tank units.

■ 1142. When the terrain is favorable, the armored division either alone or in cooperation with other forces may be employed in counterattack. The characteristics of the armored division may justify assigning it objectives considerably deeper or further to a flank than those whose capture would be necessary merely to restore the defensive position.

■ 1143. When a large force reinforced by armored divisions passes from the defensive to the offensive, the armored divisions may be employed rapidly to envelop a hostile flank or to form the spearhead of a penetration of a weak portion of the hostile front.

■ 1144. In delaying action against less mobile forces the support echelon operates against the heads of the advancing enemy units, while the tanks threaten or attack the hostile flanks and rear. Against hostile armored troops, every effort is made to locate each delaying position behind a formidable natural obstacle. Tank units protect the flanks and execute local counterattacks.

When tanks are employed in an attack, intensive reconnaissance to discover antimechanized defenses must be initiated promptly and must be continued throughout the tank action.

When necessary, engineer troops with suitable equipment are attached to tank units to assist their advance. Mine fields and serious obstacles must be destroyed before the tank attack is launched. Their destruction must be accomplished at the last possible moment in order not to warn the enemy of the impending attack.

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2

Training Circular No. 31, Employment of Larger
Armored Units, 1941

Training Circular
No. 31

WAR DEPARTMENT,
Washington, May 6, 1941.

Employment of larger armored units.--1. Purpose and scope.--Pending the publication of pertinent doctrine in FM 100-15, the broad policies governing the employment of large components of the Armored Force, independently or in combined operations, are announced herein. This publication supplements the doctrine announced in Training Circular No. 4, War Department, 1940, which has particular application to the armored division and GHQ tank battalions, and pertinent paragraphs of Training Circular No. 10, War Department, 1940. See also Training Circular No. 10, War Department, 1941.

2. Methods of employing elements of the Armored Force.--Operations of components of the Armored Force may, at various times or simultaneously, involve--

a. The attachment of GHQ tank battalions and groups to infantry, cavalry, and armored divisions or corps.

b. The grouping of armored divisions, corps, or GHQ tank groups with other corps or field armies for combined operations.

c. The employment, by the field or theater commander, of armored divisions and corps on independent or semi-independent missions without reinforcing logistical means, or additional supporting troops other than reconnaissance aviation.

d. Operation as task forces wherein armored divisions or corps or, at times GHQ tank units, are teamed with motorized divisions, antitank battalions, anti-aircraft automatic weapons battalions, and GHQ engineer, maintenance and supply units, closely supported by combat aviation, parachute and other troops transported by air.

3. General considerations.--Larger units of the Armored Force properly utilized, either separately or in combination with other means, can achieve rapid decisive results in the area of employment. They are to be employed on decisive missions. They must not be frittered away on unimportant objectives. Missions far in advance of other main forces are justified when the operation will obtain decisive results, but should be closely supported by other equally mobile troops (see par. 4). Proper utilization necessitates definite appreciation and careful consideration of the following:

a. Those conditions which should exist or be created for successful action; such as air superiority in the decisive area of employment, surprise, favorable terrain, and absence of or neutralization of massed defensive means.

b. The mobility of armored units permits great latitude in choice of direction and method of attack. Decision as to whether the attack will be executed as a turning movement, envelopment, or penetration will be largely determined by the time factor involved, and by terrain and hostile dispositions, including rear installations. The most suitable areas for employment are on open flanks or through existing gaps created by penetrations.

c. The assignment of missions or objectives to armored units must be preceded by a careful consideration of the more important factors affecting operation of the armored and other units associated in the operations. These factors are: weather; terrain throughout the entire area of contemplated operation; nature of the enemy and his methods of combat; availability of other supporting troops; and especially, adequate space and road net for the operation of the units concerned. The axis of advance of major armored and motorized units will be along roads.

d. Most decisive results will be gained from the grouping of overpowering masses of armored units and launching them against vital objectives deep in the hostile rear. The armored mass must be supported by sufficient means to maintain momentum until attainment of the objective.

e. Most effective and decisive application of the mobility and power of large armored and motorized combinations will often necessitate decentralization of control to the appropriate commanders who will be guided only by the broad general plan of the higher headquarters. After the initiation of the operation, however, the superior commander must keep armored unit commanders constantly informed of the situation.

f. Maximum development of the demoralizing power of larger armored formations will be dependent in a large measure on continuous support of adequate reconnaissance and observation aviation, and timely assistance of combat aviation in overcoming critical ground resistance beyond the ability of available artillery. This should

be assured by direct arrangement between air and armored unit commanders and by adequate air-ground signal communication nets. Higher commanders can enhance the effectiveness of supporting aviation by habitually assigning the same components to operational teams or task units.

g. Sustained mobility of armored and motorized units is dependent upon adequate, timely replenishment of required supplies, especially fuel and to a lesser degree oil and lubricants. Regular vehicle maintenance must be continued. When operations are to be prolonged for several days, it must be appreciated that armored and motorized units must have opportunity for daily maintenance. See also paragraph 8d.

h. Because of their mass employment, armored and motorized units are difficult to conceal during approach and development. Elaborate measures for deception and surprise will often be required and may involve variously: advance stockage and concealment of essential supplies; improvising and concentrating dummy armored vehicles or marked activity of actual units in localities distant from that of contemplated employment; extensive camouflage work; and rapid shifting of armored masses to the area of decisive attack.

4. A task force is a temporary tactical grouping composed of one or more arms or services formed for a specific mission or operation. The operation of large armored formations will frequently dictate the organization of task forces. The composition of such forces should be decided only after careful estimate of the associated means required to accomplish the projected mission or operation. This estimate must consider the nature of the expected resistance, the distance to which operations are projected, the terrain to be traversed, and the troops available for the operation. The additional means to be associated with armored elements will vary with each situation but may comprise appropriately: infantry divisions, foot or motorized or components thereof; cavalry units; engineers; combat aviation; parachute troops; other troops transported by air; antitank battalions; antiaircraft units; and additional maintenance and supply facilities, especially for GHQ tank groups.

5. Methods of operation.--a. Offensive operations of armored units, acting either alone or as part of a

combined force, are characterized by rapid thrusts into vital parts of the hostile rear followed by immediate exploitation to complete enemy demoralization. Armored division commanders coordinate and control the movement of subordinate units by appropriate assignment of routes, zones, objectives, or phase lines. Phase lines are prescribed only when required to insure coordinated action or movement of two or more units and must not involve prolonged halts thereon. The attack is massed initially, but is extended promptly in frontage and depth by the armored reconnaissance and combat elements after the hostile position is penetrated. As the operation gains momentum, reconnaissance agencies should precede combat elements at the earliest opportunity to seek out and develop soft spots through which combat elements may pass rapidly. The more time allowed for this reconnaissance, the more effective it will be. Contact once gained must be maintained.

b. Maximum advantage is taken of speed and terrain barriers to prevent or neutralize enemy countermeasures. Reconnaissance agencies provide information on which to base security measures. Other combat detachments provide immediate advance, flank, and rear security. Closely supporting motorized units protect the immediate rear and lines of communication of the armored elements. Other motorized units should relieve the armored unit commanders of concern for extended lines of communication and assure continuous logistical support. When armored units are operating as task forces, the security of the immediate supporting motorized elements will be enhanced by their following the armored combat elements as closely as possible.

c. Following the advance of armored units, other elements of task forces (see par. 4) operate to overcome remaining hostile resistance, occupy ground gained, keep gaps open, extend and protect the flanks, and relieve armored units temporarily checked in order to permit their employment in a more remunerative direction. Whenever practicable, other less mobile troops should follow motorized task units as closely as possible to wipe out the last vestige of resistance, meet counterattacks, and relieve the more mobile elements for close support of the armored units.

d. In addition to establishing and maintaining local control of the air, supporting combat aviation is

directed against hostile antitank dispositions, artillery and reserves, especially armored, in the immediate zone of advance. Concurrently, if available aviation suffices, it may be directed against hostile command and supply installations, targets of opportunity such as more distant reserves and other formed bodies of troops, especially armored units.

e. In an envelopment, the support units of armored divisions and task forces may, when the situation demands, attack or contain enemy elements on the flank while armored units make the main attack.

f. Troops transported by air may be suitably employed in advance of armored units to seize critical points or to create opportunity for immediate exploitation by armored forces operating alone or as task forces.

g. Highly organized areas should be avoided. Where their attack is necessary, it will usually be advisable for other specially equipped infantry and engineer troops to breach the enemy defenses in advance or concurrently with the advance of the armored units unless heavy tanks are available to lead the attack.

h. Against equal or superior hostile armored forces, friendly armored units will avoid frontal assault and maneuver to cut off or destroy enemy armored unit supply facilities, followed by blows against the rear of enemy detachments.

6. Exploitation and pursuit.--a. Large armored formations, operating separately or as part of task forces, are especially suited for exploitation and pursuit. They should be launched boldly against vital areas deep in the hostile rear. The exploitation and pursuit phase must be anticipated to insure that appropriate plans are made and timely orders issued in all echelons. There must be no relaxing of pressure on the shaken or beaten enemy. Objectives for armored units should be those which will halt hostile rearward movement until less mobile friendly troops can close with the enemy. Concurrently, some armored elements operate to destroy, disrupt, and paralyze enemy communication and supply.

b. Pursuit by large armored units, operating alone or as major elements of task forces, is rapid and continuous, even during hours of darkness.

c. When the operations of armored units are likely to carry them beyond practicable operating radius of

organic supply means, special provision must be made by the higher commanders to place necessary supplies within operating radius of the units. Likewise, special arrangements must be made by higher headquarters for rapid communication with the widely dispersed elements of armored formations.

7. Defensive situations.--Large armored units, as part of other major forces on the defensive, are held in readiness for the counteroffensive or major counter-attack. The employment of the armored units must be carefully timed and coordinated with the attack objectives of the other forces. Local air superiority during the period of the counteroffensive or major counter-attack is a prerequisite to success of the operations. Usually the armored attack should be delivered to disrupt the continuity of the hostile offensive and not merely to restore the defensive position.

8. Logistical considerations.--a. Where prolonged operations of armored divisions and corps or GHQ tank units are contemplated, adequate arrangements must be made by the higher headquarters to insure timely replenishment of supplies required by the armored units. Where the armored units are required to operate at great distances from their base of supplies, when continuity of supply is interrupted by enemy action, and in other emergency situations, delivery of urgent supplies may be made by air.

b. As a general guide to the logistical capabilities of armored divisions, the following, expressed in terms of days of supply, are the maximum supplies carried organically:

Class I--3 days (including one "D" ration) in units, plus 1 day in quartermaster battalion.

Ammunition: 2 days' supply of small arms, 37-mm, 60-mm mortar; 1 day's supply 81-mm mortar, 105-mm howitzer, and 75-mm AT guns.

Gasoline and oil: 2 days' supply.

In addition, the quartermaster battalion of the armored division can carry 120 tons of ammunition or gasoline and oil (over and above the normal division reserve of 1 day's supply of Class I -- 40 tons).

c. The following are the approximate tonnages of 1 day's supply of the indicated items for an armored division:

Ammunition, all class 600 tons

Gasoline and oil (assumed <u>average</u> oper- ating distance - 100 miles)	220 tons
Class I	40 tons

d. Where several armored divisions or GHQ tank units are under control of one headquarters, consideration should be given to retaining one or more division or GHQ tank units in reserve either for the purpose of extending combat operations or of relieving similar units to permit necessary maintenance and replacement operations. In this manner continuity of the operation and necessary maintenance, rest, and replacement will be assured.

(A.G. 353 (4-10-41).)

By order of the Secretary of War:

G. C. MARSHALL,
Chief of Staff.

Official:

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

3

FM 100-15, *Field Service Regulations: Larger Units* (Extract), 1942

~~RESTRICTED~~

FIELD SERVICE REGULATIONS

LARGER UNITS

CHANGES } WAR DEPARTMENT,
No. 1 } WASHINGTON, September 10, 1942.

FM 100-15, June 29, 1942, is changed as follows:

■ 248. Two classes of obstructions * * *. Plans should provide that all obstructions are covered with fire.

Mines should be used, whenever practicable, to obstruct the landing field and any landing areas in the vicinity. Since some mines which are used to prevent the use of the landing field by hostile aircraft may be detonated by hostile bombs during counter air force operations, plans for defense must provide for prompt repair of such damage. Antitank mines should be used to obstruct possible avenues * * * and made known to all friendly forces.

[A. G. 062.11 (8-12-42).] (C 1, Sept. 10, 1942.)

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

J. A. ULIO,
*Major General,
The Adjutant General.*

WAR DEPARTMENT,
WASHINGTON, June 29, 1942.

FM 100-15 (Field Service Regulations, Larger Units) is published for the information and guidance of all concerned. It discusses the functions and operations of larger units. It presupposes a familiarity with the provisions of FM 100-5 (Field Service Regulations, Operations) which covers the doctrines pertaining to the leading of troops and combat of the combined arms; FM 100-10 (Field Service Regulations, Administration); and Joint Action of the Army and the Navy, 1935. Policies and procedure for coordinated action by United States land and sea forces, as set forth in the latter publication, are particularly applicable to the operations of task forces composed of military and naval units. Doctrines pertaining to the defense of coast lines and landing operations on hostile shores are discussed in other manuals.

Field Service Regulations, Larger Units, is not intended as a treatise on war but as a guide for commanders and staffs of air forces, corps, armies, or a group of armies. Operations of the division are discussed in FM 100-5.

This manual emphasizes the importance of modern means of combat. It stresses the fundamental doctrine that successful modern military operations demand *air* superiority.

[A. G. 062.11 (1-21-42).]

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

J. A. ULIO,
Major General,
The Adjutant General.

DISTRIBUTION:

D (10); B (5); R (5); Bn (2).
(For explanation of symbols see FM 21-6.)

II

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III

- 76. Important functions of the strategic advance guard include the following:
- By reconnaissance to locate the enemy, especially his main forces. This reconnaissance complements that of the air forces and any highly mobile ground forces operating directly under the supreme commander.
 - To engage the enemy in order to fix his main forces to a definite locality, to draw them to a definite locality, or to draw them in a desired direction.
 - To screen the main forces and gain time for the movements necessary to carry out the tactical maneuver planned as a result of all information gained.
 - To act as a pivot of maneuver for the main forces.

CHAPTER 5

STRATEGIC MANEUVERS

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SECTION I

OFFENSIVE MANEUVER

GENERAL

- 77. The strategic offensive retains the initiative; it permits the higher commander to direct his movements and employ his forces in a decisive effort in accordance with his plans. Its psychological advantage is great; it provides a powerful stimulus to the war efforts of both the civil and military components of the nation. Initiated with surprise and energetically followed through, it throws the opponent off balance and on the defensive from which he may be unable to change until decisively defeated or until the accomplishment of the mission assigned the forces initiating the offensive has been achieved.
- 78. The strategic offensive demands great initial impetus, continuity of effort, and flexible dispositions, so that its culmination in battle will find the offensive force capable of launching decisive, destructive blows against the enemy forces. For decisive results in modern warfare it is essential that the offensive forces have air superiority in the areas of decisive operations. Combat aviation and motorization have increased striking power both for the offensive and defensive forces, but the offensive force still has the advantage of in-

initiative and earlier concentration. This advantage offers enormous opportunities for success if it is not neutralized by the enemy's ability to canalize or restrict maneuver, or counteract superiority by the utilization of terrain and combat aviation. The defender, on the other hand, must conform not only to the general movements, but must be prepared to meet the many capabilities of his opponent. This may tend to disperse the defender and weaken him at areas which are, or lead to, decisive strategic objectives of the attacker.

■ 79. The Maintenance of routes of communication in hostile territory presents numerous difficulties. Large reinforcements in personnel, munitions, and equipment must be kept moving forward. It may be necessary to employ considerable forces in investing or containing fortresses or large fortified areas and holding and exploiting the occupied areas of enemy territory. The inhabitants, as well as parachute troops, can be expected to interfere with the gaining and transmitting of information and with the maintenance of supply lines, as well as to engage in guerilla operations. Careful estimate of the situation will enable the commander to foresee many of the difficulties which may be encountered and provide for timely measures to meet them effectively, without diminishing unduly the power of, or resources required for, his decisive movements.

■ 80. Whether the strategic offensive can be initiated in all theaters at the same time will depend upon many factors, among which are the mission of the armed forces, the relative strengths of friendly and enemy forces, terrain, lines of communication, and defensive or other strategic requirements in certain areas. With inadequate forces the strategic offensive should rarely be undertaken in secondary theaters. When such an offensive is necessary, it must be launched with boldness, rapidity, and surprise. The assumption of the strategic defensive in one or more theaters may permit the decision to be reached in the primary area of operations. For the doctrines concerning main and secondary attacks see FM 100-5.

- 81. Strategic offensive maneuvers have for their purpose—
- a. Forcing the enemy to accept combat under conditions favorable to the attacker.
 - b. Forcing the enemy to abandon his will to continue war-like operations by occupying or seriously threatening his vital areas.

Since the second contingency will rarely be achieved without battle, the culmination of the offensive maneuver will ordinarily find the opponent ceasing to maneuver and taking position from which to receive the attack in an area most favorable to him and in accord with his strategic requirements. When this condition is reached, offensive operations will be continued to gain tactical success by break-through, envelopment, or turning movement.

■ 82. Offensive operations on interior lines consist of maneuvers from a central location against enemy forces advancing along convergent lines or against enemy forces of two allied countries which are separated by the common opponent of both. The advantage of interior lines is increased as the distance separating the converging or otherwise separated hostile forces is increased. Time and space initially favor forces operating on interior lines. This advantage is at the maximum when the separated forces can be struck and defeated in detail before one can come to the assistance of the other. This necessary delay of separated forces may be gained by employing against one or more of them small, highly mobile forces whose primary mission is delay, yet which can strike hard offensive blows against an overanxious or rash enemy.

THE BREAK-THROUGH

■ 83. The *strategic break-through* may consist of a decisive blow launched in one area or of penetrations with decisive blows launched in two or more areas. The purpose of both is an advance deep into hostile territory to encircle and destroy or capture large hostile forces or to seize strategically important areas.

■ 84. *Break-through operations launched in one area* have for their primary objective the separation of the enemy's forces into two parts, followed by the envelopment or encircle-

ment and defeat or destruction of one or both of the separated parts.

■ 85. Break-through operations launched in two or more areas will ordinarily envisage the junction of the highly mobile leading elements of each penetrating force in rear of the hostile rear areas or other objective. They further provide for the closing of the pincers thus formed, and annihilation or capitulation of the forces surrounded, or the capture or investment of the strategic objective encircled. The break-through forces must be prepared to meet enemy counterattacks from the encircled enemy forces as well as from those outside the encirclements. The maintenance of strong pressure on the hostile front between, as well as on areas outside and adjacent to the areas of penetration, tends to fix the enemy in those areas and restrict maneuver of his forward elements.

■ 86. Break-through operations require careful planning, deception, surprise, and the massing of superior striking and exploiting means, including armored forces, motorized elements, and combat aviation in the area of decisive attack. Whether the break-through operations are initiated by infantry divisions or by task forces of large armored elements reinforced by combat aviation and other suitable mobile ground forces closely followed by motorized elements, the break-through must be exploited by highly mobile, hard-striking forces. The encirclement and capture or destruction of the enemy can best be accomplished when the leading and encircling elements have the mobility and power to form the arc of the circle behind the enemy and permit the rapid advance of other ground forces, motorized, horse, or foot elements or a combination of any or all of these, to close in on him from the front, flanks, and rear. Not only does the rapid advance of these forces provide protection to the flanks and rear of the leading elements, keep supply routes open, and decisively close the circle, but by taking over the fronts of the leading forces, these forces are released for other missions. These missions may include operations against large enemy reserves, threats to or capture of strategic areas, exploitation beyond the encirclement, or movement to other fronts for other decisive operations.

■ 87. It is essential that the offensive forces have air superiority and that this air superiority is maintained throughout the operation. Combat aviation not only assists the break-through operations by attacks against hostile ground forces in contact, but by attacks against large enemy reserves which may be employed to assist the defender, and by providing pursuit protection over the area of operations. (See ch. 7.) Aviation has a major function of gaining and transmitting important information prior to the initiation of the operation, and of reporting events on the field of battle as well as those distant from the scene of operations which may eventually influence the outcome of the operations. It must exert every effort to gain and transmit this information. Air superiority itself is a tremendous factor in preventing the enemy from gaining timely information. It may prove decisive in gaining surprise over the enemy.

■ 88. Modern means of combat have placed in the hands of the higher commander weapons of speed and striking power which permit him to plan well in advance and employ these means decisively in the break-through and subsequent encirclement and effectively to meet changes in the situation.

■ 89. A break-through operation launched with insufficient striking and exploiting force runs the grave risk of failing to break through the hostile defensive areas and of merely bending the hostile front. This, in turn, may subject the attacking force to strong enemy counterattacks or to a hostile counteroffensive.

■ 90. When terrain and other conditions permit, large armored formations may be effectively and decisively employed as the leading elements of the task forces employed in the break-through operations. They are capable of thrusting themselves into and through the hostile dispositions as a wedge and in such formation as to assure protection initially of their own flanks. This wedge formation also furnishes some security to the flanks of the other ground elements which are following the armored formations. The armored formations open the way for the timely advance of other ground troops which widen the breach and strike the flanks

and rear which have been exposed. Pressure is continuously maintained on the hostile front, between and adjacent to the areas of break-through. Missions assigned the armored formations will be governed by the object to be attained. In one situation they may constitute an element of the encirclement force whose task is to envelop and destroy a major hostile force. In another they may be assigned strategic area objectives for the purpose of destroying hostile lines of communication, blocking movement of large reserves, or capturing facilities vital to the opposing force, while the encirclement and destruction of the forward hostile elements is assigned to other ground units. Against a retreating force they may be employed to gain the rear or flank of this force and block its retreat while less mobile elements advance to complete the destruction or cause the surrender of the enemy. In whatever maneuver the components of the break-through forces are employed, the forces must be so organized and of sufficient strength to execute a complete break-through and the plans must be so flexible that full advantage can be taken by mobile, hard-striking forces of changes in the situation favorable to the friendly forces. This also requires a thoroughly adequate signal communication system. (See also ch. 9.)

■ 91. The *selection of the area*, or areas, for the break-through will be influenced strongly by the objective (whether enemy forces or vital areas), by the suitability of terrain throughout the area for operations by the forces to be employed, by dispositions of the hostile forces, including large reserves, and the time required to move adequate forces to the area. In some situations it may be desirable to select an area in which terrain is less favorable when by so doing combat intelligence indicates less hostile resistance is to be expected and surprise as to direction and intensity of the advance and attack is gained. When the opposing forces are composed of armies of two or more allied nations, the area at which such armies make contact along their front may be particularly suitable for the break-through. This consideration also applies, though to a lesser degree, to the area of contact between two armies. It is in these areas that coordination and cooperation are often weakest and

where national jealousies or conflicting aims weaken the opponent. Large salients along the opposing fronts may offer especially favorable areas for the break-through since in these areas exposed hostile flanks already exist.

■ 92. Full advantage must be taken of all means to deceive the opposing commander. With plentiful lateral routes of communication and modern means of combat and transportation it may, under certain conditions, be feasible to build up a strong force in one area, attack with a part of this force, follow this attack with the secret movement of the mass of the assembled force to the area where the decisive effort is to be made, and strike in that area. Such an operation requires that forces sufficient to effect a strong continuing blow be employed in the area of initial concentration. Otherwise, there will be little deception, since the enemy may be able to block the original attack with minimum forces and meet effectively the forces intended for the decisive effort, and the advantages of mobility will be lost.

THE ENVELOPMENT

■ 93. The *enveloping maneuver* may be initiated off the field of battle after contact has been gained; or it may be the decisive action following the break-through.

■ 94. The strategic objective, the terrain, the relative strengths of opposing forces, and the enemy situation may be such as not only to indicate, but to make advantageous, the initiation of movements off the battlefield by the enveloping forces. Such movements will often facilitate the surprise execution of the envelopment simultaneously with or following the fixation of the hostile forces by those friendly forces which make contact frontally. This maneuver should not ordinarily contemplate the movement of the two component parts beyond mutually supporting distance. (See FM 100-5.) However, the size of each should be such that it can maintain itself against the enemy. It is highly desirable that the enveloping forces move secretly and strike with surprise.

■ 95. An envelopment may be the result of an advance so planned and executed as to be in sufficient width to extend beyond one or both flanks of the hostile forces. In such an

advance the higher commander must guard against an over-extension of his own forces or their separation into parts by a barrier which may unduly delay or prevent concentration at a decisive area. Flexibility in plans, an adequate system of routes of communication both laterally and in depth, and a superiority of forces, air and ground, in the decisive area, are essential to the successful execution of such a maneuver.

■ 96. After contact has been gained and the hostile forces have been developed, an enveloping maneuver may be executed by troops on the battlefield. When the maneuver aims to strike the hostile flank well in its rear, it is preferable to employ for the envelopment, reserve or other mobile elements not in close contact with the enemy. Such a maneuver requires thorough reconnaissance, careful planning, excellent staff work, suitable security measures, and the exercise of great initiative by all commanders. Great freedom of action must ordinarily be granted to subordinate commanders, since a capable enemy will not remain idle while the offensive force maneuvers. It must be expected that the opposing commander will take suitable measures, including offensive action, to counter the planned maneuver.

■ 97. Air, naval, and land force superiority may permit decisive results to be gained by an envelopment, by air-borne and sea-borne troops, of an enemy, one or both of whose flanks rests on navigable waters. The existence of suitable landing beaches, inlets, or other waters favoring the movement of small landing boats, along and in rear of the hostile flank, provide suitable areas from which to launch an envelopment or turning movement against the hostile rear combat elements and lines of communication. Maximum results are to be expected when the maneuver can be launched with surprise; when the envelopments by sea-borne and air-borne troops can strike simultaneously, and when the objective is of such nature that its capture makes the position of the defender untenable and at the same time blocks the retreat of part or all of the hostile forces.

■ 98. The relative merits of the break-through and the envelopment will not be discussed. They both have the same ultimate aim: to defeat or destroy the hostile forces or to

capture decisive strategic areas. When his mission and a careful estimate of the situation have caused the commander to decide upon both the strategic and tactical offensive, he must employ all means at his disposal to drive through boldly and energetically to the objective. Under special conditions strategic requirements may demand a tactical offensive when the calculated risks indicate only a fair chance of success. The commander must not, however, rush headlong into enemy traps.

TURNING MOVEMENT

■ 99. Lines of communication and the maintenance of adequate supply to the combatant forces are of vital importance in modern operations. The requirements in munitions, equipment, food, and motor fuel can be satisfied only from the zone of the interior or other suitable supply bases. To deprive the field commander of essential supplies reduces his otherwise effective army to the status of a force equipped only with primitive means of combat. Consequently, no field commander can afford to sacrifice his lines of communication. He must meet a threat to these vital lines. Meeting this threat may draw him from an otherwise advantageous position and force him to maneuver in conformity with the plan of his opponent. This may be accomplished by the turning movement or maneuver wherein the final defeat or destruction of the hostile forces is achieved or aided by directing a suitable proportion of the offensive forces deep against the hostile rear, the hostile lines of communication, or specifically against the sources of enemy supply. The commander of the forces comprising the turning movement seeks by surprise, deception, and rapidity of movement to avoid hostile defenses of major organized forces in order to strike his objective rapidly and decisively.

■ 100. For large forces the turning movement is frequently executed in conjunction with the frontal advance. It is particularly suited to highly mobile, hard-striking components, such as large armored formations strongly reinforced by combat aviation and other suitable means. Its objective may be at a great distance from the field of battle on which the forces in the frontal advance initially engage the enemy.

- 101. Forces executing the turning movement may be required to sustain themselves for considerable periods of time. Because of the vulnerability of their own lines of communication they may be required to transport with them supplies in amounts considerably greater than they ordinarily carry. Special provision for supply by air transport may be advisable or necessary.
- 102. Whether or not the turning movement can be initiated prior to the contact of other friendly forces with the main enemy forces will depend on many factors. Whenever possible the forces engaged in the turning movement should be from those not in contact with hostile forces when the maneuver is begun. It is preferable to begin the turning movement from an area well to the flank, and strike the hostile rear vital areas with surprise, disrupt the hostile high command and assist in completing the total defeat of the enemy. There can be no formulas as to the area from which the turning movement is begun nor the area to which it is directed. In one situation the friendly forces may be within mutually supporting distance (modern means of transportation have greatly increased this distance); in another the turning movement may consist of operations both by land, air, and water to gain the hostile rear areas or areas otherwise vital to the prosecution of war by the enemy.
- 103. The successful turning movement presages great strategic and tactical victory. However, the commander must give consideration to certain dangers inherent in this maneuver. The commander of the turning forces will ordinarily be given a general directive for operations. Therefore the possibility always exists that the turning forces will turn too soon or too close to the main hostile forces, find themselves confronted by a defended enemy front, and be forced into a frontal attack or a change in direction of movement with the probable resulting delay. As a consequence of the great distance separating the friendly forces there may be the risk of defeat in detail.
- 104. In determining the practicability of a turning movement the higher commander must evaluate the means he has available, the means with which the enemy can oppose his

maneuver, and the possible hostile reactions. The separate forces must be strong enough to execute their missions without assistance from the other. Each must be capable of fully exploiting a success gained by the other. *The elements allotted the commander of the turning movement should be strong in highly mobile, hard-striking forces.* These must be reinforced with powerful combat aviation means and plentifully provided with suitable reconnaissance agencies, both ground and air. The commander to whom is entrusted the execution of the turning movement must be bold and aggressive. He must be one who, having weighed carefully the factors of the situation, daringly puts his decision into execution. He must give full play to his initiative and be able quickly to exploit successes or turn seeming disadvantages into situations favorable to himself.

STRATEGIC WITHDRAWAL AND COUNTEROFFENSIVE

- 105. It cannot be expected that advances along the entire front of the armies on the offensive will be uniform. Successes will be notable on some parts of the front; inability to advance will be common on others; reverses also must be expected. These varying degrees of success, stalemate, and reverse provide the energetic, bold commander opportunities to exploit situations which seem unfavorable to him and favorable to the enemy, and thus achieve results of decisive importance. Under such conditions the higher commander may direct a withdrawal where a stalemate has resulted or where he is experiencing reverses, and follow this withdrawal with a counteroffensive to envelop and encircle the pursuing hostile forces. Boldly conceived, carefully planned, and energetically executed, this maneuver may bring decisive results.
- 106. In the execution of the counteroffensive from a withdrawal for the purpose of enveloping and encircling the hostile forces, certain fundamental doctrines are applicable:
- a. The withdrawing forces preferably should withdraw from an area whose recapture is important to the enemy.
 - b. Terrain, preferably on both flanks of the withdrawing force, should permit the flanks of the withdrawing elements to be held and protected. Behind these protected flanks

strong counteroffensive forces are secretly assembled. When the counteroffensive is to be initiated, they are launched in decisive directions.

c. Adequate mobile reserves are required for the rapid concentration of forces necessary to accomplish the encirclement. *Armored and motorized divisions are particularly suited for this component of the counteroffensive.* These reserves should be moved secretly, ordinarily at night. Secret movement by day requires absolute air superiority in the area of movement. The requirements of deception may not make this air superiority desirable in the area of withdrawal.

d. The conduct of such an operation requires the most careful planning, a highly trained and disciplined command, and great initiative in all ranks.

e. During the withdrawal, and particularly just prior to the launching of the counteroffensive, the withdrawing forces must be aggressive. They must force the opposing commander to focus all, or certainly most, of his attention on the situation in front. Local counterattacks and strong covering force action characterize this maneuver.

f. When the counteroffensive is launched, a strong frontal attack is combined with the attack of the encircling forces so directed as to "wrap up" the opposing forces and destroy or capture them.

SECTION II

DEFENSIVE MANEUVER

GENERAL

■ 107. Various factors may dictate the adoption of the strategic defensive in one or all areas at the opening of hostilities. Included among these factors are the superior readiness of the enemy; inferior strategic position, such as frontiers exposed on the flank; inferior combat strength in one or more theaters; or the advisability of deliberately adopting a defensive attitude initially to let the enemy expose his plans and commit himself.

■ 108. The strategic defensive confers some advantages initially on the nation or force which must gain time in order fully to mobilize its effort for offensive action. The defender

will not have long lines of communication in hostile territory to protect, nor large hostile populations to control. Where time and space permit, the defender may trade terrain for the time necessary for the full mobilization of his offensive power. However, for psychological reasons, not only the troops but the civilian population must be informed of, and impressed with, the conception that such losses are temporary only. The commander has a responsibility to the nation as a whole. A nation correctly oriented as to the aims and requirements of the military forces can be expected to, and will, give its utmost to support the action of its armed forces. The strategic defensive, ably conducted and appropriately employing the tactical offensive, will permit the field commander to assemble his forces as they become ready. By assembling in such areas and at such times, as to permit him to take full advantage of enemy mistakes, and move decisively to the offensive, he will be able to defeat the enemy's armed forces and break the will of the hostile state to continue operations. The execution of such maneuvers requires that the higher commander possess the highest qualities of leadership, that he be decisive and of adamant will power, with the ability to select the correct time for offensive operations, and that all forces be thoroughly indoctrinated with the fundamental consideration that only by the offensive can decisive results be achieved.

■ 109. Although conditions may require the adoption of the strategic defensive initially, the fundamental consideration remains that no decisive results can be achieved by the defensive. The power of initiative, over-all threat, and the ability to strike at the tactical or strategic area of his choosing remains with the higher commander who is on the offensive. It is he who forces his opponent to conform to, and seek to parry his movements.

■ 110. The strategic defensive employs the tactical offensive under suitable conditions to gain time, to block hostile advances, to threaten seriously enemy dispositions, lines of communication or strategic areas. The tactical offensive may also be employed to gain a local success as a stimulant both to troop and civilian morale. Although the strategic defen-

sive as a national policy initially has been forced by lack of complete military readiness, by surprise offensive action on the part of the enemy, or by other considerations, the ultimate aim must be the general offensive. Unnecessary or heedless expenditure of personnel and material in minor tactical offensive operations which do not contribute to the general success must be avoided. This does not imply, however, that a calculated risk should not be taken to gain a tactical success which will operate to facilitate the later general offensive. Such an operation may entail the employment of suitable forces to regain an objective of great importance or to reinforce elements engaged in combat against greatly superior forces seeking to capture an area of decisive strategic importance. However, the higher commander must not be influenced too greatly by the conditions on a small part of his front. He must visualize the whole and estimate the situation as a whole.

- 111. Whether the defensive will be conducted initially with the intention of holding a general area and offering decisive battle in this area or of executing delaying or retiring maneuvers will depend on many factors. Among these are the time during which it is estimated the defensive attitude must be maintained; the space in which the defender can maneuver without engaging in decisive battle; the necessity of protecting vital strategic areas such as essential industries, mines, or other sources of raw material; and the terrain on or near the boundary between the two States as well as that farther within the boundary. Whatever the character of the defensive maneuver decided upon, it must be predicated upon maximum mobility and achievement of surprise, both in dispositions and conduct, with the ultimate objective of turning to the offensive and defeating the enemy decisively.
- 112. It must be expected that an opponent strong in armored means will seek to use this means to strike deep into the defender's rear. (See pars. 83 to 92, incl.) It is on roads that armored units can achieve greatest speed. In many situations, terrain and weather conditions may limit rapid movement of armored and motorized formations to roads. It is therefore imperative that the commander give careful

consideration to, and make adequate provision for, suitable antitank defense measures along all roads in rear of his forward elements and in great depth on those roads. Not only can highly mobile enemy elements which succeed in breaking through or enveloping a position jeopardize the defender and frequently make his position untenable but, unless they are blocked or delayed, these elements may be able to disrupt the orderly withdrawal or retirement of the friendly forces. Where time and facilities permit, the antitank defenses along roads in rear areas can be provided by prepared installations. This permits the commander to retain his mobile elements for active offensive employment as the situation dictates. Tank-destroyer units provide the commander hard-striking, highly mobile means which should be employed aggressively to seek out and destroy enemy armored formations.

DEFENSIVE IN ONE POSITION

- 113. When strategic considerations cause the high commander to decide to execute his defensive mission in one position, the selection of the area for this position is his next major strategic decision. This decision will be influenced by the factors which have been considered in FM 100-5 under tactical operations of the defense and by the necessity of protecting vital installations or areas. Whether the force engaged be an army corps or the entire field forces of the nation, the position must be such that the enemy cannot risk passing the defender without offering battle. On the other hand, the defender must not take a position which will permit his forces to be contained by a part of the enemy forces while the remainder advance with slight opposition to decisive objectives. The flanks of the position must be protected. Where other conditions permit, they are rested on difficult obstacles.
- 114. The defensive in one position may be the result of systematic planning and preparation, during which the complete structural development of the position has been accomplished. It may be adopted on the outbreak of hostilities to block the maneuver of the enemy, on terrain which then

must be organized, or it may be the culmination of maneuver to block hostile moves. Under either condition it is of the utmost importance that the mobility of the defending forces be such that hostile successes in one area can be effectively met by elements from other areas. *It is the essence of the defense that the enemy be prevented from exploiting his initial success; and of the strategic defense that it can, at the proper time and place, launch a decisive counteroffensive.*

■ 115. Factors indicative of, or favoring, the defensive in one position include the following:

- a. Early arrival of reinforcements.
- b. Terrain, the defensive power of which greatly augments the combat strength of the defender.
- c. Short distance of the enemy from decisive strategic objectives.
- d. Location of a position on the flank of the enemy advance which will force him to change direction, and commit his forces in a maneuver less favorable to him.
- e. Strong natural or prepared flanks which cannot be turned or which will require long, tedious operations to turn.

■ 116. Although the commander may plan to hold on one position until he can launch the offensive, he must be prepared to meet enemy successes. Rear positions must be reconnoitered and prepared. Under suitable conditions on a part of the front, he may execute a strategic withdrawal to these positions and follow by a decisive counteroffensive. (See pars. 105 and 106.)

■ 117. Not only must the commander assure himself that suitable defensive measures are taken against hostile ground forces, but also must be especially vigilant to defeat attacks against his rear by parachute troops and other troops transported by air or water. (See FM 100-5.)

RETROGRADE DEFENSIVE

■ 118. The *retrograde defensive* avoids decisive battle until adequate measures can be effected for the successful assumption of the offensive. It delays the enemy, draws him farther from his major supply bases, and elongates his lines of com-

munication; it inflicts losses by offensive tactical operations and disrupts his plans by the operations of detachments in his rear. The retrograde defensive in one area may be combined with the offensive in another area. This combination of maneuver finds special application when it will operate to draw component elements of the hostile force away from each other. The retrograde defensive is suitable when time and space factors are favorable and the initial loss of terrain will be more than compensated by the reasonable expectation of subsequent decisive results. Tactical considerations affecting the conduct of retrograde actions are discussed in FM 100-5.

■ 119. Inherent in the retrograde defensive are the dangers that the defending forces will become involved in a decisive engagement at an unfavorable time. For instance, the enemy may strike while a withdrawal or retirement is in progress, or the actions of subordinate commanders may precipitate a major engagement prematurely. The essence of this maneuver is to cause the opponent to prepare for a series of battles, not one of which the defender permits to reach culmination until the decisive moment arrives.

■ 120. Whether the retrograde defensive is initiated prior to or following close contact, the general situation, the lines of communication net, the operations planned for the future, and the location of strategically important areas will largely influence the commander's decision as to the direction of movement to be taken by his subordinate elements. They may be directed to move straight to the rear or they may be directed to converge on a given area; or the convergence may follow after a series of moves straight to the rear. Under any condition, control of the entire force must be such that at the proper time a concentration of forces may be effected and launched in a decisive counterblow. Throughout the defensive action, suitable reserves must be available to prevent an enemy break-through or exploitation of local enemy successes.

■ 121. The retirement straight to the rear simplifies execution of the maneuver; it permits the maximum use of road and rail nets; it confronts the enemy on a broad front whose

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TACTICS AND TECHNIQUE

CHAPTER 1

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SECTION I

GENERAL

■ 1. ROLE.—The role of the Armored Force and its components is the conduct of highly mobile ground warfare, primarily offensive in character, by self-sustaining units of great power and mobility, composed of specially equipped troops of the required arms and services. Combat elements of the Armored Force operate in close cooperation with combat aviation and with large units of ground troops in the accomplishment of a mission.

■ 2. TACTICAL ORGANIZATION.—*a.* The Armored Force consists of armored corps, armored divisions, and GHQ reserve tank battalions. It is composed of troops from more than one arm or service, transported in armored or other type motor vehicles.

b. The armored corps consists of a headquarters and headquarters company, two or more armored divisions, and certain organic and auxiliary units termed corps troops.

c. The armored division is a self-contained unit of the several arms and services organized tactically and administratively for independent action. It may be attached for operation with an infantry or a cavalry corps.

d. The GHQ reserve tank group contains a headquarters and headquarters detachment and three GHQ reserve tank battalions of either light or medium tanks or both.

e. The GHQ reserve battalions are self-contained units, of either light or medium tanks, organized tactically and administratively for employment by battalion or by group to furnish additional striking power to other ground forces including armored divisions and corps. Trained as units, they are immediately adaptable to inclusion in larger groupings of other ground troops.

■ 3. CHARACTERISTICS.—The characteristics of Armored Force units are:

a. *Mobility*.—All combat units are mounted in armored motor vehicles.

b. *Fire power*.—Through a multiplicity of weapons mounted on the vehicles.

c. *Armor protection*.—All combat vehicles are protected by armor of varying thickness, capable of withstanding at least rifle fire.

d. *Shock action*.—Accomplished by the combination of the other characteristics and by the weight and crushing power of the major vehicles.

■ 4. METHODS OF EMPLOYING ELEMENTS OF ARMORED FORCE.—Operations of components of the Armored Force may, at various times or simultaneously, involve—

a. The attachment of GHQ tank battalions and groups to infantry, cavalry, and armored divisions or corps.

b. The grouping of armored divisions, corps, or GHQ tank groups with other corps or field armies for combined operations.

c. The employment, by the field or theater commander, of armored divisions and corps on independent or semi-independent missions without reinforcing logistical means, or additional supporting troops other than combat and reconnaissance aviation.

d. Operation as *task forces* wherein armored divisions or corps or, at times GHQ reserve tank units, are teamed with motorized divisions, antitank battalions, antiaircraft automatic weapons battalions, and GHQ engineer, maintenance, and supply units, closely supported by combat aviation, parachute, and other troops transported by air.

■ 5. GENERAL CONSIDERATIONS.—Larger units of the Armored Force properly utilized, either separately or in combination

with other means, can achieve rapid decisive results in the area of employment. They are to be employed on decisive missions. They must not be frittered away on unimportant objectives. A mission far in advance of other main forces is justified when the operation will obtain decisive results, but must be closely supported by other equally mobile troops. Their proper utilization necessitates a definite appreciation and a careful consideration of the several characteristics of the Armored Force units.

a. The conditions which should exist or be created for their successful action are air superiority in the decisive area of employment, surprise, favorable terrain, and absence of or neutralization of massed defensive means.

b. The mobility of armored units permits great latitude in the choice of direction and the method of attack. The decision as to whether the attack will be executed as a turning movement, envelopment, or penetration will be determined largely by the time factor involved, by the terrain, and by the hostile dispositions, including hostile rear installations. The most suitable areas for the employment of Armored Force units are on the open flanks or through existing gaps created by penetrations of the enemy's positions.

c. The assignment of missions or objectives to armored units must be preceded by a careful consideration of the more important factors which affect the operation of the armored and other units associated in the operations. These factors are: weather, terrain throughout the entire area of contemplated operation, nature of the enemy and his methods of combat, availability of other supporting troops, and especially, adequate space and road net for the operation of the units concerned. The axis of advance of the major armored and motorized units will be along roads.

d. The most decisive results will be gained from the grouping of overpowering masses of armored units and launching them against vital objectives deep in the hostile rear. The armored mass must be supported by sufficient means to maintain its momentum until the objective has been attained.

e. The most effective and decisive application of the mobility and power of large armored and motorized combinations will often necessitate the decentralization of control to the appropriate commanders who will be guided only by the broad general plan of the higher headquarters. After the

initiation of the operation, however, the superior commander must keep the armored unit commanders constantly informed of the situation.

f. The maximum development of the demoralizing power of the larger armored formations will be dependent in a large measure on the continuous support of adequate reconnaissance and observation aviation, and timely assistance of combat aviation in overcoming critical ground resistance beyond the ability of available artillery. This should be assured by direct arrangement between air and armored unit commanders and by adequate air-ground signal communication nets. Higher commanders can enhance the effectiveness of supporting aviation by habitually assigning the same air and ground units to work together as a task force or team.

g. The sustained mobility of armored and motorized units is dependent upon adequate timely replenishment of required supplies, especially fuel, and, to a lesser degree, oil and lubricants. Regular vehicle maintenance must be continued. When operations are to be prolonged for several days, it must be appreciated that armored and motorized units must have opportunity for daily maintenance.

h. Because of their mass employment, armored and motorized units are difficult to conceal during approach and development. Elaborate measures for deception and surprise will be required often and may involve variously: advance stockage and concealment of essential supplies; improvising and concentrating dummy armored vehicles or marked activity of actual units in localities distant from that of contemplated employment; extensive camouflage work; and rapid shifting of armored masses to the area of decisive attack.

■ 6. A TASK FORCE.—A task force is a temporary tactical grouping composed of one or more arms or services formed for a specific mission or operation. The operation of large armored formations will frequently dictate the organization of task forces. The composition of such forces will be decided only after a careful estimate of the associated means which will be required to accomplish the projected mission or operation. This estimate must consider the nature of the expected resistance, the distance to which operations are projected, the terrain to be traversed, and the troops available for the operation. The additional means to be associated with

armored elements will vary with each situation but may comprise appropriately: infantry divisions, foot or motorized or components thereof; cavalry units; engineers; combat aviation; parachute troops; other troops transported by air; anti-tank battalions; antiaircraft units; and additional maintenance and supply facilities, especially for GHQ groups.

■ 7. METHODS OF OPERATION.—a. Offensive operations of armored units, acting either alone or as part of a combined force, are characterized by rapid thrusts into vital parts of the hostile rear followed by immediate exploitation to complete enemy demoralization. Armored division commanders coordinate and control the movement of subordinate units by appropriate assignment of routes, zones, objectives, or phase lines. Phase lines are prescribed only when required to insure coordinated action or movement of two or more units and must not involve prolonged halts thereon. The attack is massed initially, but is extended promptly in frontage and depth by the armored reconnaissance and combat elements after the hostile position is penetrated. As the operation gains momentum, reconnaissance agencies will precede combat elements at the earliest opportunity to seek out and develop soft spots through which combat elements may pass rapidly. The more time allowed for this reconnaissance, the more effective it will be. Contact once gained must be maintained.

b. Maximum advantage is taken of speed and terrain barriers to prevent or neutralize enemy countermeasures. Reconnaissance agencies provide information on which to base security measures. Other combat detachments provide immediate advance, flank, and rear security. Closely supporting motorized units protect the immediate rear and lines of communication of the armored elements. Other motorized units should relieve the armored unit commanders of concern for extended lines of communication and assure continuous logistical support. When armored units are operating as task forces, the security of the immediate supporting motorized elements will be enhanced by their following the armored combat elements as closely as possible.

c. Following the advance of armored units, other elements of task forces operate to overcome remaining hostile resistance, occupy ground gained, keep gaps open, extend and

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protect the flanks, and relieve armored units temporarily checked in order to permit their employment in a more remunerative direction. Whenever practicable, other less mobile troops will follow motorized task units as closely as possible to wipe out the last vestige of resistance, meet counterattacks, and relieve the more mobile elements for close support of the armored units.

d. In addition to establishing and maintaining local control of the air, supporting combat aviation is directed against hostile antitank dispositions, artillery and reserves, especially armored, in the immediate zone of advance. Concurrently, if available aviation suffices, it may be directed against hostile command and supply installations, targets of opportunity such as more distant reserves, and other formed bodies of troops, especially armored units.

e. In an envelopment, the support units of armored divisions and task forces may, when the situation demands, attack or contain enemy elements on the flank while tank units make the main attack.

f. Troops transported by air may be suitably employed in advance of armored units to seize critical points or to create opportunity for immediate exploitation by armored forces operating alone or as task forces.

g. Highly organized areas should be avoided. Where their attack is necessary, it will usually be advisable for other specially equipped infantry and engineer troops to breach the enemy defenses in advance or concurrently with the advance of the armored units unless heavy tanks are available to lead the attack.

h. Against equal or superior hostile armored forces, friendly armored units will avoid frontal assault and maneuver to cut off or destroy armored units supply facilities, followed by blows against the rear of enemy detachments.

■ 8. EXPLOITATION AND PURSUIT.—*a.* Large armored formations, operating separately or as part of task forces, are especially suited for exploitation and pursuit. They should be launched boldly against vital areas deep in the hostile rear. The exploitation and pursuit phase must be anticipated to insure that appropriate plans are made and timely orders issued in all echelons. There must be no relaxing of pressure on the shaken or beaten enemy. Objectives for armored units should

be those which will halt hostile rearward movement until less mobile friendly troops can close with the enemy. Concurrently, some armored elements operate to destroy, disrupt, and paralyze enemy communication and supply.

b. Pursuit by large armored units, operating alone or as major elements of task forces, is rapid and continuous, even during hours of darkness.

c. When the operations of armored units are likely to carry them beyond practicable operating radius of organic supply means, special provision must be made by the higher commanders to place necessary supplies within operating radius of the units. Likewise, special arrangements must be made by higher headquarters for rapid communication with the widely dispersed elements of armored formations.

■ 9. DEFENSIVE SITUATIONS.—Large armored units, as part of other major forces on the defensive, are held in readiness for the counteroffensive or major counterattack. The employment of the armored units must be carefully timed and coordinated with the attack objectives of the other forces. Local air superiority during the period of the counteroffensive or major counterattack is a prerequisite to success of the operations. Usually the armored attack should be delivered to disrupt the continuity of the hostile offensive and not merely to restore the defensive position.

■ 10. LOGISTICAL CONSIDERATIONS.—*a.* Where prolonged operations of armored divisions and corps or GHQ tank units are contemplated, adequate arrangements must be made by the higher headquarters to insure timely replenishments of supplies required by the armored units. Where the armored units are required to operate at great distances from their base of supply, when continuity of supply is interrupted by enemy action, and in other emergency situations, delivery of urgent supplies may be made by air.

b. Where several armored divisions or GHQ tank units are under control of one headquarters, consideration should be given to retaining one or more division or GHQ tank units in reserve either for the purpose of extending combat operations or of relieving similar units to permit necessary maintenance and replacement operations. In this manner, continuity of the operation and necessary maintenance, rest, and replacement will be assured.

■ 11. ORDERS.—*a.* Orders follow the general form prescribed in FM 101-5. Mission type orders will be frequent. Warning and fragmentary orders in the form of messages, overlays, and oral instructions are freely used to give early instructions to subordinates so they will have adequate time to make their reconnaissance and prepare their plans. Orders of this type, together with operation maps, aerial photographs, and standing operating procedure will reduce the scope of orders of execution to a minimum.

b. Save in the beginning of an operation, the use of formal written orders will be exceptional. Orders will normally be dictated or oral, and often fragmentary in units smaller than the corps. All commanders must be trained not only to be able to give brief clear oral orders but also to be able to act intelligently on receipt of any such orders.

c. Orders for combat must be thoroughly understood by all subordinate commanders and their units. They must be timely to permit necessary dissemination and reconnaissance by various affected echelons.

■ 12. COMMUNICATIONS.—*a.* The usual methods of communication used within armored units are visual signals, motorcycle messengers, liaison officers, radio, and command airplanes.

b. Visual signals are used within the battalion and lower units and between air and ground troops.

c. Motorcycle messengers are most efficient over short distances and are used to a maximum to reduce the amount of radio traffic.

d. Liaison officers are the most satisfactory means for transmitting instructions where time is vital or the situation is hazy. For qualifications and duties of liaison officers and their methods, see FM 101-5.

e. Radio communication is available down to include vehicle commander in platoons of armored units. In order to derive the maximum use of this agency, strict radio discipline is essential. Only essential sets are operated and the maximum use is made of a simple system of prearranged code messages.

f. Command and liaison airplanes are utilized to transmit orders, overlays, and staff officers, when the situation warrants.

SECTION II

INDIVIDUAL AND UNIT TRAINING

■ 13. THE SOLDIER.—*a.* Man is the final and decisive element in war. Victory is gained through the application of technique and employment of matériel by troops with high morale, discipline, and the will to overcome all obstacles to attain their objectives. (See FM 21-50 and 21-100.) The following requirements are essential in developing armored units whose individuals are capable of superior performances and confident of their ability to accomplish any mission assigned.

b. A high standard of individual training attained by painstaking and meticulous attention to the smallest details is necessary to make the soldier mechanically perfect in handling his weapon, vehicle, and equipment, under all circumstances. Proficiency in these details may mean the difference between success and failure of an operation and life and death of the individual.

c. Emphasis on calisthenics and other forms of physical exercises is essential to develop the high degree of physical fitness and stamina necessary for withstanding the prolonged strain of active campaign.

d. Each individual must be kept constantly informed of the purpose of training and of the tactical situation in which he is engaged. Simulation of battle casualties among subordinate leaders in combat training to allow the soldier to carry out the mission of the combat team teaches him to accept similar responsibility in actual warfare. Realism in training, including all field exercises, must be constantly stressed by visualization of battle conditions and impressing upon all the significance of such conditions.

e. Every opportunity during training will be utilized to create enthusiasm and interest, to stimulate alertness, pride in personal appearance, sense of responsibility, and to develop initiative and esprit de corps.

■ 14. THE LEADER.—*a.* The qualities of command leadership must be developed to a high degree in all grades. The ability to analyze situations, basically and quickly, to reach sound decisions, and to give expression thereto in concise and clear orders will be developed in all leaders through frequent tactical exercises.

b. Initiative must be demanded in all grades. Mental alertness and aggressiveness, and ability to think, act, and quickly take advantage of tactical opportunities must be developed to the highest degree. In the absence of orders, each individual must use his judgment and act in accordance with the tactical situation in furtherance of the general mission.

c. A sense of duty which subordinates personal consideration to the welfare of the unit or group and a will to accept personal hazards and prolonged intensive effort in the execution of orders must be demanded.

d. Leaders must always be well forward to receive early information of the situation, make their estimate, announce their decision, and issue orders personally to the subordinate commanders.

e. Leaders must understand and appreciate the thoughts and problems of their troops. They must make every effort to provide timely necessities, insure rest, and protect their troops from unnecessary hazards.

f. Leaders must require strict and complete obedience and demand the maximum measure of sacrifice from their units when necessary to insure victory.

■ 15. THE UNIT.—a. The primary training objective of each unit will be the early development of an efficient, hard-striking unit which is prepared to take the field at short notice, at existing strength, and capable of conducting combined operations against an enemy equipped with modern means of warfare.

b. Success in battle depends upon the coordinated employment of all available arms and technique applicable to the situation. This coordination is only obtained through painstaking combined training of highly trained individuals and units. Tactical flexibility is based on the ability to exact definite and rigid standards of performance from individuals and units committed to action.

c. Men are grouped into units with a view to their training for and use in combat. Individuals constantly trained, quartered, and fed together develop a feeling of solidarity, which must be furthered by the greatest degree of permanence being given to squad and platoon assignments. (See FM 100-5.)

SECTION III

RELATION WITH OTHER ARMS

■ 16. ARTILLERY.—a. The role of the artillery of armored units, its characteristics, and tactical and technical employment are given in FM 100-5 and 6-20.

b. The division artillery composed of a headquarters and headquarters detachment and three artillery battalions of 105-mm howitzers is an organic part of each armored division. Each battalion has three firing batteries of six 105-mm howitzers each, a headquarters battery, and a service and ammunition battery. The battalion normally furnishes general support fires and may be attached to or support the infantry regiment in the execution of particular missions.

c. Armored artillery is organized and equipped to facilitate its employment in support of highly mobile units.

d. Observers in radio-equipped armored vehicles accompany supported units to obtain and adjust artillery fire. Air observers supplement ground observation in the adjustment of fire.

e. Antiaircraft units, equipped with weapons suitable for both air defense and antitank employment may be attached to large armored force units to provide protection of routes, particularly critical points, areas, and installations vital to armored operations.

■ 17. AVIATION.—a. The role of aviation attached to or operating in support of armored force units, its characteristics, and tactical and technical employment are given in FM 1-5, 1-20, and 100-5.

b. Corps headquarters contain an aviation section that acts in an advisory and technical capacity for the corps commander and coordinates operations of attached or supporting observation and combat aviation.

c. (1) An observation squadron is attached to the armored division. It is equipped both with airplanes of high speed and sufficient range to reconnoiter the area essential to armored operations and with airplanes capable of operation from advanced landing fields.

(2) Observation aviation performs distant and battle reconnaissance (including artillery adjustment), liaison, command, and photographic missions.

d. Combat aviation is made available by GHQ. It is employed against targets which cannot be engaged effectively by available ground weapons within the time required and supplements or extends the range of available artillery. Its chief missions in support of large armored force units are:

- (1) Neutralization of hostile aviation.
- (2) Neutralization of enemy artillery.
- (3) Neutralization of hostile defensive installations, including antitank.
- (4) Direct support of the attack.
- (5) Neutralization of counterattacks, especially of armored units.
- (6) Destruction, harassing, or delaying of hostile concentrations, reinforcing, pursuing, or retreating forces, and rear installations and centers of communication.

e. Transport aviation will be furnished by GHQ for the supply of elements of armored units when operating beyond the sources of normal supply or when no land communications are available.

f. Either parachute troops or air-borne troops may be employed in conjunction with the operations of armored units to secure terrain objectives on the routes of march or to seize vital points in rear of the hostile front. They may establish support groups and supply bases for a break-through.

■ 18. CHEMICAL TROOPS.—a. Chemical regiments (motorized), organically a part of GHQ reserve, are attached to armored units for tactical employment as needed. For details of their employment see FM 3-5 and 100-5.

b. The armored corps headquarters includes a section of chemical warfare personnel that acts in an advisory and technical capacity in the planning, execution, and supervision of gas defense measures and with decontamination of equipment.

c. Chemical weapons within the division, intended principally for smoke missions, are the 81-mm and 60-mm mortar subordinate units in the armored and infantry regiments.

d. Smoke is employed to screen troop movements from hostile observation, to reduce the effectiveness of hostile fire, to protect a flank exposed to enfilade fire, and to blind anti-tank guns and machine gun nests. In defense it is employed to blind hostile observation, cover a withdrawal, and aid in counterattacks.

■ 19. ENGINEERS.—a. The role of the engineers with armored force units, its characteristics, and tactical and technical employment are given in FM 5-5 and 100-5.

b. An armored engineer battalion is an organic part of each armored division. It includes four combat (pioneer) companies and a bridge company. The latter is equipped with assault boats, portable ferries, and ponton and steel bridge equipage.

c. Their duties include: making bridge, water, road, and bivouac reconnaissance; strengthening, repairing, and constructing bridges; providing means for crossing streams in the presence of the enemy; reproduction and issue of maps; establishing and operating water supply points; removal of or assisting in the passage of tank obstacles and mines; and supervising and assisting in the construction of obstacles, and preparation and execution of demolitions.

■ 20. INFANTRY.—a. The role of the infantry with armored force units, its characteristics, and tactical and technical employment are given in FM 100-5.

b. An armored infantry regiment is an organic part of each armored division. Its combat element consists of three infantry battalions of three rifle companies each.

c. The infantry regiment may attack to drive in hostile covering forces, to develop a situation, and to seize terrain from which to launch the tank attack. It may follow closely the tank attack to wipe out remaining hostile resistance, cover the flanks of the division against a hostile threat, occupy and hold ground gained, and cover the reorganization of the tank units. It is used to establish bridgeheads and outposts. It is employed in a similar manner to that prescribed for the infantry rifle regiment in FM 7-40.

■ 21. MEDICAL SERVICE.—a. The role of medical troops with armored force units and their employment are given in the training regulations for that service. See FM 8-5 and paragraph 47 this manual.

b. A medical battalion is an organic part of each armored division. It includes three medical companies.

c. The medical company makes battlefield collection of casualties and establishes collecting points for the division. It is equipped for emergency surgery and first aid treatment.

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■ 22. **ORDNANCE DEPARTMENT.**—*a.* The functions of the ordnance with armored force units and their employment are given in FM 9-5.

b. An ordnance battalion, maintenance, is an organic part of each armored division. It includes three maintenance companies.

c. It provides spare parts for the upkeep of ordnance matériel throughout the division. It is capable of accomplishing artillery, automotive, instrument, and small arms repairs as well as ordnance vehicular maintenance. It establishes divisional ammunition distributing or control points as required.

d. Heavy maintenance elements from GHQ reserve units furnish similar services to a GHQ reserve tank group.

■ 23. **QUARTERMASTER CORPS.**—*a.* The functions of the quartermaster troops with armored force units and their employment are given in FM 10-5 and 100-5.

b. A battalion is an organic part of each armored division. It includes a headquarters company and two truck companies, maintains a labor pool, and is the basis of the transportation pool.

c. It operates the division railhead and gasoline and oil supply point.

d. The truck company supplements the unit trains in transporting and replenishing supplies, including ammunition.

■ 24. **SIGNAL CORPS.**—*a.* The role of signal troops with armored force units and their employment is set forth in FM 11-17.

b. A signal battalion and signal company are organic parts of an armored corps and division respectively.

c. The signal battalion includes a radio operation company, a wire operation company, and two construction companies.

d. The division signal company consists of a headquarters platoon, an operating platoon, and a radio platoon.

e. Within their respective units, they provide signal equipment and parts and perform radio repair and maintenance. They operate message centers and radios at the forward and rear echelons of corps and division command posts. They install, maintain, and operate telephones, telegraph, and telegraph printers.

CHAPTER 2

TACTICAL EMPLOYMENT

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SECTION I

GENERAL

■ 25. **GENERAL DOCTRINE.**—*a.* The tactical employment of armored force units is based upon the doctrine set forth in FM 100-5 and chapter 1 of this manual. Their characteristics favor the striking of quick, hard blows.

b. Armored units should be assigned missions which their characteristics are designed to accomplish and, except in emergencies, should not be assigned missions that other available troops can perform satisfactorily.

c. Since tanks furnish the striking power of armored units it is necessary to understand and keep constantly in mind their capabilities and limitations in the assignment of missions. (See ch. 5.)

d. The capabilities are—

- (1) High road speed: 35 to 40 mph.
- (2) Ability to move cross country at speeds up to 25 mph in especially favorable terrain.
- (3) Ability to cross small obstacles, ditches, and shallow streams.
- (4) Ability to pass through thin woods and brush.
- (5) Great fire power.
- (6) Crushing ability to overrun personnel, matériel, and equipment.
- (7) Armor protection for crew.

e. The limitations are—

- (1) Cannot cross deep or soft-bottomed streams, marshy ground, or swamps.
- (2) Cannot cross wide ditches or other large obstacles.

- (3) Cannot pass through dense woods.
- (4) Heavier vehicles must avoid roads having bridges and culverts of light construction.
- (5) Operations in mountainous country are generally limited to roads.
- (6) Observation and control is difficult when vehicles are operated with all ports and doors closed.
- (7) Vulnerable to fire of artillery and antitank weapons.
- (8) Noise of engines indicates the presence of tanks which may affect the element of surprise.
- (9) Fire from moving vehicles is limited in its casualty effect.
- (10) Difficulty of fuel and ammunition supply.
- (11) Necessity for periodic maintenance.

■ 26. TERRAIN AND WEATHER.—*a.* The terrain exercises an important and often decisive influence in tactical situations. It may be the determining factor in the decision to employ armored units on a specified mission or not. Generally the terrain will determine the tactical form of an attack and the ground over which the main attack will be launched.

b. A thorough appreciation of terrain and its effect on operations is essential to the proper command and employment of all armored units. Areas most favorable for their employment are determined from: the study of maps, reconnaissance agencies, higher and adjacent units, troops already in contact with the enemy, and personal reconnaissance by the leader or his staff.

c. Gently rolling, open terrain with occasional lightly wooded areas, affording some cover and facilities for observation, is the most favorable for operations of armored units. Desirable terrain is that which provides covered routes of approach, positions for supporting units, and permits the maximum use of the speed and maneuverability of armored vehicles.

d. Terrain broken by natural obstacles, such as unfordable streams, ravines, or streams with steep banks, marshes, cliffs, dense woods, closely spaced boulders or stumps, forces armored units either to make long detours, or follow canalized routes, limiting their maneuverability, choice of direction, and method of attack.

e. Rough, hilly, or mountainous terrain reduces the speed

of armored troops to almost that of dismounted troops, or else restricts their movements to roads. Armored troops when restricted to roads and defiles, unless frequent "turn-arounds" are available, are particularly vulnerable to attack by hostile aircraft and to antitank weapons.

f. Armored units avoid defended towns or cities when possible except when they can be surprised. Such localities are attacked by motorized infantry or other closely following troops.

g. Unfavorable weather may materially affect operations of armored force units. Rain, mud, ice, and snow may impede, limit, or prevent the employment of armored units. Extremes of temperature adversely affect both matériel and personnel. However, inclement weather may prove advantageous to the troops inured to hardships.

■ 27. COVER AND CONCEALMENT.—*a.* The discovery of unusual numbers of tank units in a given area is an indication of a probable major operation in that vicinity. The concealment of vehicles, therefore, is important at all times, particularly from aerial observation and photography. Partial concealment is of little or no value. Every practicable effort must be made to provide complete concealment.

b. Camouflage is work done to provide concealment of matériel, troops, or military works from enemy air or ground observers. To be effective, camouflage must be supervised by personnel thoroughly familiar with its principles and methods. The means employed are nets, paulins, paint, earth, branches, and grass. The fundamental rules of camouflage are covered in detail in FM 5-20 and 21-45.

c. Personnel of armored units must be thoroughly instructed in the use of natural means of camouflage available and be required to apply habitually these means to conceal themselves and vehicles.

d. The following rules governing concealment should be known and understood by all:

(1) Natural concealment should be sought before resorting to camouflage; it is simpler, requires less time, skill, and material, and is more effective. Concealment of bivouacs is much simpler in woods and villages than in the open. Vehicles are best concealed by placing them under heavy natural cover as in dense woods. In partly open country,

they should be driven into thin woods or clumps of trees or brush.

(2) Camouflage should not be overdone. A small amount of material, judiciously employed, is frequently more effective than a mass of material. Branches of trees, brush, weeds, leaves, grass, or dirt are usually available to cover tents and vehicles that are partially or wholly exposed. Irregular patches of different material are better than solid blankets of any one kind.

(3) The worst enemies of concealment are straight lines, regularity of pattern, angles, and shadows. Therefore, ingenuity must be exercised to change or break the outline or regularity of the pattern of the object being camouflaged. Shelter tents in bivouacs, and vehicles in parks or assembly areas should always be placed in scattered, irregular formations.

(4) An aerial observer cannot see an object within a shadow; neither will an aerial photograph of the locality reveal it. Even a partial shadow crossing the object makes recognition difficult from the air. Therefore, natural concealment can be obtained by halting vehicles within shadows.

(5) Care should be taken that track imprints do not disclose the location of vehicles. Tracks may be obliterated by covering them with brush, leaves, or dirt, or by dragging over them with branches or some other means. The enemy may be further deceived by running one or more vehicles beyond the true entrance to the area and obliterating the actual entrance. In entering woods, fewer tracks will have to be obliterated if vehicles enter in column and scatter after getting under cover. Also, in dense woods, care should be taken not to knock down any more trees than absolutely necessary and then straighten up those that have been knocked down.

(6) Making paths within bivouac to concealed vehicles should be avoided, unless such paths are concealed from air observation.

(7) When foliage is used to cover vehicles and other equipment, it should be renewed daily. Wilted leaves and branches will appear different in color from natural surroundings when observed or photographed from the air. Care should also be taken in gathering natural camouflage, to avoid denuding the ground in the immediate vicinity of

the object being camouflaged. Fresh dirt should be covered with brush, leaves, or grass.

(8) No rubbish of any kind should be allowed to accumulate about a bivouac.

(9) Fire or smoke should not be permitted near vehicles.

(10) Ruins provide one of the best means of concealment.

(11) At night necessary lights are concealed.

(12) If natural concealment is not available, vehicles halted in the open should seek very broken ground, folds in the ground, etc. Natural or artificial means available should be used to disguise their characteristic profile.

(13) Bright or shining parts of material should be covered with mud or grease.

e. Concealment in snow is much more difficult than at other times. The following points should be kept in mind: Trails get tracked with mud and melt out early, leaving a black line; snow falls through camouflage material and the holes show dark; the heat of engines and of kitchen ranges cause early melting of snow. This can be remedied by keeping activity at a minimum when snow first falls; and by covering trails, vehicles, etc., with fresh snow, replacing it as often as needed.

f. The noise of running engines, particularly those of tanks, can be heard at a considerable distance and will disclose the presence of concealed tanks to ground observers. Engines, therefore, should always be stopped as soon as vehicles have been placed under cover or concealed. This should likewise be done whenever practicable, as a means of conserving fuel.

g. The following precautions should be observed while moving to attack or in close proximity to the enemy:

(1) Use all available natural cover, whether stationary or moving.

(2) Halt preferably under trees, in thickets, or in the shadow of buildings or trees.

(3) Choose routes of approach which provide the most cover and concealment, such as ravines, draws, gulleys, or folds in the ground; avoid skylines.

(4) Avoid bottoms where vehicles may be bogged down, and clumps of bushes where sink holes, stumps, etc., may be encountered.

(5) Avoid dense woods; travel along the edges.

- (6) Approach the crests of hills and ridges slowly and look over.
- (7) Avoid crossing ridge lines; back down and go around if possible.
- (8) If forced to cross over open ground or ridges, move speedily.
- (9) When under observation, avoid halting and exposing personnel or tops of vehicles.
- (10) Avoid massing of vehicles.
- (11) Avoid following the tracks of preceding vehicles when passing over soft ground, stream crossings, ditches, or similar obstacles.
- (12) If time permits, and if considered essential, obliterate tank tracks by dragging suitable objects over them.
- (13) When approaching the enemy, if the presence of tank units has been disclosed, deception as to direction of attack and numbers of vehicles may be obtained by running several tanks back and forth off to a flank.

SECTION II

RECONNAISSANCE

■ 28. GENERAL.—*a.* The *purpose* of reconnaissance is to gain information upon which to base strategical maneuvers or tactical operations.

b. Information desired may be of the enemy or of the terrain. Information concerning the enemy may include his location, disposition, strength, organization, capabilities, movements, attitude, equipment, and morale. Information concerning the terrain may include character of roads, streams, cover and concealment, positions, bivouac areas, and suitable areas for employment of obstacles.

c. Responsibility.—The commander of each unit is responsible for maintaining reconnaissance for information that influences his own operations, or which is required of him by the higher commander. The detailed preparation of plans and orders for reconnaissance is the function of the staff. Plans for the employment of armored force units should be based on the most careful and detailed reconnaissance practicable in the time available. Every effort must be made to obtain the information of greatest importance, i. e., the essential elements of information.

d. Essential elements of information.—(1) (See FM 30-5.) The essential elements of information are those which the commander deems necessary or highly desirable to:

- (a) Make a sound decision.
- (b) Conduct a maneuver.
- (c) Avoid surprise.
- (d) Form details of a plan of operation.
- (e) Permit him to revise or make a new decision.
- (f) Accomplish his mission.

(2) To obtain this information, reconnaissance missions should be expressed in specific questions stating the information desired such as:

(a) *Enemy.*

Does the enemy occupy _____ position? If so, in what strength? What are his approximate dispositions?

Where is the enemy's reserve?

What is the strength and location of the enemy's advanced columns?

What supporting weapons does the enemy have?

(b) *Terrain.*

Are certain roads passable for all armored vehicles?

Are certain bridges intact? What is their capacity?

Are certain terrain features capable of defense by hostile or friendly troops?

Are obstacles present which affect the plan of attack or defense?

e. Routine information.—In addition to the essential elements of information prescribed by the commander, ground reconnaissance units obtain and report, at specified times or at most practicable time, as a matter of routine without additional orders and in conjunction with the execution of specific missions, information covering the following items:

(1) *Route and bridges.*—Type, condition, load, and traffic capabilities.

(2) *Landing fields.*—Location and suitability.

(3) *Utilities* (water, sewage, electric power, communication, railroads, docks).—Condition, and repair necessary.

(4) *Supplies.*—Amounts, location, type, and condition, particularly fuel, lubricants, and food.

(5) *Prepared obstacles, demolitions, mines, and contaminated areas.*—Location, extent, means of avoiding.

(6) *A continuing brief estimate of terrain.*—Fordability of

streams; marshy and wooded areas; clear areas suitable for tank employment; areas unsuited for tank employment; commanding terrain; cover and concealment.

(7) *Hostile aircraft.*—Number of, location, time, type, altitude, direction of flight.

(8) *Hostile ground forces.*—Location and time of all hostile contacts giving strength, composition, and movements, with particular attention to location and movements of hostile mechanized forces.

(9) *Friendly troops and miscellaneous.*—Includes friendly troops within the sphere of action of the reconnaissance unit and other intelligence data not included in other items pertinent to the operation, such as weather, visibility, etc.

1. Sources of information.—The sources of information are varied and include reports from reconnaissance agencies, actual observation of terrain or physical objects, information or intelligence reports procured from other units, examination of inhabitants, prisoners, documents, aerial photographs, maps, spies, or identifications, and summaries from higher and lower echelons.

g. Reconnaissance agencies.—(1) The execution of the commander's plan for reconnaissance is the task of the reconnaissance agencies. The reconnaissance agencies and personnel available to the armored division and its elements are:

(a) The attached observation squadron.

(b) The division reconnaissance battalion, which includes three armored reconnaissance companies and a light armored (tank) company.

(c) An armored reconnaissance company in each armored (tank) regiment.

(d) The reconnaissance platoon in the headquarters company, engineer battalion, and reconnaissance and liaison section in each engineer company.

(e) The personal reconnaissance by the commander, staff officers, and subordinate commanders.

(f) Artillery reconnaissance elements.

(g) Scouts and patrols.

(2) The reconnaissance agencies and personnel available to the GHQ reserve tank groups and battalions are:

(a) Reconnaissance platoon in the group and battalion headquarters companies.

(b) Personal reconnaissance by the commander, staff officers, and subordinate commanders.

(c) Scouts and patrols.

h. Classification.—Reconnaissance is usually classified in accordance with the location of the objective and the phase of operations as distant, close, or battle reconnaissance.

(1) Distant reconnaissance is the function of the aviation and the division reconnaissance battalion. It seeks to locate the advanced elements of the enemy forces, and maintain contact with them. It procures the information upon which the strategical and operative decisions and the plans of the high command are based. Distant reconnaissance is dealt with in FM 100-5.

(2) Close reconnaissance is the function of the regimental reconnaissance companies. It seeks to gain more detailed information for tactical operation, such as the location, strength, composition, and movements of the enemy and a reconnaissance of the terrain.

(3) Battle reconnaissance is a function of all echelons of the command and must be continuous. It includes observation of all enemy forces engaged in the action and those whose contact with our principal forces is imminent. Both air and ground troops should seek the location of hostile flanks, changes in hostile dispositions, location of hostile artillery, movement of hostile reserves, preparation for counterattacks, and indications of a withdrawal.

i. Plans for the employment of tank units require, in addition to the usual classes of reconnaissance, a special type of battle or tank reconnaissance to determine when, where, and how tanks can best be employed. Tank reconnaissance is of particular importance to all commanders of tank units. It is always made prior to an operation and when possible before orders are issued. Information may be obtained by the regular reconnaissance agencies, but will normally be obtained by personal reconnaissance or by scouts or patrols dispatched from the tank units in the area over which tanks are to operate. Information of this type must be obtained by GHQ reserve tank battalions when attached to cavalry or infantry divisions.

j. Reconnaissance in force.—When hostile resistance is encountered which cannot be brushed aside, flanked, or outflanked by the reconnaissance agencies, a reconnaissance in

force may constitute the best method of clearing up an uncertain situation. Troops assigned to this mission may vary in strength from an armored (tank) company to a reinforced armored regiment, but must be sufficiently strong to accomplish the mission. Their action will usually consist of a local attack on a limited objective. 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 of the reconnaissance in force bringing on a general engagement.

k. Zones, routes, and localities.—(1) To avoid duplication of effort, reconnaissance agencies must be assigned a zone, an axis or route, or a locality or area for reconnaissance. The boundaries thereof are not to be construed as limiting the movements of the units, but rather as definite guides as to areas of responsibility for reconnaissance. The maximum liberty of movement that the situation warrants should be allowed.

(2) When the enemy is disposed on a broad front, or when his location is in doubt, a zone of reconnaissance may be assigned. Factors to be considered in determining the width of the zone of action are the terrain; the road net; strength of forces to be employed; strength, disposition, and activity of the enemy; facilities for communication; and the time available.

(3) When information indicates the enemy's advance is by a definite route (or routes), a route (or routes) for reconnaissance is generally designated.

(4) When accurate information has disclosed the presence of the enemy in a definite area, then that locality or area is assigned for reconnaissance.

(5) In large forces, such as a division or larger, a reconnaissance line is designated marking the limit of reconnaissance between the higher and lower unit. The subordinate unit reconnoiters outward to this line, the superior unit beyond it. Either may cross the line if necessary. During an advance, the reconnaissance line is advanced from day to day so that prior to the commencement of each march stage, reconnaissance by the division has explored in advance to a distance equal to at least a day's march.

(6) Advance of reconnaissance elements will be regulated by designation of successive phase lines or objectives which

may be crossed or passed only on orders or in accordance with a time schedule. Lateral communications between reconnaissance elements is maintained by contact, normally on phase lines, or at designated objectives.

(7) Reconnaissance phase lines should include easily identified terrain features such as roads, streams, railroads, or towns.

(8) Observation aviation should know in advance the limits of reconnaissance for the reconnaissance battalion and the route of the battalion command post.

l. Coordination.—The commander coordinates the employment of reconnaissance agencies at his disposal. He regulates their employment in such manner that they will supplement and assist one another. Duplication of effort is avoided by the assignment of reconnaissance missions and objectives and by informing subordinates concerning reconnaissance to be executed by agencies of other commanders.

m. Aggressiveness.—Reconnaissance agencies must be active and aggressive. Such missions generally require secrecy of movement. As a rule combat is avoided which is not necessary for gaining essential information. Essential information can frequently be obtained only through attack. Reconnaissance units do not hesitate to attack when their mission requires it.

n. Reserves.—Commanders initiating reconnaissance should arrange for reserve reconnaissance elements which can be employed to reinforce or extend reconnaissance to the front or flanks.

o. Communications.—(1) To insure the prompt and reliable transmission of the results of reconnaissance, the commander must regulate the establishment and maintenance of signal communication, including the coordination of communication to be used between air and ground reconnaissance agencies. When there is danger of hostile interception he may sharply restrict or prohibit the use of radio in the interest of secrecy.

(2) In the employment of ground reconnaissance agencies, the distance they are sent out, and the front to be covered, consideration must be given to the sending range of radios. Frequently reconnaissance units, particularly divisional reconnaissance, will be out beyond direct radio communication with their commanders. Under such circumstances informa-

tion will have to be transmitted by airplane through pick-up messages, or relayed by radio through air-ground nets or reconnaissance nets of lower units.

(a) A liaison type airplane working with the division reconnaissance, if practicable, will speed up transmission without interfering with missions of other agencies or utilizing their radio sets which are needed for transmitting information that they have obtained.

(b) Shuttling of command cars until they are within radio range, or even dispatching motorcycle messengers, may be used as expedients, but have obvious disadvantages. Motorcycle messengers may, however, be utilized expeditiously for short distances between elements of the divisional or regimental reconnaissance units.

(c) Provision should be made in the regimental reconnaissance unit for listening in on the divisional reconnaissance net.

p. Instructions.—(1) Instructions for the execution of reconnaissance in large units may be issued in the form of an intelligence annex (see FM 30-5 and 101-5). In small units they may be included in the field order or be issued separately, in complete or fragmentary form, as instructions for reconnaissance.

(2) Instructions to reconnaissance agencies should include, in addition to the mission and essential elements of information, the following:

- (a) Time of departure.
- (b) Zone, areas, or route.
- (c) Objectives and time to be reached.
- (d) Duration.
- (e) Reconnaissance phase lines and time to be crossed.
- (f) Instructions concerning adjacent reconnaissance units.
- (g) Instruction for the transmission of reports, or time reports are desired.
- (h) Instructions about communication with observation aviation.
- (i) Time of departure, route, and objectives of main force.

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

■ 29. EXECUTION OF RECONNAISSANCE.—*a. Distant reconnaissance.*—The speed and mobility of armored troops and of a mobile enemy requires air and ground reconnaissance forces to operate at great distances from the main body. (See fig. 1.)

(1) *Air.*—(a) Distant reconnaissance by air will be wide and deep and is usually conducted beyond the sphere of action of friendly ground forces. It will never be less than the operating range of hostile armored forces, or the equivalent of a day's march for the division, that is from 100 to 150 miles. It will normally be initiated prior to the establishment of contact between ground forces and is under control of the commander of the armored force unit.

(b) Time, the ever increasing depth of zone to be observed, and the fact that available aircraft are seldom adequate to perform all the missions desired, precludes detailed reconnaissance of areas off the main roads. Initially, "search" missions to locate the enemy concentrations and to provide early information of the enemy's dispositions and movements are the most important. Primarily, they should be confined to the main routes or probable localities. The commanders of armored units also need information as to the condition of roads, bridges, defiles, and general terrain features many miles ahead in order to guide their fast moving columns and to direct their reconnaissance elements in the right direction avoiding unnecessary detailed reconnaissance. This is known as route reconnaissance. Other missions, i. e. surveillance, tracking, or photographic, may be assigned. It is important, however, that the priority of missions be specified in the orders or instructions.

(c) The tactics and technique of air reconnaissance and observation are contained in FM 1-20.

(2) *Ground.*—(a) Since effective reconnaissance cannot be made at the rate of march of the division, reconnaissance elements should be pushed out sufficiently far in advance of the division to insure the timely receipt of information by the division commander. In an initial advance, prior to contact with the enemy, the divisional reconnaissance may precede the division by as much as 100 miles and usually is sent out 1 to 2 days in advance of the main body.

(b) When the division is moving under cover of darkness, reconnaissance should be pushed out during daylight hours to a line beyond the expected bivouac location of the division.

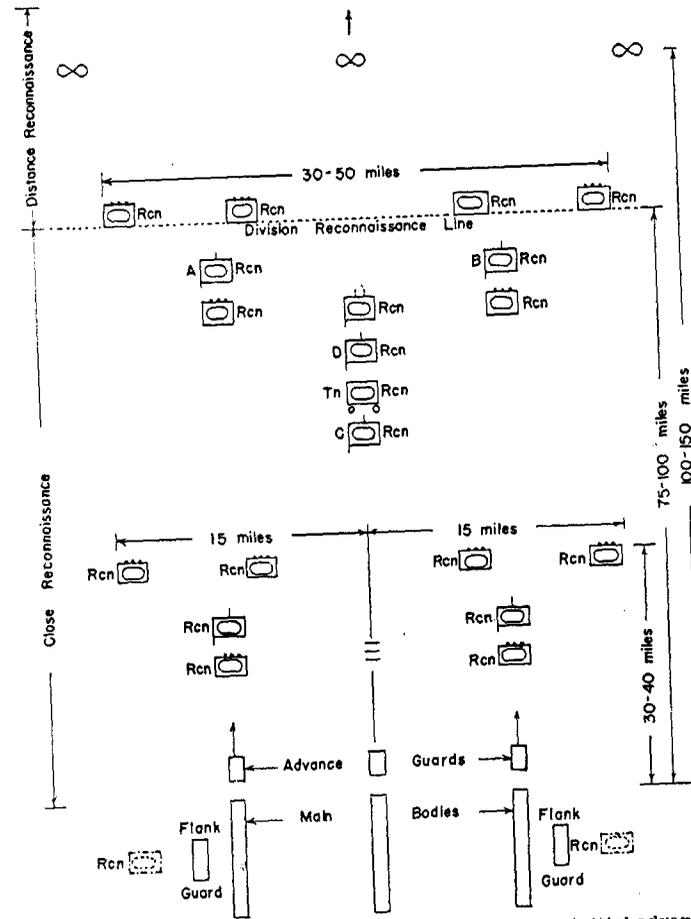


Figure 1.—Schematic diagram of reconnaissance in an initial advance of division.

A line of observation is established during the hours of darkness to warn of the movement of hostile troops that might interfere with the march or bivouac of the division.

(c) In other situations reconnaissance should be sent out sufficiently early to gain their distance in front of the main body and have at their disposal the time necessary for reconnaissance.

(d) The divisional reconnaissance battalion may be required to cover a perimeter of as much as 150 miles. Detailed reconnaissance of such a large area is usually impracticable. The usual objectives are principal terrain features, critical points or areas, and hostile main forces previously indicated by observation aviation. The assignment of broad frontages for reconnaissance necessarily will restrict in detail the information that can be expected and may result in gaps between adjacent elements.

(e) In general the breadth of zone for the battalion should not exceed from 30 to 50 miles. It is determined by the situation, location, strength, and composition of the enemy, the road net and terrain, and the mission of the main body.

(f) Each reconnaissance platoon can reconnoiter in average terrain a front of about 5 to 7½ miles in width while advancing at the rate of approximately 12 to 15 miles per hour. Assigning two platoons to reconnaissance and one to reserve in each reconnaissance company will enable the battalion to reconnoiter on a 30-mile front while the division is moving. Initially one reconnaissance company may be held in reserve. If the rate of advance is decreased the width of reconnaissance can be correspondingly increased.

(g) When contact is gained, the divisional reconnaissance battalion seeks to locate enemy dispositions, including his flanks, and favorable ground for an assembly position for the attack. The methods used by the reconnaissance platoon and company are discussed in chapter 4.

(h) The ground reconnaissance agencies work in close cooperation with the aviation which will furnish some positive information and a very large amount of negative information. Ground agencies will develop the information that requires verification, and verify and amplify the positive information. When the aviation is prevented from getting information because of weather conditions or hostile air superiority, the ground reconnaissance must be prepared to extend its

reconnaissance. Each arm supplements and assists the other. Team play is essential.

(i) The successful operation of an armored unit will be materially impeded, if not stopped, unless there is a constant flow of information from the reconnaissance agencies to the commander. Communication from air to ground is usually accomplished by radio or dropped messages; from ground to air by radio, pick-up messages, or by a prearranged system of panel signals. Information by radio from the aviation is received by the ground reconnaissance agencies at the same time it is received by the armored unit commander. In this way advantage is taken of important and vital information and reconnaissance directed accordingly. Ground elements use motorcycles to augment or replace radio communication.

(j) In order to give power and drive to the reconnaissance battalion and sufficient combat power to overcome minor opposition, an armored (tank) company is provided. This company will normally remain with the battalion headquarters, in a central location if the road net permits. It may be dispatched in detachments or as a unit to furnish support for reconnaissance companies when required. Where the front to be covered is so broad that prompt assistance cannot be rendered; or where critical points must be reached and held temporarily; or where hostile resistance is expected to be encountered, detachments of the armored (tank) company may be attached initially to the reconnaissance company elements. When the necessity for the attachment no longer exists, the tank elements revert to battalion control.

(k) Platoons and sections of the armored (tank) company execute reconnaissance over terrain that is unsuitable for wheeled vehicles. They may also be used to reduce resistance that is delaying the advance of the more lightly armored units of the battalion.

(l) Normally it will be desirable and necessary to attach engineers to the battalion. Elements from this detachment accompany the reconnaissance units and furnish detailed road information, with particular reference to condition of bridges and fords. The engineer detachment locates and makes initial preparations for stream crossings.

(m) The principal function of the battalion is reconnaissance. It should not be assigned security or combat missions that will interfere with the performance of reconnaissance.

(n) Provisions must be made for replenishment of rations, fuel, and ammunition and for maintenance of vehicles.

b. *Close reconnaissance.*—When contact with the enemy is imminent, reconnaissance is intensified. More detailed information will be required on points of decisive importance near the probable or actual zone of contact of the ground forces. Air and ground reconnaissance agencies by continuous reconnaissance endeavor to determine the contour and identification of the enemy's leading elements, the frontage and depth of the enemy's movement, his assembly position, his measures for antiaircraft defense, the location of his airdromes, detrainning stations, principal supply establishments, and any changes when they occur.

(1) *Air.*—The primary mission of the 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 are roads, communication 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. Flights made shortly after dawn and before dark offer a favorable opportunity for discovery of night movements. The missions for the observation aviation include: route reconnaissance, march liaison, surveillance, search, tracking, and photographic missions.

(2) *Ground.*—(a) Regimental reconnaissance is conducted under the direction of the regimental commander by the methods set forth in chapter 4. The reconnaissance elements precedes the main body of the regiment by 3 to 4 hours and covers the entire width of the regimental zone. The regiment follows on one or more axial roads. The extent of the front or area covered by this reconnaissance depends upon the mission, amount, and kind of resistance expected, the available road net, and front covered by the regiment. A reconnaissance company under normal conditions can reconnoiter a zone about 15 miles in width, containing three or four axial roads and frequent lateral roads, at the rate of from 9 to 12 miles per hour.

(b) Reconnaissance operations at night are generally restricted to movements of elements to initial positions from which they may continue or commence operations at dawn.

Night reconnaissance limits observations and requires slower speeds and more extensive dismounted observation. Movement by armored reconnaissance vehicles at night is limited to roads, except for short periods over favorable terrain or during bright moonlight.

(c) Detailed reconnaissance of important areas not covered by elements from reconnaissance units may be executed by patrols from the main body or at times by motorcycle scouts. The details of employment of scouts and patrols are set forth in chapter 3.

(d) Frequently, reconnaissance elements will be required to attack to obtain exact information of hostile dispositions, or they may encounter hostile mechanized counterreconnaissance units. When this is anticipated, tank elements may be attached to reinforce the reconnaissance platoons. Normally, tank elements are not used for other than battle reconnaissance.

(e) Engineer and artillery reconnaissance personnel accompany the regimental reconnaissance company.

(f) The length of missions is dependent upon the ability to supply gasoline and oil, endurance of personnel, and servicing and maintenance of vehicles.

c. *Battle reconnaissance.*—Battle reconnaissance begins when units initiate development for combat.

(1) *Air.*—(a) In the assignment of missions during battle, consideration must be given to the number of missions that can be effectively executed with the aviation available. Of especial importance are the reconnaissance of movements of hostile troops in rear areas and on the flanks of the battle position and the surveillance of hostile detrucking and detraining points. Air reconnaissance and surveillance of areas beyond the zone of reconnaissance of front line troops and divisional ground reconnaissance will be continuous before, during, and after battle.

(b) Battle reconnaissance missions report all dispositions and activities in the immediate battle area with particular emphasis on the following:

1. Gaps in enemy positions, enemy reserves, command posts, railhead, supply and distributing points, and tank and troop concentrations.
2. Mechanized forces, artillery and antitank guns, mines and demolitions, road and area blocks.

3. Conditions of routes, bridges, and terrain on the projected route of the armored units and between them and hostile armored forces.

4. Artillery missions, which 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 direction of the artillery commander.

(c) Priority is given to radio in communicating information to command posts, ground reconnaissance elements, and to the artillery. This method as compared to using dropped messages expedites the action and quickens the battle reconnaissance by obviating the necessity for the airplane returning many miles with each important item of information. Moreover, it permits the command post and interested subordinate elements in the divisions to keep abreast of the situation. In case of radio failure or silence, drop messages may be resorted to. This method may cause delay in locating the various command posts.

(d) A certain amount of battle liaison can be performed simultaneously by airplanes on battle reconnaissance missions. However, when enemy aerial and antiaircraft activity permits, battle liaison may be performed satisfactorily by the slower, liaison type of airplane. Battle liaison is concerned with:

1. Visual location of front lines and tactical disposition of advanced elements.
2. General locations and unusual conditions affecting adjacent units.
3. Command and liaison missions, including the transmission of information and instructions between the superior commander and his artillery, infantry and other subordinate commanders; also all observation missions executed for special information for the superior commander. These missions may be ordered for the purpose of obtaining or verifying information as to the tactical situation of the units engaged, or to obtain other urgent information.

(e) Radio provides the quickest means of communication both from air to ground and ground to air. Where other

means are available, they should be utilized, keeping the net free and available for emergency messages. Such additional means are; from air to ground: dropped messages, rocket signals, and simple airplane maneuvers; from ground to air: pick-up messages, or by prearranged system of panel or other signals.

(2) *Ground.*—(a) Immediately preceding combat, as the enemy main force is approached, detailed reconnaissance of hostile dispositions and of terrain is intensified by all reconnaissance agencies.

1. As the regimental reconnaissance companies and security detachments of the various columns make contact with the enemy, the reconnaissance battalion may be relieved by them and move to the flanks and continue reconnaissance against the hostile flanks and rear.
2. Elements of the reconnaissance battalion in contact with the enemy maintain contact during combat. In this case regimental reconnaissance companies may be attached to the reconnaissance battalion to continue reconnaissance to the flanks and rear.

(b) During combat the division reconnaissance elements gain contact with the enemy by working through gaps and around the flanks and rear and ascertain the strength, composition, and dispositions of the enemy main force and the approach of enemy reinforcements. When ordered, the reconnaissance elements avail themselves of every opportunity to harass enemy command and supply installations, reserves, or reinforcements without becoming engaged in combat at the expense of adequate reconnaissance.

1. Where the terrain or the situation prohibits further reconnaissance to the front during battle, the divisional reconnaissance battalion may be ordered to protect an exposed flank or the rear of the division and give timely warning of approaching air and tank attacks. It may be withdrawn into division reserve to reservice and recuperate pending further missions.
2. Regimental reconnaissance units when no longer able to perform reconnaissance to the front proceed to the flanks of their unit to secure them

during combat and give warning of air and tank attacks.

(c) After combat, the reconnaissance battalion moves either around the flanks or through a gap in the hostile front to determine the routes of withdrawal of the hostile main column; whether his withdrawal is well organized or in disorder; the covering positions with reference to his columns; and whether or not critical points on his routes are held in strength. Contact must be maintained.

(d) When the battle results in the withdrawal of our own forces, contact with the enemy must be maintained. The delaying force must be constantly informed of the progress of the hostile troops.

1. Divisional reconnaissance towards the enemy will be extended to the flanks to obtain information of the direction of the main threat of the enemy's pursuit or exploitation.
2. The reconnaissance battalion may be ordered to delay and harass the enemy by action against his head and flanks while continuing reconnaissance.
3. Reconnaissance in the direction of withdrawal must be instituted to insure that the routes of withdrawal are free of enemy and clear of obstacles.

(e) After combat, the regimental reconnaissance companies prepare to assist in the exploitation, pursuit, or withdrawal of their regiment in the same manner as the divisional reconnaissance units function with the division. A portion of the regimental reconnaissance may be attached to rear or flank guards when necessary to further the mission of these security detachments. (See sec. III.)

d. Tank reconnaissance.—This type of reconnaissance is conducted prior to an operation when the use of tanks is contemplated. It is made to determine: the location, capacity, concealment, and suitability of positions; the routes to selected positions; the terrain over which tanks may operate; and the allotment of tanks.

(1) The items to be considered regarding positions include in general:

- (a) Routes into and within the assembly or intermediate position.
- (b) Available routes to point of probable subsequent activities.

- (c) Available routes to alternate positions.
 - (d) Water (quantity, quality, and reliability).
 - (e) Cover and concealment.
 - (f) Capacity and suitability.
 - (g) Standings for vehicles under all weather conditions.
 - (h) Protection from hostile fire.
 - (i) Suitability for local defense.
 - (j) Shelter for maintenance activities.
 - (k) Assignment of areas to subordinate units.
 - (l) Tactical soundness of location.
- (2) Prior to any movement of tank units, principle routes and alternate routes should be thoroughly reconnoitered and a suitable system established for marking the routes and furnishing guides. In reconnoitering routes, consideration must be given to the following:
- (a) Means of identification day or night; i. e., by landmarks, sketches, description, map reference, or aerial photographs.
 - (b) Critical points and areas for location of guides and route markers.
 - (c) Distance over entire route and important parts thereof and time required to traverse them.
 - (d) Detailed data on routes, such as kind (road, trail, or cross country); width (one-way or two-way); grades; surface (firmness, smoothness); defiles; availability; probable effect of changes in the weather; and practical speeds day or night, wet or dry.
 - (e) Cover and concealment, including defilade.
 - (f) Fords; whether depth and conditions of bottom and approaches permit crossing, and whether water level is rising or falling.
 - (g) Bridges, including location, size, kind, capacity, condition, and material required for reinforcement. Also possibility of detouring around them.
 - (h) Tank obstacles including mines and contaminated areas; their location, nature, and possibility of removing, neutralizing, or avoiding them.
 - (i) Friendly installations, including steps necessary to prevent destruction of telephone wire, point of crossing field works, or work and material necessary to insure expeditious crossing.
 - (j) Routes for passage through friendly lines.

(k) Routes for wheeled transportation forward to the line of departure.

(l) Comparative desirability of all routes.

e. Personal reconnaissance.—In preparing for combat, personal reconnaissance of the terrain by the commander, staff officers, and subordinate commanders, under protection of leading elements, is conducted whenever possible to supplement and verify reports of reconnaissance agencies.

■ 30. TRANSMISSION OF INFORMATION.—*a.* All commanders are responsible that their immediate and lower unit commanders are promptly and fully informed of the situation.

b. Neighboring units and reconnaissance agencies when meeting habitually exchange pertinent information. Reconnaissance elements in contact with the enemy cooperate with reconnaissance elements and security detachments that may be employed in the interval between the main force and the reconnaissance elements in contact. Information of vital interest to these reconnaissance elements and security detachments is transmitted through "listening in" radio sets, dropped messages from airplanes, or by messengers.

c. First contact with the enemy and new identifications are always reported by the most rapid means available. Negative reports must be submitted with the same promptness as positive information.

d. Prisoners, inhabitants, messages from patrols, and documents are examined by the reconnaissance unit or detachment commander and forwarded to the main body by the quickest and most reliable means available. Radio, airplanes, scout cars, motorcycles, or impressed motor transportation may be used. In friendly or occupied territory commercial wires should be used whenever practicable.

e. Captured prisoners are evacuated by any available means, together with a digest of their individual statements.

f. Units in contact, although closely engaged in combat, are not relieved of the responsibility of making reports as often as desired by the higher commander. In order to offset the failure to receive a report, commanders must make provision for obtaining prompt information by special reconnaissance and by sending liaison agents to higher, subordinate, or adjacent units.

g. Artillery observers and liaison officers transmit to the higher commander, over their own communication systems, important information which might otherwise be delayed in transmission.

■ 31. SUMMARY.—*a.* The prompt employment of armored force units necessitates early information of the enemy and of the terrain in order for the commander to formulate sound plans and make prompt decisions.

b. All available reconnaissance agencies must be used boldly to gain and maintain contact and obtain information.

c. Reconnaissance agencies must be dispatched in advance of the main force in time to allow for proper reconnaissance of the designated zones, routes, or localities and to get information back to the commander in time to be of value.

d. Information must be transmitted by the quickest and most reliable means available.

e. Prior to combat, personal reconnaissance by the commander, staff officers, and subordinate commanders must supplement and verify reports of reconnaissance agencies.

f. All reconnaissance personnel must be trained to note and report on, suitable terrain for the employment of tanks; possible emergency landing fields; water and gasoline supply sources; and similar items of vital importance to armored force units.

g. The successful operation of an armored force is dependent upon a constant flow of information to the commander.

SECTION III

SECURITY

■ 32. GENERAL.—*a. Security.*—Security embraces all measures taken by a command to protect itself against annoyance, surprise, attack, observation, and interference by the enemy. It includes the special measures taken for protection against hostile aviation and ground forces, including mechanized and chemical attacks. Security is always necessary, whether in movement, at the halt, or in combat. In bivouac and in movement, security is provided in all directions. Adequate and timely information is the basis of all security measures. Continuous reconnaissance is therefore an essential part of security. Security retains freedom of maneuver for the commander.

b. Responsibility.—The commander of each unit is responsible for the security of his command. This includes the protection of his lines of communication, unless such protection is furnished by the higher commander. The superior commander prescribes security measures for the protection of the command as a whole or coordinates those adopted by subordinate commanders. He insures that measures adopted are appropriate to the hostile threat. Subordinate commanders provide additional security required for their own local protection. When contact is imminent, security measures are increased.

c. Warning.—All security measures include an adequate warning service consisting of observers and the means of signal communication. In this manner changes in hostile dispositions and other operations on the ground and in the air are known early. Special measures are taken to warn of the approach of hostile mechanized or air forces.

■ 33. SECURITY AGAINST GROUND FORCES.—The principal security measures against ground forces include reconnaissance, the employment of security detachments, the distribution, formation, and mobility of units, and utilization of terrain.

a. Reconnaissance.—While reconnaissance is closely allied with security, reconnaissance and security forces operate in accordance with different considerations. Reconnaissance influences security by indicating to the commander the measures to be taken to protect his forces. Under certain conditions it may be the only measure employed for security. Information furnished through reconnaissance is a guide to the commander for determining the strength, composition, and disposition of his security detachments.

b. Security detachments.—(1) *General.*—Security detachments are elements of a command assigned to protect the main body. Such detachments are always necessary whether in movement, at the halt, or in combat. On the march, security detachments are called advance guards, rear guards, flank guards, and march outposts; in camp, in bivouac, or in a defensive position, they are called outposts; during development for combat, covering detachments; and in combat, combat patrols. (See FM 100-5.)

(2) *Missions.*—In general, the mission of a security detachment is to furnish the command with information rela-

tive to the enemy, to protect the command against surprise, observation, and interference by hostile ground forces, and to maintain the freedom of maneuver for the command by gaining the time and space it requires to make the necessary dispositions. The priority given to these missions embodying reconnaissance, counterreconnaissance, and resistance varies with the situation and the expressed intentions of the commander.

(a) Information of the enemy in proximity is obtained by the reconnaissance elements or combat patrols from the security detachment.

(b) Protection of the main body from surprise, observation, and interference is accomplished by preventing the enemy firing into the main body and from observing the size, dispositions, and composition of the main body; and by holding the enemy and gaining time for the main body to deploy before coming under effective fire.

(c) Freedom of maneuver of the main body is insured by the security detachment which, according to circumstances, attacks, resists, or delays the hostile forces.

(3) *Strength*.—The strength of a security detachment depends upon the mission assigned it, the terrain, proximity of the enemy, and the size, composition, and physical condition of the command. In certain situations security detachments constitute a partial commitment of the strength of a command to action. They are given sufficient strength to preserve freedom of action for the main body and no more. As far as practicable, tactical unity is preserved in the detail of security detachments.

(4) *Formations of security detachments*.—There is a similarity in the *formation* of advance, flank, and rear guards and outposts. Each comprise groups which send out patrols or post sentinels for observation. These reconnaissance groups are reinforced by a support, the principal element of resistance. In large security detachments, a reserve is provided. The reserve constitutes the principal maneuvering and reinforcing element for offensive or defensive action as determined by the mission of the security detachment. These missions in turn depend upon the plan for the subsequent employment of the command as a whole.

(5) *Distances or time interval*.—(a) The distances or time interval between the main body and the security de-

tachments and between subdivisions of the security detachments will vary with the size and mission of the security detachment, visibility and terrain, and strength, composition, and proximity of the enemy. It should be sufficient to allow the security detachments time to cope with small hostile forces, to allow successive elements of the detachment space to maneuver, and to secure the uninterrupted movement of the main body.

(b) The normal distances between vehicles and units comprising elements of security detachments on the march will be those prescribed for tactical marches. (See sec. VII.) Fixed or routine distances cannot be prescribed for all movements of detachments as terrain, composition, mission, hostile air activity, and many other factors will influence the conduct of the movement.

(c) When operating in darkness, fog, or in close country, distances maintained will be less than when operating in daylight, clear weather, or in open country. Distances between the main body and security detachments and between subdivisions of the security detachments should be reduced to that consistent with control; between vehicles it should be reduced to that consistent with visual communication with the vehicle immediately preceding and following.

(6) *Rate of march*.—The march order prescribes the rate of march for the command and the distance between the security detachments and the main body. The main body regulates the rate of march whenever the command must maintain a certain rate of march to reach a designated place at a prescribed time. When contact is imminent, the advance guard regulates the march.

(7) *Communication*.—(a) Communication between the elements of the security detachment and between the security detachments and the main body is maintained by the quickest means available. Radio, except when radio silence is necessary, or motorcycle messengers are the principal means employed. The commander and leader of each element of the security detachment have radio equipped vehicles. In addition, one or more motorcyclist should accompany the security detachment commander for messenger service.

(b) Leaders of security detachments send information

promptly. Promptness is vital because of the mobility of all units.

(8) *Control.*—(a) Control is obtained by means of radio, visual signals, connecting files, or, the main body commander may designate phase lines, control points, assembly positions, or message relay points, when such are necessary to insure control and facilitate communications.

(b) The normal drill signals for "halt," "forward," and "assembly," and simple improvised signals to indicate "enemy in sight" or "all clear" are used.

(c) Contact between elements of security detachments and between the main body and security detachments is maintained by connecting groups or files. (See par. 34.)

(9) *Movement.*—Security detachments on the march regulate their movements so as to give the main body the protection required by the tactical situation and offered by the terrain. When contact is imminent, they move by bounds as outlined in the following subparagraphs. When darkness, fog, or rapid rate of march of the main body makes the movement by bounds impracticable or inadvisable, movement is continuous and at a prescribed rate.

(a) An advance by bounds is accomplished by a forward element gaining distance over the one in rear to reach some important point which possesses tactical advantage either for observation or combat. The smaller the element, the more easily its speed can be changed, and the shorter and more frequent are its bounds.

(b) A bound of a forward element should not be so great as to place it beyond supporting distance of the next succeeding element.

(c) A bound of a rear element should be under the protection of the element next in front.

(d) An advance by bounds has several important advantages. It—

Enables an element to reconnoiter the terrain before the following element has closed up.

Permits the crossing of terrain that may be under hostile observation or fire in the shortest time.

Offers opportunities for the interrogation of inhabitants, and for servicing of vehicles.

Offers opportunities to coordinate the advance.

c. Distribution of units.—The distribution of units in the

main body is made in accordance with their probable tactical employment. Each unit makes provision for prompt formation and movement to facilitate the command's readiness for action.

d. Utilization of terrain.—Terrain and the road net influence the commander in his selection of positions or routes for the main body and for the security detachments. A map study, supplemented by air and ground reconnaissance, will disclose terrain which may afford protection to the command while in movement or at the halt. A consideration of the road net and terrain will also be a determining factor in the location of the security detachments with respect to the main body.

■ 34. *CONNECTING GROUPS (FILES).*—*a.* A connecting group is a detachment detailed by a force to maintain contact (liaison) with a neighboring force or between units (elements) of a force on the march. Elements of a connecting group used within a march column are called connecting files.

(1) Connecting groups are used to maintain contact with adjacent forces prior to and during combat.

(2) They are used between units within march columns where distance limits visual communication.

(3) They are always used during night marches within a march column.

(4) Within the main body, connecting groups are furnished from the unit in rear to maintain contact with the preceding unit.

(5) Within a security detachment, connecting groups are furnished by the larger element to maintain contact with the next smaller element. For example, from the main body to the advance guard (flank or rear guard), within the advance guard from the support to the advance party.

(6) Connecting groups are especially useful when:

(a) Observation is limited because of terrain features or weather.

(b) A march column passes through a city or large town.

(c) The route of march has many changes of direction.

(d) The route of the preceding element is difficult to follow.

(7) Connecting groups are not to be confused with reconnaissance or combat patrols, although their missions in certain situations are similar.

b. Mission.—The primary mission of a connecting group is liaison. Specifically its duties are to—

(1) Keep the commander of the force from which detailed informed of the location and progress of neighboring units.

(2) Observe and report any penetrating hostile force and oppose such force until arrival of reinforcements or until the threat has ceased.

(3) Maintain connections and liaison within a march column.

c. Strength and composition.—(1) The strength of a connecting group depends upon its mission. When its mission is one of liaison, it may be small; when the distance between adjacent forces is great and hostile threat exists, it is larger. It varies from two motorcyclists to a platoon.

(2) For liaison with adjacent units, scout car, half-track, ¼-ton truck, or tank elements may be used.

(3) For liaison on the march between armored units, such groups consist of two or more motorcyclists or ¼-ton trucks. The number of motorcyclists detailed for this purpose will depend upon the distance between units, the terrain, visibility, and the number of motorcyclists available.

d. Formations and methods of operation.—(1) Formations for connecting groups vary with their mission, terrain, and hostile situation.

(2) For contact and liaison with an adjacent force, a patrol formation is used.

(3) For contact and liaison within a march column, a connecting group usually marches in the interval between the units to which its mission applies.

(a) Whenever visual contact is broken, connecting files, preferably in pairs, are detached from the group to maintain visual contact. When visual contact is regained they close on the connecting group leader at increased speed, if in rear of the leader; or halt and await his arrival, if in front of the leader.

(b) When the number of connecting files is limited and visual contact cannot be maintained because of distance or terrain, connecting files move by bounds.

■ 35. COMBAT PATROLS.—*a. Purpose.*—(1) Combat patrols are security detachments sent out to the front, flanks, and rear to protect the main body or the detachment from which sent out.

(2) Units engaged in combat employ combat patrols for their protection.

b. Mission.—The primary mission of combat patrols is security. Specifically, their duties are to—

(1) Observe the terrain for hostile dispositions and movement.

(2) Gain contact with the enemy in a close situation and furnish timely information of enemy movements towards or around the flanks.

(3) Drive off small enemy forces which threaten the front, flanks, and rear, and contain larger forces until suitable preparations can be made to oppose them.

c. Strength and composition.—The strength of a combat patrol depends upon the force from which detailed, the enemy, and the terrain. It may consist of a pair of motorcyclists, one or more ¼-ton trucks, a section of half-tracks, or a section or platoon of tanks.

d. Formation and methods of operation.—Combat patrols operate under orders from the commander of the force from which they are detailed. The formation in which they move is similar to that prescribed for reconnaissance patrols. Their conduct is different in that combat is usually required for the accomplishment of their missions. They regulate their movements upon the body from which detached.

■ 36. ADVANCE GUARDS.—*a. General.*—An advance guard is a security detachment which precedes the main body on the march.

b. Mission and duties.—The mission of an advance guard is to insure the uninterrupted advance of the main body and to protect it against surprise and observation by hostile ground forces. Specifically, its duties are to—

(1) Guard against surprise and to obtain information by reconnoitering to the front and flanks.

(2) Push back small parties of the enemy and to prevent their observing, firing upon, or delaying the main body.

(3) Check the enemy's advance in force long enough to permit the main body to prepare for action.

(4) Determine the strength and location of the hostile lines and flanks when the enemy is encountered on the defensive, but to avoid bringing on a general engagement unless empowered to do so.

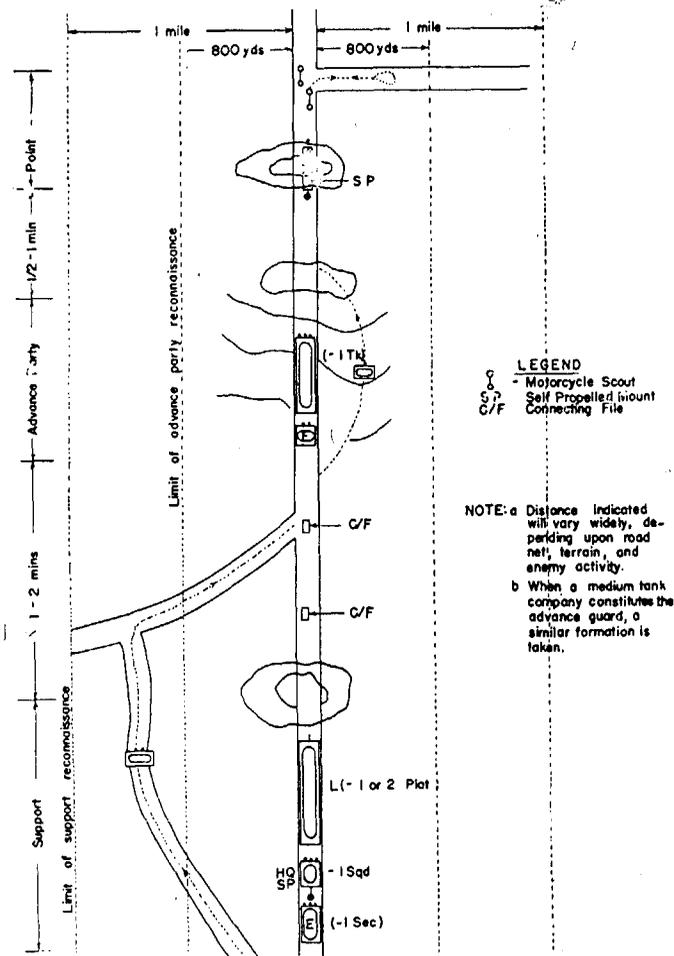


FIGURE 2.—Schematic diagram of advance guard for regiment.

(5) Remove obstacles, repair roads, and facilitate in every practicable way the uninterrupted march of the column.

(6) Seize or hold such terrain features as will facilitate the successful execution of the commander's plan for his command as a whole.

c. Strength and composition.—(1) The strength of an advance guard for armored force units varies from a small fraction to about one-fourth of the command. From front to rear it consists of a point, advance party, support, and reserve. In an advance guard consisting of less than a battalion, the reserve is generally omitted. Figure 2 may be used as a guide but distances indicated will vary widely, depending upon road net, terrain, and similar items. The following are suggested as appropriate advance guards for the forces indicated:

For a platoon—Point	One or two solo motorcycles and 1/4-ton truck, command; one car, half-track, or tank.
For a company—Point	Two solo motorcycles. One 1/4-ton truck.
Advance party.	One section, armored cars (half-tracks, or tanks).
For a battalion—Point	Same as for company and one self-propelled mount.
Advance party.	One mortar squad. One tank platoon. One section engineer platoon.
For a regiment—Point	Same as for company.
Advance party.	Same as for battalion.
Support	One tank company (less 1 or 2 platoons). One mortar platoon. One engineer platoon (less section with advance party). One field artillery battery.
For a combat command group—Point	Same as for company.
Advance party	Same as for battalion.
Support	Same as for regiment.

Reserve-----	One tank battalion (less 1 or 2 companies).
	One engineer company (less 1 platoon).
	One field artillery battery.
For a division—Point-----	Same as for company.
Advance	Same as for battalion party.
Support ----	Same as for regiment.
Reserve-----	Same as for combat command group.

(2) At night the advance guard for battalions and larger units may be composed of infantry and engineer elements.

(3) If any portions of the advance guard are unnecessary, the rear elements are the first omitted. The point is always present.

d. Distances.—Within the advance guard the following are considered satisfactory limits during daylight: (See fig. 2.)

Main body to reserve—5 to 10 minutes.

Reserve to support—3 to 5 minutes.

Support to advance party—1 to 2 minutes.

Advance party to point— $\frac{1}{2}$ to 1 minute.

e. Rate of march.—When the movement of the main body is dependent upon information which the advance guard obtains or upon the actions of the latter, the advance guard regulates the rate of march. At night it is usual for the advance guard to regulate the rate of march.

f. Main body commander.—(1) The main body commander issues the order for the movement of his troops, and prescribes the size and composition of the advance guard or guards to be employed.

(2) He issues the necessary instructions to insure the operation of the advance guard in furtherance of his general plans, and to control its progress and movement.

(3) If the command is marching in two or more columns, orders to the advance guards may prescribe phase lines, selected with regard to the road net and terrain on which periodic control is established and necessary instructions for the coordination of the advance guards.

(4) During the march he may join the advance guard commander, thus keeping himself informed of the situation

in his front, and keeping the latter advised of any changes in his plans he may deem necessary to make.

g. Advance guard commander.—(1) Upon receipt of a march order the advance guard commander issues the necessary orders for the disposition and movement of the advance guard.

(2) During the advance he may control the advance guard from any position. His usual position is in rear of the advance party.

(3) When the enemy is encountered he makes a rapid personal reconnaissance and decision for the employment of the advance guard as follows:

(a) To employ any part of the advance guard as necessary to dislodge the enemy in time to prevent delay of the march of the main body.

(b) To establish a defensive position to cover the approach march and offensive action of the main body.

(c) To contain or delay a hostile force, permitting the main body to continue its advance.

(4) When the leading elements of the advance guard engage the enemy, the advance guard commander moves forward close to the axis of movement of the advance guard to observe the action and to keep the commander of the main body informed of the situation. When the enemy has been disposed of he reorganizes the advance guard elements rapidly and continues the advance.

h. Point commander.—(1) The point commander is responsible for the conduct of the point. In large advance guards, the point commander may be mounted on a $\frac{1}{4}$ -ton truck and ride wherever he deems his presence necessary. His usual position is with the self-propelled mount.

(2) He instructs the point en route, and makes sure that the designated route is followed.

(3) In case the designated route becomes impracticable, or obstacles are encountered over which the main body cannot readily move, he notifies the next higher commander and executes reconnaissance promptly to determine routes around the obstacle.

(4) In case the enemy is encountered, he will:

(a) Report contact.

(b) Employ the self-propelled mount to drive off hostile resistance. Send dismounted members of the point to re-

connoiter the enemy position, fire on, and mark the hostile flanks with tracer ammunition, and to signal if the enemy withdraws.

(c) Send prompt information to the next higher commander of the hostile strength, composition, and disposition.

(d) Reorganize the point following combat, prepared to continue the advance.

(5) If the scouts sent out from the point remain out of view for an unreasonable period, the point commander will assume that these scouts have been shot or captured and will send dismounted scouts to reconnoiter the place where they disappeared before permitting the point to proceed.

i. Point.—(1) The point is both a reconnaissance and security element. (See fig. 2.) Its observation is limited to the line of march. It pushes forward boldly, by bounds, employing the self-propelled mount, if attached, closely supported by the advance party. On winding roads or where terrain features between definite bounds prevent visual contact, elements within the point maintain visual contact until the next bound is reached, thus avoiding stopping at intermediate points of no tactical value.

(2) Its principal duties in the advance are to—

(a) Reconnoiter the road on which the column is marching and observe to the immediate flanks.

(b) Gain rapidly elevations, edges of woods, and other points of vantage from which a good view to the front can be obtained or which the enemy might try to occupy.

(c) Give timely warning, to the element next in rear, of the enemy's presence or of road blocks, mines, traps, or similar methods for delaying a marching column.

(d) Drive back or disperse promptly small hostile patrols. When the enemy encountered is too strong to be defeated by the point, the point protects the next element in rear.

(e) Remove small obstacles blocking the route. When these obstacles require more manpower and technical equipment than that contained in the point, it proceeds beyond the obstacle and protects the next element in rear while engaged in removing the obstacle. When the obstacle is defended, the point first assists in driving off the enemy.

(f) Push boldly into villages along the line of march and determine promptly whether or not they are occupied by the enemy.

(g) Remain on or near the route of advance in order to protect the head of the column from surprise.

(3) In the execution of its duties the elements of the point proceed as follows:

(a) Motorcycle scouts, if available, work as a pair preceding the rear vehicle (1/4-ton truck, self-propelled mount, armored car, half-track, or tank) keeping always a bound ahead. They move in single column, staggered on either side of the road at a distance of 35 to 50 yards between scouts. Successive bounds are made at the maximum speed road conditions permit.

(b) At the end of each succeeding bound they slow down, halt short of the crest, bend, etc., and the leading scout dismounts, moves to reconnoiter the terrain to the front, and check the route. The remaining scout observes to the flanks. He also is employed to reconnoiter lateral roads, if necessary riding out to a position where he can observe for at least 600 yards (effective rifle range). Motorcyclists maintain contact within the point.

(c) When an obstacle or enemy is discovered, one scout reports this information to the point commander, the other scout remaining in observation.

(d) Scouts do not move forward to the next bound until they have signalled "all clear" to the remainder of the point. Control is maintained by visual signals.

(e) When fired upon, scouts seek cover, report contact, and then reconnoiter to determine the direction and nature of the hostile action. They fire their weapons in self-defense and to warn elements in rear.

(f) In case a hostile position has been passed without being observed by the scouts, they will return, dismount, and attack the enemy. They will especially seek and bring under fire antitank guns or machine guns. If the enemy withdraws, they endeavor to ambush him. The scouts avoid getting in the line of fire from other elements of the advance guard.

(g) Upon reaching a terrain feature in rear of the motorcyclists, crew members from the rear vehicle of the point observe to the immediate flanks. When the terrain, time element, and situation warrant, a dismounted reconnaissance will be made for a short distance to either side of the route of march.

(h) This vehicle closes on the motorcyclists on receipt of

signals from the motorcyclists. It coordinates, by bounds, its movement with that of the advance party.

(i) If the enemy is encountered, the rear vehicle and the self-propelled mount, if present, will move forward, depending upon the location of the enemy and place fire on the enemy. The crew, when necessary, will continue its reconnaissance dismounted.

j. Advance party.—(1) The advance party is both a reconnaissance (maneuvering) and holding (pivot) element. (See fig. 2.) Its principle duties are to—

(a) Maintain connection with the point and assist it in overcoming resistance encountered on the line of march.

(b) Extend flank reconnaissance to a distance of about 800 yards.

(c) Check the enemy's advance until the element next in rear has time to prepare for action. In case the enemy encountered is too strong for the advance party to defeat, the latter reports the fact to the next element in rear and reconnoiters the enemy's strength and dispositions.

(2) In the execution of its duties the elements of the advance party proceed as follows:

(a) Each vehicle commander receives, acknowledges, and passes signals both from the front and rear and moves by bounds, coordinating its advance with the rear vehicle of the point.

(b) When contact is gained, the leading vehicle remains on or near the axis of march and engages the enemy by fire, to support the action of the remainder of the advance party.

(c) If subjected to surprise fire the leading vehicle will seek a defiladed firing position if immediately available; otherwise, unless a tank, the vehicle will be abandoned for a dismounted position.

(d) Whenever fire is opened on the leading vehicle, the advance party commander in the next vehicle in column makes a hasty reconnaissance, mounted or dismounted, depending upon the available cover, and disposes the advance party initially to protect the next element in rear.

(e) In larger advance guards, a platoon of tanks, an engineer section, and one or more mortar squads, constitutes the advance party. They perform reconnaissance to the flanks, either by having a patrol march parallel to the axis of movement, where the terrain permits, or by having the

patrol move direct to reconnoiter features of terrain and return to the axis. Only those terrain features that may afford possible positions for the enemy should be reconnoitered. This reconnaissance is continuous when dictated by the situation and terrain.

(f) When enemy resistance stops the advance the tank platoon extends reconnaissance to locate the flanks, drive out the enemy, and develop the situation, reporting results to the advance party commander.

(g) If the enemy resistance is too strong to be overcome by the advance party, each element will hold its most advanced position and cover the approach of rear elements of the advance guard or of the main body.

(h) In advance guards, where there is no support, the tank platoon may be left as a containing force while the main body bypasses the enemy position.

k. Support.—(1) The support bears the same relation to the elements in its front and rear as the advance party does to the point and support. It extends the reconnaissance (maneuvering) or acts as the holding (pivot) element. (See fig. 2.) In the absence of a reserve, it is also the principal striking element. Its principal duties are to—

(a) Maintain connection with the advance party and assist it in overcoming enemy resistance.

(b) Extend the flank reconnaissance to a distance of about 1 mile.

(c) Check the enemy's advance until the element next in rear, or the main body has time to prepare for action. In case the enemy encountered is too strong to be defeated, the support reports the fact to the next element in rear, protects it, and extends reconnaissance.

(2) In the execution of its duties the elements of the support proceed as follows:

(a) March at the prescribed rate of march maintaining the time distance in front of the reserve, if present, or the main body. It should not move on the next bound until the preceding element has cleared.

(b) Extends the reconnaissance to the flanks in a similar manner to that of the tank platoon in the advance party.

(c) When the enemy is encountered, it reinforces the action of the advance party, whether it is combat, reconnaissance, or both.

l. The reserve.—The reserve is the striking (main blow) element of the advance guard. Its employment is based on the information obtained from the lesser forward elements and other sources by the advance guard commander.

m. Artillery.—In an advance guard for a regiment or larger unit it will often be desirable to attach a battery of field artillery. When attached it will normally march as the rear unit of the advance guard, with a reconnaissance officer well forward. If no artillery is attached to the advance guard, the necessary artillery support for its action is furnished by the artillery with the main body. When the need for their employment can be foreseen, supporting antiaircraft artillery may accompany the advance guard. It occupies critical points en route.

n. Aviation.—While not normally attached to the advance guard, available airplanes should be directed to cooperate. They render valuable assistance by reporting direct to the advance guard commander the approach of enemy forces, the location of hostile positions along the axis of advance, pertinent information of roads and bridges, and other similar information.

o. Engineers.—Engineers march at the rear of the support, or near the head of the reserve. Their principal functions are to repair or strengthen bridges, remove obstacles, prepare stream crossings, and repair roads. An engineer detachment marches at the rear of the advance party; its function is to furnish early engineer information. Where need for their use can be foreseen, engineers with bridge building equipment may be attached to the rear element of an advance guard.

p. Medium tanks.—In the absence of artillery with the advance guard, or where their use can be foreseen, medium tanks may be attached to the advance guard composed of a light tank unit or a regiment or larger unit.

q. Mortars.—In an advance guard for a battalion or larger unit, the attachment of at least a squad of mortars is desirable. It is used to neutralize enemy observation posts and screen the movement of advance guard units and later, if necessary, the development of the main body.

r. Trains.—The unit trains of an advance guard generally remain with the trains of the main body. A truck to transport gasoline for refueling motorcycles should march at the rear of the last element in the advance guard. The light

maintenance elements of units performing advance guard duty march in rear of their units.

s. Advance guard in retrograde movement.—In retrograde movements an advance guard should be detailed. It will vary from a point to a larger element, depending on whether or not there is a possibility of an enemy attack against the head of the column. If there is no enemy threat, the principal missions of the advance guard will be to clear the route of march, insure the uninterrupted movement of the main body, and regulate civilian and refugee traffic. For the latter purpose, military police may be attached.

t. March outposts.—Advance guards are used in forming march outposts for temporary or prolonged halts. (See par. 40.)

■ 37. COVERING DETACHMENTS.—*a. General.*—(1) A covering detachment is a security detachment used to protect troops moving in the presence of the enemy.

(2) It is used when early contact with the enemy is expected and when because of this expectation the main body is deployed in an approach formation.

(3) A covering detachment is always used in an approach to a line of departure.

b. Missions.—The missions assigned to covering detachments are similar to those given an advance guard, except in situations requiring combat strength. The primary mission is that of security; the secondary mission is reconnaissance. Specifically its duties are to—

(1) Guard against surprise and obtain information by observing to the front and flanks.

(2) Cover a larger force in the approach to a line of departure.

(3) Guide a larger force over the best terrain available.

(4) Push aside small enemy patrols and offer resistance to larger hostile forces until the main body attacks.

(5) Support the main body in an attack.

c. Strength and composition.—A covering detachment for a tank company usually consists of a platoon; for a battalion a platoon reinforced by detachments of the battalion headquarters company; for an armored regiment a light tank company reinforced.

d. Formations.—(1) Formations for covering detachments

vary depending upon the terrain. They are generally deployed over a broad front with very little depth.

(2) The interval between vehicles (squads) varies between 150 to 300 yards, depending on terrain and visibility.

e. Communication and control.—(1) Communication and control are maintained normally by radio or prearranged visual signals. Exceptionally, motorcycle or other vehicle messengers may be employed.

(2) Movement of the covering detachment is controlled by the main force commander from his position in the interval between the covering detachment and the main force.

f. Methods of operation.—(1) The covering detachment precedes the unit from which it is detailed.

(2) It moves by successive bounds, the limitations of each bound being indicated by the force commander and not by the covering detachment commander.

(3) Upon arriving at each terrain objective, the covering detachment halts and observes to the front and flanks until ordered to make another indicated bound. Full advantage is taken of available cover.

(4) Covering detachments attack small patrols and offer resistance to larger forces.

(5) Upon reaching the line of departure the covering detachment may constitute the leading assault wave; may halt and support the attack by fire; may afford flank and rear protection; or follow in support or reserve.

g. Reconnaissance.—Reconnaissance elements may be attached to a covering detachment the size of a company, or ordered to cooperate with a smaller covering detachment. When the terrain and road net are favorable, early information of hostile dispositions can be obtained by the reconnaissance elements which enables a covering detachment to better carry out its mission.

■ 38. REAR GUARDS.—*a. General.*—A rear guard is a security detachment which follows and covers the main body on the march. The fundamentals covering rear guards and rear guard action are contained in FM 100-5.

b. Who may perform.—Armored units are suitable to perform rear guard duty because of their mobility and fire power, which enable them to withdraw quickly after delaying the pursuing enemy to the last possible moment. However, this

use is exceptional and sacrifices their offensive power. This mission should not be assigned armored units when other suitable units are available. However, the rear guard covering the retirement of a combined force often contains armored units.

c. Mission and duties.—The mission of a rear guard is to assure an uninterrupted movement of the main body and to protect it from attack, observation, or interference by hostile ground forces. Specifically its duties are to—

(1) Guard against surprise and furnish information by observing to the rear.

(2) Hold back small forces of the enemy and prevent their observing, firing upon or delaying the main body.

(3) Check an enemy in force until the main body has time to prepare for action, march beyond the range of hostile fire, or occupy a position.

(4) Provide suitable passive measures of opposition, such as interposing obstacles and destroying or damaging bridges and roads.

(5) Collect stragglers and lost vehicles and destroy abandoned property.

d. Strength and composition.—The strength and composition of a rear guard for armored units depends upon the mission, direction of a march, nature of the terrain, and upon the mobility and strength of hostile forces likely to be encountered. Its strength and composition should be such as to permit the execution of its mission without the intervention of the main body.

(1) *Strength.*—Its strength varies from a small fraction to about one fourth of the command.

(2) *Composition.*—It normally is composed of machine gun and tank elements. It may be augmented by artillery and mortar elements to provide greater combat power for reconnaissance units; and by engineers, chemical, and medical troops. At night it may be composed of infantry and engineer elements, and when the situation is obscure it should consist primarily of armored or motorized infantry.

e. Formation.—The rear guard formation resembles that of an advance guard reversed. Next behind the main body marches the reserve, followed in turn by the support, rear party, and rear point. In general the size of the rear guard is smaller than an advance guard, except in retrograde move-

ments. When the size makes it impracticable to have all the elements, they are omitted in order of size beginning with the reserve. A rear point is always present.

f. Distances or time interval.—On the march, distances or time intervals between the rear guard and the main body and between subdivisions of the rear guard vary. In general they are governed by the size and mission of the rear guard, by visibility and terrain; and by the strength, composition, mobility, and proximity of the enemy. The distances and time intervals previously outlined for advance guards may be taken as a guide subject to the following:

(1) *Support to reserve.*—The minimum distance between the support and reserve is determined by the consideration that the support must delay the enemy until the reserve can prepare for action. The maximum distance is that which the reserve can take without exposing the support to the liability of being cut off. These distances may be greater in open country or during daylight than under the opposite conditions.

(2) *Reserve to main body.*—The minimum distance between the reserve and the main body is determined by the consideration that the rear guard must protect, and not be driven back upon, the main body. The maximum distance is that which can separate the reserve and the main body without subjecting the rear guard to the danger of being cut off by the enemy. It must not be such as will permit intervention of hostile forces in strength between the reserve and the main body.

g. Rate of march.—(1) The march order prescribes the rate of march for the command and the time or distance between the rear guard and the main body.

(2) The elements of the rear guard usually retire by bounds, based on the progress of the main body and the time limit set by the main body commander for holding designated lines. They may follow the main body at a steady rate of march when conditions render the movement by bounds impractical or unnecessary.

h. Communication and control.—Communication and control are maintained between the rear guard and the main body and between subdivisions of the rear guard in the same general manner as has been previously outlined for advance guards.

i. Conduct of rear guard.—(1) When the distance from the enemy permits, the rear guard retires in march formation.

(2) When in contact with the enemy, the rear guard moves on a broad front and opens fire at long range to force 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 withdraws successively from position to position as the enemy approaches.

(3) The rear guard fights in successive positions.

(4) The rear guard commander makes timely provision for preliminary reconnaissance of new positions and routes thereto.

(5) The successive positions of the rear guard are chosen at such distance from each other that the enemy is forced to renew his preparations for attack, including forward displacement of his artillery, in each instance.

(6) A rear guard position should favor withdrawal by affording covered routes of withdrawal.

(7) When the enemy presses his pursuit closely, greater resistance is offered. Full use is made of surprise attacks and ambushes to slow down or halt the hostile advance.

(8) In general, the main efforts of the rear guard, like those of any delaying force, must be constantly directed toward barring roads or other avenues of approach, and denying, or disputing to the limit of available means, their use by the enemy forces.

(9) Hostile mechanized elements usually attempt to attack from the flank. Against such forces, care must be taken to prevent dispersion of the rear guard in order that it may be able to repel flank attacks and avoid being cut off from the main body.

(10) Advantage is taken of favorable opportunities to punish over-hasty pursuit by counterattacks against the heads of pursuing columns, or against hostile forces attacking from the flank. Ambush of leading hostile elements will be effective in slowing down and punishing a hasty enemy. Such tactics will cause the enemy to be more cautious and, consequently, slower in action.

(11) A rear guard resorts to such defensive measures for halting or delaying the enemy as obstructing fords, executing

demolitions within the capabilities of the rear guard, felling trees across the road, burning stretches of grass or shrubs, or by the use of persistent chemicals.

j. Duties of rear guard elements.—(1) (a) In general, each rear guard element maintains connection with the next lower element and, by fire action or otherwise, assists it in effecting withdrawal.

(b) Each element observes or reconnoiters to its own rear and flanks and furnishes timely information of the enemy situation to the next higher commander.

(c) Each element covers the retirement and cooperates in the fulfillment of the mission of its next higher element.

(d) Each element in falling back avoids masking the fire or interfering with the action of the elements covering its withdrawal.

(e) Limited flank reconnaissance for their own protection is performed by elements of the rear guard. When special flank reconnaissance is necessary, it is performed by reconnaissance units attached to the rear guard or by patrols detailed for this purpose from the reserve or main body.

(2) The principal duties of the rear guard elements are as follows:

(a) *Rear point.*—The rear point is a patrol from the rear party and follows the rear party en route. It adheres closely to the route of retirement, observing constantly to the flanks and rear to detect hostile moves. It discourages pursuit by firing upon hostile elements.

(b) *Rear party.*—The rear party, a subdivision of the support, follows and protects the support. It endeavors to delay a closely pursuing enemy by long-range fire. It covers the withdrawal of the rear point by engaging the enemy by fire alone or by fire and movement. When necessary it maneuvers at distances up to about 800 yards on either side of the axis of movement.

(c) *Support.*—The support is the smallest element of the rear guard capable of offering the enemy serious resistance. It follows the reserve en route or the main body when no reserve is present. When no reserve is present, it performs the duties that normally devolve upon the reserve. It delays the enemy, usually by means of long-range fire in successive positions; it covers the occupation of delaying positions by the reserve; it covers the withdrawal of the rear party by

fire alone or by fire and movement. It may operate as much as 1 mile to either side of the route.

(d) *Reserve.*—The reserve, normally the strongest element of the rear guard, constitutes its chief maneuvering force. It is a duty of the reserve in particular to detect the presence of any hostile forces attempting an encircling maneuver. It delays the enemy by means of all available fire power and, when occasion demands, by offensive action in cooperation with the support. In case the situation requires the rear guard to effect a long delay of the enemy force, the reserve, under protection of the support, occupies strong delaying positions. It maneuvers as necessary to either side of the route.

k. Artillery.—Field artillery may be attached to the rear guard for a regiment or larger unit. When attached, it generally marches near the head of the largest element of the rear guard. Because of its great range, artillery can force the enemy off roads before he is within range of small arms fire and can compel him to march across country in deployed formation, or to use circuitous routes in order to obtain cover.

l. Aviation.—While not normally attached to the rear guard, observation airplanes operate in close liaison with its commander. They keep him informed of the strength, composition, location, and movements of enemy forces. They assist, whenever necessary, in maintaining liaison between the main body and the rear guard. Some airplanes usually are placed at the disposal of the artillery with rear guards to observe their long-range fires.

m. Chemical troops.—Detachments of chemical troops may be attached to a rear guard for the purpose of delaying the enemy by the use of persistent chemicals or other chemical ammunition. Smoke may also be used to assist the elements of the rear guard in concealing their movements during successive withdrawals. When attached, chemical troops should march with the reserve.

n. Engineers.—When available, engineers should be attached to the rear guard to complete demolitions or the installation of obstacles which may have been prepared by preceding engineer troops.

o. Medical troops.—Sufficient medical troops are attached

to the forward elements of the rear guard to care for probable casualties.

p. Medium tanks.—Medium tank units may be attached to the rear guard for an armored regiment or larger unit when there is no artillery attached, or when a mechanized threat exists.

q. Mortars.—In the absence of chemical troops, the attachment of at least a platoon of mortars to the support of a rear guard for a regiment or larger unit to furnish smoke is desirable.

r. Reconnaissance units.—(1) Divisional reconnaissance units are seldom attached to rear guards. In a withdrawal, divisional reconnaissance units between the enemy and the rear guard keep the rear guard commander informed of the strength, composition, location, and movement of enemy forces.

(2) A portion of the regimental reconnaissance company may frequently be attached. When attached to rear guards, these units are of great assistance in performing flank reconnaissance and in obtaining early information of encircling maneuvers. They generally move abreast of the rear guard, on parallel roads or cross country.

s. Trains.—The unit trains of the rear guard should march at the rear of main body. In general, maintenance elements of the rear guard march as far to the rear as is consistent with the tactical situation. Usually maintenance vehicles with the reserve will march at the rear of the reserve while maintenance vehicles of other elements march at the head of their respective units.

t. March outposts.—Rear guards are used in forming march outposts. (See par. 40.)

■ 39. FLANK GUARDS.—*a. General.*—(1) A flank guard is a security detachment detailed to protect the flank of a marching force. The fundamentals covering flank guards and flank guard action are contained in FM 100-5.

(2) Because of their high degree of mobility, armored units are especially suitable to perform flank guard duty. However, tank units must not be used for that duty when such employment will materially reduce their offensive power or when other suitable troops are available for such duty.

(3) When the protection usually afforded by adjacent units

or obstacles is absent, a flank guard may be necessary.

b. Mission.—The mission of a flank guard is to insure the uninterrupted advance or retirement of a force and to protect it from attack, observation, or harassment by hostile ground forces from the flank. Its duties are similar to those of advance and rear guards.

c. Strength and composition.—The strength and composition of a flank guard varies according to the situation, from a patrol to a force of all arms. When the main body executes a flank march in proximity of the enemy, flank protection assumes great importance; a strong flank guard is detailed.

d. Distance.—(1) Since the mission of a flank guard is to protect the flank of a marching column, it is interposed between this column and the located or anticipated hostile threats. The distance of operation to the flank will vary depending upon the enemy composition, terrain, such as defiles and obstacles, and particularly upon adjacent roads parallel to the route of the main force.

(2) Large flank guards should be far enough out to the flank to prevent hostile artillery or antitank weapons from placing effective fire on the main body. Small flank guard patrols should be far enough out to protect the command from enemy machine gun and antitank gun fire.

(3) Distance between elements of the flank guard on the march may conform to those between elements of an advance or rear guard. When continuous flank protection is required, the flank guard is distributed in detachments to give protection throughout the length of the main body. Critical areas (key positions) controlling avenues of approach may be occupied and held until the main body has passed. (See *g* below.)

e. Rate of march.—(1) The rate of march of the flank guard conforms generally to that of the main body.

(2) When movement of the flank guard is by bounds, the rate of march will be based on the progress of the main body or the time limit set by the main body commander for holding specific localities or points.

f. Communication and control.—(1) The communication facilities afforded by the use of radio, aviation, motor, and motorcycle messengers enable the flank guard commander to maintain contact with the main body.

(2) Where the terrain permits, contact with the main body may be maintained through connecting groups.

(3) Contact is frequently gained with flank guards and their movement controlled by the main body commander on designated phase lines or objectives.

(4) Communication and control are maintained between subdivisions of the flank guard in the same manner as has previously been outlined for advance guards.

g. Conduct of flank guard.—(1) Flank guards are conducted with especial reference to routes or localities which favor attack against the flanks of a command.

(2) 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 to cover possible routes of hostile attack. Except as indicated below, it is distributed in echelons over sufficient depth to offer resistance to attack at various points on the flank of the main body and to prevent inroads of small hostile detachments.

(3) When the locality from which an attack is to be expected is well defined, a flank guard occupies a key position covering the routes of approach to the main body until the command has passed.

(4) When several such locations must be passed during the progress of a march, echelons of the flank guard move by bounds from one position to another.

(5) Upon arrival at a locality, dispositions are made to hold that position as long as may be necessary to allow the main body to march out of danger. The flank guard, or echelon thereof, then moves to the next locality.

(6) When the enemy is encountered, the flank guard may act offensively, delay in successive positions, or defend a position, as the situation may require.

(7) In addition to the normal methods of performing flank guard duties, where considerable doubt exists as to the most likely avenue of hostile approach, a flank guard may resort to a position of readiness at some conveniently located point. If sufficiently strong, it may occupy two or more key positions covering the most probable routes of approach. In the latter case, a highly mobile reserve should be held at a convenient

location to move rapidly to oppose the enemy when his line of approach is known.

h. Artillery.—Artillery is usually attached to flank guards required to operate beyond effective supporting distance of the artillery in the main column, or to combat hostile forces likely to be accompanied by mechanized elements.

i. Medium tanks.—Medium tank units may be attached to large flank guards for a combat command or division when there is danger of attack by hostile mechanized elements.

j. Aviation.—Although observation airplanes are not normally attached to flank guards, they cooperate with them in the same manner as with advance guards and rear guards. In some situations, flank guards may be supported by combat aviation.

k. Other auxiliary troops.—Other auxiliary troops, such as engineer, chemical warfare, and medical units, are attached in accordance with their need as the situation in each instance may demand.

l. Reconnaissance units.—(1) Divisional reconnaissance units are seldom attached to flank guards. In a withdrawal these units cooperate with or may even supplant flank guards.

(2) A portion of the regimental reconnaissance unit may frequently be attached. When attached to flank guards, these units are used to conduct reconnaissance to locate hostile threats, or to seize and hold critical points prior to their occupation by the flank guard proper. Exceptionally they may be employed to delay the enemy from localities too distant for the flank guard to occupy.

m. Trains.—Unit trains of the flank guard march with the trains of the main body. The maintenance elements of units performing flank guard duty accompany their units.

■ **40. OUTPOSTS.**—*a. General.*—(1) An outpost is a security detachment to protect a resting command or a defensive position against annoyance, surprise, and observation by ground forces.

(2) The presence of hostile mechanized units necessitates all-around security.

(3) In order to obtain cover and concealment against air attack, units may have to disperse over a large area.

(4) When armored force units are attached to other ground forces, they may depend upon the general security furnished

by the force to which they are attached. However, they provide their own local security, including security against hostile mechanized elements and aviation.

(5) When operating alone, or at too great a distance from the force to which they are attached to be furnished adequate security by them, armored force units provide their own all-around security. This paragraph covers the security of armored force units when they furnish their own security.

b. Types.—(1) *Outposts at halt and in bivouac.*—At a halt during the course of a march the advance guard, or rear guard, or both, establish a march outpost consisting of observation posts at commanding points and combat patrols at critical terrain features. The support usually furnishes this outpost. In bivouac, while the outpost is being established, advance, flank, and rear guards provide security.

(2) *Combat outposts.*—When operations are interrupted by a halt for reorganization or by nightfall and troops are required to bivouac in battle formation, companies or battalions cover their sectors by means of a security detachment termed a combat outpost. Provision is made for patrolling the foreground and intervals between tactical localities. Contact with the enemy must be maintained. The action of the several combat outposts is coordinated by the commander of the whole force. The flanks and rear must also be covered with security detachments.

c. Strength and composition.—(1) The strength and composition, as well as the disposition, organization, and conduct of an outpost depend upon the following considerations:

- (a) Special mission assigned the outpost, i. e., march, combat, or outpost for a prolonged halt.
- (b) Proximity, strength, composition, mobility, and attitude of the enemy.
- (c) Size and composition of the whole command.
- (d) Tactical dispositions of the main body.
- (e) Front to be covered and the distance of the outpost from the main body.
- (f) Nature of the terrain, especially the road net and natural obstacles.

(2) *Strength.*—An outpost is given sufficient strength to enable it to accomplish its mission, but is made no stronger than is consistent with reasonable security.

(3) *Composition.*—Outposts for large armored force units

are composed principally of infantry and machine gun elements augmented by reconnaissance, artillery, and engineer elements. In smaller units, such as an armored regiment, they are normally composed of machine gun elements. For armored units smaller than a regiment, see chapter 5.

d. Outpost dispositions.—The degree of organization of the outpost depends upon whether or not contact with the enemy is remote or imminent, or whether forces are in actual contact. *The basic consideration is that a command must not allow itself to be surprised.*

(1) *When contact is remote.*—The time distance from the enemy varies with the rate of march of the enemy troops that may move against the command. When contact is remote, security is provided by far reaching reconnaissance; by depth of depositions and location of units in the bivouac; and by sending out detached posts to hold critical points on routes of approach from the front, flanks, and rear. These detached posts, preferably, are along some protective terrain line that the enemy will be forced to pass in his advance (defiles, stream crossings). They provide local security by posting outguards and sending out patrols. Additional outguards are posted near the bivouac area.

(2) *When contact is imminent.*—When the enemy is so close that contact can be expected at any moment, a more highly organized outpost system is prescribed. Combat units may be assigned sectors for which to furnish security. These sectors are assigned by the senior commander and include the bivouac area of the combat unit. When sectors are so assigned, the dispositions of troops in the bivouac area must be such that combat units encircle the noncombatant elements present; and sectors must be contiguous. When necessary, portions of the main body are held in readiness for immediate action.

(3) *In close contact with enemy.*—When in close contact with the enemy, a complete outpost is organized as described in subsequent subparagraphs. Such circumstances will be exceptional since armored force units, when they pass to the defensive, should be replaced by other ground forces and withdrawn to conserve their strength for a resumption of the offensive. (See ch. 1.) However, when armored force units in contact with the enemy have outdistanced the ground forces to which they are attached, it may be necessary to

bivouac, to assemble, and to reorganize and service the vehicles, pending relief by other ground forces. Either an organized outpost or combat outposts will then have to be established, depending upon the hostile situation. The provisions outlined in FM 100-5, pertaining to supports, outguards, sentinels, detached posts, and patrols, applicable to outpost dispositions, are made.

e. Organization of outposts.—An outpost position should be selected because of its facilities for observation and its suitability for defense. Two lines are usually established, i. e., a line of observation and a line of resistance. The position is organized in depth in such manner as to place between the main body and the enemy a series of groups which the enemy must attack successively as he advances. The closer to the main body, the stronger the group.

(1) *Line of observation.*—The line of observation consists of small groups (outguards) charged with observing and reporting any hostile advance. This line is extended well to the front on terrain commanding an unobstructed view of the front, particularly avenues of approach and of the intervening terrain.

(2) *Line of resistance.*—The outpost line of resistance consists of larger groups (supports) posted on the best defensive ground, encircling the bivouac areas. During the hours of daylight, the outpost line of resistance for armored force units of a regiment or larger are usually at some distance from the main body. Full advantage is taken of all obstacles. At night, since it is not practical to build up a line of resistance in advance of the bivouac by attempting to maneuver heavier elements of the command forward to that line during the hours of darkness, the line of resistance may be increased in strength; or the line of resistance may be established by the disposition of combat units in bivouac. This may be obtained by providing close-in protection with the guns of the vehicles sighted for all-around defense, with personnel bivouacked at their vehicles.

(3) *Subdivisions of outposts.*—The usual subdivisions of an outpost from rear to front are reserve, supports, and outguards. In case of attack, the primary duty of each subdivision in front is to gain time for the element next in rear to prepare for action. Elements in rear reinforce elements in front. In occupying their positions and during relief, the

various subdivisions of the outpost conceal their movements against both air and ground observation. The outpost troops ordinarily stand relieved when the support of the advance guard passes the outpost line of resistance.

(a) *Reserve.*—The reserve, which constitutes the main force of the outpost, is held at some central point from which it can support the troops on the main line of resistance. It renders support by reinforcement or by counterattack. In case the outpost is assigned a delaying mission it holds a rallying position upon which the more advanced elements may retire in the event of a hostile attack in force. Its strength varies from one-fourth to two-thirds of the outpost strength. The reserve is marched to its post by its commander, who then sends out such detachments as have been ordered and places the remainder at rest. He stations sentinels at the post of the reserve. He establishes connection with the supports and nearby detached posts. Each unit of the reserve is informed of its place of formation and action in case of hostile attack and the general action expected of the reserve.

(b) *Supports.*—The supports constitute a line of supporting and resisting elements. They are usually located on or near the line of resistance along prominent terrain features or clearly defined points, such as buildings, bridges, or road junctions so as to cover likely avenues of approach. Strength is concentrated at the most important points, the remainder being covered by small detachments, patrols, and weapons previously sighted in positions. Supports vary in strength from a platoon to a company. The strength, armament, terrain, and extent of the outpost sector control the distance between adjacent supports. Each support is organized as a defense area. It commands an adequate field of fire to the front and the intervals between adjacent supports. Each support is assigned a sector clearly defined by means of readily distinguishable terrain features. Sector boundaries are so arranged and so designated that responsibility for covering roads, sensitive points, and likely avenues of hostile approach is never divided. Supports are numbered consecutively from right to left in the outpost. Each support commander stations at least one sentinel at the post of the support, details outguards to cover the front of the sup-

port, and makes provision for patrolling including visiting lateral patrols.

(c) *Outguards*.—Outguards are detailed from supports to occupy vantage points on the line of observation. They vary in strength from four men to a platoon, depending on their location, distance from the support, and the number of sentries they are to furnish. An outguard of four men includes a leader and maintains three reliefs of single sentinels. A squad posted in observation maintains single or double sentinels. Larger outguards protect themselves by sentinel posts of half squad or squad groups, and patrols, depending on the situation. At night it is frequently advisable to place outguards in positions different from those occupied during the day. Outguards are numbered consecutively from right to left in each support. The number and size of outguards employed will depend upon the strength of the support, terrain, and actions of the enemy. Outguards must be ready for action at all times. In every case the outguard commander must understand what he is to do in an emergency. Vehicles of the outguard may be with the support or kept under cover near the outguard.

(d) *Sentinels*.—Sentinels are posted from outguards either singly or in pairs. On sentinel posts from the larger outguards it is customary to use one sentinel in the daytime and two at night. Sentinels are located in concealed positions which afford an unobstructed view. They must be near enough to their leader to attract his attention without leaving their post. They are charged with the observation of a portion of the foreground of the outpost position, with the discovery of hostile activity, and with giving the alarm in case of attack. Sentinels are given the following information:

1. Number of their relief, outguard, and support.
2. Direction and probable route of approach of the enemy.
3. Names of features of military importance, such as roads, villages, or streams.
4. Location of the support or other units of which the outguard is an outpost element and the location of adjacent outguards.
5. What friendly patrols are in advance of the line of observation.

6. Special signals.
7. Means of identification of friendly vehicles at night.
8. Where prisoners are to be sent.
9. Where messages may be sent.
10. When he is to be relieved.

(4) *Detached posts*.—Detached posts are observation and combat groups detailed for the purpose of occupying points which possess special importance to the security of the command but which are too remote to be included in the normal outpost organization. Detached posts are given sufficient strength to maintain themselves and to furnish the necessary observation.

f. Distances.—Because of the mobility, organic fire power, and facilities for rapid communication of armored force units, the distance between subdivisions of the outpost may be considerably greater than in less mobile troops. Armored force units can quickly support an outpost line of resistance at a distance from the bivouac of a command. The line of observation, when practicable, should be at sufficient distance to keep hostile light artillery beyond the range of the bivouac area.

g. Communication and contact.—(1) Communication between the main body and the outpost and between subdivisions of the outpost are maintained in the same general manner as has been previously described for all security detachments.

(2) Within the outpost position, contact with advance elements and with adjacent supports and outguards is maintained by patrols.

(3) Visual signals, such as ground projector signals or improvised alarms, may be utilized in accordance with a pre-arranged code to warn of the approach of hostile ground or air forces.

h. Conduct.—The conduct of an outpost depends primarily on the contemplated employment of the main body. The plan of action of the main body may require the line of resistance to be held at all costs, or the outpost and security detachments may be required to delay in order to afford the main body time to prepare for action or withdrawal. The course of action to be followed is prescribed by the commander of the force.

i. Obstacles.—Obstacles (road blocks) constructed from

material found on the ground are placed on roads in front of outguards and supports, where they may effectively delay the enemy advance. Such obstacles must be covered by fire. Obstacles are placed by the outpost troops with the assistance of engineers. They are located to take full advantage of defiles. Mines are used freely. (See FM 5-30.)

j. Terrain.—Terrain features are utilized to the maximum extent in providing protection and in making dispositions. Terrain should be selected for positions that will cover avenues of approach, provide an adequate field of fire to the front, and cover the interval between adjacent elements. Covered routes of withdrawals from positions should be selected and reconnoitered in advance.

k. Vehicles.—The minimum number of vehicles necessary for patrolling, communication, and transportation of personnel remain with the subdivisions of the outpost. When not employed they are concealed. Remaining vehicles are left with the vehicles of their unit.

l. Identification of friendly vehicles.—Some means of identifying friendly vehicles approaching outguards from the direction of the enemy must be improvised and understood by all sentinels and the crews of vehicles. A simple prearranged code that can be flashed by a light and seen at a distance will serve to warn of the approach of friendly vehicles at night. Along routes that are likely to be used by vehicles it may often be preferable to post an additional sentinel a hundred yards or so in advance of the outguard to flash a light on all vehicles to insure identification. If an enemy vehicle is identified, the outguard is warned by the sentinel giving a prearranged signal.

m. Artillery.—Support of the outpost troops is usually provided by the artillery with the main body, or that assigned to the defense of the main position. Batteries are specially designated for this purpose in case such action is contemplated. If such support is impractical, artillery may be attached to the outpost.

n. Aviation.—Observation aviation provides additional surveillance and cooperates with outpost troops in the same manner as with advance, flank, and rear guards.

o. Engineers.—Engineers are attached to the outpost as required for the repair or destruction of bridges and roads, and for the construction of obstacles, mine fields, and other barriers.

p. Other auxiliary troops.—Other auxiliary troops, such as chemical warfare and medical units, are attached to large outposts in accordance with their needs as the situation in each case demands.

q. Reconnaissance units.—(1) Divisional reconnaissance units are seldom attached to outposts. They execute distant reconnaissance regulated by the higher commander. (See sec. II.)

(2) A portion of the regimental reconnaissance unit may be attached to extend the zone of reconnaissance of an outpost to the front and flanks.

(3) All reconnaissance elements maintain close contact with the enemy when combat outposts or outposts for the night are established. During the hours of darkness, unless an emergency calls for other action, reconnaissance elements not in contact are habitually withdrawn to the bivouac area of the main body. Elements in contact with the enemy maintain observation of the enemy with the minimum personnel required while the remainder of the element rests in concealed bivouac in the vicinity.

r. Trains.—Trains of outpost elements remain at the service park of their unit bivouac.

s. Supply and maintenance.—The feeding of personnel and maintenance of vehicles on outpost duty in armored force units, at a distance from their bivouac areas and service parks, may offer a difficult problem. The following methods may be taken as a guide:

(1) Rations, fuel, and lubricants may be transported in containers to the various elements. Necessary servicing is performed by the crews with vehicles concealed at the outpost position.

(2) In proximity to, or in close contact with the enemy, feeding and servicing may have to be accomplished prior to the element being posted, if sufficient warning is given, or after the element has been relieved from outpost duty and has been withdrawn. Elements may have to exist on their reserve rations and carry the necessary fuel and lubricants in containers with them in the combat vehicles.

(3) When practical and at not too great a distance from the element in rear, personnel and vehicles may return to the rear element in relays for feeding and servicing.

(4) Maintenance, other than first echelon maintenance,

normally is not performed at outpost positions. If such maintenance is essential, vehicles requiring it should be replaced by other vehicles prior to going on outpost duty.

■ 41. COUNTERRECONNAISSANCE.—*a. General.*—(1) Counterreconnaissance includes the measures to screen a command from hostile observation. Armored force units when operating alone provide, when necessary, their own counterreconnaissance screen. The screening of other troops by armored units is usually incidental to other missions.

(2) Counterreconnaissance missions may be assigned whether the force to be screened is advancing, withdrawing, moving laterally, or is at a halt.

(3) Air superiority is essential to prevent observation by hostile aviation.

b. Missions and duties.—Counterreconnaissance missions may be to screen a force in movement (moving screen); or to screen the disposition or concentration of troops (stationary screen). Specifically the duties of counterreconnaissance elements are:

(1) To prevent hostile patrols from working through the screen.

(2) To prevent a hostile penetration in force.

(3) To engage the enemy in such a manner as to prevent or limit his observation of a certain area or beyond a certain line.

c. Strength.—The strength of a screening force, as well as the number of security detachments employed and the frontage and depth to be covered, depends upon the following principal factors:

(1) Strength, composition, dispositions, and mobility of the enemy.

(2) Kind of screen to be established, i. e., moving or stationary.

(3) Size and tactical dispositions of the force being screened.

(4) Nature of the terrain, particularly the road net.

d. Composition.—Counterreconnaissance in an armored division is executed principally by reconnaissance, infantry, and attached aviation elements, while the remaining combat elements of the division reinforce, from a central location, the screen as necessary. In smaller units, such as an

armored regiment, it is normally executed by reconnaissance and tank units. Units smaller than a regiment may have appropriate elements attached for the purpose.

e. Organization of counterreconnaissance screen.—When a commander assigns a counterreconnaissance mission to a force, he may designate a zone or sector to be covered by the counterreconnaissance screen. This zone or sector is covered by security detachments known as counterreconnaissance detachments which in turn send out counterreconnaissance patrols. Reconnaissance to a distance beyond the screen, under the control of the commander of the counterreconnaissance force, is performed by reconnaissance units. The main body of the counterreconnaissance force marches or remains in a central location behind the counterreconnaissance detachments. It supports the counterreconnaissance detachments as the situations may require.

f. Zones and sectors.—(1) If the mission calls for screening a moving force, a zone of action is usually prescribed.

(2) If the mission calls for the establishment of a stationary screen, the instructions designate the general line and sector to be screened. A stationary screen is similar to an outpost.

g. Frontage and depth.—(1) A counterreconnaissance force is disposed to cover the entire front and in sufficient depth to give the commander thereof time to concentrate an adequate force to prevent a hostile penetration of the screen. Those parts of the front or area most vulnerable to hostile reconnaissance receive special attention in the disposal of the counterreconnaissance force.

(2) The following may be taken as a guide for the frontage that can normally be effectively covered in a moving screen by units of the infantry or reconnaissance elements of the armored division:

	Infantry	Reconnaissance units
	<i>Miles</i>	<i>Miles</i>
Regiment.....	27	
Battalion.....	13½	15-25
Company (or armored tank company).....	3½	5-7

(3) In a stationary screen these frontages may be increased by approximately 25 percent.

h. Moving and stationary counterreconnaissance.—(1) In a moving screen, the elements of a counterreconnaissance force usually move by bounds. Patrols operating on a broad front move from one coordinating or phase line at specified times to another. Counterreconnaissance detachments, keeping within supporting distance of their patrols, and the main body, move from one suitable defensive terrain feature to another. In marches of more than one column the movement of the main body is usually coordinated by the designation of specific lines to be reached by heads of columns at specified hours.

(2) In a stationary screen counterreconnaissance elements are posted to block the advance of the hostile reconnaissance. Maximum advantage is taken of terrain, obstacles, and defended road blocks. Patrols must be supported promptly to prevent penetration of the screen.

i. Counterreconnaissance detachments.—(1) The duties of counterreconnaissance detachments are primarily to prevent reconnaissance by the enemy's ground troops and to deny the transmission of information to the enemy. They are habitually assigned zones of action or sectors.

(2) The strength of a counterreconnaissance detachment depends chiefly upon the width of the zone of action or the frontage assigned, and the number of patrols it must furnish to accomplish its mission. These in turn depend upon the strength of the hostile forces likely to be encountered, the terrain and road net, and the nature of the screen to be established. The strength may vary from a platoon to a battalion.

(3) In general, counterreconnaissance detachments will normally be used to:

(a) Prevent smaller hostile patrols from penetrating the zone of action or sector assigned.

(b) Destroy or drive off small hostile detachments.

(c) Locate and delay the advance of larger detachments.

(d) Reinforce, or form rallying points for, their own patrols.

(e) Maintain liaison within that part of the screen established by the detachment as well as with adjacent detachments.

(f) Reconnoiter locally to the front and flanks of the detachment.

(g) Furnish information to the commander of the main body.

(4) Personnel and weapons are employed in accordance with the principles of their use in offensive and defensive action by small units.

j. Counterreconnaissance patrols.—(1) The principle duties of the patrols are to locate and destroy hostile patrols and to warn the counterreconnaissance detachments of the presence and movement of larger hostile detachments that are beyond the capability of the patrol to destroy. They delay such detachments. The strength of a patrol varies from half a squad to a platoon with its organic weapons. Normally, vehicles operate in pairs.

(2) In general, the conduct of counterreconnaissance patrols, whether in moving or in stationary screens, is similar.

(a) In a moving screen patrols move along routes which enable them to keep under observation the likely routes of hostile advance. They patrol laterally to adjacent patrols.

(b) In stationary screens patrols are posted at observation points from which they can view routes of hostile approach. Active patrolling between adjoining groups is maintained.

k. Instructions to counterreconnaissance detachments.—Instructions to the commander of the detachment include:

(1) Time of starting.

(2) Zone of action (for moving screen).

(3) Sector and line of observation and defense (stationary screen).

(4) Coordinating lines and time to be passed (for moving screen).

(5) Special reconnaissance desired.

(6) Procedure if enemy is met in force.

(7) Lines of communication; responsibility for liaison between detachments.

l. Methods of operation.—In performing counterreconnaissance missions, units seek to defeat or neutralize hostile reconnaissance forces. In the execution of this mission they operate offensively, defensively, or by delaying action, resorting to all forms of combat when necessary. Hostile aviation is fired upon within range unless prohibited in orders.

(1) Counterreconnaissance detachments attack hostile detachments whenever and wherever found.

(2) When hostile reconnaissance forces are superior in strength, or the screen must cover a broad front, the screening force may have to resort to defensive or delaying action as a means of temporarily impeding the operations of hostile reconnaissance forces. Defensive action is most effective when the screen, or an element thereof, can be established behind an obstacle, such as a stream, defile, or road block which must be crossed or passed by the enemy.

m. Artillery.—The artillery with armored force units on a counterreconnaissance mission is used to support the screening force. When the screen is moving, artillery generally accompanies the main body. In cases where the defense of a screen has become necessary or advisable, all or part of the artillery may be placed in position for the support of the screen or may be held with the main body prepared to move to the support of any part of the screen which may be threatened.

n. Aviation.—Aviation assists counterreconnaissance forces by attacking hostile aviation attempting to cross the area of counterreconnaissance, by reporting hostile ground movements, especially the movement of approaching highly mobile units, and by attacking hostile attempts in force to penetrate the screen.

o. Trains.—Trains of units composing the counterreconnaissance screen remain with the trains of the main force.

■ 42. SECURITY AGAINST HOSTILE AVIATION.—*a. General.*—(1) Hostile aviation presents a menace to operations of armored force units by attacking them or observing and rendering reports on their presence, location, and activity to enemy ground forces.

(2) Armored force units may frequently operate under the protection of supporting air units, or may even have attached to it combat aviation and antiaircraft artillery for defense against hostile aircraft. (See FM 100-5.) Regardless of the security measures taken or furnished by the higher command, all armored force units must be alert to the probability of hostile air attack or reconnaissance and must provide appropriate security measures for its own protection.

(3) Antiaircraft protection of a column depends initially

on the efficiency of the concealment in its last bivouac. Special security measures must be taken during the time of exit from bivouac, while passing through defiles, at temporary halts, and during movement into assembly areas or bivouac.

(4) The principal security measures employed by armored force units against hostile aviation include passive measures such as night marches, concealment, and dispersion or distribution into small units or groups; active measures; and the construction of slit trenches for all personnel except crews of turreted vehicles.

b. Warning service.—(1) The first requirement of anti-aircraft security is an adequate warning service. Warning of the approach of hostile aviation is provided for as follows:

(a) By air and ground reconnaissance units whose routine missions include reports on hostile aircraft. (See sec. II.)

(b) By detailing air scouts from all units. Air scouts consist of designated personnel in each unit whose duty is to observe for hostile aircraft and give timely warning. On the march they observe from the vehicle to which they are regularly assigned. At the halt, they are posted near their units.

(c) Where observation is limited because of the character of the terrain, such as in a defile, a flank patrol may be posted or detailed to march along high ground parallel to the column for the specific purpose of warning of the approach of hostile aircraft.

(2) All personnel must be trained in the identification of hostile aircraft.

(3) The air alarm may be transmitted by radio, improvised visual signal, prescribed whistle signal, firing weapons (see FM 17-5), or voice. Any one or all the methods may be used depending upon the distance at which the warning is given from the command and whether or not the engines of vehicles are running.

(4) Upon receiving the air alarm warning or signal, units and personnel are governed by the following rules:

(a) While marching, large armored force units cannot expect to keep from being observed. Since the normal dispersion of turreted vehicles renders such units an unfavorable target for air attack, they continue in motion. However, if the column consists of open vehicles or these vehicles are

intermingled with turreted vehicles, all will halt without closing up and all possible small arms fire will be brought to bear on the attacking airplanes. Personnel in open vehicles not manning antiaircraft weapons will disperse dismounted. Movement will be resumed as soon as practicable after the hostile airplanes have passed. Small groups, such as patrols or trucks moving by infiltration, cease movement in the open, since they are primarily interested in escaping detection and are not likely to be subject of an air attack. When columns halt, vehicles are moved off the road, whenever possible, to cover and are immediately camouflaged. This is done even though the halt is for only a few minutes.

(b) In an assembly position, or in a bivouac area, personnel remain motionless until the "all clear" signal is given. If early warning has been received, they may seek cover and remain motionless. Men are trained not to look up, as faces are easily detected. At night, it is especially important that these precautions be observed when hostile aviation uses flares to illuminate an area. In addition, all lights not completely concealed should be extinguished during the period of the air alarm.

c. *Night marches.*—Large armored force units in the combat zone can best escape detection from the air by marching during the hours of darkness. These night marches are made without lights, or with the use of tactical lights only.

d. *Concealment.*—The presence and position of troops are disclosed to an air observer by movement, regular formation or outline, reflection of light, dust, smoke, or newly made tracks and installations. Measures taken for concealment aim to defeat both visual reconnaissance and photography from the air. These measures and the rules governing concealment are covered in detail in section I. Extensive artificial camouflage rarely will be practicable. (See FM 5-20.)

e. *Dispersion.*—A command diminishes its vulnerability to air observation and attack by adopting dispersed formations and by distribution into small units or groups. Dispersion may be accomplished by increased width and depth of formations; by moving in multiple columns; by distribution in assembly or bivouac areas into small units or groups to take advantage of cover; by halting at extended distances, by clearing roads, and moving under nearby cover; and by in-

creased speed of movement between successive terrain lines affording cover.

f. *Antiaircraft fire.*—All units provide immediate protection against low flying hostile aircraft by using their own antiaircraft weapons and other weapons suitable for fire against aircraft.

(1) All antiaircraft weapons are alerted for antiaircraft fire at all time. Troops and personnel charged specifically with the duty of antiaircraft firing are constantly prepared for immediate action. Organic weapons provided for the purpose protect trains in movement and in service parks.

(2) Fire is opened promptly upon enemy airplanes within effective range, except from a concealed position where it is desirable to maintain secrecy and firing might disclose the presence of troops.

g. *Air-borne troops.*—The threat from air-borne troops, parachute and air-landing, requires that special security measures be instituted against them. Responsibility for these measures extends down through all echelons of command, the measures adopted within each echelon being coordinated in such a way as to provide a unified system over the entire danger area. In general, the security measures adopted are designed to gain early information; to attack incoming enemy transports by combat aviation and antiaircraft fire; to destroy parachute troops while in the act of landing, when they are most vulnerable, or immediately after; to obstruct all possible landing fields (airdromes, open fields, and straight stretches of level highway); and to isolate and destroy all forces that land by immediate attack before they can be resupplied and reinforced with supporting weapons. See FM 100-5 and 100-15.

h. *Summary.*—In order to provide its own antiaircraft security armored force units must:

(1) Provide timely warning of the approach of hostile airplanes.

(2) Rely on dispersed formations or make such appropriate use of cover or concealment as conditions offer.

(3) Keep antiaircraft guns ready for immediate action at all times.

(4) Be skillful in the antiaircraft use of its own fire weapons and open fire promptly upon enemy airplanes, except

when security is to be gained through concealment rather than fire protection.

(5) Determine when security depends on fire power or on concealment.

■ 43. SECURITY AGAINST HOSTILE MECHANIZED FORCES.—*a. General.*—The inherent characteristics of armored units (mobility, fire power, armor protection, and shock action) provide the primary means of protection against hostile mechanized attacks. Certain armored force units, however, do not have this protection and additional means are frequently necessary for their protection, as well as for the security of the command as a whole. These additional security measures are active and passive, generally used in combinations. They supplement the normal security detachments provided for the security of the command as a whole.

(1) The active means available to armored force units include employment of tank destroyer, artillery, chemicals, and the counterattack. Combat aviation, when attached, may also be employed. (See FM 100-5.)

(2) The principal passive means employed include concealment, natural and artificial obstacles, demolitions, and antitank mines.

b. Reference.—FM 100-5 covers the methods employed to warn of mechanized threats and the use of antitank guns, artillery, and chemicals.

c. Concealment.—The rules set forth in section I governing cover and concealment apply to all armored force units.

d. Natural obstacles.—Terrain which is unsuitable for the employment of hostile mechanization is also unsuitable for the employment of friendly armored force units for offensive action. Consideration, therefore, must be given to the probable employment of friendly armored force units. Natural obstacles, which restrict the offensive operations of these units, are avoided. However, the defensive possibilities of terrain must be studied constantly from the viewpoint of protection and antimechanized defense in order to utilize existing natural obstacles to the maximum extent.

(1) A map study, supplemented by air and ground reconnaissance, may disclose avenues of approach and natural obstacles such as streams, lakes, marshes, thick woods, and mountainous country, which will impede or restrict enemy

mechanized operations. During marches, halts, or when in position, full use is made of those terrain features which restrict the approach of hostile mechanized vehicles. When the enemy's approach is limited to a few routes crossing a natural barrier, protection is obtained by blocking these crossings.

(2) When approaches are favorable to enemy mechanized elements and march columns are exposed, chief reliance must be placed on active means of providing security.

(3) Tank destroyer and artillery units when employed on antimechanized missions take advantage of local natural obstacles, including buildings, walls, and stump covered or rocky areas.

e. Artificial obstacles.—Artificial obstacles such as barricades, demolitions, and antitank mines normally are employed by armored force units only to block crossings, defiles, and other routes of approach of hostile mechanized vehicles; to provide additional security of bivouac areas; and for local defense of tank destroyer and artillery units and weapons on antimechanized missions.

(1) Engineers with armored force units are charged with the placing and construction of major artificial obstacles. (For details see FM 5-30.) When artificial obstacles are employed, their location must be coordinated with natural obstacles and with the fire of antitank and other weapons. The main effort in the construction of artificial obstacles is made on those parts of the front possessing natural obstacles which are susceptible of improvement. The bulk of the antitank guns are placed to cover the avenues favorable for tank action. A barrier or obstacle loses much of its defensive value unless covered by fire of supporting troops. Removal of obstacles can be impeded by contamination with persistent chemical agents. 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.

(2) Demolitions and mines are useful for quickly blocking defiles and principal avenues of approach. They constitute a means for canalizing a hostile mechanized attack. Mines have the advantage over demolitions in that mines may produce casualties both of personnel and vehicles. The location of mines must be coordinated with natural and artificial

obstacles and with the fire of antitank guns and other weapons.

(3) Artificial obstacles, demolitions, antitank mines, and contaminated areas may restrict the movement of troops which they are designed to protect. A record must be made of the location and extent of such measures when used so that the necessary precautions may be prescribed for the safety of friendly troops.

(4) The construction of road blocks is covered in FM 5-30.

(a) *Employment.*—A road block is a barrier to block or limit the movement of hostile vehicles along a road. They are used to protect the flanks of a marching column or an encircling force; to delay an enemy to give time and space for deployment for combat or time to organize the defense; and as counterreconnaissance measures.

(b) *Location.*—Road blocks are located in defiles where they cannot be readily avoided. To be most effective a road block should be located so that the enemy will come upon it suddenly. A position immediately around a bend where vegetation shields it from view of approaching hostile elements is preferable. Covered or concealed positions from which effective machine gun or antitank gun fire can cover the obstacle are desirable.

(c) *Construction.*—Road blocks may be constructed by engineers when available. *However, all units must be trained in the methods of constructing hasty obstacles and in their removal.*

(d) *Defense.*—Road blocks must be defended by fire. Strength of the defense depends upon the means available and extent of delay desired. The defense may vary from two riflemen to several riflemen, machine guns, and self-propelled guns. Guns are so placed that their fire will prevent hostile troops from removing the obstacle or passing around it. Tank destroyer elements may be used. The employment of tanks to defend road blocks is unusual. When so used they should operate by section, taking mutually supporting positions to increase protection against stalking and to permit rapid withdrawal.

■ 44. SECURITY AGAINST CHEMICALS.—Security against chemicals is conducted in accordance with the fundamentals prescribed in FM 100-5 and procedure outlined in FM 21-40.

■ 45. SUMMARY.—a. All armored force units must provide themselves with the necessary security to protect themselves *at all times* against surprise, observation, and interference by hostile air and ground forces.

b. All security measures include an adequate warning service to prevent surprise.

c. Security detachments between the enemy and the main body are detailed to prevent observation by hostile ground forces.

d. Protection of the main body against interference is obtained by making security detachments sufficiently strong to either defeat the enemy or to hold the enemy until the main body gains time for deployment to meet the threat.

e. Reconnaissance is an essential element of security.

f. Terrain and the road net are important factors in the security of a command.

g. A command's readiness for action is facilitated by the distribution of units in the main body and prior plans to meet enemy situations.

h. Special measures must be taken for protection against hostile aviation and mechanized units and enemy chemical attacks.

i. The use of armored troops on security missions, except for their own security, when others are available for this duty, is justified only under conditions of extreme emergency. It will be remembered that armored units are first, last, and always offensive troops.

SECTION IV

OFFENSIVE COMBAT

■ 46. GENERAL.—a. *Purpose.*—Offensive combat has for its object the attainment of an objective by means of the attack. The organization and equipment of armored force units are designed primarily for offensive combat. Units must be imbued with the spirit of the offensive and must be always on the alert to seize the opportunity for offensive action. The attack of armored force units should be characterized by boldness and speed in striking sudden blows in the most favorable direction.

b. *Scope.*—Armored force units are employed in accordance with the principles of large numbers, surprise, and maneuver. (See FM 100-5.)

(1) *Large numbers.*—They are employed in large numbers in decisive areas which afford suitable terrain and sufficient space to utilize fully their mobility and shock action. Protection against hostile air attack and antitank weapons is a prerequisite of successful employment.

(2) *Surprise.*—Surprise is obtained by rapid maneuver, secrecy, and deception. By prompt delivery of the initial blow the commander places his adversary at a disadvantage and forces him on the defensive or prevents him from organizing his defenses. A rapid, bold attack by a small force may often accomplish more than a slower carefully coordinated attack by a larger force. By such an attack initiative is taken from the enemy and his plans for attack or defense disrupted.

(3) *Maneuver.*—The maneuver of units rapidly to project shock action and protected fire power into the vital part of hostile rear areas from an unexpected direction must be sought in all attacks.

c. Use of terrain.—Full advantage must be taken of terrain favorable for movement, concealment, and use as observation points. Terrain suitable for operations should provide: concealed assembly positions (areas), covered routes of approach, areas for attack sufficiently free of obstacles to permit movement to objectives at speed, and suitable positions and observation for supporting artillery and other ground weapons during the attack. (See par. 26.)

d. Initiative.—Initiative of subordinates plays a great part in success in any action. Commanders will often be confronted, especially when the situation is obscure, with the problem of making immediate decision and initiating prompt action. Time may, but usually will not, permit detailed reconnaissance. Mission type orders may be given and leaders of small units must be relied upon to make a prompt estimate of the situation, arrive quickly at a decision, and promptly and energetically carry out that decision. Decisions made must be in conformity with the general missions and intentions of the commander, hence it is essential that all commanders be informed of such missions and intentions. *Calm* and *clear*, yet rapid, thinking must be combined with a high degree of initiative. Snap judgment must be avoided.

e. Fire and movement.—(1) The principal means of attack

for armored force units is a combination of fire and movement to reduce enemy opposition. By fire and movement is meant the advance by certain elements or units (maneuvering element) protected by the fire of other elements or units (base of fire). The object of this form of attack is to advance elements or units to positions from which stationary fire will annihilate enemy opposition, or to a point where a swift assault over a short distance, strongly supported by fire, can be launched to overrun the enemy position.

(a) This method of attack is applicable in the largest armored force unit and down to and including the section. For example, the regiment attacks by fire and movement when the armored (tank) battalions advance under the cover of the base of fire established by its machine gun and mortar units and by supporting artillery.

(b) Fire and movement is generally employed by the components of the maneuvering force when enemy fire is encountered. For example, a platoon in the maneuvering force, when held up by fire, furnishes its own base of fire consisting of one of its sections. This section, preferably from a partially defiladed position, fires while the other section maneuvers to a forward position from which it in turn establishes a temporary base of fire to cover the advance of the former.

(c) Fire and movement is also employed in displacing forward by the force constituting the base of fire. For example, the elements of the self-propelled gun platoon and mortar platoon displace forward to a new position by echelons, each echelon being protected in its advance by the fire from the elements remaining in position.

(2) The elements or units constituting the *base of fire* deliver fire from either vehicular or ground mounted weapons, depending upon the cover and the field of fire available. The vehicles of the maneuvering force advance by covered routes, where practicable; weapons being fired from the vehicle when the enemy position is in view. Where the terrain permits, vehicles move into a partially defiladed position, fire a small burst, maneuver to a new position, and repeat. The 37-mm and 75-mm guns are normally fired when the tank is halted. Where the terrain is relatively flat and smooth, a large burst of fire may be delivered while the vehicle is moving. Even under the most favorable

terrain conditions fire will be more effective if the vehicle is halted a few seconds while a small burst is fired and then moves on. Firing from moving vehicles should only be attempted where a swift assault over open terrain for a short distance (not over 200 yards) is desired; casualties can only be held down when this assault is given the maximum fire support of supporting weapons.

f. Tactical forms of attack.—The tactical forms of attack are covered in detail in FM 100-5. The mobility of armored force units permits great latitude in the choice of direction and method of attack. Against forces of similar characteristics and against strongly organized positions, the turning movement is the preferred form. Against groups or positions highly vulnerable to armored attack, the attack may be an envelopment of one or both hostile flanks, preferably the latter. When the mission, time, terrain, and other factors do not favor an envelopment, an attack against the hostile front may be by a penetration. A prompt direct attack may be made to take full advantage of surprise or of a temporarily favorable situation.

g. Tactical groupings.—In attack the combat command groups generally are disposed into four parts: a reconnaissance force (consisting of organic reconnaissance units and attack units), a striking force (the striking echelon consisting of tanks with engineers attached), a supporting force (consisting of the support echelon, i. e., the infantry, artillery, and tank destroyer units), and a reserve. Whether the striking force makes the initial attack or main attack will depend on the terrain and the extent and dispositions of the hostile antitank defenses.

(1) *Striking force.*—When terrain is favorable for tank operation and hostile antitank defenses are not strong, the striking echelon supported by available combat aviation makes the initial attack. This attack is usually by envelopment, the supporting echelon being used as a holding force or base of fire, or a portion of the tank units may be used for such holding or secondary attack. The striking echelon will make the initial attack in a penetration *only when hostile defenses are very weak* or when given overwhelming air and artillery support. Engineers are usually attached to the striking echelon. Infantry may be attached.

(2) *Support force.*—When the striking force makes the

initial attack, the support echelon follows to seize and hold objectives taken by the striking echelon. When terrain is unfavorable for tank operation or antitank defenses are strong, the support echelon, supported by medium tank units, may lead the attack to secure ground from which the striking echelon may attack. The support echelon usually leads the attack in a penetration. The support echelon may be used to make an attack initially to serve as a base of fire for the striking force in an envelopment. This attack serves to fix the enemy and may attract his reserves. In this manner it assists the advance of the enveloping or striking force.

(3) *Reserve.*—A part of the command, the reserve, is held out of the combat initially for employment by the commander of the whole force in furtherance of his plan of attack or for use according to the development of the action. The reserve is composed chiefly of tank units. Its strength usually varies from one-third to a small fraction of the command. A maximum is held out against an enemy composed of mechanized troops, or strong in antitank weapons. Its employment will vary with existing conditions and opportunities. As soon as the reserve is committed, a new reserve must be constituted without delay.

(a) The commander of the reserve must be in close communication with the commander of the whole force.

(b) In emergencies, he must not hesitate to act without waiting for orders, keeping in mind the mission and general plan of the commander. He must maintain personal reconnaissance and keep close contact with the attacking troops. He should anticipate possible uses of the reserve and prepare tentative plans therefor.

(c) The commanding officer of the reserve must conduct timely reconnaissance of routes to probable localities for employment or movement.

(d) The reserve is located in a position from which it can best support the main effort and protect the flanks. To support an envelopment, the reserve is located towards the flank enveloped, generally in rear of the main attack.

(e) When the main attack force reaches the enemy or attains its objectives, the reserve must be ready to take advantage of the situation, to give an added impetus to the attack at a critical moment to clinch the victory or to resist counterattack. It may pursue a retreating enemy or tempo-

rarily occupy the ground captured. The reserve must be prepared to cover the withdrawal or reorganization of the main attack force.

h. Employment of tanks.—(1) *General.*—In the attack, the mobility, fire power, and shock action of tanks are exploited to the maximum. Tank attacks will be costly or will result in failure to reach their objective unless employed in decisive numbers.

(a) The width and depth of the formation depends upon the situation and terrain. Terrain may limit the breadth of the formation and force a unit to attack on a narrow front. When the situation is obscure or great power is needed to overcome hostile resistance, a deep formation is used. This formation gives the maximum control and flexibility. When a limited objective attack is to be made such as in withdrawal, a broad formation may be used. This formation is difficult to control. Echelon formation is suitable for flank protection, units being echeloned toward the flank to be protected.

(b) Tank units are arranged in the attack formation in accordance with the plan of attack. They advance to their objectives by a combination of fire and movement. Within the platoons, the intervals and distances between tanks is not to be less than 50 yards, when supporting other ground troops; otherwise not less than 75 yards. The distance between successive waves must not be less than 150 yards.

(2) *Light tanks.*—The primary mission of the light tank units is to close with the enemy and to disrupt the hostile organization in vital rear areas by fast, bold action. This is accomplished by destroying hostile automatic weapons and personnel; disrupting communications; and overrunning command posts, artillery positions, reserves, and other installations essential to the enemy.

(3) *Medium tanks.*—(a) The primary mission of medium tank units is to assist the attack of the light tank units, chiefly by neutralizing or destroying the hostile antitank weapons. When organized resistance is encountered, especially antitank guns, medium tank units will usually precede the light tank units for this purpose. The use of one or more platoons of medium tanks following the attack of light tank units for supporting fire will frequently be desirable. Tanks so employed, for short periods, should assume turret defilade

positions from which they can bring direct fire to bear on hostile antitank weapons as they are found.

(b) Medium tanks also protect the light tanks against the attack of hostile tanks. When the enemy is composed of mechanized troops, a large medium tank component, if available, is held in the reserve.

(4) For further details on the employment of tanks, see chs. 5, 7, 12, and 13.

i. Heavy tank destroyer battalions.—(1) *Organization.*—This battalion consists of a headquarters company and three heavy tank destroyer companies. The company has two heavy and one light platoon of four guns each.

(2) *Missions.*—(a) The mission of the tank destroyer with the armored division is to assist either by offensive or defensive action in the protection of the division against hostile mechanized forces.

(b) The battalion may be used to—

1. Protect a bivouac, assembly area, or rallying point.
2. Guard an exposed flank.
3. Protect the rear of the division.

(c) The battalion may be used as a unit or companies may be attached to armored regiments or combat commands. Except when actually emplaced to protect a bivouac, assembly area, or rallying point, tank destroyer units should be held in mobile reserve, prepared to move promptly to any threatened area.

(3) *Reconnaissance.*—Reconnaissance for positions and routes thereto is continuous during the advance. Information gained is immediately transmitted to the battalion headquarters or the company concerned. Battalions and company reconnaissance personnel supplements the reconnaissance of units to which the battalion or its companies are attached. Close cooperation must be maintained with observation aviation.

(4) *Liaison.*—The battalion sends a liaison officer to the unit to which it is attached and each company sends liaison personnel to the unit to which it is attached. Close liaison must be maintained in order that the tank destroyer units may act promptly.

(5) *Advance.*—During the advance the tank destroyer units move usually as a unit near the head of the unit to which they are attached. A detachment or the whole battalion

may be used to guard an exposed flank. In this case they are usually attached to or act as flank guard. When the armored units go into assembly areas, tank destroyers immediately place guns in position to cover likely avenues of approach for attacking armored units. A portion of the battalion or company is held in mobile reserve ready to reinforce any threatened point.

(6) *During combat.*—Tank destroyer units may advance behind the second echelon of attack, usually the second armored battalion in depth. They are prepared to repel counterattacks from the flanks and rear. The greater part of the unit should, if terrain is suitable, be near the exposed flank.

(7) *During reorganization.*—As the attack progresses, the tank units in rear will pass through the destroyer units to enter combat. After the objective is reached, the tank destroyer units move rapidly forward and cover the rallying point to protect the reorganization.

(8) *In defense.*—In defense the tank destroyer battalion is usually kept intact in mobile reserve in such position that it may move promptly to any threatened point to repel a counterattack. Tank destroyer units are not ordinarily attached to lower units and emplaced as stationary antitank guns in defense. Their mobility is preserved.

(9) *Retrograde movements.*—In retrograde movements tank destroyer units are usually attached to the rear guard. They are held mobile ready to repel enemy armored units.

(10) *River crossings.*—In river crossings tank destroyer units should cross the river immediately after the infantry in order to repel hostile armored counterattacks.

(11) The employment of the tank destroyer company is covered in chapter 7.

1. Artillery.—(1) *Role.*—The role of the armored artillery is to support the armored division and its elements in the conduct of highly mobile ground warfare primarily offensive in character.

(2) *Sources of fire missions.*—The sources of artillery fire missions are:

(a) *Artillery forward observers* (with advance elements of division).—The armored vehicle serves as an armored observation post for these observers. Radio is the means of communication.

(b) *Air observation.*—Air observers report directly to the

particular artillery echelon with which they are functioning. Prearrangement of plans and definite assignment of zones of responsibility for observation and fire are essential.

(c) *Artillery liaison officers.*—Artillery liaison officers accompany the armored unit commanders. Flexibility in plans and fire support by the artillery are thus facilitated.

(3) *On the march.*—The armored division usually advances in multiple columns. When contact is imminent for any column, its advance guard moves on a broad front. Artillery usually supports this type of action by immediate occupation of a position. Continuous support is effected by displacement by echelon. The artillery must be prepared to place fire on the principal routes leading toward the marching columns from the front and flanks. If no special use for the battery is contemplated, it is left under artillery control with limitations placed on its employment and displacement.

(4) *In assembly areas and bivouac.*—When armored forces are in assembly areas or bivouac, artillery is posted to cover all approaches to the area. Positions are selected from which it may bring long range interdiction fire on principal routes of approach for hostile forces. It performs counterbattery missions if within range of hostile artillery. It supplements the antitank defense of the area.

(5) *Attack of deliberately prepared hostile position.*—(a) *Fires preceding attack.*—The division artillery officer is responsible for the coordination of all fire by the artillery of the division (organic and reinforcing). A short preparation may precede the attack.

(b) *Fires in support of the attack.*—Fires in support of the attack are planned and executed as follows:

1. *Limited objective.*—Same as (5) (a).

2. *Unlimited objective.*—The mobility of the armored division practically precludes complete coordination of artillery fire in support of the attack. Normally decentralization is effected by attachment of elements of the artillery to the armored echelons.

(c) *Normal artillery fires in support of the attack.*—These fires include:

1. Counterbattery.

2. Neutralization of antitank guns, infantry heavy weapons, and hostile reserves.
3. Neutralization of areas on the flanks of the attack.
4. Fires to oppose hostile counterattacks.

(d) The *organization* for combat of the artillery with the division provides for general support and direct support missions. The bulk of the artillery supports the main effort.

(e) *General support artillery* fires on targets capable of affecting the operation of the division as a whole. Such fires may be interdiction of crossroads, bridges, and other defiles, counterbattery fire, or the firing of concentrations on hostile known or suspected points of assembly. Direct support artillery is primarily concerned with targets that will immediately affect the operations of the supported units. Its fires are: neutralization of hostile antitank guns and observation posts; neutralization of infantry heavy weapons; neutralization of hostile reserves; and assistance by concentrations or direct laying to repel hostile counterattack. Successful artillery support as the attack progresses depends upon coordination of fires, air and ground observation, liaison and communications, and the vigorous forward displacement of the batteries.

(f) *Artillery* supports the tanks until they come in close contact with hostile positions, usually to about 300 yards.

(g) *At halt*.—When tank units halt for reorganization, artillery must be emplaced to protect them.

(6) *Attack of hastily prepared battle position*.—This situation occurs more often in a meeting engagement. Armored units attack at once and little time will be available for coordinating fires. In some cases medium tanks will provide the principal artillery fire support. Artillery supports such attack by opening fire early to assist advance elements to seize vital terrain; by counterbattery; and by neutralization of hostile antitank weapons, heavy infantry weapons, reserves, and observation posts. It neutralizes hostile fires on the flanks of the attack and fires on troops forming for counterattacks.

(7) *Exploitation*.—In exploitation, artillery control probably will be decentralized.

(8) *Pursuit*.—When the division is pursuing alone, part of the artillery will be with the direct pressure and part with the encircling force. With the direct pressure force, artillery

gives direct support. Artillery of the encircling force takes positions from which it may fire on retreating hostile forces. It supports the attack of tank units. It assists in repelling counterattacks made against the encircling force.

k. Mortar units.—Mortar fire is coordinated with the artillery fire to avoid duplication of effort. Mortars place smoke screens at the shorter ranges, while the artillery fires smoke at the longer ranges. Infantry mortar units are employed with the infantry elements. Mortar platoons of armored battalions operate with these units, normally under centralized control. In some situations a section of the mortar platoon may be attached to a subordinate unit. For further details on the employment of mortars of armored force units, see chapter 5.

l. Aviation.—(1) Operation of the armored force is facilitated by control of the air. Such control permits free movement of units in the approach and makes possible the support of an attack by bombardment aviation. Lack of control of the air, although not prohibiting movement, makes operations much more difficult. Pursuit aviation is employed to deny the use of the air to hostile observation and bombardment aviation.

(2) Combat aviation supports armored force units by attacks on hostile supply and command installations, reserves, artillery, antitank weapons, and other resistance holding up an attack. In the advance combat aviation in close support is used to attack and delay hostile columns. In the attack it supplements the fire of artillery against critical targets; attacks targets beyond the range of artillery; gives close support to attacking units that have advanced beyond range of their supporting artillery; and attacks hostile counterattacking forces. In pursuit it gives close support to pursuing forces by attack on hostile resistances holding up the movement; by attacking and delaying withdrawing hostile forces; and by destruction of bridges on routes of withdrawal. In defense it attacks hostile attacking forces, reserves, command and supply installations.

(3) Observation aviation performs battle reconnaissance as previously discussed in this chapter. It is also employed during a crisis in combat to maintain liaison and coordination between tanks, artillery, and combat aviation.

m. Infantry element.—(1) Action of the armored infantry

in the attack varies. Part or all of it may be employed in the secondary attack. A part of it may be attached to the maneuvering element or be held in reserve. It remains mobile as long as the situation permits and then may be employed as follows:

- (a) To clarify or develop a situation, such as attacking to drive in hostile covering forces or attacking a hostile antitank zone.
- (b) To seize terrain from which to launch a tank attack.
- (c) To make holding attacks while tank units envelop.
- (d) To follow closely the main attack to overcome the remaining hostile resistance, occupy and hold ground gained.
- (e) To cover the flanks against a hostile threat.
- (f) To constitute a new reserve.
- (g) To protect tank units during their reorganization after the attack.
- (h) To protect tank units at night in movement or in bivouac.

(2) The fire of infantry supporting weapons is coordinated with that of the artillery. The fire of these weapons supplements the artillery direct support fire, chiefly by engaging targets in the immediate foreground.

n. Engineer units.—Engineer units may be employed with the main or secondary attack forces to facilitate their movement in the attack. Engineer missions will include: removing or assisting in the passage of obstacles and mine fields; providing means for crossing streams; and protection of flanks by means of obstacles, demolitions, and mines. Engineer troops engage in combat when necessary for the accomplishment of their assigned work. (For details, see FM 5-30.)

o. Use of chemicals.—Because of the difficulty of establishing and maintaining effective chemical concentrations in mobile operations, use of chemical agents other than smoke by armored force units in the attack is limited. The employment of smoke must be limited carefully in respect to both time and space and must be coordinated carefully with other supporting fires and with the action of tanks and supporting aviation. Under favorable conditions of wind and weather, smoke is used to blind hostile observation posts, antitank guns, and infantry supporting weapons, to conceal the approach of the attacking elements, and to protect the

flanks of the attack. It is especially useful during short periods when troops must traverse exposed ground.

(1) Smoke may be projected from artillery or mortar shell; from aircraft, or dischargers attached to tanks. Smoke placed by mortars frequently will be more effective than artillery fire in neutralizing observation and hostile antitank gun fire within a particular area.

(2) Partial loss of control and disorganization may result from tanks passing through smoke. It must not be placed on tank objectives or on areas where tanks will be required to pass in the assault unless the wind conditions are such that it will be dissipated before the arrival of the tanks.

p. Coordination.—(1) *General.*—The commander is responsible for coordination of all elements of his command. Attacks launched directly from march columns without halting, or with a short halt may result in an uncoordinated attack, loss of control, and a sacrifice of some of the capabilities of artillery, tanks, and other supporting weapons. Such attacks will usually be launched in a meeting engagement or against a retreating enemy. They may be launched against an inferior enemy, against an enemy not fully organized for defense, or against an enemy whose morale is low. Ordinarily an attack in a moving situation may be organized and coordinated in assembly or intermediate positions.

(2) *During the attack* the action of the light and medium tank units must be coordinated with each other and with the action of the infantry and other supporting units. The fire of all supporting weapons must be coordinated, wherever practicable, with the scheme of maneuver and plan of tank employment. In all cases the maximum coordination permitted by the situation and time element is sought. The measures to insure coordination are prescribed in the attack order.

(3) *Line of departure.*—See FM 100-5 and appendix I.

(4) *Intermediate position.*—If the line of departure is at a considerable distance from the assembly position, an intermediate position may be designated for coordinating the advance of all elements.

(5) *Attack position.*—An attack position, on or immediately in rear of the line of departure, may be designated for the coordination of armored force units with other ground forces they are supporting.

(6) *Rallying and alternate rallying points.*—Rallying and alternate rallying points are designated where the unit assembles after combat for the purpose of reorganization. Rallying and alternate points are announced for each objective. The rallying point is usually just in rear of the objective. The alternate rallying point is farther to the rear and may be the attack or intermediate position. In the exploitation of a break-through a series of rallying points may be designated along the axis of advance. These are designated before the movement starts. Any change in direction of advance will require the designation of new rallying points.

(7) *Objectives.*—Each subordinate tank unit in the attack should be assigned a principal objective. Suitable objectives are:

(a) Hostile elements or installations, the destruction of which will disrupt most effectively the enemy operation.

(b) Enemy reserves.

(c) A decisive terrain feature.

(8) *Time of attack.*—The earlier an attack can be launched after gaining contact with the enemy, the less preparation the enemy can make to meet it and the greater the possibility of surprise. Ordinarily the main attack by tank units should not be started unless there is sufficient daylight remaining to permit such units to reach their objective by nightfall. The time of the attack will depend chiefly upon the enemy situation, terrain, and the time required to organize and prepare for the attack.

(a) The time of attack may be indicated by prescribing a definite hour, or by prescribing that the unit will attack upon order (radio, visual signal, or other means) of the commander; or on reaching a certain line or terrain feature.

(b) When the command attacks by an envelopment, the time of attack may be indicated by:

1. Prescribing a definite hour for each part of the attacking force. This method insures the best coordination of the attack and should be used whenever existing conditions render it feasible.

2. A signal, visual or otherwise. This method may be necessary when conditions of terrain and the enemy situation are so vague or uncertain as to render the prescribing of a definite hour impracticable. When employed, care should be taken to

insure that the signal prescribed can be seen and understood.

3. Making the time of attack of one element dependent upon the time or progress of attack of the other. This presupposes that the terrain over which the attacks take place is clearly visible to one or both elements or that close liaison exists. Such a method of time coordination may prescribe that one element attack in conjunction with the other; when the attack of one element has been launched, the attack of the other is made at the same time or at such time thereafter as to bring the full weight of both attacks on the enemy.

4. The secondary or main attack force being directed to attack as soon as in position. Frequently this may be the only feasible method, because of difficulties of terrain, uncertainty, or rapidly changing conditions in the enemy situation.

(c) When the command attacks by a double envelopment, any one or combination of the foregoing methods may be employed that are applicable.

q. *Orders.*—(1) Attack orders for armored force units usually are issued orally. They are issued to the assembled staff and available unit commanders prior to the separation of the various elements for the attack. When practicable, orders are issued at a point from which the objective can be seen. To those not present, orders may be delivered, as appropriate, orally by staff officer messengers, by radio, or (written) by motorcycle messengers. Fragmentary orders are frequently used. Orders are issued sufficiently far in advance to permit subordinates as much time as possible for reconnaissance, for the preparation of plans, and issuance of their own orders. For the form and details of the attack order, see FM 101-5.

(a) Orders will designate or prescribe, as may be necessary—intermediate assembly positions, line of departure, time of attack, zone of action, direction of attack, objective or objectives, rallying and alternate rallying points, and the limit of pursuit.

(b) Orders to supporting units will contain definite instructions covering the particular support the unit is to render. As appropriate, these orders will cover positions, targets, time

of opening fire, any limitations of fire, forward displacement, and subsequent action.

(2) When conditions require, decentralization of command is encouraged. The initiative of subordinates is relied upon. The commander issues mission type orders to those tactical groupings in which command is decentralized and attaches the means necessary to accomplish their tasks.

(3) In armored force units it is particularly necessary that smaller units be familiar with higher plans in order that they may act promptly and correctly in any situation not covered by orders. Leaders must be enterprising and always ready to seize opportunities for the employment of their commands in furtherance of the plan of the higher commander.

r. Control.—(1) The chief requirements of control during the attack are simplicity of plans and formations, rigid adherence to the procedure of follow the leader, reliable radio and visual communication, and prearranged rallying points or alternate rallying points.

(2) Control by a commander of an armored force unit during attack is difficult. He exercises such control as is possible by utilizing all practicable means of communication and liaison, and by making full use of his staff. The commander of the whole force is well forward until his troops are committed to action. He may remain with the force whose mission is of decisive importance to the action or may go to a position from which he can observe the action of both the secondary and maneuvering forces. He should at all times be in close communication with his command post and his reserve. Control is always regained at rallying or alternate rallying points.

(3) Since mobility of all elements may result in considerable dispersion, the greatest possible latitude is given subordinates to accomplish their missions in their own manner in conformity with the general plan rather than on specific instructions. During the approach march, formations are as flexible as conditions of the terrain permit. Each tank commander selects his route and rate of march to conform to the general formation, and takes full advantage of cover.

s. Formations.—Formations of units in the attack should be simple and flexible in order that units may retain their ability to maneuver. Dispositions should permit control, mutual fire support, and development of the maximum fire

power in the shortest time with least exposure to hostile fire.

t. Frontage and depth.—The depth and frontage of the initial combat formations depend primarily upon known hostile composition and dispositions, the terrain, and distance to the objective.

(1) The main attack is delivered on the minimum frontage necessary to overcome resistance to its advance consistent with the number of tank units employed. It is launched in sufficient depth to insure sustained and successive striking power.

(2) Secondary attacks are characterized by lack of depth, limited objectives, and wide zones of action. The frontage of any unit in the secondary attack is based, in general, upon its principal weapon strength. It varies with the mission or missions and combat power of the unit, the terrain, the amount of fire support available, and the probable hostile resistance that will be encountered.

■ 47. CONDUCT OF OFFENSE.—*a. Offensive action.*—Offensive situations that armored force units will participate in are covered under subsequent paragraphs. They may be classed generally as:

- (1) Meeting engagements.
- (2) Attacks against enemy positions.
- (3) Exploitation of a success.
- (4) Pursuit.
- (5) Special operations.

b. Development for combat.—(1) In anticipation of offensive combat, an armored force unit is disposed with the reconnaissance elements in contact or seeking contact with the enemy, the advance guard furnishing security en route, the combat elements in the main body in the order facilitating their employment, the light maintenance elements close up in rear, and the supply and administrative elements moving well to the rear.

(2) Development for offensive combat may be from the march column direct with the minimum amount of coordination, or if the approach is made at night it will be made from assembly positions (areas). Should the commander decide that rapidity of action is essential to retain a tactical advantage, he may dispense with assembly positions, decentralize operations to combat units, and issue orders to those

units to develop and attack. Normally coordinated attacks are organized and launched from assembly positions. (See fig. 24.)

c. Assembly positions (see fig. 24).—Under conditions where contact is imminent, especially at night, and march formations are no longer safe to continue, the units go into previously reconnoitered assembly positions. Assignment of units to assembly positions is based chiefly upon the cover and concealment available; the disposition of units upon their probable employment; and to facilitate their initial movement from the assembly positions. Movement into positions is under protection of the advance guard. Guides are provided to lead units into their assembly positions. Depending upon the available cover, positions may be widely separated. They should not be within the range of hostile light artillery fire. Movement into assembly positions is often made under the cover of darkness. Daylight positions will have to be changed after dark if the command is to bivouac. Subordinate commanders assign assembly positions to the component units of their command in accordance with the foregoing principles.

(1) While units are moving into their assembly positions, the commander prepares his orders and completes arrangements for the execution of his scheme of maneuver, including: instructions for further reconnaissance; arrangements for coordinating the action of troops in the attack echelon with that of the artillery, combat aviation, and other supporting elements; assignment of artillery units to direct and general support; attachments to attacking troops; establishment of communications; and any other necessary measures. Before he decides on his scheme of maneuver for an attack, the commander, whenever practicable, makes a personal reconnaissance. If possible he should be accompanied by his immediate subordinate commanders.

(2) As each unit arrives in its assembly position, elements take up dispersed formations suitable to the available cover and concealment and to facilitate movement in more than one direction out of the position. Measures are taken immediately for security against both air and ground forces. Roads are cleared and exits reconnoitered. Communication is established without delay between command posts, and liaison with the next higher unit is maintained. Radio com-

munication ceases in proximity to the enemy. Reconnaissance of routes over which the elements are to advance is initiated as soon as these routes are known.

(3) Maintenance and supply echelons are brought up to their unit assembly positions. Vehicles are refueled, last minute inspections are made, and necessary maintenance is performed until the last moment. Extra ammunition required is issued. Kitchen trucks may be brought up and personnel fed while in the assembly position.

(4) Commanders of troops in the attack echelon and commanders of units designated to support them coordinate the action of their units. Coordination of the plans for maneuver and plans of the fire of subordinate units is completed and attack orders are issued promptly.

d. Phases of attack.—Normally the attack passes through several stages. These stages are the approach march, deployment for attack, fire fight, assault, reorganization, and pursuit. Some of these phases may be omitted. For example, in a sudden meeting engagement, units may have to deploy for the attack direct from the march formation and be launched in an assault without going through an approach march or engaging in a fire fight. There must be a reorganization of attacking units afterwards. An attack may be followed by a pursuit.

e. Approach march.—(1) *Security*.—In the approach to the attack a force protects its front by the use of a covering detachment. Flanks and rear are protected by the utilization of terrain, the use of combat patrols, tank destroyer weapons supports, and reserves. Any element of the command operating at such distance that the security provided by the higher commander is not sufficient must provide its own security groups. All subordinate units are responsible for the local protection of their flanks. (For details on security, see sec. III.)

(2) *Formations*.—The main body of a combat force moves out from the assembly position, in approach march formations, at the prescribed distance in rear of the covering detachments, which move by bounds. The enemy situation and terrain determine the formation. It should be extended both laterally and in depth in anticipation of the attack and to afford protection of personnel and vehicles from hostile long range fire. The formation should be such as to take

advantage of covered routes. Smaller units maneuver in their approach to take as much advantage of cover as the rate of advance permits. Formations may and should be changed to meet terrain conditions. (See FM 17-5.)

(3) *Intermediate positions.*—The approach march continues to the line of departure, except where halts of brief duration are made at predesignated intermediate positions for the purpose of coordination or pending further reconnaissance. Units remain disposed insofar as practicable in the same relative position as in the approach march with vehicles dispersed under cover.

f. Deployment for attack.—As soon as resistance is encountered by covering detachments, the leading waves take up attack formations before coming under effective fire. Deployment for the attack generally takes place as the line of departure is crossed. If the objective is at a distance from the line of departure, approach march formations may be continued by all or part of the attack echelon until subjected to hostile fire.

(1) Usually, if attack formations are not taken as the line of departure is crossed, a partial deployment, in anticipation of the attack formation, is made. This is done to permit the continued advance of the rear elements when the leading waves assume the attack formation. For example, a company in line of platoons may change to a wedge formation (platoons in column).

(2) Within attacking platoons, maximum extended intervals and distances, consistent with control, are taken to afford protection to personnel and vehicles and permit them to reach their objective with minimum casualties. Vehicles are disposed so that they will not interfere with the fire or maneuver of adjacent vehicles. Suitable attack formations of platoons or companies are the squads wedge, or squads echelon formations. (See FM 17-5.)

(3) Security during the attack is provided by reconnaissance elements and combat patrols. Liaison is maintained by connecting groups. (See sec. III.)

(4) For details concerning the conduct of the attack, see chapters 5, 7, 12, and 13.

g. Fire fight.—The fire fight takes place when combat units are deployed and the advance can no longer be continued without engaging the enemy by fire. The fire fight is the

primary mission of the units in the secondary attack force (support echelon). Maneuvering units engage the enemy during their advance by fire and movement.

h. Assault.—The assault is the final combined effort of all the combat units to overcome enemy resistance.

(1) Generally, the tank units, supported by the maximum fire of supporting elements, launch their assault by a short, swift, concerted attack to overrun the enemy. It is made upon the signal of the leader of each wave after the units have deployed and advanced to a point from which the objective is readily discernible and the hostile position and direction of attack is fixed. Normally the assault is launched from 200 to 400 yards from the objective. Tanks are driven at speed, delivering a maximum volume of fire from their weapons as they close with the enemy and overrun the hostile position. Units of the secondary attack force whose fire is masked are displaced forward.

(2) Some medium tank units may be used in turret defiladed positions to support the assault by fire. These positions should be on the flank of the assaulting wave so that fire of the medium tanks may be maintained until the last practicable moment.

(3) After overrunning their objectives, tank units are reorganized, as subsequently described.

i. Consolidation of positions.—Consolidation of positions is accomplished by infantry and tank destroyer units who hold the captured objective and cover the reorganization of the tank elements. Antitank weapons, artillery, machine guns, and mortars are disposed in mutually supporting positions to protect the consolidation and reorganization. The coordination of the forward displacement of all units is the function of the force commander.

j. Reorganization.—(1) After an attack, whether successful or not, the commander must reorganize his command preparatory to further operations. This is accomplished by units reorganizing at rallying points or at alternate rallying points under the protection of other combat units. If pursuit or another mission has been ordered previously, it proceeds after the reorganization.

(a) Depending upon the time available at these points, the tank unit commander makes any necessary reorganization of his unit; directs the tank crews, assisted by the mechanical

crews, to make needed repairs; supervises the repair and redistribution of weapons where necessary; checks and redistributes ammunition; and regains rapidly a state of readiness for combat. When required, supply elements may be brought forward. Upon the arrival of the supply elements, tanks are refueled and ammunition replaced. First aid is rendered at this time by members of the unit and by attached medical personnel, which usually arrives with the maintenance personnel. Walking wounded are directed to the most conveniently located aid station.

(b) Upon completion of the reorganization, each tank unit commander reports to his next superior the combat condition of his unit. As soon as known, he issues instructions to his commanders covering the future action of his unit, with special reference to the next objective, the route, the formation, special missions, and the time to start.

(2) If unable to reach the rallying point, or if at any time it becomes necessary to rapidly reform to renew the attack or to meet an immediate hostile threat, a tank unit is rallied as prescribed in FM 17-5.

k. Continuation of attack.—The direction and continuity of the attack is of first importance. Continuity of the attack is maintained by timely movement and employment of reserves and by rapid reorganization and continuation of the attack on the next position or movement toward the next objective after successful assault on a hostile position. When the hostile position is broken through, reconnaissance elements followed by tank units immediately move out and continue the advance. Continuous pressure must be kept on the enemy in order that exploitation or pursuit may begin at the earliest practicable moment.

l. Pursuit.—The situation determines to what extent pursuit is carried out. The attack order issued by the commander informs subordinates whether or not to pursue. If a pursuit is ordered, the elements to make the pursuit are designated and the limit of pursuit is prescribed in the attack order. Upon reaching the limits of the pursuit, elements are assembled and conducted to the rallying or alternate rallying points.

m. Service park.—(1) Except for the light maintenance vehicle, the maintenance sections do not accompany their combat units in the approach march. The unit motor officer selects a position for the unit service park where maintenance

elements assemble when combat units attack. The service park may be established at the assembly position, intermediate position, or other suitable position in rear of the line of departure, where water and cover, or concealment, are available, as dictated by the situation. The unit motor officer is responsible for the operation and immediate defense of the unit service park. He follows the course of action of the combat units by radio or other means so as to be able to meet conditions promptly. Unit maintenance officers direct the work of their unit maintenance in the service park.

(2) Light maintenance vehicles accompany their units as far forward in the approach as practicable, but not beyond the line of departure. When their units cross the line of departure, maintenance vehicles and motorcycles are assembled at a predesignated place in the vicinity of a supporting unit command post or at a battalion or regimental service park.

(3) After combat, light maintenance vehicles, motorcyclists, and heavier maintenance elements may be directed to rejoin their units at the rallying or alternate rallying points. Maintenance is continued to the last practicable moment before combat and is resumed at the first opportunity during or after combat. The location of vehicle casualties is reported to the service park.

n. Medical unit and detachments.—(1) The operations of the medical unit and detachments are covered in detail in FM 8-10.

(2) In general, regimental aid stations are established in the vicinity of the service park. Battalion sections accompany their combat units in the approach and establish battalion aid stations in the vicinity of the battalion service park where the light maintenance vehicles and motorcyclists are located. Litter bearers of units remain at their battalion aid stations. Litter bearers of infantry units follow closely behind the infantry and artillery elements. Company first aid men of infantry and artillery elements accompany them into action.

(3) The commander of the medical battalion establishes collecting points in rear of the battalion aid stations, and as near to them as ambulances can be operated with reasonable safety. Provisions are made for collecting platoons to evacuate the wounded from the aid stations to the collecting stations where clearing companies evacuate them to the rear.

(4) After combat the battalion sections accompany the light maintenance vehicles when they rejoin their units and establish aid stations when and where needed.

o. Trains.—The supply echelons are consolidated under the command of the train commander. G-4 (S-4 in smaller units) directs the employment of the supply echelons in accordance with the situation and plan of supply. The train commander is in charge of their movement and bivouac and is responsible for reconnaissance of their routes and for their security. (See FM 17-50.)

■ 48. MEETING ENGAGEMENT.—*a. General.*—A meeting engagement may result from uncertainty or obscurity in the situation such as in the meeting of small units or when reconnaissance is ineffective. Again, it may occur when each opponent is cognizant of the other but both decide to attack without delay to retain or gain some tactical advantage, or to gain a decisive terrain feature, or because of a knowledge of superiority over the other. Except where armored units are employed to rupture a position, collision with hostile forces will usually be in the nature of a meeting engagement.

b. Plans.—(1) *Preliminary planning.*—Anticipatory planning is essential to success in a meeting engagement. Planning starts with receipt of warning orders for the movement. All available data on the route or routes of march and terrain of the zone of advance is obtained and information concerning it disseminated to commanders. The best available maps are procured and distributed. Aerial photographic reconnaissance is used to supplement the maps. Reconnaissance strips and individual photographs are taken of critical points and areas. By study of these data and maps the commander plans his march and disposes his subordinate units in various columns so as best to develop for combat. He determines the critical points in the zone of advance and makes plans for action against the enemy at those points. He determines points or areas where the enemy may be taken by surprise or at a disadvantage and plans to force combat in such areas if opportunity arises. Plans are made flexible and troops are disposed for control and to facilitate rapid entry into battle. Commanders of the main subdivisions of the command are informed of these plans and given orders, missions, or tasks for carrying them out.

(2) *Dispositions.*—Armored units advance usually in multiple columns covered by advance, flank, and rear guards as necessary and by reconnaissance elements well to the front. Usually medium tank units may be attached to light armored regiments for the movement. Medium tank units should be placed well forward in the columns so that they may be used to counter hostile mechanized threats and may enter into combat without passing through the light tank organizations. Infantry may be attached to each column. Each column must be given artillery. Tank destroyer elements are usually detailed to march with flank columns to protect against a mechanized attack.

(3) *Scheme of maneuver.*—Direct frontal attacks are avoided when practicable and are made only when the hostile flanks are unassailable. The envelopment or double envelopment is the usual method of attack. Tank units seek to encircle the enemy and attack him from the rear. The advance guard or guards are used to seize vital terrain to limit the hostile advance to the front while the tank units move around the flanks. Infantry may be used to reinforce the advance guard or all or part of it used to follow up the tank attack.

c. Action as combat becomes imminent.—As combat becomes imminent the commander completes his plan of action and gives final instructions for the operation.

(1) *Advance guard.*—Action of the advance guard is characterized by speed and aggressiveness. If indications show that the enemy is preparing to organize or is organizing a defensive position, the advance guard drives in the hostile covering force and seeks to disrupt his defensive organization. If the advancing enemy is in a position unfavorable for our attack the advance guard may fight a delaying action or withdraw until the enemy has advanced to more favorable ground for our attack. However, the advance guard must not retire so far as to endanger or restrict the movement of the main body.

(2) *Artillery.*—(a) *Artillery with advance guard.*—As contact becomes imminent the artillery advances by leap frogging, part of it always being in position to support the advance guard action. It opens long range fire on hostile columns and

interdicts routes of approach. An artillery liaison officer must be with the leading elements of the advance guard and an artillery airplane furnished.

(b) *Artillery with main body.*—Artillery with the main body is well forward so that it may quickly go into action. As contact becomes imminent the artillery prepares to reinforce the advance guard, to protect the flanks, and to protect the development of the main body. When the situation is obscure artillery advances by echelon, part of it always being in position to protect the column.

(c) *Infantry.*—The Infantry may be used to support the advance guards; to seize and hold terrain to form a pivot for maneuver. It may seize assembly positions on the flanks from which armored units launch their attacks. It may be held in reserve to follow the attacking echelons and assist in the mopping up of the hostile forces.

d. *Conduct of attack.*—(1) *Control.*—Control is chiefly maintained by assigning a direction of attack and objective. In some cases a commander may be given a mission order assigning him an objective and time of attack. The force commander may assign rallying points where he will regain control. Communication is chiefly by radio. Liaison airplane and messenger may be used.

(2) *Artillery.*—Artillery gives close support in initial stages of the attack by preparation fire and successive concentrations, and thereafter is used against resistances holding up the attack. Artillery observers are with forward units. Artillery interdicts routes of approach of enemy reinforcements. A part of it follows the attack closely so that it will be ready to give close support in assisting in reducing small islands of resistance holding up the attack.

(3) *Aviation.*—See paragraph 46.

(4) *Infantry.*—Infantry assists the attack by forming a base of fire about which the tank units maneuver. Where unexpected hostile organized defenses are encountered and cannot be avoided by tanks, infantry is used to attack such localities. Infantry follows the tank echelon and consolidates gains made.

e. *Meeting engagement with unarmored troops.*—In a meeting engagement with unarmored troops the attack is pushed to a conclusion without delay. If the hostile force is known to be poorly disposed for defense, the attack is

launched promptly and aggressively with little or no fire support in order to afford the enemy no time to develop and concentrate his defensive means. Armored units attack on a broad front against a flank to engage the greatest possible number of enemy troops simultaneously and permit a maximum use of shock action combined with fire power of vehicular weapons. After the attack has passed through the hostile dispositions, its direction may be reversed and the assault repeated. Each march column may be given a certain task in this operation so attacks may be launched simultaneously. Flank attacks may not be practicable, in which case frontal attacks usually on a narrow front in great depth are made direct from march column. Against unarmored troops small reserves are held out.

f. *Meeting engagement with hostile armored units.*—In a meeting engagement with hostile armored units, maximum use is made of terrain to canalize and restrict the enemy's maneuver. If the advance guard is opposed by weak forces the reserve of the advance guard may be used at once to turn this attack into the main attack. The main attack force is composed of tank units. It maneuvers to attack the enemy from the flank or rear. It has as its objective the destruction of hostile artillery, communication and service elements. Attempt is made by feints to cause the enemy to dislocate his main body or reserves and thus place himself in a vulnerable position. Medium tank units may be used in the leading attack echelons against armored forces. A large reserve is held out and is located so as to facilitate its employment with either the main or secondary attack.

■ 49. **ATTACK AGAINST HOSTILE FORTIFIED POSITIONS.**—a. *General.*—In general, armored units avoid attacking enemy defensive positions. If practicable the position is screened by all or part of the support echelon while the remainder of the force passes around a flank of the hostile defenses and proceeds on its mission. After passage of this force, screening elements assemble and follow unless they are required to remain to protect the line of communication. Higher commanders detail motorized infantry units to relieve the armored infantry when necessary. When the hostile defenses cannot be screened and passed by, armored forces seek to turn the enemy out of position by encirclement or envelop-

ment of one or both flanks. An attack of a fortified position by penetration is unusual for an armored force acting alone and should be made only when other maneuver is impracticable or a weak spot can be found in the hostile defenses. In penetrations in cooperation with other large units of the combined arms, the zone of the initial break-through is neutralized or breached completely by other troops. Armored divisions then enter the breach and launch their attack as a passage of lines.

b. *Attack by envelopment.*—When one or both hostile flanks are vulnerable, single or double envelopment is made. The support echelon is used to make the holding or secondary attack while the striking force envelops or encircles one or both hostile flanks. Direction and time of attack and line of departure are given for the secondary attack. The striking force is given a direction of attack including an objective or objectives, or it may be given a mission order, an objective and route or routes of approach being assigned. It may attack simultaneously with the support echelon but usually attacks later. The striking force seeks to attack the enemy from the rear and destroy his artillery, reserves, communications, and supply installations.

c. *Attack by penetration.*—When an attack by penetration is necessary the support echelon in conjunction with the infantry, artillery, engineers, and combat aviation neutralizes or breaks through the front to be attacked by the tank units. The attack is launched on a narrow front and in great depth. The striking echelon moves rapidly forward through the gap created or makes a passage of the infantry lines and advances through the neutralized zone. After passing through the hostile position some tank units move to the right and left and attack the enemy from the rear. Other units continue to the rear and attack hostile artillery, reserves, communications, and supply installations. The Infantry assists the tank units in mopping up the hostile position and in widening or maintaining the gap. (See figs. 3, 4, and 5.)

■ 50. BREAK-THROUGH AND EXPLOITATION OF BREAK-THROUGH.—

a. *General.*—When operating with other large units armored divisions are seldom used to effect the actual operation of break-through. Their primary mission in such operations is

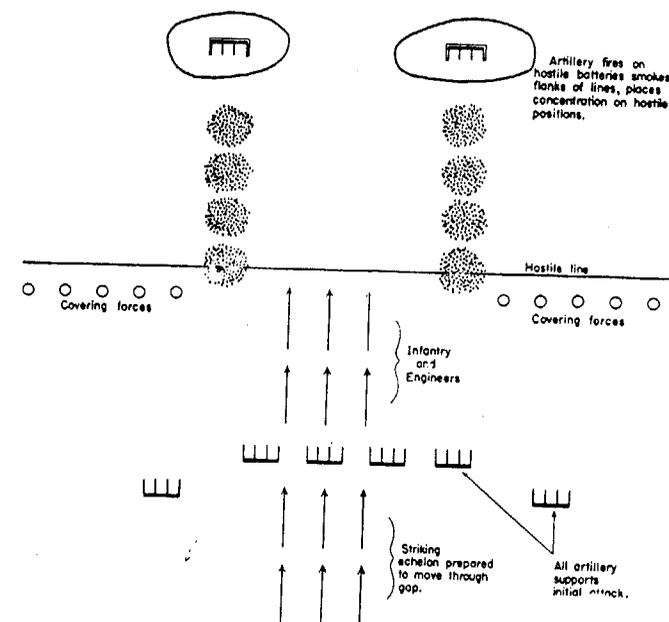


FIGURE 3.—Penetration of defensive position. (Attack made on narrow front, usually the width of an infantry battalion in the main attack, 500 to 1,000 yards.)

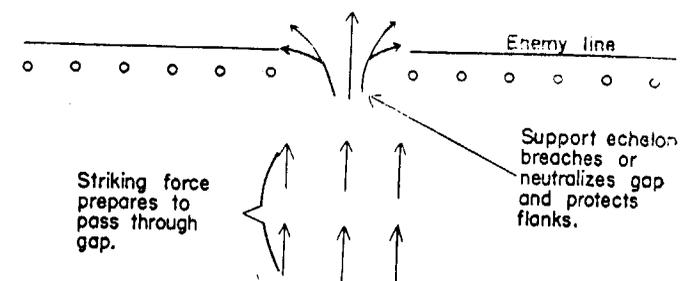


FIGURE 4.—Penetration of defensive position.

to push through the gap created and to exploit the success gained. GHQ reserve tank units operate with units detailed to breach the hostile defenses.

b. *Scheme of maneuver in break-through.*—To effect a break-through and exploit such an operation, the higher commander masses his break-through troops, usually special units, supported by large groups of artillery, and such engineers, chemical troops, and GHQ reserve tank units as are necessary, behind that portion of the line to be penetrated. Armored divisions and motorized infantry or cavalry divisions

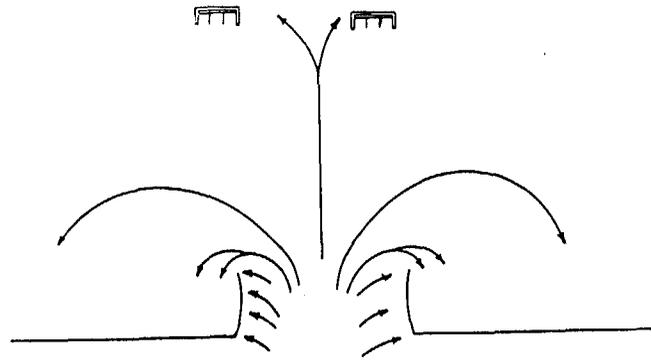


FIGURE 5.—Penetration of hostile position. (Support echelon rolls up hostile flanks created by the gap and protects tank elements pouring through the gap. Tank units pouring through the gap attack hostile positions from the rear, hostile reserves, and artillery.)

are massed behind the break-through troops ready to be pushed through the gap to be effected in the hostile line. Combat aviation is detailed to assist break-through troops and delay hostile reinforcements. Other troops are detailed to attack all along the hostile line to confuse the enemy as to the place and direction of the attack and delay movement of reserves to meet such attack. A feint may be made at some other portion of the line to draw hostile reserves away from the contemplated zone of penetration.

c. *Assault unit of break-through.*—When GHQ reserve tank units are not available or are present in insufficient numbers, armored divisions may be used as assault units in a break-

through. This employment is unusual. The combat commands in such operation are used similarly to GHQ reserve tank units as explained in chapters 12 and 13.

d. *Exploitation of a break-through by armored units.*—(1) *General.*—The general methods employed in passing through a gap in the hostile line and in exploiting a penetration are the same. However, in the first case the gap will probably be found unexpectedly and time for deliberate reconnaissance and preparation of plans will not be available. In such a case objectives are assigned and mission or task orders issued. In the latter case definite deliberately planned orders are given.

(2) *Missions and objectives.*—Missions assigned to armored units in exploitation will be to attack hostile positions from the rear; attack and destroy hostile reserves and artillery; disrupt hostile communications, command posts, and supply installations; and to seize and hold vital terrain features or areas until the arrival of other troops.

(3) *Preliminary preparations.*—Preliminary preparations for exploitation of a break-through include reconnaissance for routes and sites; planning of movement to initial positions and preparation of plans for the attack; arrangements for coordination with other units, particularly with motorized infantry, supporting artillery, and combat aviation; arrangements for attachment of other troops such as additional engineer units, if needed, chemical troops, combat aviation; and arrangements for supply and maintenance during the operation.

(a) *Reconnaissance.*—Reconnaissance is made to determine assembly and intermediate positions and routes and zones of advance. Routes to the front line held by friendly troops are reconnoitered and arrangements made for marking and for guides. It must be remembered that the armored units may be several miles behind the line of departure and forward areas will be filled with troops detailed for the break-through. Map and aerial reconnaissance of the zone of advance must be made.

(b) *Coordination with other units.*—Arrangements are made with the break-through troops for necessary passage of line. Plans of action are coordinated by conference with commanders of following motorized infantry divisions. Liaison officers should be sent to the headquarters of the break-

through units that are in the zone of the armored force unit's advance and also to motorized troops that follow.

(c) *Supply*.—Fuel trucks may accompany units to their assembly or intermediate positions. In case the armored unit moves deep into hostile territory additional fuel trucks may be attached to units. Empty trucks are assembled under division control. It must be expected that some fuel

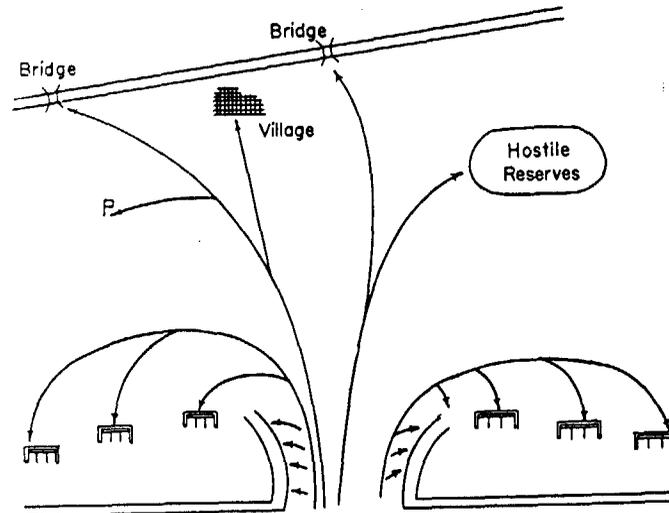


FIGURE 6.—Exploitation of a break-through. (Break-through troops hold gap open. Armored units move rapidly through. Some units attack enemy from the rear while others attack hostile reserves, seize vital points of critical areas, disrupt communications and supply systems. Motorized infantry divisions follow closely behind armored units and consolidate gains.)

trucks will be lost. In isolated cases of small units becoming separated from their organizations, fuel may be transported by airplane. Food and water are carried in each vehicle. A maximum load of ammunition is carried and replenishment is made at every opportunity.

(4) *Conduct of attack*.—Reconnaissance units lead the armored tank units after they pass through the gap in the hostile line and proceed rapidly toward previously designated objectives. The striking force units follow the reconnais-

sance units more closely than in other forms of attack. Those units detailed to attack to the right and left fan out as soon as they emerge from the gap, advance rapidly on their objectives, and after completion of their mission rally and proceed on to the next objective. Those units that are detailed to more distant objectives move rapidly forward in columns preceded by their reconnaissance units. The support echelon follows the striking echelon. Control is exercised by assignment of routes, zones, phase lines, and objectives. (See fig. 6.)

■ 51. *Pursuit*.—*a. General*.—The pursuit is launched when the enemy is decisively defeated. A commander recognizes success by the continued advance of his troops in a decisive direction and the capture of critical objectives; by the number of captured prisoners and abandoned weapons; by the number of hostile dead; by the diminution of hostile artillery fire; by the relaxation or cessation of hostile countermeasures; and from reports that the enemy is withdrawing.

b. Preparation for pursuit.—When it is recognized that the enemy is withdrawing the commander should immediately increase pressure on the enemy to maintain continuity of the attack. He regroups his reserves and makes plans for encircling and completing the destruction of the enemy. He organizes his command into a *direct pressure* and an *encircling force*. A reorganization line, usually a line of rallying points, is set from which to launch the pursuit.

c. Object of pursuit.—The object of the pursuit is the annihilation of the hostile forces. Pursuit is pushed to the utmost endurance of men and vehicles. No opportunity must be given to the enemy to reorganize his defense. Direct pressure is combined with an enveloping or encircling maneuver to place troops across the enemy's line of retreat. Every effort must be made to prevent withdrawal of the enemy under cover of darkness. Units continue to advance after dark.

d. Direct pressure force.—The function of the direct pressure force is to keep continuous heavy pressure on the retreating hostile force so that the enemy will not be able to disengage any appreciable part of his troops and send them to the rear or use them to delay the encircling force. Pursuit is launched, without halting, direct from a reorganization line set by the commander when he plans the pursuit. Reserves

are sent in to gain the hostile flank or rear and break through his covering troops.

e. Encircling force.—The encircling force seeks to place itself across the enemy's line of retreat. When practicable it advances along roads parallel to the hostile line of retreat and attempts to block the enemy at defiles and other critical points. When the encircling force is unable to outdistance the enemy it attacks him in flank and delays him so that the direct pressure force can attack and complete the destruction. If the encircling force is not able to move around a flank it pushes through a gap in the hostile line and proceeds on its mission.

f. Pursuit by armored forces in conjunction with other arms.—(1) *General.*—When operating with larger forces, the armored division is employed in the encircling maneuvers around exterior hostile flanks or through a breach effected in the hostile dispositions. GHQ reserve tank units, if available, are usually used with the direct pressure force when armored divisions are present. However, some battalions may be attached to the encircling force. The action of GHQ reserve tank units in pursuit is covered in chapters 12 and 13.

(2) *Terrain.*—Unsuitable terrain or secure flanks of the enemy may limit pursuit operations to direct pressure initially, or may admit of only limited encircling maneuvers to areas where the retreating columns can be checked until overtaken and destroyed by troops which are following directly. Encircling forces sent to these areas are usually small, consisting primarily of infantry reinforced by reconnaissance elements, tanks, artillery, and engineers.

(3) *Cooperation with other troops.*—Infantry, engineers, artillery, and chemical troops may be attached to an armored force unit in an encircling movement. Motorized divisions may follow to consolidate gains made and to assist in the destruction of the enemy. Observation aviation reports on positions of hostile columns. Combat aviation attacks and delays the hostile retreat; thus giving the encircling force time to place itself across the hostile line of retreat.

(4) *Conduct of the encircling force.*—(a) *Reconnaissance.*—Reconnaissance units operate on the flanks of the retreating columns, gain contact, and report on the composition and direction of movement of hostile forces, and execute harassing missions.

(b) *Armored units.*—Armored divisions usually advance in parallel columns. Reconnaissance elements of the armored regiments precede the advance. Engineers are attached to each column to assist in removal of road blocks and construction of crossings. Artillery is placed with the advance guard or well forward in the main bodies. The artillery must be prepared to occupy positions from which fire may be brought to bear on any hostile threat. Tank destroyer units are disposed in each column. If the enemy has mechanized units, attack by such units may be expected on the heads and near flank. A medium tank unit therefore should be well forward in the column. However, the outer flank must not be neglected because hostile reinforcements may be sent in from that direction.

(c) *Infantry.*—The Infantry with the encircling force follows the armored units closely and takes over critical terrain gained by the tank units. It holds these areas to halt or delay the retreating columns.

(d) *Control.*—Control is exercised by giving march objectives, routes of advance, boundaries, phase lines, intermediate objectives to be used as bases for reorganization, and by communication, principally by airplane, radio, and motor messenger.

g. Pursuit by armored force acting alone.—(1) *General.*—An armored force unit acting alone pursues principally by encirclement, applies its strength to hostile weaknesses, strikes enemy personnel and matériel at or near the heads of the retreating columns, and seeks to gain critical points or areas on the hostile route where the enemy can be halted and destroyed.

(2) *Direct pressure force.*—The support echelon is usually employed as the direct pressure force. It may have attached to it GHQ reserve tank units if available or medium tank units from the striking force. It pushes rapidly and aggressively forward keeping constant pressure on the hostile covering forces. Suitable missions for tank units with the direct pressure force include disorganization or destruction of hostile reserves, supporting weapons, observation posts, and command and communication installations. Such tank units are given zones or routes of advance and final objectives. They advance without regard to supporting fires, using fire and movement within the unit. They will usually, after the initial

attack, work forward in small groups by infiltration and attack the enemy wherever found.

(3) *Encircling force*.—The striking echelon is usually employed as the encircling force. Its action and conduct is as previously explained.

SECTION V

THE DEFENSIVE

■ 52. GENERAL.—*a. Role*.—The primary role of armored forces on the defensive is the tactical offensive. Their usual employment will be in the counterattack. However, armored divisions may for short periods organize and occupy a defensive position.

b. GHQ reserve tank units.—On the defensive, GHQ reserve tank units are employed primarily in counterattacks. Their use on the defensive is covered in chapters 12 and 13.

c. Types of defensive operations in which armored units may participate.—The usual types of defensive operations in which armored units participate either when acting alone or in conjunction with other troops are:

- (1) Defense of a position.
- (2) Withdrawal.
- (3) Delaying action.

■ 53. DEFENSE OF POSITION WHEN ACTING ALONE.—*a. General*.—(1) An armored force acting alone may be forced to take up a defensive position temporarily because of superior hostile forces or it may have been assigned a mission to seize and hold a critical point, such as a bridgehead or a vital area, pending arrival of other troops.

(2) The support echelon occupies the defensive position while the striking force is used primarily for counterattacks. Reconnaissance elements perform their usual mission of reconnaissance and in addition may be used for counterreconnaissance and security missions.

(3) The defense seeks to act by surprise. Every effort is made to conceal the nature of the defense and location of the main line of resistance. Changes in the defensive arrangements, camouflage, dummy works, and skillful screening by security detachments in advance of the battle position mislead the enemy and induce him to adopt faulty dispositions. By causing the enemy to take unfavorable dispositions, the

reserves of the defense, consisting primarily of tank units, may be able to strike him a fatal blow.

(4) Defense must be mobile. The front covered by the infantry regiment of an armored division will be small, therefore dependence must be placed upon the effective use of large tank units as mobile reserves. FM 7-40 gives front-ages for infantry in defense.

b. Selection of position.—As the Infantry will occupy and defend the main battle position, selection of such position will conform to procedures laid down in FM 7-40. Full utilization of all natural obstacles must be made to restrict the direction and scope of the hostile attack. When practicable, flanks should rest on impassable obstacles. When this is not practicable, ground should be selected with a view to limiting as much as possible any flank attack. The position should afford good observation and fields of fire while denying to the enemy observation over approaches to the position from the rear. Frequently it may be located on reverse slopes where an adequate field of fire can be obtained.

c. Distribution of troops.—(1) Usually the front is not defended in uniform density. Key points of terrain are occupied and arrangements made to cover intervening spaces and flanks by fire and counterattack of reserves. Key points are usually those terrain features that afford good observation into the defensive position or over the foreground.

(2) Troops on the defense are distributed in depth. This distribution provides for—

(a) Security and the necessary time for manning the defenses of the battle position.

(b) Screening the battle position and keeping the enemy in doubt as to its location.

(c) Facilitating resistance on the flanks and in the rear as well as to the front.

(d) Avoiding offering the enemy a vulnerable concentrated target.

(e) Providing suitable positions for reserves.

(3) Troops are distributed in—

(a) A reconnaissance echelon.

(b) A security or counterreconnaissance echelon.

(c) A combat echelon.

(d) Reserves.

d. Reconnaissance.—The reconnaissance battalion performs its reconnaissance missions in all directions. It contacts the enemy and gives information of his strength, composition, and movements. It withdraws through or around the defensive position and assists in flank protection. It must be ready to move out on reconnaissance when the offensive is resumed. Observation aviation performs its usual reconnaissance missions.

e. Security and counterreconnaissance.—Security detachments protect the battle position from surprise ground attack and screen it from hostile observation and investigation. Engineers, assisted by infantry, establish defended road blocks and demolitions along the principal routes leading toward the position. Strong patrols operate between the obstacles. When necessary to accomplish greater delay than can be expected by small infantry detachments not provided with antitank guns, tanks and artillery may be used to defend such road blocks. Elements of the reconnaissance company may be used to defend road blocks and for patrolling between such road blocks. Outposts are ordinarily established within range of light artillery supporting the main line of resistance. When beyond this range some light artillery is usually attached to the outpost. Local outguards sent out by units on the main line of resistance are posted within range of infantry supporting weapons. When the battle position is on a reverse slope, it is protected by combat outposts on the crest. These are either made a part of or are protected by the combat outpost. When attack by mechanized forces is expected, a strong natural obstacle in the immediate front is a requisite. The reconnaissance battalion, reinforced if necessary by the reconnaissance companies of the light armored regiments tank destroyer units, may be used to form a counter-reconnaissance screen across the front. It may be reinforced and employed to delay the enemy to give time for the defense to be organized.

f. Battle position.—The Infantry organizes and defends the battle position in accordance with the methods discussed in FM 7-40. All the artillery tank destroyer units, except that detailed for defense of certain road blocks, are used to support this position. The striking force is used primarily as a reserve, therefore, infantry units need not hold out large reserves. This procedure is the reverse of that used by infantry in an infantry division. In the armored division the

tanks furnish the reserve, whereas in the infantry division a large mobile reserve must be held out when a wide front is occupied. In cases where a wide front must be defended, the Infantry may hold out no reserves and may have attached to it small tank units for local reserves. Under exceptional circumstances individual tanks may, when the battle position is unduly extended, be placed in a turret def-

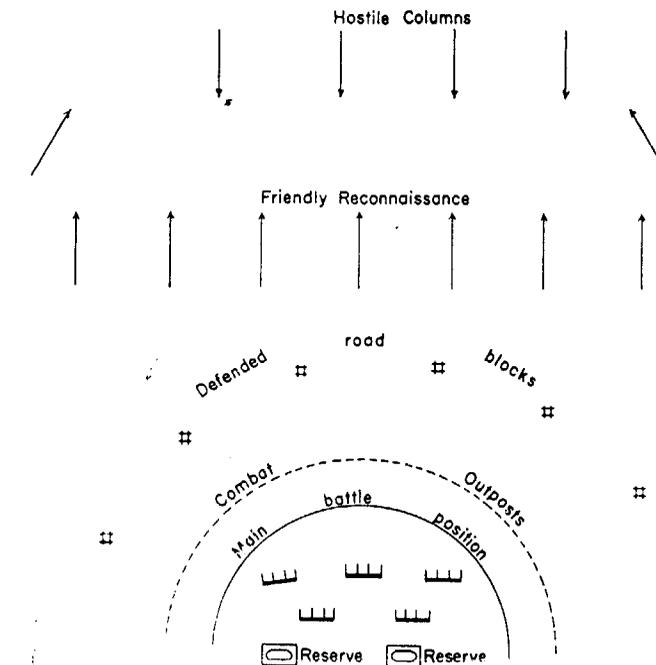


FIGURE 7.—Typical defensive position; flanks open and refused.

laded position in rear of the main line of resistance to assist in the defense of that line. Such use of tanks is unusual. However, when an armored force has been forced on the defensive because of the lack of fuel, this method would be extremely applicable. In this case the fuel from such might be drained and used to augment the fuel supply of tanks held in reserve. The use of tanks as stationary pill boxes should

be avoided when practicable and all tanks used in reserve. Crews and weapons of disabled tanks may be dismounted and used to reinforce the battle positions. (See fig. 7.)

g. Reserves.—(1) *Composition and location.*—Reserves consist primarily of the tank units. Depending upon the terrain and the extent of the battle position, reserves are placed in one or more positions. They are located in covered positions, preferably beyond range of light artillery fire, and where they have good routes of approach to counterattack positions. Where both flanks are open, the striking echelon

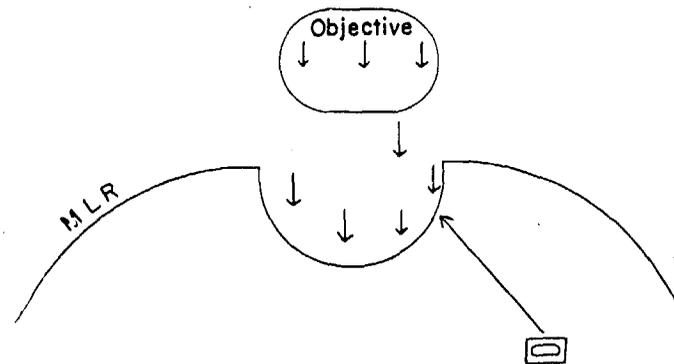


FIGURE 8.—Counterattack against a penetration. (Counterattacking force strikes flank of salient. Objective is limited distance in front of main line of resistance so that hostile attack may be disrupted.)

may be divided into two or more parts, one of which will be in position to strike hostile enveloping forces.

(2) *Counterattacks.*—Plans are made for counterattacking the enemy from any direction. Where flanks are secure the counterattack will be made to restore the battle position. This attack does not stop at the main line of resistance but continues on beyond to a limited objective to completely disrupt the hostile attack. When one or both flanks are open to counterattacks, plans are prepared not only against hostile forces attacking in front but also against hostile enveloping or encircling forces. The enemy may try to work far around the flanks and attack from the rear. Plans must

be made to delay the heads of his forces while the bulk of the counterattacking force strikes him in the flank. (See figs. 8, 9, and 10.)

h. Conduct of defense.—(1) *Reconnaissance units.*—As the enemy advances, ground and air reconnaissance units keep him constantly under surveillance and report his strength.

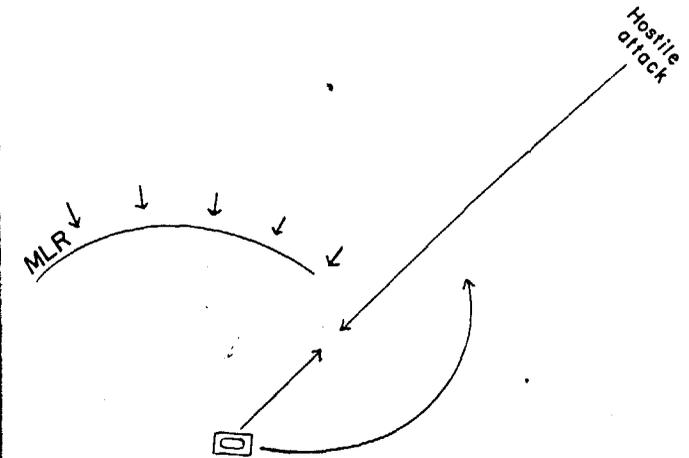


FIGURE 9.—Counterattack against hostile close-in envelopment. (Part of counterattacking force makes frontal attack while remainder strikes hostile front on outer flank.)

location, composition, dispositions, and direction of movement. Ground reconnaissance units may be ordered to delay the advance and to lead the enemy into false dispositions. As the enemy continues to advance, reconnaissance elements withdraw through the outpost or to the flanks and are used for flank security.

(2) *Security echelon.*—As the enemy continues to advance,

he comes in contact with the obstacles and is further delayed. Available combat aviation attacks and delays his advance. The outpost screens the defensive position, forces the enemy to deploy, and assists in leading him into a false direction of attack.

(3) *Battle position.*—When the enemy approaches the battle position, long range artillery and machine gun fire is used against him. Combat aviation attacks his troop concentrations. When the enemy launches his attack all weapons

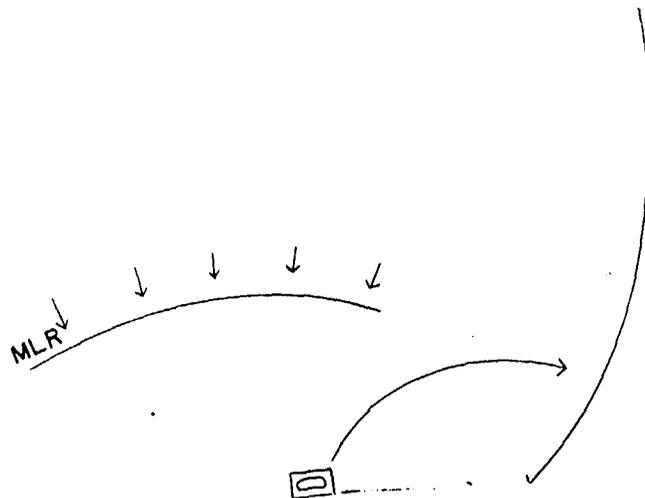


FIGURE 10.—Counterattack against hostile encirclement or wide envelopment. (Counterattacking force delays head of hostile attack by part of its force and strikes hostile inner flank with rear of force.)

available are brought against him. Tank units in reserve may be used to counterattack him before he reaches the front line. If he succeeds in penetrating the position, counterattack by reserves is made to expel him. Reserves are used to block and counterattack any hostile enveloping forces.

(4) *Communication.*—Communication will be by radio, messenger, airplane, and flag.

■ 54. DEFENSE IN CONJUNCTION WITH OTHER TROOPS.—*a. General.*—(1) When employed in defense with other large bodies of troops, armored force units may be used to—

(a) Counterattack an enemy who has succeeded in penetrating the position, and disrupt his attack.

(b) Attack an enveloping or encircling force.

(c) Attack a hostile force that has committed itself to an attack but has not yet penetrated the battle position.

(2) Seldom will an armored division, when operating with other forces, be assigned to hold a sector of the defensive line. A portion of the tank units, particularly medium tank units, may be used to augment the antitank defense by taking up positions where they may ambush hostile tanks that have penetrated the position. The armored artillery may be used to augment the artillery of the defense. However, if the armored division is to perform a semi-independent mission against the flanks of attacking hostile forces or is to block an envelopment, then it should retain its artillery. The use of GHQ reserve tank units in the defense is discussed in chapters 12 and 13.

b. Counterattacks.—(1) *Positions.*—If the armored division is to be used as a whole in the counterattack, it should be located well to the rear in a covered area out of light artillery range. The location should permit of easy access to any contemplated sector of employment.

(2) *Plans.*—By reconnaissance, avenues of possible hostile attack are determined. Plans are then made for counterattacking against any probable place of hostile penetration. Routes from the reserve position to the attack positions are reconnoitered and assigned to various units. Tentative zones of action and lines of departure are assigned. All arrangements are made for quickly moving to attack positions and launching the counterattack without delay.

(3) *Objectives.*—Objectives in front of the main line of resistance are assigned in order to break up a hostile attack formation. Where the direction of the hostile attack has been determined but the full force of the attack has not reached the main line of resistance, the armored force attack might be launched against the flank of such hostile attack.

(4) *Support echelon.*—The support echelon usually follows and consolidates the gains of the striking echelon as in offensive operations.

(5) *Artillery*.—Artillery supports the attack initially by concentrations on hostile troops. All artillery in the area should be used to support the attack.

(6) *Engineers*.—Engineers prepare routes of approach for the attacking tank units.

(7) *Reconnaissance units*.—Reconnaissance units are either retained in reserve or given reconnaissance, screening, counterattack, or flank protection missions.

(8) *Conduct of attack*.—The conduct of the attack is the same as the offensive (see sec. IV), except that after the attack tank units withdraw to a previously designated area behind the battle position, unless the offensive is to be immediately assumed.

c. Attack of an enveloping or encircling force.—The attack of a hostile enveloping or encircling force is similar to an attack in a meeting engagement. Against unarmored troops, the support echelon is used to block the hostile advance while the striking force maneuvers to strike the enemy in the flank or rear. Against armored troops, the support echelon, supported by a part of the striking force, blocks the advance while the remainder of the striking force maneuvers to attack the hostile flank.

d. Attack against hostile force that has committed itself to attack but has not yet penetrated battle position.—This is a defensive-offensive operation. The commander of the whole force may take up the defensive to require the enemy to deploy and attack. By using the armored force from concealed positions on the flank or even by passing the armored units through his own line in a certain area, the commander may strike the enemy in flank or rear. The enemy should be struck after he has made his dispositions and launched his attack, but before he has penetrated the battle position. This operation requires careful timing. The striking echelon leads the attack and may be followed by the support echelon.

■ 55. WITHDRAWAL FROM ACTION.—*a. General*.—Tactical doctrine covering withdrawal from action by armored force units is contained in FM 100-5. Action of GHQ reserve tank units in withdrawal is discussed in chapters 12 and 13.

b. Armored force units in withdrawal.—An armored force unit may participate in withdrawal either as part of a larger force or when acting alone. In withdrawal its use is prima-

rily offensive to delay or break up hostile attacks and by so doing relieving pressure so that the withdrawal may be accomplished without undue casualties. Armored forces, except the armored infantry, are seldom used during night withdrawal. Tank units are used during the day for counterattack to assist other troops in holding out until night in order that withdrawal may be made under cover of darkness.

c. Withdrawal when acting alone.—(1) *Daylight withdrawal*.—In daylight withdrawal it may be expected that a series of delaying actions will be fought. The withdrawal of large units in daylight is dangerous and many casualties may be expected.

(a) *Scheme of maneuver*.—A rearward position is designated on which troops will prepare for renewal of resistance or under the protection of which they may be assembled for further retrograde movement. A covering force consisting of a part of the striking force is used to assist in the disengagement of the infantry. The infantry is disengaged and moves to the rear. Reconnaissance units assist in flank protection.

(b) *Rearward position*.—The rearward position and routes thereto should be thoroughly reconnoitered. Its selection is based upon the natural protection it affords against attack of hostile troops. It should have good routes leading to its rear.

(c) *Covering force*.—The covering force will consist primarily of tank units and should be strong in medium tanks. A part of the artillery may be attached to the covering force. Engineers may be attached for demolition purposes. The purpose of the covering force is to slow down or halt the hostile attack and protect the rearward movement of other troops.

(d) *Conduct of withdrawal*.—Counterattacks are made by reserves to halt or slow down the hostile attack. The covering force takes a position from which it may block the hostile advance. Small tank units may be moved into turret deflade positions in or in rear of the infantry lines to protect the infantry withdrawal. Artillery supports the withdrawal by concentrations on hostile troop concentrations and interdiction of critical areas. Engineers destroy bridges and perform other demolitions that will delay the hostile attack. Combat aviation assists in the withdrawal by attacking hostile troop

concentrations and reinforcements. Trains are withdrawn first. Infantry units in front lines, as they are relieved by tank units, move to the rear in small groups, entrucked, and move to the rearward position. Artillery withdraws by echelon. Tank units, supported by tank destroyer units, fight a delaying action to protect the withdrawal of the remainder of the force. Reconnaissance units protect the flanks and, if and when action is broken off by the main force, keep contact with the enemy. Maximum resort is made to ambush tactics and delay in intermediate positions.

(2) *Night withdrawal.*—Whenever practicable troops hold out until night to make a withdrawal. By counterattacking before dark with tank units pressure may be relieved and organization of the night withdrawal made easier. Rearward positions are selected, routes reconnoitered, and all necessary plans made as prescribed for a daylight withdrawal. The covering force will consist of elements of infantry, tank destroyer, and artillery, and operates in accordance with doctrine prescribed in FM 100-5. Reconnaissance units protect the flanks and are used as an additional covering force. The reconnaissance companies of the armored (tank) regiments together with tank destroyer units may be attached to the reconnaissance battalion for this maneuver. When the covering screen is withdrawn, the reconnaissance units close across the zone and cover the withdrawal. They contact and maintain contact with hostile units. Troops withdrawn to the rearward position may organize that position or retire under the protection of a rear guard. It will be unusual to assign tanks to such a force.

d. Withdrawal when opposed by unarmored troops.—When opposed by unarmored troops in a withdrawal, the striking force attacks to disrupt hostile forces. Other units disengaged by the tank attack move to the rear. The striking echelon then moves to the rear, followed by the reconnaissance elements.

e. Withdrawal when acting with other large bodies of troops.—(1) *General.*—When operating with other large bodies of troops, armored units are used primarily in daylight withdrawal. The support echelon may be used as a covering force. The artillery may and usually will be used to augment the artillery of the defense. The tank units may be used either as a unit or in two or more units for launching

counterattacks. In some cases the armored division, and in large forces the armored corps, may be used to make a wide encircling movement to move behind the hostile lines to attack the hostile rear and break up and disorganize the hostile attack. Conduct of such forces is the same as in the offensive. Armored force units, reinforced by tank destroyer elements, will be particularly effective as a covering force acting against hostile armored units.

(2) *Counterattacks.*—The primary use of armored force units in the withdrawal in conjunction with larger bodies of troops will be in the counterattack. Such attacks may be made by the entire striking force or any portion of it. The piecemeal employment of tank units is wrong; they must be used in large numbers in a coordinated effort. When hostile mechanized forces are expected, medium tank units should be assigned each attack force and used primarily to lead the attack. Counterattacks in withdrawal are usually limited objective attacks made on a broad front to delay and disrupt the hostile attack.

(3) *Scheme of maneuver.*—See paragraph 54.

■ 56. DELAYING ACTION.—*a. General.*—Procedure governing delaying action is covered in FM 100-5. The purpose of delaying action is to give the main force time to retire, to consolidate positions, or time and space to deploy for offensive action. GHQ reserve tank units may be attached to motorized infantry or cavalry divisions engaged on delaying missions. A portion or all of an armored division, reinforced by tank destroyer units, may be used on delaying missions. When advancing hostile columns contain armored units, armored units should be used against them. The methods employed vary from use of small groups to defend road blocks, or temporary defense of a natural obstacle, to methods involving offensive action by tank units, such as limited objective attacks and ambush. Armored force units may be employed alone or in conjunction with other forces. It may delay in one or successive positions. If acting alone, delay in successive positions will be normal, terrain permitting.

b. Scheme of maneuver.—In delaying action by armored force units, one combat command is used to occupy delaying positions to check the hostile advancing columns while the other echelon with engineers threaten or attack the hostile

flanks or rear. Combat aviation is used to attack hostile columns, troop concentrations, and artillery. Reconnaissance elements keep the columns under constant surveillance. When operating with larger forces against hostile armored units, tank units together with tank destroyer units, are used to protect the flanks of the troops on the delaying position, to limit penetrations, and to deliver counterattacks.

c. Selection of position.—Good observation, long-range fields of fire, covered routes of withdrawal, and secure flanks are desirable for a delaying position. When opposed to hostile armored troops a position covered by natural obstacles is highly desirable. Successive positions should be separated by such distance that hostile artillery will be forced to displace in order to fire effectively. Infantry units may, however, have to occupy intermediate positions for mutual support.

d. Delaying action when acting alone.—When operating alone as a delaying force, armored units may be required to cover a broad front in order to delay the various hostile columns. It will usually operate in two or more groups against the heads, flanks, and, if practicable, the rear of hostile columns. For such operations an armored division utilizes its combat command groups consisting of tanks, infantry, artillery, tank destroyers, engineers, and reconnaissance units. Each combat command group will be given a certain column or a zone to delay.

(1) *Delay of hostile unarmored units.*—In the delay of hostile unarmored units, infantry and engineers will usually be used to block the advance of the hostile columns while tank units attack the flank and rear of such columns. Some engineers and reconnaissance units should be attached to the maneuvering force. The tank attack, as in withdrawal, is characterized by quick, powerful blows to disorganize the enemy.

(2) *Delay of hostile armored units.*—In the delay of hostile armored units enemy effort is made to locate each delaying position behind a formidable natural obstacle. The infantry, supported by artillery and tank destroyer units, occupies the position. Engineers place obstacles in front of the position. Tank units are held in reserve to protect the flanks and to execute counterattacks. These counterattacks are characterized by rapid blows to disorganize the enemy attack. They

may be launched before the enemy has reached our own front lines. They are usually followed by rapid withdrawal to a reserve position.

e. Delaying action in conjunction with other troops.—(1) *Against unarmored troops.*—Against unarmored troops, armored units, when acting in conjunction with other troops, are used as in *d*(1) above.

(2) *Against armored troops.*—When operating in conjunction with other troops in delay against an enemy having armored elements, armored units are usually left in reserve to be used to protect the flanks and to counterattack. The counterattack is usually conducted as in *d*(2) above. However, armored divisions may be used to move around a flank of the delaying position and attack the enemy in flank.

f. Withdrawal.—Withdrawal in delaying action is accomplished as previously described. Withdrawal starts before units become heavily engaged in order to avoid losses. If the delaying force does become heavily engaged every effort should be made to hold out until dark for a night withdrawal.

SECTION VI

SPECIAL OPERATIONS

■ 57. **GENERAL.**—The general procedure governing special operations is contained in FM 100-5. Armored units participate in special operations primarily by employment of offensive action. Such operations include attack or defense of a river line, attack in woods, attack and defense of towns and cities, and, to a limited extent, night operations. The fundamentals of attack and defense discussed in sections IV and V apply to these operations.

■ 58. **NIGHT OPERATIONS.**—*a. General.*—In general, night operations of armored units will consist of night marches, movement into position, and defense. Collision with hostile tank units at night will be rare because of the protective reconnaissance and security elements. However, in pursuit, armored units continue the advance to the limit of their ability at night.

b. Infantry in night operations.—The technique of employment of infantry in night operations is covered in FM 100-5 and 7-40. Infantry in the support echelons of

armored forces may, when the division occupies a defensive position, make a local night attack to gain information, to seize defiles or to secure ground from which tank units may launch a daylight attack. Again infantry may be used at night to seize and hold vital terrain features on a flank to protect advancing armored columns. In some cases infantry might even make an attack to throw a hostile column into confusion. Hostile tank bivouacs or assemblies may provide remunerative objectives for infantry night attack.

c. Reconnaissance units.—Use of reconnaissance units is covered in chapter 4.

d. Tank units.—The use of tank units in night operations will be limited to local defense except in delaying action and pursuit. Observation from a tank is poor at the best and in a night attack they would be very much at the mercy of hostile antitank guns at close range and subject to destruction by gasoline grenades. They may be used in defense from covered positions with guns sighted on main avenues of approach. They are not used in night attack except against a badly beaten enemy under favorable conditions of visibility and terrain or in limited objective attacks over previously reconnoitered ground.

e. Artillery.—Artillery is used in night operations to support an infantry attack. It may be used to fire against hostile troop concentrations and for interdiction. Use of artillery in defense and withdrawals has already been discussed.

f. Tank destroyer units.—Tank destroyer units are used at night to cover likely avenues of approach and support the defense of infantry, artillery, and tank units.

■ 59. ATTACK AGAINST RIVER LINE.—*a. General.*—Procedure in attacks against a river line is covered in FM 100-5. Armored units may take part in such operations as part of a large force or may, when acting alone, find it necessary to force a river crossing (see ch. 9 for combat command groupings). GHQ reserve tank units must be reinforced by other troops, particularly engineers when the necessity for crossing of unfordable streams can be foreseen. Armored divisions carry some bridging equipment but must be reinforced by additional engineer troops when wide rivers are to be crossed or crossings are to be made at several points simultaneously.

b. Types of action.—Operations in the attack of a river

line may be classed as hasty crossings of small streams or large streams where bridges can be seized intact, and forced crossings of large streams.

c. Surprise.—Surprise in a river crossing is as essential as in any other operation. Every effort must be made to deceive the enemy as to the actual point or points of crossing so he will not be able to mass his defensive means against the operations. Frequently feints are made at two or more points while the actual crossing is made at another point. The first troops usually cross just before daylight. Smoke may be used to conceal the crossing or used at the place where feints are made.

d. Security.—Air superiority is essential in forcing a crossing of large streams. Antiaircraft artillery protects the bridging operations.

e. Reconnaissance.—Prior to any operation all available data are assembled concerning streams to be crossed. This includes width, depth, swiftness of current, condition of bottom and banks, fordability, location of fords and bridges, observation on each side of the stream, and natural defensive strength of positions on hostile side. Preparations are then made to provide the necessary units and matériels to cross the streams. Engineers and tank destroyer units are attached. Extra bridging equipment may be necessary. All preparations practicable are made in order that a rapid crossing may be made.

f. Hasty crossings.—(1) *General.*—This type of crossing will occur frequently in pursuit, exploitation, and enveloping movements. Minor hostile resistance may be encountered or the enemy may be prepared to give deliberate resistance to crossing. Bridges will usually be found destroyed and fords mined or damaged. Engineers protected by infantry and tank destroyer units must be prepared to give prompt assistance in repairing or improvising crossings and in removal of obstructions and mines. Advance units must act with boldness and energy to seize bridges before the enemy is able to damage them.

(2) *Fordable streams.*—(a) *Streams fordable for great distance.*—Reconnaissance elements endeavor to locate undefended or lightly defended crossing points. They seize such points and hold them until arrival of other troops. The attacking unit may cross on a broad front. Part of the unit

by either firing from vehicles in covered positions or by using weapons in dismounted positions cover the crossing by fire while other vehicles are pushed rapidly across the stream and attack the enemy from the rear. Smoke, if available, is used to screen hostile weapons and observation points. Artillery, when present, supports by concentrations on hostile defenders and by counterbattery fire. Medium tank units may be used to support the crossing. When the enemy has organized a defense on the opposite bank, the Infantry, with tank destroyers and engineers, are used to effect the crossing. (See FTM 7-40.)

(b) *Stream fordable at only few points.*—In this case fire is brought on the hostile defenders as previously described. Dismounted men, infantry, and engineers, or a portion of the crew of the vehicles, are used as a dismounted maneuvering element to move across, up, or down stream from the hostile defensive position and attack from the flank or rear to destroy or neutralize antitank weapons. These men are armed with personal weapons and vehicular weapons such as caliber .30 machine guns. Armament includes subcaliber machine guns and grenades. In attacking a defended stream, the support echelon supported by all the artillery, tank destroyer, and engineers forces the crossing. The bulk of the tanks are kept in covered areas prepared to move across when the crossing has been effected.

g. Crossing of unfordable streams by armored unit acting alone.—(1) *General.*—In general, armored units smaller than a division, unless reinforced by engineers, rarely attempt to force a river crossing when acting alone. Armored divisions and smaller armored units move forward rapidly and seize the necessary crossings and bridgehead on the enemy's side of the river. Parachute troops may be used to seize bridges initially. They are rapidly relieved by armored troops. If it is impossible to seize a bridge intact, armored units move quickly to weakly or undefended portions of the river line and effect a crossing. Action is rapid and bold. Usually limited time will be available for detailed reconnaissance. Anticipatory planning is essential to the success of the operation. Rapid communication and exploitation of local successes are also essential. Crossings may be made either during the day or at night.

(2) *Plans.*—Plans are made before forward movement is

started to force a crossing in case the bridgehead desired cannot be secured.

(a) *Scheme of maneuver.*—The scheme of maneuver is as described in FM 100-5. After the Infantry has secured the opposite bank and the bridge site from hostile small arms fire, some artillery, tank destroyer, and light tank units will be ferried across. The engineers build the bridge for the remainder of the unit to cross. Air superiority must be obtained in daytime, except in surprise crossings, and antiaircraft protection is furnished to troops building the bridge.

(b) *Infantry.*—The Infantry crosses in assault boats initially. Assigned objectives are seized and defensive positions to secure the bridgehead are occupied. Preparations are made to break up hostile counterattacks. *Antitank guns and tank destroyer element must be ferried across in the leading waves.*

(c) *Artillery.*—All the artillery supports the attack initially by concentrations on hostile positions, counterbattery, and interdiction.

(d) *Tank destroyer.*—Tank destroyer elements are ferried across early in the operation to assist the Infantry in antitank defense. The tank destroyer battalion crosses as soon as the bridge is constructed and before tank units.

(e) *Engineers.*—Engineers with the reconnaissance units reconnoiter the bridge sites and construct the bridges. The bridge company must be well forward in the column in the approach so that assault boats will be available to the Infantry at once and ponton equipment available for starting bridge construction and for ferrying, when needed. The engineers operate the assault boats and construct the bridge.

(f) *Reconnaissance elements.*—If hostile resistance is slight, reconnaissance units are crossed behind the Infantry and continue on reconnaissance. If hostile resistance is heavy, reconnaissance units are crossed after the tank units.

(g) *Tank units.*—Tank units are crossed as soon as the bridge is constructed and follow the reconnaissance units. Artillery may be crossed with tank units.

(h) *Trains* are crossed after all other troops and only when the bridgehead is secure.

(i) *Time of attack.*—In this action time is essential. Surprise is essential and is obtained by secrecy, deception, and speed of action. The crossing is forced at the earliest time that preparations can be made. A bridgehead must be ob-

tained during daylight hours of the day the attack is launched.

h. Attack of river line by armored forces in conjunction with other troops.—(1) *General.*—When operating with other troops in forcing a river crossing, armored units are usually held well to the rear in covered positions until other troops have secured the bridgehead. However, armored divisions may be used to effect a surprise crossing as previously described and attack the enemy from the rear. The armored artillery may be used to reinforce the artillery of the bridgehead troops. It must, however, be ready to move forward with the division.

(2) *Plans.*—When armored forces are to cross after the bridgehead has been established, plans are made and tentative objectives are set so that it may best be employed to exploit the crossing. Plans must be flexible to take advantage of the enemy situation. Assembly positions of such armored forces are selected with a view to rapid movement to any point where a successful crossing has been made.

■ 60. DEFENSE OF A RIVER LINE.—*a. General.*—The general procedure for defense of river lines is covered in FM 100-5. A river is often used as an obstacle in front of a defensive or delaying position. It may be used as an aid in defensive-offensive action.

b. General scheme for defense of river line.—Usually a river line is not held in strength as a defensive position. Units are assigned such wide sectors that strong defense along the river bank is impracticable. The entire river line is covered by patrols, stationed to give warning of an attack. Certain favorable crossing points may be held by strong detachments. The bulk of the force is held in one or more reserve positions ready to move to defend any threatened point of crossing or to counterattack any hostile forces that have crossed.

c. Employment of armored forces in defense of river lines.—In defense of a river line armored units are most effectively used as a powerful mobile reserve to attack hostile units that have succeeded in crossing the river. Both GHQ reserve tank battalions and armored divisions may be used for this purpose. GHQ reserve tank units will seldom defend a river line alone. Armored divisions may defend a river line in conjunction with other troops either being employed as a reserve or to hold a sector on the river, or they may defend

a river line alone, pending the arrival of other troops.

d. Employment as reserve of a larger force in defense of a river line.—(1) *GHQ reserve tank units.*—In defense of a river line GHQ reserve tank units are habitually employed in reserve. They may be attached by battalion unit to infantry or cavalry divisions for operation with the reserves of such units. They are seldom employed in units smaller than a battalion.

(2) *Armored divisions.*—Armored divisions employed as a reserve of larger units may be employed as a whole or used in two or more combat command groups, each consisting of reconnaissance, light and medium tanks, artillery, tank destroyer, infantry, and engineer units. The most effective use will be to counterattack the main enemy forces while they are in the midst of crossing or before they have had time to organize or consolidate after crossing. The division should be kept intact when the road net and other conditions permit.

(3) *Position of reserves.*—The road net and condition of cross-country approaches as well as cover, concealment, and the tactical situation, determine the position of armored units in reserve. In general, reserve positions must fulfill the same conditions as those in the defense of a position. They must facilitate speedy entrance into combat in any planned area of operation. GHQ reserve tank units usually are held near the general reserve of the unit to which they are attached.

(4) *Plans.*—Procedure in planning for the use of the reserve in defense of a river line is the same as in the defense of a position. After receiving the plan of the sector commander in whose sector he is operating, the commander of an armored unit, by detailed reconnaissance and conference with unit commanders in whose subsector he may operate, makes plans to meet all possible action by the enemy. As in defense, detailed plans are made for counterattacks and full coordination of effort and a plan of supporting fires is made in cooperation with other ground unit commanders. When the armored unit is located in two or more groups situated to support the defense of different subsectors, plans are made for the speedy movement of such reserves to support the movement of any one unit. (See fig. 11.)

(5) *Reconnaissance units.*—Reconnaissance units may be employed by the force commander to gain and maintain con-

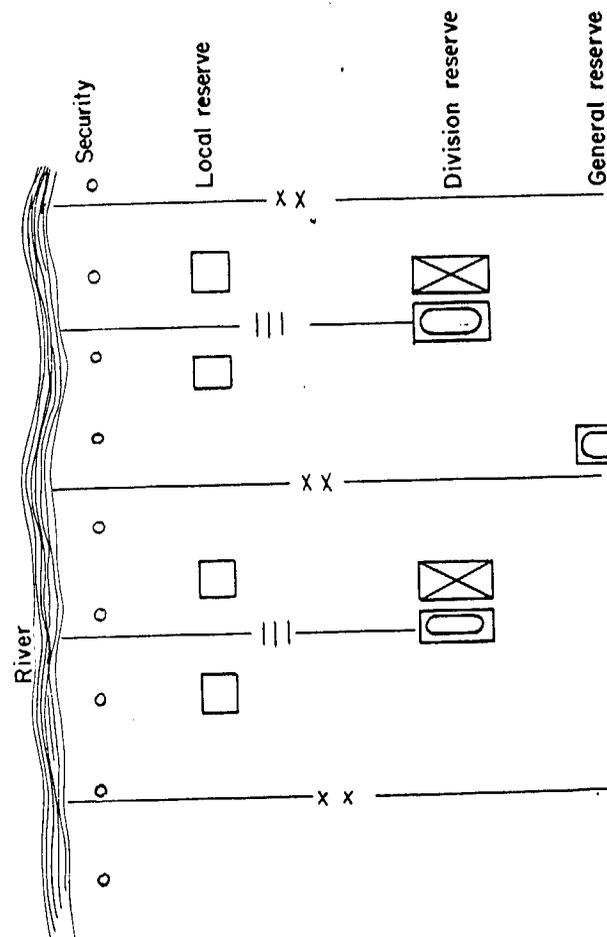


FIGURE 11.—Armored units in reserve in defense of a river line. (Armored units in division reserve are usually held near other reserves of the division. Plans are made by the higher commander for their speedy movement and employment in any other sector. Armored units in general reserve are usually held in one area ready to move against the hostile main threat once it has been discovered.)

tact with the hostile force on the enemy side of the river.

(6) *Artillery*.—The artillery should be left with the armored units to be employed by them in the counterattack. When the armored division is divided into two or more combat command groups, each may require some artillery.

(7) *Engineers*.—Engineers are employed to prepare routes of approach and some are attached to each group in reserve.

(8) *Infantry*.—Infantry is employed as indicated in FM 7-40. The armored infantry should remain with the armored division and should not be used as a separate reserve for other units. A part of it may be attached to armored regiments detailed in separate reserve locations.

(9) *Tanks*.—Light and medium tank units are used in the counterattack. As the enemy will ferry antitank guns across early, medium tank units should be used in the leading waves of the attack. When attack is made to reduce a bridgehead, hostile tanks may be encountered. The fundamentals of tank versus tank combat then apply. (See par. 43.)

(10) *Control*.—Prior to an attack, communication is primarily by messenger. Telephone may be used between larger units. In attack, radio is the principal means of communication. Control is exercised as in the counterattack.

(11) *Conduct of attack*.—The attack is conducted as a counterattack in defense of a position. When the attacking force reaches its objective, usually the river bank where bridging work is in progress or a bridge has been built, the tanks attack the enemy by fire while infantry and engineers destroy the bridge. Tank units are then withdrawn to a reserve position.

(12) *Time of attack*.—The attack is preferably launched before the enemy has established a bridgehead and started bridging operations. It is launched as soon as the location of the hostile main effort is determined.

e. Employment in defensive-offensive.—In defensive-offensive operations attempt is made to strike the enemy while he is astride the river. Some armored units may cross the river and attack the enemy in rear or flank. Action will be similar to a meeting engagement in the offensive. Other units may counterattack troops already crossed.

f. Defense of river line when acting alone.—(1) *Scheme of defense*.—When acting alone, an armored force defends a river line by using reconnaissance and delaying elements on

the hostile side of the river; local patrols along the bank; local defense elements at most favorable points of crossing; local reserves in defensive sectors; and a large general reserve. No attempt is made to hold the river line in strength at any one point.

(2) *Reconnaissance elements.*—Reconnaissance elements operating against advancing hostile forces delay the enemy and report his movements. Air observation is used to the maximum. When forced across the river, reconnaissance elements assist in patrolling the river line and protecting the flanks.

(3) *Engineers.*—Engineers prepare bridges for destruction and routes of approach for tank units.

(4) *Infantry.*—Infantry patrols the river line and furnishes local reserves at the most likely crossing points.

(5) *Tanks.*—Tank units are held in reserve for counter-attack use.

(6) *Artillery.*—Some of the artillery supports the Infantry, but the bulk is held in mobile reserve prepared to support the striking echelon.

(7) *Destruction of fords and bridges.*—Fords and bridges are prepared for destruction. Those not to be used by withdrawing reconnaissance and delaying elements are destroyed. Others are prepared for destruction. These points are defended by fire of automatic weapons and tank destroyer elements. When reconnaissance units have withdrawn, the bridge or ford is destroyed. An officer must be stationed at the bridge or ford prepared to instantly destroy it if it is in danger of falling into hostile hands. *This officer must act upon his own initiative and not wait for instructions from higher authority.*

(8) *Conduct of defense.*—The defense is conducted as in the defense of a position.

■ 61. **COMBAT IN TOWNS.**—*a. General.*—In general, armored vehicles are not suitable for combat in towns, particularly large towns. Towns offer concealment to large forces, observation is limited, fire effect is reduced, and combat deteriorates to that of small groups. Such localities enable the enemy to effectively use antitank weapons, barricades, demolitions, and mines.

b. Attack of a town.—Armored units, if practicable, avoid

attacking towns. If attack must be made, the town is encircled. A direct frontal attack is resorted to only when encirclement is impossible.

(1) *Attack by encirclement.*—The support echelon with part of the artillery makes the direct assault on the town while tank units move around one or both flanks to cut off the forces in the town from reinforcements and isolate it from hostile supporting forces. When no infantry is present, part of the tank units, supported by machine gun elements, is used for the main attack.

(2) *Frontal attack.*—This form of attack is resorted to only as a last resort or when the locality can be surprised. The Infantry supported by all the artillery makes the attack. Tank destroyer and tank units will usually be used only to repel counterattacks after the town has been taken. When no Infantry is available, elements of the reconnaissance and battalion headquarters companies may be used in the assault, while tank and artillery units cover the advance by fire. (See FM 7-5.)

c. Defense of town.—In defense of a town, infantry supported by artillery and tank destroyer units are used to defend the town itself, while tank units are held in reserve to attack enveloping forces. When a tank unit is acting alone, it uses its mobility to attack the enemy before he reaches the outskirts. (See FM 7-40.)

■ 62. **COMBAT IN WOODS.**—*a. General.*—The effect of woods upon movement of tanks has been previously discussed. Woods may be both a help and a hindrance to armored units in combat. They are a help in that they afford cover and concealment. However, observation in woods is limited; large closely spaced trees slow down or prevent movement except on roads or paths. Control in woods is difficult, direction is easily lost, and mixing of units often results. Tracts of heavy woods tend to canalize an attack. Woods facilitate enemy antimechanized defense. The concealment of anti-tank guns is easy. Demolitions, barricades, and mines can be used to good effect.

b. Attack on woods.—(1) *Hostile defenses.*—Owing to the excellent artillery target presented by the edge of a woods, defensive works are either placed some distance in front of or back from the edge. The position will depend largely on the field of fire.

(2) *Scheme of maneuver.*—Tank units seek to avoid heavy woods. Smoke is used to blind observation and antitank guns in the front edges and flanks. Where woods must be attacked frontally, the Infantry, when available, supported by heavy artillery fire, makes the attack. When infantry is not available, tank units supported by artillery, tank destroyers, mortars, and other tank units make the attack.

(3) *Conduct of attack.*—When tanks reach their objectives, they must not halt in the edge of woods. Directions may be given and tanks push on through the woods. In heavy woods when trails only can be used, antitank mines and antitank guns may and probably will be encountered, and ambush may be expected. After the initial assault and when the distance through the woods is great, reconnaissance units may precede the tanks. When emerging from woods, tanks must be deployed.

c. Defense of woods.—The support echelon defends woods as outlined heretofore for the defense. Tank units are held in reserve to counterattack hostile attacking forces. Tanks may be concealed in woods, through which they may move by previously reconnoitered routes to attack a hostile force in flank. This maneuver is especially effective in counterattacking hostile tanks that seek to avoid heavy woods.

■ 63. **ATTACKS IN MOUNTAINOUS COUNTRY.**—Operations in mountainous terrain usually limit tanks to defiles, which are easily defended by antitank guns and antitank mines. Infantry and engineers, supported by artillery, clear the defiles and the tanks attack the enemy after debouching from the passes. Air superiority is a requisite to moving through mountain passes during daylight hours. (See FM 31-15.)

■ 64. **TANK VERSUS TANK COMBAT.**—*a. General.*—(1) Large tank units and armored divisions are highly effective means to counter hostile mechanized forces. They are used in an offensive manner, in large numbers, in execution of definite missions. The employment of these units on such missions must be closely coordinated with, and supported by, all other available antimechanized means, including tank destroyer units and combat aviation. Tanks *must not* be used as stationary pill boxes.

(2) When tanks are assigned a mission that does not con-

template the engagement of hostile tanks, they should not be diverted from such mission, except—

(a) When forced to engage hostile tanks as a matter of self-preservation.

(b) When it is apparent that the hostile attacks will seriously disrupt the operations of other troops.

(3) When hostile tanks are superior in armor and armament, combat is avoided, if practicable. When these conditions exist, effort is made to draw the enemy into our own mine fields or into areas covered by friendly tank destroyer weapons.

(4) Maneuvers should be planned and executed so as to destroy the enemy in detail. Flank attacks in close formations to bring a great volume of fire on successive waves supported by tank destroyer elements are most effective. Speed is used to maneuver to a deflated or covered position from which accurate fire from a halted tank may be brought to bear on hostile tanks. When the hostile armament outranges that of our own, closing within range of the enemy guns is avoided unless effective fire can be brought to bear from deflade. Attack with a view to collision is avoided unless out of ammunition or almost out of gasoline. Tanks so used will probably be sacrificed. Under exceptional circumstances, when other means are not available and time is a deciding factor, a tank may be used to block a defile.

(5) Medium tank units, owing to their superior armor and armament, are used to lead attacks against hostile mechanized units. They are supported by tank destroyer units.

(6) Tank crews must be carefully trained in—

(a) Recognition of hostile and friendly tanks by silhouette.

(b) Characteristics and capabilities of hostile tanks pertaining to armor, armament, and speed.

(c) Vulnerable parts of hostile tanks upon which fire will be effective.

(d) Range at which our weapons are effective against hostile vehicles.

(e) Hostile methods of tank employment.

(f) Methods of combating hostile tanks, such as use of speed, deflade and cover, and ambush.

(g) Cooperation with tank destroyer elements.

b. Offensive action.—(1) Tank units on the offensive will be used to deliberately attack hostile mechanized forces.

Tank versus tank combat may result from contact with hostile attacking units. Tanks are most vulnerable to hostile armored fighting vehicles when actively engaged with other elements of the enemy and when undergoing reorganization.

(2) In planning his action a tank unit commander must consider the probability of hostile mechanized attack and terrain where such attacks are possible. Plans are made for countering hostile mechanized attack and definite orders given to units as to action in case of attack. Flanks and rear are particularly vulnerable. Medium tank units and tank destroyers, when available, are used not only to lead the attack, but also some units are detailed to protect the flanks and rear. Tank destroyer units also protect the flank and rear. When hostile mechanized attack is expected, a large reserve consisting primarily of medium tank and tank destroyer units should be held out. This reserve must follow the attack by such routes as to be readily available to counter hostile tanks.

c. Defense.—(1) In the defensive, tank units supplement the employment of tank destroyer units in the antitank defense. They are used in large numbers to counterattack hostile mechanized elements that have penetrated the battle position and to attack hostile forces in their assembly positions or when they have launched their attack, but have not yet reached the battle position.

(2) The counterattack of tank units against hostile tanks must be supported by fire of all available tank destroyer weapons and artillery. Support of bombardment aviation is desirable and should especially be used when the attack is made against hostile units that have not yet reached our lines. After contact has been made with hostile tanks, fire of large caliber supporting weapons will be limited because of the danger of hitting friendly tanks.

(3) Counterattacks are planned as described in section V. In counterattack against mechanized forces all available cover is used to approach those forces from the flank. If practicable, ambush may be prepared. Tank destroyer units are especially suitable for use in ambush. When used from ambush, tanks halt in covered or deflated positions for short periods to fire their heavy weapons.

(4) Hostile tanks that break through the defensive position must be attacked immediately by tank destroyer and

tank units. They should *not be allowed* to penetrate deeply into a position before counteraction is taken. GHQ reserve tank battalions supported by tank destroyers are suitable for such missions. The battalion will be given a certain defined sector to cover. It will in turn divide this into company sectors. The battalion as a whole is located in a central reserve position from which it or any of its elements may move quickly to any part of the sector to search for and destroy hostile tanks. As soon as an element has completed its mission it returns to the central reserve position. In this way the greater part of the battalion will be ready for other missions. Liaison officers with the headquarters of the troops holding the sector and battalion reconnaissance elements are used to report locations of hostile tanks.

SECTION VII

MARCHES

■ 65. GENERAL.—*a.* FM 17-50 covers technique of marches, both administrative and tactical.

b. The armored division habitually marches in multiple columns disposed so as to readily enter combat in accordance with the plan of the commander. It is preceded by the reconnaissance battalion, the reconnaissance companies of the tank regiments, and advance guards for each column. Columns are formed so that entry into bivouac, assembly areas, or combat may be made with the least practicable delay and confusion. Doubling of units on the road must be avoided.

c. The number and composition of columns varies with the road net, the tactical situation, and the plan for employment. The columns are composed of combat command groups, both tanks and infantry, artillery, engineer, and tank destroyer; light tanks usually lead. Infantry with tank destroyer units are placed in the lead; during the hours of darkness; when the situation is obscure; when the plan of employment contemplates commitment of the infantry prior to the tanks; and when the employment of the tanks cannot reasonably be foreseen. Artillery is placed well forward in each column. Tank destroyer elements are disposed to protect the flank and rear. Depending upon the condition of routes and the necessity for clearing hostile road blocks, engineers are

attached to each column, including a detachment with the advance guard. Infantry should be attached to the advance guard when their use in reducing road blocks can be foreseen.

d. Control is maintained by designating march objectives; zones or routes of advance; phase lines to be passed at designated times or when ordered; and by prescribing rates of march.

e. Air superiority is a requisite for a successful daylight march. When air attacks are expected, increased distance must be taken between elements and in some cases advance is made cross-country in small groups.

f. In the presence of hostile aviation, and when secrecy is vital, night marches are habitual. The infantry, with tank destroyer unit, usually leads the march to secure assembly areas for the division.

■ 66. FORMATION.—*a.* (See ch. 7.) The armored division may march in regimental columns or it may be formed into combat command groupings with tank battalions as the nucleus of each group. Each such group may consist of light tanks, medium tanks, artillery, tank destroyers, engineers, and infantry. Within each column the light tanks usually lead. The artillery is placed well forward, usually following the light battalion.

b. Unit trains with the columns are usually grouped and follow in rear of the column. They may, however, be with their units. The division trains march on a route away from the exposed flank or in the center column where they will have the maximum protection afforded by the combat echelons.

CHAPTER 3

SCOUTING AND PATROLLING, MOUNTED

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SECTION I

GENERAL

■ 67. PURPOSE AND SCOPE.—*a. Scope.*—All personnel of armored force reconnaissance and combat units must be thoroughly grounded in the fundamentals of scouting and patrolling, both dismounted and mounted.

b. Dismounted scouting and patrolling.—The fundamentals of dismounted scouting and patrolling are set forth in FM 21-45 and FM 21-100.

c. Mounted scouting and patrolling.—The fundamentals only of mounted scouting and patrolling, which are performed by personnel mounted on motorcycles, ¼-ton trucks, or in combat vehicles, are covered in this chapter.

d. Agencies.—The application of the principles of scouting and patrolling employed by security detachments, reconnaissance and combat units is discussed in the pertinent chapters on these subjects.

SECTION II

MOUNTED SCOUTING

■ 68. EMPLOYMENT OF SCOUTS.—*a. Restrictions.*—Individual mounted scouts are used by armored force units only when strict economy of manpower is required and then only for close-in missions.

b. Training of scouts.—In addition to their dismounted training, they must be trained to note and report information of *vital importance to armored force units*. Scouts will be trained in recognition of the following:

(1) *Localities.*—(*a*) Is the terrain suitable for the employment of tanks and other armored vehicles?

What size unit will they accommodate?

During the attack the executive officer remains at the command post and conducts it forward as directed by the commanding officer.

b. *Rear echelon.*—The rear echelon consists of the personnel section; the band; and the command, administrative-supply and mess sections of company headquarters. The rear echelon marches with the regimental trains. The towed antitank gun is for local protection of the rear echelon elements.

c. *Communication.*—The principal means of communication is radio and motor messenger. Appendix II shows the radio sets for the regiment.

SECTION IV

HEADQUARTERS AND HEADQUARTERS COMPANY, RECONNAISSANCE BATTALION

■ 249. ORGANIZATION.—The headquarters and headquarters company reconnaissance battalion consists of battalion headquarters, transportation platoon, battalion maintenance platoon, and company headquarters. Current Tables of Organization give the detailed organizations.

■ 250. BATTALION HEADQUARTERS.—a. *General.*—The battalion headquarters consists of the command and administrative section, communications section, battalion supply section, and the personnel section. The battalion is both an administrative and tactical unit.

b. *Command and administrative section.*—This section consists of a lieutenant colonel, battalion commander; major, executive and operations officer; two captains, one assistant operations and intelligence officer, and one operations for air; four lieutenants, one supply, one adjutant, one liaison, and one intelligence; and sergeants, clerks, and other enlisted men as set forth in Tables of Organization.

c. *Communications section.*—The communications section consists of an armored car section, signal center section, and motorcycle section. Space is provided in the armored cars for the battalion commander, executive officer, and the assistant S-2. The signal center section has space for six officers and men of the command and administrative section.

d. *Battalion supply section.*—This section consists of a mas-

ter sergeant for supply, and several assistants. It is equipped with three 2½-ton trucks. The supply officer is in charge of this section.

e. *Personnel section.*—This section consists of a lieutenant, personnel officer, and necessary assistants.

■ 251. TRANSPORTATION PLATOON.—This platoon consists of a platoon headquarters, a fuel and lubricants section, and a rations section. It is equipped with two ¼-ton trucks and twelve 2½-ton trucks. This section is under the direction of the supply officer.

■ 252. BATTALION MAINTENANCE.—This platoon consists of a platoon headquarters, three maintenance sections, and a wrecker section. The platoon is commanded by a lieutenant who is battalion maintenance officer. The platoon performs second echelon maintenance for the entire battalion. Two maintenance sections are for armored cars and one for other wheeled vehicles. The maintenance platoon must be distinguished from the maintenance section of company headquarters. That section performs maintenance for headquarters company only. The maintenance sections of the platoon may be used to reinforce the maintenance sections of the reconnaissance companies.

■ 253. COMPANY HEADQUARTERS.—Company headquarters consists of a command section; reconnaissance section for local reconnaissance near the command post; the maintenance section, for company maintenance only; administrative, supply section; and mess section.

■ 254. TACTICAL EMPLOYMENT.—a. *Forward echelon.*—(1) The forward echelon of the command posts consists of all the company except the personnel section.

(2) The commander's group consists of personnel as he desires, usually his S-2. During combat this group rides in armored cars.

(3) During the advance the command post advances by bounds along the axis of advance usually on an interior road. The tank company until used for combat advances with the command post. It furnishes local protection for the command post, and advance and rear guards for the command post while moving.

b. *Rear echelon.*—The rear echelon consists of the person-

nel section and such supply and administrative vehicles as the battalion commander may direct.

c. *Communications*.—Communication is principally by radio and motor messenger. Appendix II gives the radio nets within the battalion.

SECTION V

HEADQUARTERS AND HEADQUARTERS COMPANY, ARMORED DIVISION

■ 255. ORGANIZATION.—The headquarters and headquarters company, armored division, consists of a command and general staff section, two combat commands (see sec. VI), division air officer, division artillery command, chemical warfare service section, and headquarters company. The division is both an administrative and tactical unit.

■ 256. COMMAND AND GENERAL STAFF SECTION.—This section consists of the division commander and aides, Chief of Staff, G-1, G-2, G-3 and bomber control unit, and G-4. For assistants and equipment see tables of organization.

■ 257. COMBAT COMMAND.—See section VI.

■ 258. DIVISION AIR OFFICER.—This officer is on the division commander's staff to coordinate all matters affecting aviation.

■ 259. DIVISION ARTILLERY COMMAND.—See section VII.

■ 260. CHEMICAL WARFARE SERVICE SECTION.—This section coordinates all matters pertaining to use of and defense against chemicals.

■ 261. HEADQUARTERS COMPANY.—a. This *company* consists of a company command section; communications-reconnaissance-liaison-section; three tank platoons; G-3 traffic control section; maintenance section; administrative section; company mess section; and division headquarters mess.

b. *Company command section*.—The company is commanded by a captain who is also headquarters commandant. The company headquarters section consists of the captain, a sergeant, and six privates.

c. The *communications-reconnaissance-liaison-section* consists of a sergeant, communications sergeant, and three privates. It is for use of the company commander for messenger service, local reconnaissance, and liaison.

d. The *tank platoon* is to provide tanks for the division commander and staff for each of the combat command staffs, and for local protection of the command post. The three platoons are commanded by the senior platoon leader.

e. The *G-3 traffic control section* consisting of one lieutenant and eight enlisted men mounted on motorcycles is for use by G-3 in traffic control in forward areas.

f. The *maintenance section* maintains the vehicles of division headquarters and the headquarters company.

g. The *administrative section* is for administration and supply of the company.

h. The *company mess section* takes care of the mess for the company. Separate messes are provided for division headquarters and for each combat command.

■ 262. TACTICAL EMPLOYMENT.—The headquarters and headquarters company, armored division, is the forward echelon of division headquarters. The rear echelon is in the service company. The command post usually marches at the head of the division reserve. During combat it moves by bounds usually behind the unit making the division main effort.

SECTION VI

COMBAT COMMAND

■ 263. ORGANIZATION.—In each division headquarters are two combat commands. Each is commanded by a brigadier general and consists of a headquarters, a reconnaissance-liaison section, a tank platoon, staff section, and mess section. This unit is tactical only. The combat command has a complete staff. The division signal company furnishes it with signal center vehicles as needed, operators, motorcyclists, and message center personnel and equipment.

■ 264. TACTICAL EMPLOYMENT.—a. The combat command is used by the division commander to direct and control a major tactical grouping on the march and during combat. These groupings depend upon terrain, the enemy situation, and the particular type of operation contemplated. The groupings listed below are suitable for the type of action indicated.

(1) *Advance—contact imminent.*

Combat command A.	Combat command B.
Reconnaissance company from reconnaissance battalion may be attached.	Reconnaissance company from reconnaissance battalion may be attached.
Armored regiment.	Armored regiment (less one medium battalion for division reserve).
Infantry battalion.	Infantry battalion.
One or more artillery battalions.	One or more artillery battalions.
Engineer company.	Engineer company.
The attached heavy tank destroyer company.	The attached heavy tank destroyer company.
Medical detachment.	Medical detachment.
Maintenance company.	Maintenance company.

Forward echelon armored division.
 Infantry regiment, less detachments.
 One medium armored battalion.
 Heavy tank destroyer battalion, less detachment.
 Engineer battalion, less detachment.
 Division artillery, less detachment.
 Rear echelon.

(2) *River crossing or passing a defile.*—Combat command A forces the crossing or defile.

Combat command A.	Combat command B.
Reconnaissance battalion.	Two tank regiments (less detachments).
Infantry regiment.	One or two engineer companies.
All or the greater part of the division artillery.	Medical company.
Engineer battalion (less one or two companies).	Two maintenance companies.
One medium armored battalion.	
One light tank company.	
Forward echelon armored division.	
One heavy tank destroyer company.	
Medical company.	
Maintenance company.	
Rear echelon armored division.	

NOTE.—When combat command B crosses a river, one or more battalions of artillery and a company of the engineer battalion may join it.

(3) *Pursuant or exploitation.*—Combat command A is used as a fast moving pursuing force and is especially qualified for encircling movement.

Combat command A.	Combat command B.
Reconnaissance battalion.	Armored regiments (less light battalions).
Two light armored battalions.	One or more battalions of artillery.
Infantry regiment (less one or more battalions).	Engineer battalion (less detachments).
One or more battalions of artillery.	Medical company.
Tank destroyer battalions.	One maintenance company.
One or more companies of engineers.	Forward echelon armored division.
Medical company.	
One maintenance company.	
Rear echelon armored division.	

(4) *Defense.*—Combat command A occupies defensive position. Combat command B is the counterattacking force.

Combat command A.	Combat command B.
Infantry regiment.	Two armored regiments (less battalion of medium tanks in division reserve).
Engineer battalion (less bridge company and other detachments).	Tank destroyer company.
All artillery (may be directly under the division commander).	Engineer company.
Tank destroyer company.	Medical company.
Medical company.	Maintenance company.
Forward echelon armored division.	
One medium battalion.	
Tank destroyer battalion, less two companies.	
Rear echelon armored division.	

(5) *Withdrawal from action and retrograde movements.*—Combat command A is the delaying force. Combat command B engages only in extensive counterattacks in force.

Combat command A.	Combat command B.
Reconnaissance battalion.	Armored regiments (less light armored battalions).
Two light armored battalions.	Engineer company.
Infantry regiment.	One battalion of artillery if available.
Two or more battalions of artillery.	Medical company.
Engineer battalion (less bridge company and one other company).	Maintenance company.
Tank destroyer battalion.	Forward echelon armored division.
Medical company.	
Maintenance company.	

Rear echelon armored division.

b. The groupings above are suitable for the actions indicated. The situation dictates the exact grouping and strength of each combat command group.

c. The employment of the tank destroyer battalion is described in chapters 2 and 7.

SECTION VII

DIVISION ARTILLERY HEADQUARTERS AND HEADQUARTERS DETACHMENT

■ 265. ORGANIZATION.—The division artillery headquarters and headquarters detachment consist of a colonel, division artillery officer; a lieutenant colonel, S-3 and assistant to the division artillery officer; one major and one captain, assistants to S-3; one major, S-2 and a lieutenant, assistant S-2; and enlisted men assistants. The detachment is transported in scout cars, half-track vehicles, and ¼-ton trucks.

■ 266. EMPLOYMENT.—a. The division artillery officer is the advisor to the division commander on all matters pertaining to artillery. He may at times command during combat all or part of the division artillery.

b. When the division artillery can be efficiently controlled by one headquarters, it is placed under the command of the

artillery officer. Such occasions may arise during the initial attack on a narrow front and when forcing a river line. Artillery is usually attached to the combat command groups.

SECTION VIII

HEADQUARTERS COMPANY, ARMORED CORPS

■ 267. HEADQUARTERS COMPANY, ARMORED CORPS.—a. T/O 170-1 prescribes the organization of the headquarters armored corps and T/O 170-2 prescribes that for the headquarters company armored corps. The corps is not an administrative unit except for corps troops. Corps headquarters is attached to the corps headquarters company.

b. The headquarters company armored corps is divided into company headquarters, transportation platoon, special platoon, and postal section. The corps headquarters is divided into a forward and a rear echelon. (See T/O 170-1.)

c. The transportation platoon furnishes transportation for the corps headquarters and maintains the transportation of the headquarters company.

d. The special platoon furnishes personnel for the operation of messes and for orderlies.

e. The postal section collects and distributes mail.

f. The forward echelon of corps headquarters moves by long bounds by shuttling. Transportation furnished is not sufficient to move all personnel at one time.

g. The corps headquarters company has two radio sets. These are used by the company commander and the transportation platoon. Other communication facilities are furnished by the corps signal battalion.