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THE FIELD ARTILLERY JOURNAL

VOLUME XXVI MAY-JUNE, 1936 NUMBER 3

A METHOD OF CONDUCTING THE MARCH OF A BATTALION OF LIGHT ARTILLERY AS PART OF AN ADVANCE GUARD WHEN CONTACT IS IMMINENT

BY LT. COL. R. W. BARKER, Field Artillery

GENERAL CONSIDERATIONS

IT is commonly accepted that the mission of an advance guard is two-fold: First, to assure the uninterrupted advance of the main body, protecting it from surprise and observation by hostile ground troops; second, when in proximity to strong hostile forces, to secure for the main body the time and space required for the execution of the maneuver decided on by the force commander.

This second phase of the advance guard operation begins at that time when, to use the accepted phraseology, *contact is imminent,* which is to say, when the leading elements of the advance guard enter or approach the area in which, from a study of available information and of the terrain, it is believed that contact with the enemy may be expected. The prior determination of such an area rests with the force commander; it is not subject to any rule but in each instance will depend on the conditions existing at the time, important considerations being the degree of mobility of the hostile troops and the range of their longest-range field artillery.

Practically, it is at the opening of the second phase of the advance that the artillery component of the advance guard begins to play an active role in the operation.

The article, "As To Advance Guards," by Major H. B. Hildebrand. Infantry, in the July-August, 1935, number of the FIELD ARTILLERY JOURNAL, contains an exposition of the present trend of thought in our service as to the methods of conducting the march of the advance guard infantry when contact is imminent. A study of these methods cannot but cause us to realize that we, as field artillerymen, must make corresponding changes in our

technique of supporting the advance guard under these circumstances.

Going back to our Field Service Regulations (1923) we find the following, "As soon as the situation indicates the necessity for artillery support, the advance guard artillery marches in a state of increased readiness for action. One echelon of the artillery takes up a position in readiness or in observation, while the other moves forward to an advanced position. The artillery thus successively advances by echelon from position to position." (Paragraph 231.)

Carrying this thought still farther, the Field Artillery Field Manual states, "In his initial orders the advance guard commander indicates the successive terrain lines which the advance guard will secure during the advance and the state of readiness in which the artillery will march. During the march the artillery commander directs a continuous reconnaissance for positions on each successive terrain line. When reports of distant reconnaissance (aviation, cavalry) indicate that contact is imminent, the advance guard artillery commences to echelon forward, prepared to go into action promptly and deliver effective fire. The method of echelonment varies, depending on the mission of the advance guard, the strength of the enemy and the nature of the terrain. In certain situations the entire advance guard artillery may be placed in successive positions in readiness and advanced by bounds; in other situations particularly when the enemy resistance is known to be relatively weak, a single battery may be placed in position near its location in the column from which it will be able to deliver an effective fire; the remainder of the artillery is moved to more forward positions."

With the above basic directives in mind and with the added impetus given by the need for keeping step with the developments in infantry tactics, an effort has been made at Fort Sill during the past year to evolve *a* method of conducting the march of an artillery battalion with security detachments, particularly advance guards when *contact is imminent*, which will:

(1) Exploit, in as large a measure as practicable, our present improved means of communication and recent developments in fire direction.

(2) Insure for the advance guard artillery a state of readiness

for action comparable to that of the infantry of the advance guard which, when marching in several columns (or in approach-march formation) is able to attack (or defend) earlier than when marching in one column.

(3) By having at least one battery in position, ready to fire at all times during the advance, provide practically instantaneous response to calls for supporting fires.

(4) Make for economy and efficiency in marching.

The mechanics of a method for employing the advance guard artillery which would meet the above requirement were worked out on the map for various types of terrain, careful attention being given to the time and space factors, particularly as to rates of movement and possible interference with other troops. It then was decided to give this method a series of practical tests on the ground with a war-strength field artillery battalion working in conjunction with infantry troops advancing as in the presence of the enemy. In order to give the scheme as thorough a test as practicable on the terrain available, the exercises were so drawn as to require an advance by the infantry of the advance guard of from seven to eight miles in a partly deployed formation.

The results attained in these exercises warrant the belief that the methods employed point the way to a workable solution of the requirements stated above. Both horse-drawn and truck-drawn battalions were used in the exercises. It is believed that the method can be demonstrated best by a narration of one of the exercises. One involving the truck-drawn battalion is taken, since it will not only serve to illustrate the mechanics of the support but also to show a method of handling the details in such units.

There being only one infantry battalion available to participate in the exercise, the tactical situation was drawn to represent the operations of a column of the interior division of a corps, the advance guard of that column consisting of a battalion of infantry and a battalion of light artillery. It does not necessarily follow that the artillery component of *each* advance guard of the four columns in this division would be as large as a battalion, although this may sometimes be advisable, depending on the imminence of combat and the reliability of the information with respect to the enemy's position, mobility, and anticipated strength.

However, for the column selected an advanced guard artillery

strength of one battalion was prescribed for the tactical reason that, since certain key terrain features (the Dodge Hill—Bald Ridge line and Arbuckle Hill) lie in its zone of advance, strong artillery support should be immediately available to the advance guard in the seizure of these important localities.

The mechanics of the artillery support, as herein illustrated, are equally applicable to an advance guard employing an infantry regiment (less one battalion). The only difference would be that in such cases, since the advance guard might move on a front of two battalions, the artillery plan would probably call for a slightly different assignment of liaison sections.

Before proceeding to discussion of the exercise it may be well to emphasize one point. In a situation where the advance guard artillery is required to furnish continuous support to the advance guard during the march, it is by means of his preliminary planning and by the orders issued by him *before the march begins* that the artillery commander exerts his greatest influence on the course of events during the advance. If the march is well planned and efficiently executed, the battalion should carry out its mission with a minimum of control by the battalion commander, up to the time when the action of the advance guard becomes general and a more highly centralized control is required. This thorough preliminary planning is essential to the proper functioning of the battalion in such an operation. Logically, the artillery plan must be adapted to, and superimposed upon, that of the infantry element of the advance guard. Hence the artillery battalion commander must know beforehand the advance guard commander's scheme for the conduct of the march, particularly as to:

(1) The successive phase lines to be attained during the advance, and any special control to be exercised over the advance on reaching those lines.

(2) Boundaries between the advance guard and adjacent units and, when applicable, between component units of the advance guard.

(3) The formation to be adopted by the infantry elements for the march, and where the advance guard commander may be found during the march.

The more important items to be covered in the artillery battalion commander's plan are:

(1) The organization of the battalion for the march.

(2) The selection and designation of proposed position areas. This, of course, must be based on a study of the map or air photo, or both.

(3) A plan for forward reconnaissance.

(4) A plan for signal communication.

(5) The employment of liaison sections.

(6) The coordination and control of the movements of the elements of the battalion.

(7) The preparation and distribution to all concerned of charts showing the locations of check concentrations through the zone of advance.

AN ILLUSTRATIVE PROBLEM

The Situation.—Blue (north) and Red (south) have recently declared war.

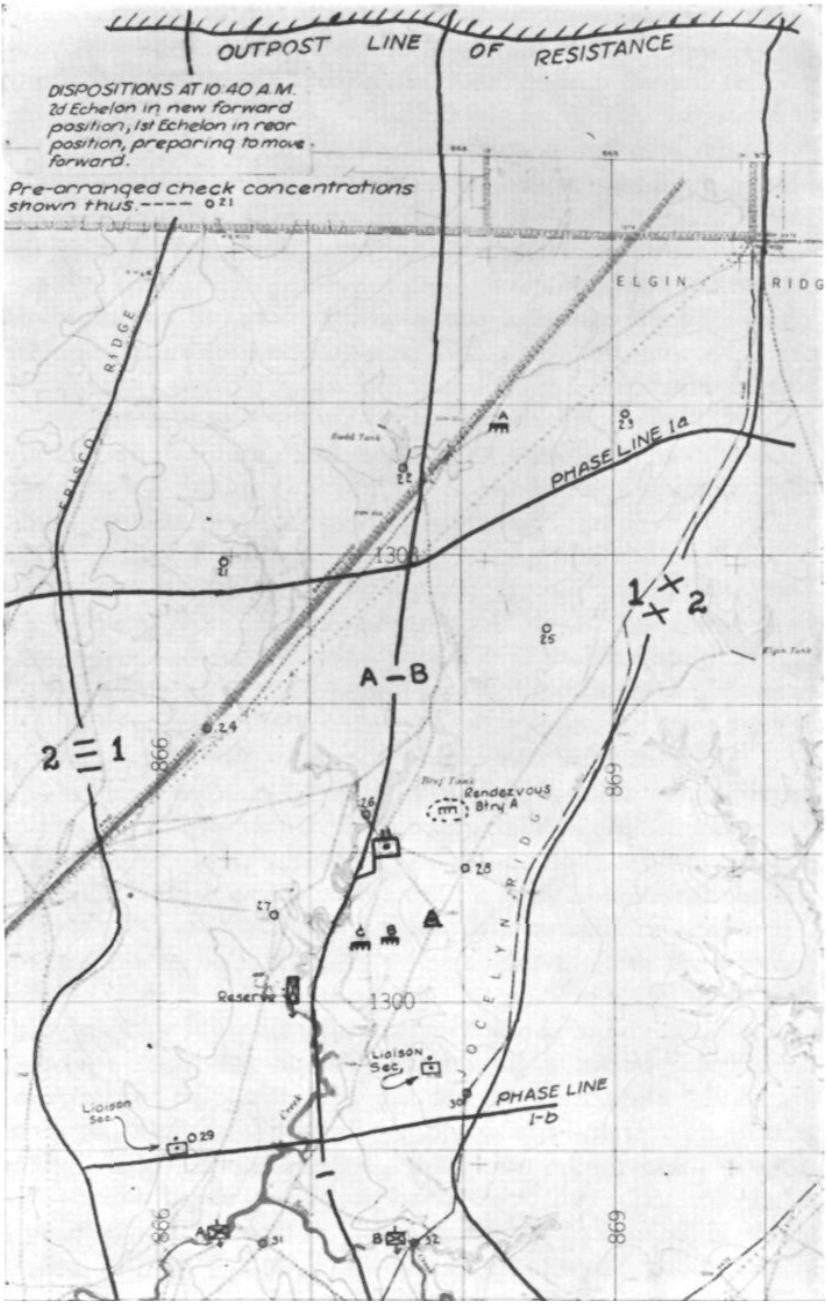
The Blue I Corps, marching southward, bivouacked the night of 5-6 June some three miles north of the north boundary of the Fort Sill Military Reservation. Part of its outpost line of resistance is indicated on the accompanying map. (See next page.)

From information available it appeared probable that the enemy would be encountered in force early the following day.

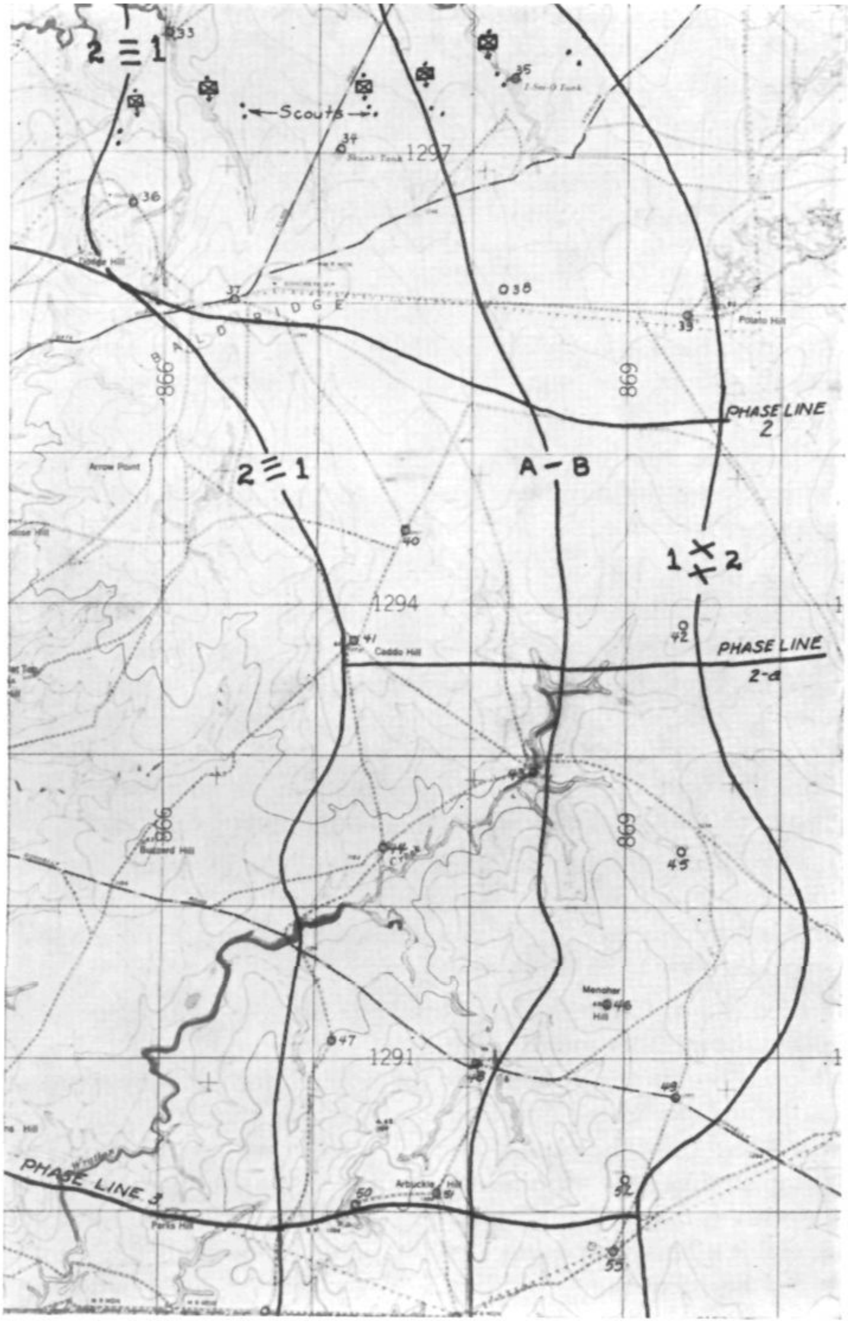
The march of the Corps was resumed on the morning of 6 June. Formation: Division abreast, in the order prescribed that the march of the 3d and 2d Divisions would each be conducted in two columns. The advance guard of the columns in these exterior divisions consisted of an infantry regiment (less one battalion) and one battalion of light artillery. The Corps march order further prescribed Highway 29 (about 12 miles south of the outpost line of resistance) as the objective to be attained by the leading elements of the Corps on that day.

The 1st Division marched in four columns. The artillery with the advance guard of the left column, on the recommendation of the division artillery commander, based on the tactical considerations previously indicated, consisted of one light battalion.

As a measure of control and coordination, the division commander prescribed that the line: Post Field—Feigel Point—Arbuckle Hill (marked "Phase Line 3" on map) would be passed by the leading elements of the division at 2:55 P. M., if contact with the enemy did not preclude.



Map continued on top of next page.


2 ≡ 1
Scouts
1297
BALD RIDGE
866
869
PHASE LINE 2
2 ≡ 1
A – B
Arrow Point
1 X 2
1294
Caddo Hill
PHASE LINE 2-a
Buzzard Hill
Menchar Hill
1291
PHASE LINE 3
Arbuckle Hill
Parks Hill
Potato Hill

Zones of action of the division and subordinate units were to be as shown on map.

The march order of the 1st Brigade further prescribed that Phase Line 2 be passed by its leading elements at 11:50 A. M.

Colonel "1st Infantry," commanding the left column of the 1st Division, in turn prescribed that the leading elements of his column pass the lines marked "1-a," "1-b" and "2-a" at 8:00 A. M., 10:00 A. M. and 12:50 P. M., respectively. The advance guard of this column consisted of the 1st Battalion 1st Infantry, the 1st Battalion 1st Field Artillery, one platoon of the 1st Engineers, and one platoon of the Howitzer Company 1st Infantry.

The orders of Lieutenant Colonel "1st Battalion 1st Infantry," commanding the advance guard of the left column, prescribed, among other items, the following:

(1) That Companies A and B, each with one platoon of machine guns attached, constitute the right and left supports, respectively, advancing in the zones of action indicated on the map.

(2) That the battalion headquarters company, Company C, Company D (less two platoons) and the 1st Platoon Howitzer Company, constitute the reserve; and that the reserve move forward by bounds, prepared to support the more advanced elements, as may be directed by the advance guard commander.

(3) That the 1st Battalion 1st Field Artillery afford *continuous support* to the advance guard after the leading elements of the latter passed the outpost line of resistance. The advance guard artillery to have priority on roads.

Lieutenant Colonel "1st Battalion 1st Field Artillery" received the advance guard commander's order at 10:00 P. M. He at once began the formulation of a plan for artillery support of the advance guard during the march of 6 June, the plan being based on: (a) The plan of the advance guard commander; (b) a map study of the terrain to be traversed; (c) the capabilities of his own command, particularly as to means of communication available. This plan formed the basis of the order subsequently issued by Lieutenant Colonel "1st Battalion 1st Field Artillery" to his staff and battery commanders.

THE PLAN OF THE ARTILLERY COMMANDER

The artillery battalion with the advance guard was organized for the advance as follows:

First Echelon

Battery A

Set 4 (SCR 161), with operating personnel.

Second Echelon

Battery B
Battery C

Battalion radio truck, with Set 5 (SCR 161) and air-ground set with operating personnel for both.

Battalion Commander's Party

Bn Comdr's Car	Bn Comdr S-1 S-2 Bugler
Detail Car 1	Radio Sergt Radio Opr 5 Radio Opr 7 Set 3 (SCR 161)
Detail Truck 1	Instrument Sergt Orderly 1 Sergt Major Chemical Corp

Battalion Executive's Party

Bn Ex' Car	Bn Ex Scout Corp 1 (Btry A) Scout Corp 1 (Btry B) Scout Corp 1 (Btry C) Communication Officer

Remainder of Battalion Detail

Normal composition, with following exceptions:
- Executive's car withdrawn
- S-1 withdrawn
- S-3 attached
- Radio truck withdrawn
- Minor shifts in enlisted personnel

Liaison Sections (*two*)

Normal composition

Reconnaissance Officer's Party

Bn Detail Car 2: Bn RO
Detail Car 4 from each battery, carrying:
- Scout Corp 2 (Btry)
- Battery Agent
- Lineman 4 (Btry), as Scout

Reconnaissance.—The battalion commander having concluded from a study of his map (or map substitute) that certain areas

would probably afford suitable position areas, directed the battalion reconnaissance officer to conduct, during the march, advance reconnaissance in the vicinity of these areas for observation, battery positions, and routes thereto. In general, he is to work as far forward as the line of supports.

When the reconnaissance officer has selected suitable observation and battery positions in a given area, he is to post Scout Corporal 2 of the battery concerned at the battery position in the normal manner, giving him the prescribed instructions, and then despatch the battery agent back along the designated route to meet his battery and conduct it to its position, the agent using his own battery detail car (No. 4) for this purpose. The agent and Scout Corporal 2 are to rejoin the reconnaissance officer at a predetermined point, after the battery has arrived at its position.

In the selection of battery positions, the reconnaissance officer is to be guided by the following considerations:

(1) The position must permit the execution of fire missions in the zone of advance as far as the next phase line to be attained by the infantry.

(2) Battery observation posts normally are to be established. Positions near such observation should be selected, even though they be at some distance from the route of advance.

(3) Wire lines from battery positions to observation posts should be short. At times it may be possible to dispense with wire, using voice communication, instead.

Should contact be made with the enemy and it be apparent that the battalion is about to become engaged, the reconnaissance officer is to report back without delay to the battalion command post.

Liaison.—Liaison Sections 1 and 2 are to be attached to the right and left supports respectively. They are to maintain contact with their associated infantry commanders, while acting also as forward observers for the battalion.

Liaison officers, before starting on their missions, are to procure from S-3 a chart showing the prearranged check concentrations to be used by the battalion during the advance; these check concentrations are to be used as reference or control points when reporting locations, when transmitting calls for fire, and the like. (Note: Attention is directed to Chapter I, Digest of Field Artillery

Developments, 1935, for information on check concentrations.)

Liaison officers are to transmit by radio the prearranged code group when the advance elements of their supports reach the phase line next in front, as: "RM LINE 2," indicating that the leading elements of the support concerned have reached Phase Line 2. (See paragraph below, dealing with communication.) *This message is to be the signal for the echelon which is not in position to advance to a forward position previously selected*.

Movement of Firing Echelons.—Both echelons are to remain in present positions, covering the advance from the outpost line of resistance to Phase Line 1-a until that phase line has been reached by the leading elements of the advance guard.

On receipt of the message indicating that the above line has been attained, the battalion executive is to direct the First Echelon to move forward without delay along the route of advance to the indicated position area in rear of Phase Line 1-a; the remainder of the battalion detail is to follow that echelon. The battalion executive then is to proceed at the fastest practicable gait to the anticipated position area in rear of Phase Line 1-a, verify the position selected for Battery A by the reconnaissance officer and then select a rendezvous for the remainder of the battalion detail and one for the Second Echelon, posting his guides (scout corporals) at suitable points along the approach thereto to lead those elements into the area selected.

The First Echelon, on arrival at its new position area, is to occupy the position marked by its Scout Corporal 2. SCR 161 (Set 4) to be set up at once, check into the battalion net and, as soon as the echelon is prepared to take over fire missions, broadcast the "SJ" signal. (See paragraph below dealing with communication.)

The remainder of the battalion detail, on arrival at its rendezvous, is to hold itself in readiness to install communication and set up the battalion command post in case the battalion becomes engaged; staff officers are to acquaint themselves with the situation and with the terrain.

In the selection of the rendezvous for a firing echelon, the following considerations are to govern:

(1) It should be near the axis of advance, readily gotten into and out of.

(2) Since the echelon may have to go into action (instead of resuming the routine advance) the rendezvous should be as near as practicable to the positions which would then be occupied, or even *at* those positions.

(3) Advantage should be taken of overhead cover, especially if enemy aviation is active.

The battalion executive is to evaluate the above considerations in the light of the situation existing at the moment and act accordingly in the selection of the rendezvous. If time and conditions permit, in each case he is to make a tentative plan for the occupation of position by the entire battalion, including observation, communication, fire direction.

Similarly, the rendezvous for the remainder of the battalion detail should be selected with a view to its suitability as a location for the battalion command post.

The Second Echelon, on receipt of the "SJ" signal from the First Echelon, is to move forward as rapidly as practicable along the designated route of advance to the rendezvous selected for it by the battalion executive. Battery commanders of this echelon, on arrival in this new area, are to acquaint themselves with the situation and the terrain, being prepared either to move forward to a more advanced position or to go into action at or near the present location.

When the "RM" signal is received from Liaison Officers, indicating that our infantry has reached Phase Line 1-b, the battalion executive is to order the displacement of the Second Echelon, which will be accomplished as indicated above for the First Echelon.

Subsequent displacements are to follow, normally, the procedure above indicated. In case of failure of radio communication, motor messenger or visual communication is to be used. Other emergencies are to be met by the battalion executive and battery commanders as they arise. Any material change in the prearranged plan is to be reported without delay to the battalion commander.

Procedure on Occupation of Position.—On arrival of a firing echelon at its position area, gun positions are to be occupied promptly and batteries prepared for action; the battery observation post is to be organized and communication thereto established. In the case of the First Echelon, the attached SCR 161

should be set up convenient to the point from which the fire of the battery will be conducted. In the Second Echelon the normal procedure is to be as indicated above for the SCR-161, the air-ground set being placed conveniently for operating with the second battery. The SCR 161 operator is to set up his instrument promptly and prepare to receive messages, listening in constantly during the time the position is occupied.

After organizing their observation posts, battery commanders are to begin a study of the terrain in front, observing the sector and identifying check concentrations. In the case of the 2d Echelon the battalion executive (or S-3) is to assign each battery a normal zone for observation.

Procedure When the Entire Battalion Becomes Engaged.—When contact with the enemy is gained one echelon will be in position while the other one probably will be either in rendezvous or enroute thereto. In this event the battalion commander or, in his absence, the battalion executive will issue the necessary instructions for bringing the other echelon into action, setting up the battalion command post and establishing the normal battalion control, including the installation of wire communication. The echelon already in position will continue to execute fire missions by battery until brought into the fire direction set-up.

(1) *Communication*.—Initially, and until otherwise so directed by the battalion commander all SCR 161 radio sets are to operate on Frequency A.

(2) *Net Control*.—The SCR 161 of each echelon, as soon as it arrives in position, is to check into the battalion SCR 161 net and assume control of it, acting as net control station until relieved by the set of the other echelon when it, in turn, checks in at the position next in front.

(3) *Frequency Assignments*.—Call signs and assignment of frequencies to be those assigned by Signal Operation Instructions to this battalion.

Net call sign for the battalion SCR 161 net: BB1.

The air-ground set is to operate on Frequency W and to be prepared continuously to receive messages from the airplane.

(4) *Special Code Groups*.—To employ the following special code groups for the purpose indicated:

RM—"Our leading elements have reached (phase line, line, or points on the terrain)."

SJ—"Rear firing echelon will move forward to new position."

March of the Battalion Commander and Party.—The battalion commander is to conduct the march of his party so as to be in as close touch with the advance guard commander as practicable and to keep in touch with the developments in his battalion by means of messengers and staff officers and through his SCR 161, which will listen-in continuously. During the march he is to make occasional halts at vantage points to observe the development of the situation, utilizing the speed of the motor vehicles to regain contact with the advance guard commander.

(Note: The plan for the employment of the advance guard battalion is given here in much greater detail than would be necessary in a battalion which has been accustomed to working as a unit. Most of these details undoubtedly would be matters of training in such a battalion.)

NOTES ON THE EXERCISE

This exercise was conducted under conditions closely approximating those of active service. The Blue infantry used the partly deployed or approach-march formation during the advance. The troops representing Red forces operated under a plan not previously known to Blue. Under the conditions of the problem the Blue infantry advanced from about 7:30 A. M. until noon before gaining contact with the enemy, after which about two and one half hours were required to drive in small Red combat groups and their covering force, and to develop the Red position.

Obviously, the smooth working of this method of marching the advance guard artillery is largely dependent on the proper functioning of the battalion radio net. In the present exercise the radio worked perfectly throughout the day with but one exception, when a transmitting operator failed to insure that the message had been received by the proper station; this situation was retrieved, in the natural course of events, in time to prevent a miscarriage of the plan. The uniformly good results obtained from the SCR 161 at all times by the regiments at the Field Artillery School justify the dependence placed on it.

At first glance it would appear that the battalion is "strung out" excessively and that, if the need arose for putting it into action as a unit, it would be out of hand. This proved not to be the case, however, either with the truck-drawn or horse-drawn battalion. As may be seen, one echelon is always in position, ready

to fire, while the other one (except for the brief period of a few minutes prior to its displacement) is either in a rendezvous nearby or enroute thereto. The remainder of the battalion detail, with the command post and communication personnel and equipment, is always either near the position of the more advanced echelon (in a location suitable for the CP) or moving forward to such a location. The battalion commander, having prescribed the plan for the advance, knows (from its provisions and from radio reports as well as from occasional contact with his executive and other staff officers) at any time approximately where all elements of the battalion are, and what they are doing.

By reason of the progressive, coordinated, and continuous reconnaissance for routes positions, observation, and the like, the battalion passes smoothly from the march phase into the battle phase. This transition, in each case, was effected more quickly and with less effort than is usually the case when the battalion marches in the column in rear of the reserve of the advance guard.

When this method is used, much depends on a careful planning of the march beforehand by the battalion commander, particularly with reference to the reconnaissance for routes and positions. The better the maps available, the more thorough can be the planning; if only a poor map or a map substitute (such as an airplane mosaic) is available, the method of planning will be unchanged, but added precaution is necessary to clear up points left in doubt because of inadequate prior information of the terrain to be traversed.

It may be necessary, on occasion, for a displacing echelon to pass the reserve of the advance guard. Realizing this, questions may arise as to (a) use of the road and (b) security of those artillery elements which are that far forward. The former can be solved readily by the advance guard commander giving priority on the road to his artillery. As a matter of fact, however, it works out that the reserve itself is marching off the road much of the time to take advantage of cover; hence this question offers no practical difficulty. As to (b), the displacing echelon will get scarcely more than about 200 yards ahead of the reserve, and this distance is soon taken up by the latter. If phase lines are selected with a proper appreciation of the terrain (which it is reasonable to assume will be the case), possession of these lines by our supports should give the advance artillery echelon protection against

hostile small arms and machine-gun fire. As it actually develops, these phase lines are reached by the supports before the advanced artillery echelon arrives at the forward position area.

It has been found that the battalion liaison officers, by using the prearranged code groups, can give their battalion commander (and, through him, the advance guard commander) prompt and useful information as to the location of the advanced infantry elements: as, for example, "RM SCOUT CHEEK," sent by a liaison officer by radio informs all SCR 161 sets in the battalion that our leading elements have reached SCOUT CREEK; frequently this is the first information that the advance guard commander receives of progress of his forward elements. Check concentrations likewise may be used for this purpose, as "RM Concentration 27."

Aside from any other advantages this method may have, it has this outstanding one: There is, at all times, *some* artillery in position, with guns laid, prepared to answer, with practically no delay, calls for fire from the front line elements. The tactical advantage conferred by this promptly delivered supporting fire may at times be a determining factor in the advance guard action.

No effort will be made to trace the development, in detail, of the exercise outlined above. Insofar as the advance guard artillery was concerned, it proceeded as planned until the leading infantry elements, advancing from Phase Line 2, came under fire from Red groups generally along Phase Line 2-a, at which time (about 11:55 A. M.) the First Echelon, in position just north of the Phase Line 2, was covering the advance. The Second Echelon had arrived in its rendezvous area (which contained good battery positions) at 11:43 A. M. The infantry of the advance guard, which had been halted along Phase Line 2 for some forty-five minutes for the purpose of coordination with adjacent units, thus had available to it the support of the entire battalion for its advance to the next phase line. Within about two minutes after the leading elements were fired on, the First Echelon was firing in response to calls from liaison officers. About three minutes later the Second Echelon opened fire.

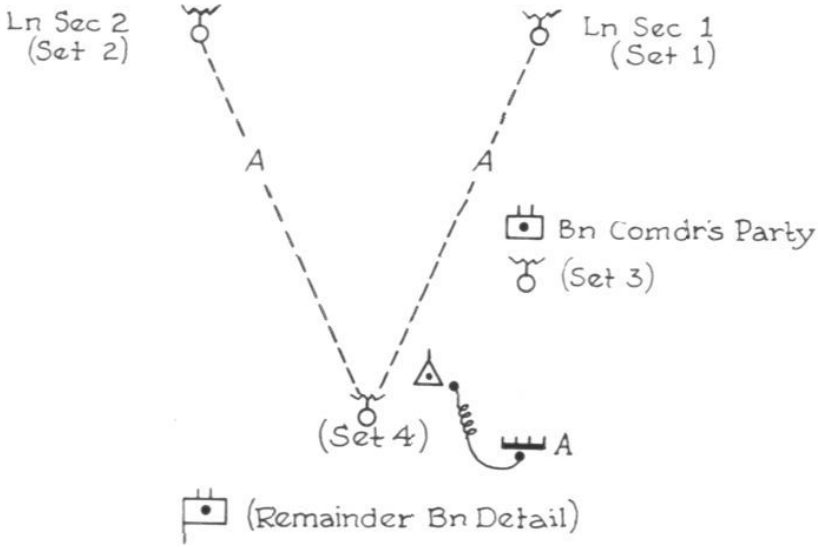
When the advance guard gained Phase Line 2a, the Second Echelon, accompanied by the remainder of the battalion detail, displaced to positions in rear of that line. The battalion command post and observation post were promptly established. The First

Echelon then moved forward to the new area as soon as the Second Echelon was ready to fire. The battalion was now prepared to support, as a unit, the attack of the advance guard.

TRANSITION FROM THE MARCH PHASE

In order to illustrate a method by which the transition from the march phase to the battle phase may be effected, the following situation is assumed: One of the firing echelons has just occupied position in a forward position area; its SCR 161 has taken over control of the battalion net. The remainder of the battalion detail, following the forward firing echelon, has been posted in the rendezvous selected for it by the battalion executive, who has also selected a rendezvous for the other firing echelon and posted its guides. At the time of selecting the rendezvous for this echelon the executive commonly will also select battery positions for it, to be occupied later, if required. Ordinarily, the executive will now go to the observation post of the forward echelon; the battalion communication officer, who has accompanied him, is familiar with the actual or prospective location of all elements of the battalion and, if required to install communication, needs only the command of execution to begin work.

Assume now that the situation indicates the need to engage the entire battalion as a unit. The existing communication system is as shown in the diagram below (assuming the least desirable case, that of having the one-battery echelon in position):



The battalion executive (or battalion commander, if present) will direct the communication officer to install the desired wire communication. Unless the rearward firing echelon is very close to its new position, the battalion wire to its battery positions can be laid before the arrival of those batteries.

As may be seen, there is now one battery in position, with two liaison sections probably asking for fire. The battery commander must use his own judgment as to which element he will give support, until more batteries are available.

Meanwhile the other two batteries are moving forward. It is desired to establish as soon as possible the battalion fire direction set-up along the lines indicated in Chapter I, Digest of Field Artillery Developments, 1935. To accomplish this, two SCR 161 sets usually will be required at the fire direction center. Set 3, which is with the battalion commander, probably will not be needed further by him and can be returned to the battalion command post. Set 5, which is with the two-battery echelon, can be brought to the fire direction center on the arrival of that echelon. Then there will be available at the fire-direction center two SCR 161 sets. As soon as considered expedient, fire missions from liaison sections can now be handled through these sets, each one operating on the frequency customarily assigned to those sections; the set attached to the one-battery echelon will then be silenced.

The setting up of the fire direction center normally will be under the direction of S-3, who will give the necessary technical instructions as to registration and other such items, in accordance with the plan of the battalion commander (or executive). If properly arranged, there need be no appreciable break in the continuity of fire support for the advance guard during this transition from the initial phase of the action to that where a more highly centralized control is effected, newly arriving batteries being absorbed successively into the fire-direction scheme.

INFLUENCE OF TERRAIN

Without question, certain details for the execution of this method of employing the advance guard artillery, as applied to the open terrain utilized in the exercise cited, would have to be modified when operating under different conditions, particularly in a more wooded country.

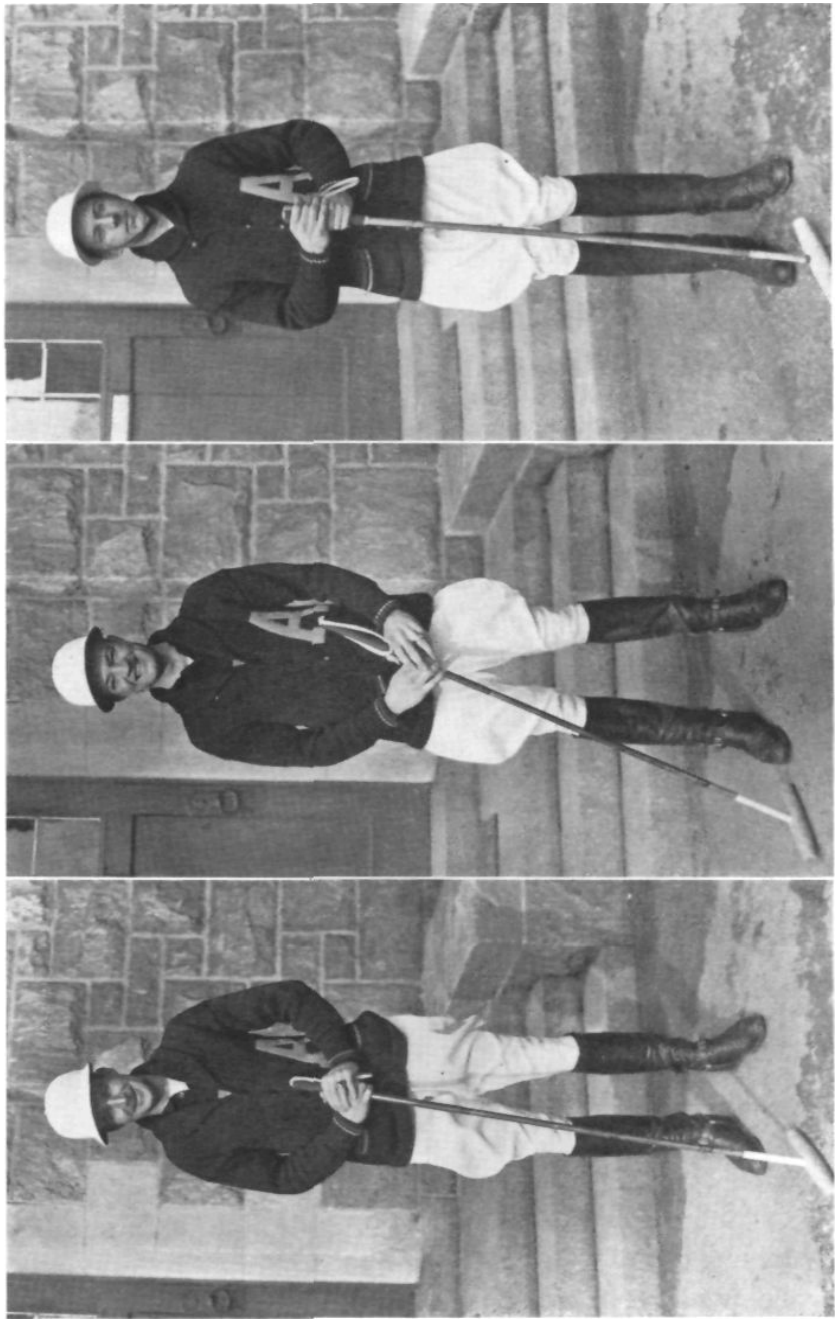
In the latter case observation would, of course, be more restricted both for liaison officers and from artillery observation posts. Liaison officers, deprived of the favorable observation in the Fort Sill exercises, would undoubtedly be forced to remain very close to the support commander until contact is made, de-dending on him for information as to the progress of the advance and the needs of the infantry, instead of advancing from observation to observation, as was found to be the most effective means in open country.

On the other hand, a less open terrain, by affording better cover, both from air and ground observation, greatly facilitates the movement and concealment of echelons.

CONCLUSION

It is believed that the reluctance of the Field Artillery heretofore to adopt the advance by bounds contemplated by the Field Service Regulations and the Field Artillery Field Manual was occasioned principally by an apprehension that control on the march would be too difficult and that the battalion would quickly get out of hand. Further, that the visual limitations in conduct of fire from battery observation posts made it hardly worth while to emplace batteries until contact had been gained and the action had taken tangible form. The answer to the first objection may be found in our present efficient (if somewhat obsolescent) radio equipment and in efficient planning of the march. The answer to the second is found in the use of forward observers, as indicated in the recent issue of the Field Artillery Digest.

It is probable that more efficient and more portable radio equipment may be available to battalions in the near future, and that the allotment of sets per battalion may be increased. Aside from its greater portability, the principal tactical advantage accruing from such equipment is that more radio channels will be available. Thus, each liaison section will be able to operate on its own frequency with a similar set at each echelon. A third set with each echelon, operating on a third frequency, will enable the battalion commander to communicate with those elements of his command. This arrangement should result in much greater flexibility than is practicable with the present equipment.



CECIL COMBS. NO. 1. HOWELL ESTES. NO. 2. HARRY WILSON. BACK.

ARMY RETAINS INDOOR INTER-COLLEGIATE POLO CHAMPIONSHIP

RIDING with the same trio that captured the indoor Intercollegiate polo cup last winter, West Point successfully defended its title on March 28th by defeating Yale, at the Squadron "A" Armory in New York City. The title winning team, which won the Army's first indoor title last year, played throughout the season with Cecil Combs at No. 1. Howell Estes, No. 2, and Harry Wilson, back. The team was coached by Captain Gyp Wofford, who took over the reins of mentor from Captain Don Galloway at the close of last season and the squad was in the charge of Lieutenant Colonel Jack Thompson, whose tireless efforts kept the horses in the best of condition.

Before entering the intercollegiates, the Cadets won eight straight victories, which included wins over Yale, Harvard, Princeton, Cornell, Squadron A, and officers teams from Forts Myer and Hamilton and the 10th Cavalry. Victories over Harvard and Yale in the tournament carried the string up to 22 for the past two campaigns without a defeat.

Because of their clean-cut victories during the regular season. Army's defending champions entered the tournament as the odds on favorites. The Cadets first opponent was Harvard, the team which had been their toughest foe in an early season game, and it was fairly certain that the victor would be the eventual winner of the cup. Playing with perfect team work, Army won by the close score of 9½ to 9. Both teams made ten goals but Harvard had two penalties called against them to make the half-point difference.

In meeting Yale in the finals, the Cadets were playing the team from whom they won the title last year by one-half a point and the team that conquered them by one point in the finals of the outdoor championships last spring. In a hard riding and bumping contest in which every man on both teams had penalties called on him, Army, by superior team play and experience, won by 10½ to 6½ in an interesting game but one that was never in doubt after the first chukker.

Both Cecil Combs and Howell Estes will be graduated in June which will leave only Harry Wilson to carry on the enviable record of the past two seasons.

AN EXPERIMENT IN SPECIALIZATION

The Experimental Wartime Motor Officers' Course

BY LIEUTENANT COLONEL J. E. LEWIS, Field Artillery,
AND
CORPORAL WALTER L. PARKER, BATTERY "E," First Field Artillery

TIME marches on! And with it has come the age of specialization—to the field artillery as well as industry. The ramifications of the profession of field artillery are so many and its technique so varied that few even in peace master all its phases. This applies particularly to the battery grade officers. Who has ever seen a lieutenant who was at any given time an excellent executive, reconnaissance officer, communication officer, liaison officer, motor officer and gunnery officer? Such a genius would be the marvel of the age.

While it is difficult to qualify the professional officer in the specialties mentioned, what chance have we with the wartime officer just called to active duty or recently graduated from a three or four months training camp.

Viewing our training efforts during the last war in retrospect, we may well conclude that every officer will find he needs an enormous mass of information, that he has very limited time in which to acquire and digest it and that there is a tendency to attempt to teach every officer and man every thing in the military catalog. The result again will be confusion and a bad case of mental military indigestion. Let us admit that these emergency officers reasonably can be expected to have only a general military education on reporting to a unit. Then let us decide to capitalize the special qualifications or training that they bring us from civil life or the ranks. And let us further decide that we will base any specialist training we give in the service on the existing qualifications of our wartime officers and that we provide the additional training for special assignments rather than hope that the general "run of the mine" officer will prove a success when so assigned without it.

Believing that such jobs as Battalion and Regimental Communication Officers, Reconnaissance Officers, Liaison Officers and Motor Officers would need special training, authority was secured by the Matériel Department The Field Artillery School to conduct an experiment in producing motor officers. A period

of two weeks between the two annual Enlisted Motor Mechanics' Classes was selected. With the hearty cooperation of School Troops fifteen enlisted men were secured for the class and the necessary troops and vehicles provided. The class consisted of enlisted men who were reserve officers or suitable material for wartime commissions. Their general education varied from common school to a few years of college. Their automotive training varied from zero to the best graduate of recent motor mechanics' classes, and their service varied from one and one-half to eighteen years. It is believed that this approximates the range of qualifications that would be possessed by a group of young wartime officers who might be selected for training as motor officers. After mobilization we probably would find a small percentage of officers had had valuable experience either in the automotive industry or in connection with large commercial motor fleets, yet would need orientation on the army system of operation and maintenance prior to assignment as motor officers.

A course of seventy-seven hours of highly condensed theoretical and practical instruction on the operation and maintenance of military motor vehicles was given in the two weeks. The students were urged to apply themselves somewhat as they would under the impetus of war. Their response was such that the instructors marveled at the volume of instruction absorbed in the limited period.

It is believed that three types or grades of motor officers would be needed in wartime:

a. Battery Motor Officers who will train the drivers, enforce caretaking by the drivers, do such preventive maintenance as he and his motor maintenance crew are qualified to do or have the time to do; train the battery to march; pull the mired vehicles out of mud holes and who will go to the battalion and regimental motor officers for advice on his problems.

b. Battalion Motor Officer, a man who should know the mechanical side of motor vehicles rather well, so that he is a good "trouble shooter;" a hairy-chested soldier man who can do the pioneer work and field expedients necessary to get vehicles thru "no man's land" or any other place his

battalion commander desires and who can supervise minor repairs.

c. Regimental Motor Officer—A skilled "trouble shooter" and repair man who can give expert automotive advice and supervision to all motor maintenance within the regiment; who knows how to march motorized field artillery and can train the motor officers of subordinate units of the regiment. In fact, a staff officer who can take all the details of the operation and maintenance of motor vehicles off the shoulders of the Colonel.

RESULTS

While the same course was given to all it was felt that their final rating would correspond roughly to their initial qualifications and experience and it proved to be a fairly correct assumption. This course had been under study for a year and as a result we found no material changes desirable in case of actual use.

We believe that from the fifteen men who completed this course we could provide satisfactory motor officers for one or two regiments, all the battalions and a few batteries of a motorized brigade.

The youngest member of the class has been selected to collaborate with the Director of the Matériel Department in the preparation of this article and he will now give the reader the reaction of the "guinea pigs."

February 3, 1936, fifteen (15) students entered the Experimental Wartime Motor Officers' Course given by the Matériel Department of the Field Artillery School. It was an experiment to develop a course suitable for the special training of motor officers after mobilization. We were non-commissioned officers selected from the various units of motorized field artillery at Fort Sill. A few were expert mechanics, but as a whole the class had only a general knowledge of motor vehicles.

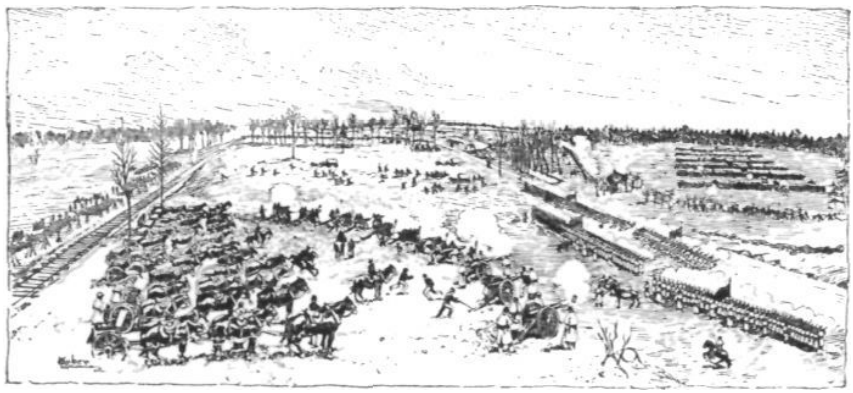
The first week's instruction covered theoretical and practical work on the general constructional features of the motor vehicles in the field artillery organizations at this post, lubrication, adjustment, "trouble shooting," including roadside troubles, driving and inspections. The selection and training of drivers was emphasized. A road march was made, students driving, to stress the

importance of correct driving and drivers inspections. The purpose and procedure of the technical inspection was also covered theoretically and practically.

The second week the Five Echelons of Maintenance emphasizing preventive maintenance, difficult draft, field expedients, forms, reports and records and marching were covered. Four marches were made, including tactical (much cross country) and strategical marches and a night occupation of position. A two-hour written examination was given Friday morning, February 14, 1936. A review of the course was held Saturday morning, followed by graduation at 11.00 A. M.

We found the course was very interesting and everyone did his best to complete it. Although not under the pressure of wartime conditions, the students found it necessary to work steadily during the class hours and to study each evening. All of us finished the course and we feel that we now have an accurate picture of the wartime problem and a good working knowledge of the job of motor officer of a field artillery unit. It was a valuable course for every student and has proven the value of the experiment in specialization.

Without such special training, even those with prior automotive training would be pretty much at sea as to the solution of the problems of a field artillery motor officer.



MAJOR GENERAL WILLIAM S. McNAIR

1868 — 1936

Major General William S. McNair, Retired, died at Fort Sam Houston, Texas, on April 6, 1936. The entire Field Artillery regrets the passing of this fine soldier and gentleman.

He gave his life to the Field Artillery, having served with it in the Boxer Relief Expedition in China, the Mindanao Campaign in the Philippines, on the Mexican Border in '14-'17 and finally with great honor during the World War where he reached the grade of Major General.

His entire service from the date of his graduation at West Point in 1890 was spent in work of inestimable value to the Field Artillery. He was beloved by the 6th Field Artillery, having joined it at organization as a captain, served with it as a major and finally as its colonel, he took it to France as part of the 1st Division.

"Bill the Brute" he was affectionately called by all, for he could always put a scare in his subalterns, thoroughly discipline them, and then treat them so kindly that they worshiped him.

In a few words it is difficult to describe the fine character of General McNair. Suffice to say that he was an officer of honor, integrity, and one who gave his best to the service. He imbued his officers with a spirit of confidence, loyalty and affection. He possessed a rare sense of humor and dry wit that carried him along despite hardships and suffering, and he was always an inspiration to his men.

The Field Artillery to a man wishes to offer final tribute to one of its own and bareheaded salutes a soldier of whom it is justly proud.

THE MAINTENANCE OF FIELD ARTILLERY MOTORIZED UNITS AND THE CONTROL OF ITS SUPPLY TRAINS

(*Lecture Delivered to Quartermaster Corps Motor Transport School*)

BY MAJOR HARRY B. ALLEN, Field Artillery

ON December 1, 1934 the War Department announced the policy for mechanization and motorization, which resulted in the following reorganization of the Field Artillery:—

a. All Regular Army field artillery in the Hawaiian and Philippine Islands were organized as truck-drawn, instead of tractor-drawn, units, with the exception of Battery "A," 23rd Field Artillery (Pack) in the Philippines which is the nucleus of a pack regiment.

b. One-half of the light artillery of each Regular infantry division in the United States was changed from animal-drawn to truck-drawn, where more than one regiment was active. Of the 5th and 9th Divisions, the one active battalion in each is truck drawn; of the 6th and 8th Divisions, the one active battalion in each is horse-drawn; and of the 7th Division, one battalion (at the Cavalry School) and one battery (separate) at Fort Snelling are horse-drawn.

c. One battalion of light artillery with the mechanized cavalry at Fort Knox, Kentucky, all medium and heavy field artillery units, and *all field trains* of horse-drawn, horse and pack artillery units were motorized. All active field artillery brigade headquarters, the only active ammunition train, the 2nd at the Field Artillery School at Fort Sill, Oklahoma, and the only active sound and flash battalion, the 1st Observation Battalion, at Fort Bragg, were motorized.

d. All field artillery units of the National Guard, including one cavalry division regiment, are motorized; except one horse artillery battalion, the 141st, in Louisiana, and four animal-drawn 75 m/m regiments; the 156th, in New York, the 112th, in New Jersey, and the 122d and 124th, in Illinois.

Before this reorganization, the Field Artillery had one battalion of two batteries at Fort Hoyle, and one battalion of three batteries at Fort Sill, both experimental units of truck-drawn light field artillery. Also, we had five battalions of two batteries each of medium artillery (155 m/m How.), and one battalion of

heavy artillery, consisting of one battery 155 m/m and one battery 240 m/m howitzers, all tractor-drawn, in the United States. In the Philippines we had one light regiment, and in Hawaii two light and one medium regiments, all tractor-drawn.

We now have nine motorized battalions of two batteries each of medium artillery, all but one of them truck-drawn, no change in the heavy artillery, except one battery of heavy artillery is equipped with half-track Linn tractors for prime movers; 19 truck-drawn battalions of two batteries each of light artillery, except the six battalions in Hawaii and the Philippines which have three batteries each. All service batteries of five regiments and seven separate battalions, or a total of seventeen animal-drawn battalions, including two of pack artillery, have been equipped with trucks in lieu of escort wagons. This has resulted in an increase in the Regular Army field artillery from less than 400 to over 2,000 wheeled motor vehicles.

Motor vehicles demand more attention from the supply services than do animals. Motor transport stops when the supply of fuel and oil fails. The disabled motor vehicle must have parts, and men with tools, to get it back on the road. The problem presented to the field artillery contains some unusual and special considerations. This arm requires vehicles for draft, cargo and passengers in groups and as individuals. These must operate both day and night on all kinds of roads, as well as cross-country. Vehicles for each purpose named often must be incorporated in a single field artillery unit and be operated by personnel whose prime duty is to fight; yet the ability of the unit to remain in fighting condition depends, among other things, upon its transportation. This imposes on the personnel certain duties of maintenance of motor vehicles similar to our problem in maintenance and care of animals.

Motor vehicles, to be suitable for use in the field artillery, should have the following features:—

a. Readily available in quantity.
b. Strong, rugged construction.
c. Simple design.
d. Maximum interchangeability of parts and unit assemblies.
e. Ease of manufacture and maximum accessibility for repair.

f. Certainty of action under extremes of heat and cold.
g. Capability of executing extended marches at 2 to 2½ miles per hour without overheating or damage to mechanical parts.
h. When carrying the maximum allowable pay load, they should have a level road speed of not less than 30 miles per hour, except in the case of tractors.
i. When fully loaded, they should have a cross-country speed of more than 18 miles per hour. Lower top speeds for tractors are acceptable.
j. The ability to climb a slope greater than 30 degrees.
k. Maximum clearance below axles consistent with good design.
l. An approach angle of at least 30 degrees and a departure angle of 45 degrees.

The Chief of Field Artillery has held to the principle that two lines of development are necessary; to adopt suitable commercial vehicles with little or no alterations to military use for initial mobilization; and to develop and test the ideal military type which would be put into production in anticipation of or after mobilization. The former line of development is with a view to having the motorized field artillery ready to take the field with suitable, available commercial equipment, rather than delay its mobilization while awaiting the ideal type. The use of trucks, commercial or the ideal type, for prime movers contemplates the use of traction devices.

Experience has demonstrated that the degree of success attained in the operation of motor vehicles in the military service is dependent upon certain factors, which are:—

a. Recognition of the limitations of all types of vehicles in operation.
b. Control by officers and noncommissioned officers.
c. Training and experience of drivers.
d. Day-to-day condition of the vehicles.
e. Training and resourcefulness of maintenance personnel.
f. And last but not least, adequate maintenance facilities.

The supply of motor vehicles to the field artillery is divided between the supply branches—generally the Ordnance Department

for tractors of both track-laying and wheeled types, and by the Quartermaster Corps for all other types.

Heretofore our experience in maintenance has been largely with the Ordnance Department for tractors and the Veterinary Corps for animals. With the extensive conversion to truck units, the field artillery is now dependent upon the Quartermaster Corps for *this* maintenance.

The system prescribed for the field artillery must be one that will work under war conditions. That part of the maintenance performed by us must, in general, require no equipment which cannot be taken into the field.

Our only requirement is that the vehicles must be in such operating condition that our tactical mission can be carried out.

According to present regulations prescribed by the War Department, viz., Circular 1-10 and General Orders No. 3, Motor Maintenance by the Quartermaster Corps is divided into five echelons. These regulations prescribe the 1st echelon as the responsibility of the driver, and the 2d echelon as that of the unit commander, or the two echelons of maintenance for which the field artillery is responsible.

These two echelons are classified as preventive maintenance, which embraces all the operations necessary to maintain a vehicle in good condition, prevent unnecessary wear, correct minor defects before they become serious, and insure that minor repairs be made. Preventive maintenance is recognized as a major means of obtaining economical and efficient motor transportation. By its correct use, the majority of breakdowns, costly in both time and money, can be averted.

There are many conflicting opinions among officers in the Field Artillery and other arms and services reference the methods and organization for carrying out the provisions of the prescribed 1st and 2d echelons. In performing this maintenance, we aim to prevent our vehicles having to be laid up through going to shops for extensive repair. Instead of having two definite echelons, we visualize a variable division between the driver, the battery, and the regimental service battery, dependent upon the types of vehicles to be maintained.

The first echelon we place in the battery. The primary requisite for the functioning of this echelon is discipline. The battery officers and NCo's are responsible that the drivers be properly instructed in regulations covering driving, and that they obey these regulations.

Light batteries will have from 20 to 28 motor vehicles, and medium and heavy batteries from 27 to 35 motor vehicles, depending on peace or war strength. These may be light passenger and 1½-ton vehicles, or they may include three, four or up to ten ton trucks. In general, the maintenance responsibility in a battery includes tightening, lubrication, and general service work on the vehicle, including care of upholstery, canvas, leather, etc. Certain adjustments of external parts, such as brakes, lights, carburetors, and replacements of simple installations may be performed under direction of the battery officers and motor sergeant.

The first step is the prevention of accidents. Accidents attributable to the driver put far more of a load on maintenance facilities than any other cause. Proper training and discipline will prevent many avoidable accidents, and will prevent injuries to the vehicles resulting from lack of proper care. Paragraph 13, A.R. 30-1075 requires that—"When possible, vehicles shall be assigned to individual drivers and normally shall not be operated by any other person." In tactical operations, particularly off roads, it is essential that all vehicles, except passenger cars, have assistant drivers who can help the driver, dismounted if necessary, to cross obstacles, avoid stumps, etc. We anticipate that most movements will be at night, when such assistance is vital. When necessary, the assistant driver relieves the regular driver, as experience indicates four hours to be the maximum period for which a driver can be held strictly accountable, due to the extreme concentration and resulting fatigue when traveling in formation.

We have set up the 2d echelon of maintenance in the regimental service battery. The personnel of this echelon includes one or more motor officers and such NCO's and mechanics as may be necessary for the work to be done. The number of vehicles assigned to the regiment, and their types, will be the determining factor. In peace time, we plan to have one motor maintenance

section for a regiment at a single station, and in war time this will be expanded to provide one section for each battalion of the regiment, as well as one for care of vehicles of the regimental headquarters and service batteries. These sections, although capable of operating separately, will constitute a single echelon and be coordinated by the regimental motor officer.

This section may include crews for special work such as trouble-shooting, ignition and carburetion, power train (transmission, differential, shafts and axles), brakes and steering. To just what extent we may apply the special provision in the War Department Circular 1-10, which authorizes that appropriate 3d echelon work may be done in 2d echelon establishments, will be dependent upon further experience, and upon agreements reached between the using arm and the supply service. It is proposed that the work-time authorized for 2d echelon jobs be limited to about six hours.

The tools required for 2d echelon maintenance and such 3d echelon maintenance as may be authorized, must be consistent with the work authorized, but limited to hand tools, required by the makes and models in the fleets to be maintained, augmented by such additional tools appropriate for the work and readily transported in the field.

The proposed supply chain is 3d echelon through the 2d echelon to the battery. Certain variations may be found desirable in peace time operations, whereby batteries will requisition direct upon the Post Quartermaster (3d echelon) for expendable supplies.

Experience in maintenance of Ordnance vehicles has resulted, in general, in a policy of having field artillery mechanics perform all the operations of which they are capable, and for which the necessary tools are, or can be provided without overloading the using arm. Just as in the animal-drawn units the stable sergeants and stable orderlies administer treatment to sick animals under supervision of veterinarians, and only serious cases are transferred to veterinary hospitals or destroyed, so do we anticipate that field artillery repair personnel under direction of trained motor officers, either field artillery or quartermaster, will perform all operations in maintenance of wheeled motor vehicles of

which they are capable with tools appropriate to their echelon, and which do not require an excessive time.

In view of the present experimental stage of automotive maintenance with reference to combat vehicles, and the need of more comprehensive tests and practical field experience both with the operation and maintenance of motor vehicles, it is believed that the present set-up should be given an exhaustive test before making any drastic changes.

It is, therefore, the opinion of the Chief of Field Artillery that:—

a. With reference to automotive maintenance of motorized field artillery units, a regimental echelon divided into battalion sections, comprising the 2d echelon, with preventive maintenance in the batteries as the 1st echelon now appears to promise the best solution. However, in this connection, attention is invited to the provision of 1st, 2d, and higher echelons of maintenance, as contained in Circular 1-10, War Department, May 18, 1933. Theoretically, functional divisions of responsibilities can be fixed as now prescribed, but practically, too rigid an application along functional lines between second and third echelons of maintenance may prove unsatisfactory.

b. While it is undesirable to overburden the using service in 2d echelon maintenance, it is recognized that the character of regimental repair and of preventive maintenance now includes, in general, such repairs as can be performed by hand tools, and, it is felt that the 2d echelon should be broadened in application to include such installation of small unit assemblies and subassemblies as can be made in the time available, and with hand tool facilities of the regimental service battery. This makes for economy of service and increases availability of temporary disabled vehicles to the using arm.

c. Briefly stated, it is believed the field artillery motor maintenance should include all of the 1st and 2d echelon motor maintenance work and such portions of the 3d echelon maintenance as will make the unit as self sustaining as possible. This is in accordance with paragraph 11 *c* (3), War Department Circular 1-10.

d. The majority of the 3d echelon maintenance work should,

and must be performed by the appropriate service units—Quartermaster Corps or Ordnance—in order that the combat arms may assume only such 3d echelon work as is essential to the preservation of the tactical efficiency of the combat unit. The responsibility for automotive maintenance (excepting preventive maintenance) devolves directly upon the Quartermaster Corps and the Ordnance Department. The latter has evolved a satisfactory system, and it is believed that a workable system is provided for in maintenance regulations prescribed by the Quartermaster Corps. Through recently authorized increases in Quartermaster motor repair sections, the Corps has been enabled to put this system in operation, and in a short time we anticipate that we will find we can rely upon it to keep our vehicles rolling.

e. The present system, based largely upon garrison conditions, may be subject to improvement, in that, it does not fully recognize the regiment as a repair echelon. The Field Artillery is primarily interested in the most practical and economical system which will keep its trucks rolling under field conditions without loss of time in making repairs on the road and, in what is vastly more important, preventing the loss of the vehicle itself. For this purpose, it appears that the regiment should be provided a supply of Class II parts, listed in paragraph 22-a of Quartermaster Circular 1-10, and be issued the equipment to install them. It is realized, however, that such a requirement "dissipates" the spare parts stock among a number of operating units, and that this dissipation increases with the number of different types of vehicles within an organization, and in direct ratio to the number of subordinate echelons.

f. The number of models and types of vehicles furnished an organization has a very definite affect on the efficiency of maintenance and repair. It is highly desirable that the models and types of vehicles with which any unit, regardless of its size, is equipped, be as few and as commercially standardized as condition permit. It is also very desirable that motor vehicles be purchased in accordance with a plan for standardization of proven types embracing both the operating and field maintenance needs of using arms and services, and, including maintenance funds, as part of the procurement policy.

g. Another consideration in organization under the present system presents itself as apparent overlapping or duplication of effort and facilities. The Ordnance Department develops and procures combat vehicles such as tanks, combat cars, armored cars, tractors of both track-laying and wheeled types. The Quartermaster Corps does the same for general service vehicles. The Ordnance Department maintains a testing ground at Aberdeen, and the Quartermaster maintains one at Holabird. Similarly, in the division and higher units, shop trucks are provided in the Ordnance company for the repair of motor vehicles, and in the Quartermaster regiment for the same purpose.

h. For the purpose of reducing overhead and providing a more satisfactory service of maintenance to operating units, it appears that more centralization or coordination of major repairs of motor vehicles in the field under one agency might prove advantageous from the standpoint of sound organization. In this connection, attention is invited to paragraph 3c (1) and (2), General Orders No. 3, War Department, January 25, 1933, which defines a dual mission for *either* the Ordnance *or* the Quartermaster Corps for 3d and 4th echelon maintenance. A better definition of responsibility is concurred in as desirable. In this connection, it is to be noted that the Field Artillery (units of the Regular Army and National Guard) now utilizing approximately 5,000 motor vehicles, is by far the largest operator of motor vehicles of any arm or service.

i. The question of motor maintenance should continue to be studied to determine what, if any, 3d echelon repair should be authorized for operating units, based on a consideration of time and space factors, the capacity of mobile repair units to make repairs, the mobility of the relatively heavy repair units compared to that of combat units, and the ability of the personnel of the operating units to perform the work authorized.

Control of Motorized Supply Trains:—

a. The road net is generally so inadequate that higher headquarters lay down the rules for basis circulation in division areas in order to minimize the difficulties of traffic control in the corps or army areas, as a whole. Subject to such restrictions, the Division G-4 prescribes the circulation within the Divisional area, and

the regulation of this traffic is a function of the Commanding Officer, Special Troops, who is Headquarters Commandant and Provost Marshal.

b. The constant trend in motorization is striving for increased mobility, which, for the Field Artillery, outside of certain strategic flexibility, means greater range of action from the supply standpoint.

c. While there appears no doubt that the speed and flexibility in the movement of supplies in rear of division areas have been greatly increased by motor transportation, it seems probable that the congestion in the areas forward of division service train areas will be greater than ever, due to mud, poor roads or no roads at all, darkness and enemy artillery fire.

Transportation is a vital element in the system of supply. Supplies are delivered to the division by rail (whenever practicable), by water, and by motor truck or wagon columns. Transportation in advance of the refilling point is effected by the trains of the division and its subordinate units. The transport of a division is the means of conveyance for moving the supplies, equipage, personnel and impedimenta thereto. It consists of animal-drawn and motor elements. Animal-drawn elements include such vehicles as wagons, carts, caissons, limbers and guns, and rolling kitchens. Motor elements include motor cars, trucks, trailers, motorcycles, tractors and guns.

The various trains within the division are classified as combat trains, field trains, and service trains. From a supply viewpoint, there are two echelons of trains in the divisions from front to rear; *first,* combat and field trains, each for its own class of supply; *second,* service trains.

In theory, the rear echelon keeps the front echelon filled, but this principle is not strictly adhered to when time and labor can be saved by any modification.

a. Field Artillery combat trains include all vehicles and animals employed by battalions for transporting a predetermined amount of ammunition for each gun in the battalion, together with water and the unconsumed portion of one day's ration for its own use. The maintenance section of the firing battery consists, in general, of the kitchen, supply and repair vehicles of the battery.

An agent is charged with maintaining contact between the firing battery and the regimental service battery. The maintenance section usually joins the combat train when combat is imminent. The firing batteries carry a limited amount of artillery ammunition corresponding to the rifle ammunition the infantry soldier carries in his belt.

b. Field trains for field artillery consist of the vehicles and animals employed for the reception, transportation, and issue of the authorized allowance of baggage, rations, forage, gasoline and oil, together with all operating and accompanying personnel. The field train of an artillery regiment consists essentially of the service battery, which is now motorized (trucks) whether the remainder of the regiment has animal or motor transport. As regards the supply and transportation functions, attention is invited to the fact that the firing batteries are mainly dependent upon the battalion sections of the service battery (field train) which, though centralized as a regimental unit, are organized to work closely with and maintain their respective battalions.

c. The division service trains are as follows:

Quartermaster Regiment.
Artillery Brigade Ammunition Train.
Ordnance Company (medium maintenance).
Engineer Regiment service train.
Medical Regiment.
Division aviation train (when attached).

The method of operation of the trains is determined, in any particular case, by the tactical and supply conditions. Any of the following methods may be employed, the first being usual:—

(1) The service trains obtain supplies at the refilling point and transport them to the distributing points, where the combat and field trains receive them and carry them to the troops.

(2) The service trains transport the supplies from the refilling points direct to the troops, thus allowing the combat and field trains to be kept loaded and in reserve.

(3) The service trains are kept loaded and in reserve, while the combat and field trains transport the supplies from the refilling points to the troops.

d. In short, the supply units of the field artillery are the battalion combat train and the brigade ammunition train for ammunition; the maintenance section of batteries, and the regimental service battery for other supplies.

Location and Employment of Trains:—

a. In camp:—When the division is in camp or bivouac, combat and field trains normally are with or near their organizations.

Service trains normally are camped in rear of the combat elements. The requirements of a good camp site for trains include protection from hostile observation and artillery fire, proximity to water, good routes to distributing points, and ground suitable for the use of vehicles and animals.

b. On the march:—It is impracticable for animal-drawn and motor vehicles to march for protracted periods at the same speed. When a train contains both classes of transport, two sections are formed, one of animal-drawn and the other of motor elements. The motor section marches by a separate road, or in an advance, it starts when slower units in front have gained some distance, closes up on the tail of the latter at its ordinary rate, and then halts until sufficient distance has been gained to allow the movement to be repeated. In a retirement, such parts of the section as are not needed for the immediate supply of the troops precede the slower moving columns.

In order to facilitate early deployment and entry into action of other combat elements, the light artillery combat trains normally are grouped and follow in rear of the last foot or animal-drawn combat elements of the column. Combat trains of the 155-mm. howitzer regiment usually follow the regiment, which ordinarily is at the tail of the column. Maintenance sections of batteries march with their batteries. They join their respective battalion combat train when action is imminent.

Field trains of the division (or of each column, if there be more than one) are combined under the direction of G-4 and formed into animal-drawn or motor sections, the vehicles of each section being arranged in the same order of march as that of the troops to which they belong. The animal-drawn section follows the column at such distance as the tactical and supply situations permit. The motor section advances by bounds, generally in rear

of the animal-drawn. Service trains, less certain elements needed with the troops, such as ambulance companies, are formed into animal-drawn and motor sections, also under the direction of G-4, and may precede or follow the field trains. In retirements, where the trains precede the troops, it often is advisable to have the motor elements lead the column and rapidly clear the road for the slower moving troops and trains.

c. Battle:—Field Artillery battalion combat trains take up suitable concealed positions in rear of battery positions. When the action is of sufficient magnitude the combat train issues its load at the battery positions and goes back to refill. In a major action the vehicles of a motorized combat train would pass to the control of the brigade ammunition train commander until they are refilled and returned to their battalion. In the meantime the brigade ammunition train (Field Artillery Service Train) which is moving under G-4 direction, is released at this time, delivers ammunition to the firing battery positions, goes back to the railhead or refilling point for refill and then returns to a previously assigned bivouac area.

When the batteries are animal-drawn, the combat train is also animal-drawn. In this case the brigade ammunition train will deliver ammunition to the firing battery if practicable, otherwise to a distributing point where the combat train, supplemented if necessary, by the battery ammunition vehicles, gets the ammunition and delivers it to the batteries.

Field trains, which at this time are also moving under direction of G-4, generally are directed to bivouac areas or concentration points. They are located sufficiently to the rear to prevent interferences with combat troops and to provide the requisites for a good camp site. As the action progresses, they are moved as required by the situation.

The motorization of all regimental service batteries, Field Artillery Brigade headquarters batteries, ammunition trains and a great number of entire regiments of field artillery has brought the question of column control sharply to the front.

The principal requirements in handling the motorized units are that groups of about 20 to 30 trucks are kept together, that the officer in charge has his instructions, is furnished with guides

as needed, and that he has a small maintenance group, similar to that in a battery to make roadside repairs. When guides are necessary, a system using two reconnaissance cars is resorted to—one ahead of the column and one following. The leading car drops off road markers ahead of the column and the other picks them up after the column has passed. Having picked up the last marker the rear reconnaissance car passes the column, the officer guide takes this car and leaves the other to pick up markers. Many variations of the use of guides and markers are applicable, dependent upon the length and difficulty of the route.

Rapid progress is also being made in the use of radio for column control, but the proper sets and procedure for the same have not yet been standardized, as no system of communication for column and tactical control should be built up in peace time, if it will not stand up in war time.

Summing up:—

a. Proper maintenance depends upon:—

(1) Discipline and training of drivers and of noncommissioned officers to insure that the number of disabled vehicles is held to a minimum.

(2) Proper utilization of maintenance personnel, tools and supplies.

(3) Present system of maintenance now prescribed by the War Department to be given an exhaustive and practical field test.

(4) Establishment of a system of maintenance during peace time that will continue in practice in war time without major changes.

(5) Establishment of a procurement policy whereby motor vehicles will be purchased in accordance with a plan for standardization of proven types embracing both the operating and field maintenance needs of using arms and services; and, including maintenance funds, as part of the procurement policy.

(6) The practicability of coordinating major repairs of motor vehicles in the field under one agency.

b. Proper control of supply columns depends upon:—

(1) Compliance with general regulations governing the road net, composition and size of march units, type and tactical mission of unit concerned, etc.

(2) Specific instructions as to routes, times when these may be used, and instructions as to the officer commanding the convoy covering what he is to do, where and when he is to do it.

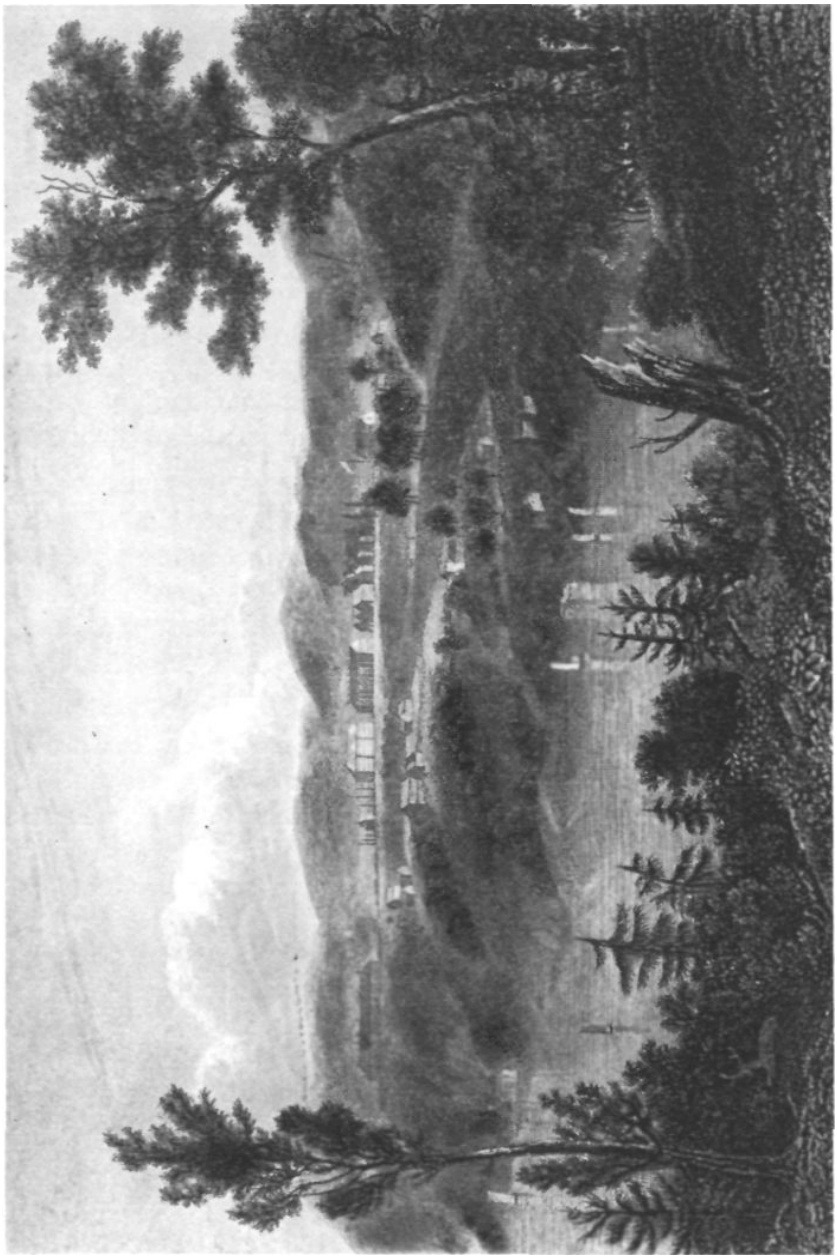
(3) The convoy commander having proper means for handling his group of vehicles as a march unit, a thorough understanding of march discipline, and making proper provision for roadside maintenance.

At no time during the past fifteen years has so much thought and intensive study been given to motorization in the Army. With the main objective of developing a system of maintenance which will keep our motor transport in operation under war conditions, the Field Artillery and the Quartermaster Corps should continue to have a pleasant and profitable time working out the details as to tools, parts to be carried, and division of desponsibility for maintenance work.

THIRTEENTH FIELD ARTILLERY GIVES UP PACK HOWITZERS

The Commanding General, Hawaiian Department, has discontinued the experimental pack battalion of the Thirteenth Field Artillery, and the entire regiment once more has its organic armament of truck-drawn 75-mm. guns.

It is interesting to note that, while the pack howitzers were in use, there was a disinclination on the part of previous service men to reenlist in the regiment, due presumably to apprehension that the armament of the regiment eventually might be changed completely to the pack howitzer with its mules.



WEST POINT ABOUT 1830—PRINT IN NEW YORK PUBLIC LIBRARY.

EDGAR ALLAN POE—SOLDIER

BY CATHERINE REDMOND

DELVING into the several hundred pages of an eminent writer's biography of the poet Edgar Allan Poe, one is startled to come upon a statement to the effect that had not "food, clothes, shelter, and refuge from the civil society of the time" been provided the poet by Battery "H" of the First Regiment of United States Artillery, he would have early perished of cold and hunger in some obscure garret. For more than two years of his all too brief life the most gifted poet that America has yet produced served under the eagle, and his triumphs and disgraces in the service are entitled to a story of their own.

Records of the War Department reveal that, on May 26, 1827, under the assumed name of Edgar A. Perry, Poe enlisted in the United States Army. Although only eighteen, he stated his age as twenty-two, gave Boston as his birthplace and professed himself a clerk by occupation. He was described as five feet, eight inches tall, having brown hair, gray eyes, and a fair complexion. He was assigned immediately to Battery "H". First Artillery, and about June 1, 1827, joined his command in Boston Harbor, Fort Independence.

Of all the poets, vigorous and visionary, who have sung their way through the annals of American literature, Edgar Allan Poe seems the one least fitted to military life. A misfit in a cold and calculating world, he sought physical security in the Army at a time when he was forsaken and penniless. It was a last resort and as such he gave himself to it wholly, subjecting his sensitive nervous system and brilliant intellect to the deadly monotonies of barracks life in an artillery regiment in peace-time. That it was but a temporary solution to his ever desperate financial situation was evident from the beginning.

Although trained as a recruit at Fort Independence in the interim between June and October, 1827, Poe's superior abilities were early recognized by officers in command. He was given clerical work in the quartermaster's department—a detail highly desirable in that it relieved him from the necessity of reporting for drills—and also served as company clerk and artificer.

Stories are rife that Poe's enlistment was the result of a spree, but from evidence extant today it seems much more probable that a quarrel with his foster-father. John Allan, and a fierce pride on Poe's part which prevented an immediate reconciliation are attributable to his joining the Army. Although addicted to alcoholism and the use of opium in later life, throughout his two years of military service Poe's conduct was exemplary. He was rapidly promoted (in 1829, at the age of twenty, he was elevated to regimental Sergeant Major, a promotion given only for merit) and, upon his discharge, he was recommended as "sober," which leads to the natural conclusion that perhaps such a virtue in military men of his day was rare enough to be deserving of comment.

On October 31, 1827, Battery "H" was ordered to Fort Moultrie, S. C. A week later Army transports pushed off from Boston and sailed out into the Atlantic, heading southward for Charleston. Eleven days passed aboard ship before the transports anchored within the shadow of the walls of Fort Moultrie and, on a brisk Sabbath morning, discharged Battery "H".

At the time of his arrival at Fort Moultrie Poe, as Private Perry, was doing duty as a company clerk. Since the post was remote and seldom inspected, and there were few social activities to absorb the garrison, no doubt the soldiers found themselves with abundant leisure. They rose about five-thirty a.m.; policed and breakfasted; a short infantry drill or exercise at the great guns broke the long period between breakfast and lunch. The remaining hours of the day were the soldiers' own; they could roll dice, play cards, engage in idle conversation, swim, or roam the beaches. The only relief from the monotony of garrison life was an occasional leave in Charleston, but facilities for passage to and from that point were at all times inadequate and uncertain.

It is probable that Poe was quartered within the bastions of the old fort and from his writings it is certain that the atmosphere of the fort and its lonely situation intrigued his imagination. A powerful swimmer, he spent much of his leisure in the warm waters which lapped the sandy edges of Sullivan's Island and in a few easy strokes must have swum time and again the inlet which separated the island from the Isle of Palms or Long Island. It was his first experience in a sub-tropical climate and its tropical plants, its wild birds, great sea-turtles, bright butterflies and

strange beetles so fascinated him that ever afterward they were to be woven into the background of his literary creations.

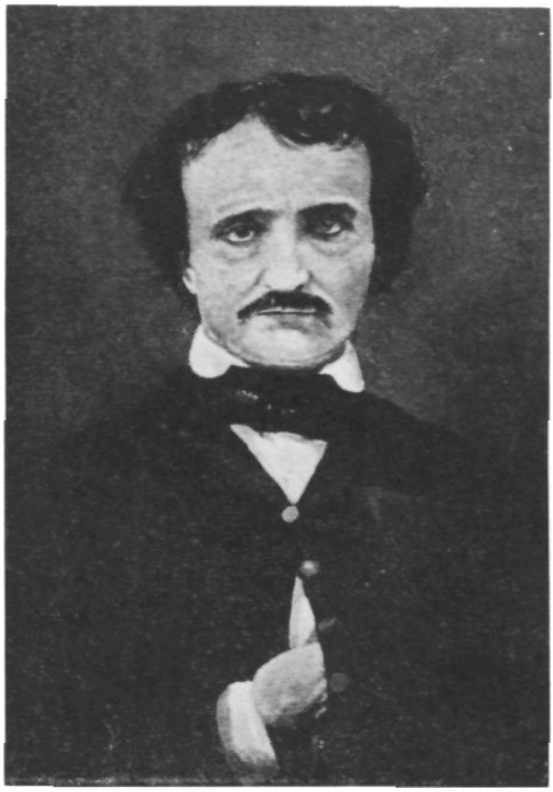
To add to its other eery charms, Sullivan's Island was rich in Revolutionary lore and its adjacent waters had been the favorite haunt of pirates. What more natural then but that, in such a setting, Poe should conceive the idea for "The Gold-Bug," the short story which, written many years later when he was at the height of his creative powers, secured a prize of $100 for him? From the beetles infesting the island Poe patterned his skull-marked "Gold-Bug" and all the legends he had heard of buried treasure influenced him in the compilation of one exciting story which centered in the buried loot of Captain Kidd.

It is certain that the responsibilities relegated to Poe at Fort Moultrie because of his superior ability brought also the privileges of frequent leave. Doubtless he spent much time in Charleston, because a familiarity with that city is apparent in his later story, "The Oblong Box," "Al Aaraaf," Poe's longest poetic creation, was also conceived and produced during his station at Fort Moultrie.

During the latter part of 1828 a correspondence was begun between Poe and his foster-father, John Allan, which was to result eventually in the former's appointment to West Point. Poe had served two years of his five year enlistment term; he realized already that his career must be literary rather than military but his company commander—a Lieutenant J. Howard who was much interested in the young man—refused to arrange a discharge unless Poe effected a reconciliation with his foster-father and gained that gentleman's consent to leave the Army.

There is little in the character of John Allan that one can find to admire, even after the passage of more than a hundred years. He was a stern and obdurate man, and had never shared his wife's love and pride in their adopted son Edgar. Moreover, with the acquisition of a considerable legacy from his uncle, John Allan had developed a certain snobbishness. He felt that to have Poe return to Richmond in the uniform of an enlisted man might imperil his own social position; besides, the unsympathetic Allan was convinced that Poe's was an unpredictable nature. The moody, muse-driven offspring of pauper actors might—when released from the tedium of Army routine and restored to the freedom of

Richmond—cause the impeccable Allan grave embarrassment. Therefore Allan ignored his foster-son's importunate letters and decided that "He had better remain where he is until the end of his enlistment."



EDGAR ALLAN POE—ABOUT 1849.

The death of Frances Allan, Poe's beloved foster-mother, in February of 1829 was destined to alter this decision. Poe's regiment had been removed to Fortress Monroe by this time, and the young soldier was given a ten-day furlough to pay a last visit to his dear "Ma." John Allan had notified Poe of Frances' illness at the very last moment; by the time leave had been granted and the laborious trip to Richmond had been made, Poe's "sweetest and truest friend" was in her grave. But his wife's passing and her dying request of him not to forget her "dear boy Edgar"

must have had a temporarily softening effect upon John Allan. He gave his consent to Poe's withdrawal from service as an enlisted man and even agreed to help him secure the appointment to West Point.

Poe returned to Fortress Monroe at the expiration of his furlough and busied himself with arrangements for his discharge. His reasons for enlisting and for wishing to withdraw from the service are contained in a letter to the General in command of the Department of the East, written from Fortress Monroe on March 30, 1829, by Colonel Jas. House, 1st Art'y, commander of Poe's regiment. The letter begins:

"General,—I request your permission to discharge from the service Edgar A. Perry, at present the Sergeant-Major of the 1st Reg't of Artillery, on his procuring a substitute."

The matter was arranged without difficulty. With General Gaines' permission Poe's discharge from the service of the United States was effected on April 15, 1829. Had either his company or regimental commander been present at the time a *new* recruit could have been secured as substitute for only $12; however, both these officers were absent on the day of Poe's discharge, so it was necessary for the ever impecunious young poet to pay a sergeant $75 to act as his substitute.

John Allan's "help" to Poe with respect to the West Point matter consisted merely in a cold and curt letter to Major John Eaton, the Secretary of War, in which he revealed himself both as a hypocrite and a man of calculated hardness. Said he of Poe, the boy who had lived under his roof from infancy: "He is the grandson of Quartermaster-General Poe, of Maryland. Frankly, sir, do I declare that he is no relation to me whatever; that I have many whom I have taken an active interest to promote theirs, with no other feeling than that, every man is my care, if he be in distress. For myself I ask nothing, but I do request your kindness to aid this youth in the promotion of his future prospects. And it will afford me great pleasure to reciprocate any kindness you can show him. Pardon my frankness but I address a soldier."

Luckily for Poe, there were others willing to write kinder letters of recommendation for him. Andrew Stevenson, Speaker of the House; Colonel Worth, district Congressman; a Major John Campbell and Colonel James Preston besought the aid of the Secretary

of War in the young man's behalf. An interview with the Secretary in Washington—Poe walked to the Capital from Baltimore—was discouraging inasmuch as it revealed a surplus of cadets already on the West Point list. However, Poe was advised to leave his recommendations on file, as resignations might make possible his appointment after the summer encampments.

Eight months passed with no further word from Washington. Finally, in the last of March, 1830,—after a letter from Senator Powhatan Ellis of Mississippi had reawakened official interest in his case—Poe's appointment to the military academy was received. The long months of waiting Poe had passed in Baltimore, in the home of "Aunt Maria" Clemm, whose daughter, Virginia Maria, was later to become his wife. In the family were also Edgar's grandmother, Mrs. David Poe, widow of the Revolutionary Quartermaster General; his brother, William Henry Leonard Poe, who was dying slowly of tuberculosis; and Maria Clemm's son, Henry. The household was shadowed by sickness and poverty, and Poe could do little to help. He was unable to find work and was obliged to write often to his prosperous foster-father, John Allan, for a meager allowance or a "half strip of linen" from the well-filled Allan storehouse in Richmond, to be made into sheets "gratis by Aunt Maria."

The one consoling feature in this desolate period of waiting was the fact that it afforded Poe an opportunity to meet various literary men of Baltimore and to have published, in 1829, his second volume of verse containing "Al Aaraaf, Tamarlane, and Minor Poems." His first volume, "Tamarlane and Other Poems," had been published in Boston in May, 1827.

Poe arrived at West Point the last of June, 1830—in time to take the entrance examinations. These he passed and on July 1 he took the oath which bound him to the service of the United States for five years. It was doubtless with reluctance that Poe ventured upon this career—two years as an enlisted man had removed much of the glamour from military life for him—but he had no alternative except starvation. He must have felt also that any future help from his foster-father would be dependent largely upon the outcome of the West Point experiment. In this surmise he was only partly right. A letter from John Allan, with a $20 bill, greeted Poe upon his arrival at "the Point" and this, with a

pair of blankets from the warehouse of Ellis and Allan, was almost the last help Poe ever had from "Pa." Mr. Allan was upon the point of taking a new wife and perhaps eager to be rid of Poe entirely. Besides, the Academy allowed each cadet $28 a month, and rations; doubtless John Allan felt that with such a stipend his foster-son's future independence was assured.

Poe's West Point career was destined to be bitter and brief. He resumed the rigid routine of military life at the Academy and found it even more irksome than during his enlisted days. There was little time for contemplation, for leisure and freedom to dream; the exercises and drills doubtless put a strain upon his weak heart and resulted in physical troubles which were to continue until his death. Added to these harassments was his continuing lack of funds; all the "necessities" were extra at the Academy then and often Poe was reduced to begging a bit of soap or an inch of candle from a fellow cadet.

To offset the degradations suffered because of his constant impecunious state, Poe built himself up as an exciting character; he referred to Mediterranean cruises, to visits to the heart of Arabia, and to other experiences which fitted into a romantic background. His maturity and mysterious air led to a story being circulated among the cadets that Poe had secured the West Point appointment for his son but the latter died so the father, Poe, entered the Academy in his stead. Poe's mature appearance and his superior mental attainments made the story almost plausible.

However, military duties could not lead Poe to cast aside his pen entirely. He wrote some of his loveliest poems during this period, among them "To Helen," "Israfel," "The Sleeper" and "The Valley of Unrest." Before he left the Academy he collected these in manuscript and submitted them for publication.

The individual who paved the way for Poe's West Point career was in the end to be the one to terminate it. "Bully" Graves, the Sergeant who had agreed to act as Poe's substitute at Fortress Monroe, had not been paid his $75 in full; he held Poe's note for $50 and this he finally attempted to collect from John Allan. Allan paid the debt but thereby "banished Poe from his affections" and wrote him to that effect. Poe's reply to his foster-father's letter in January, 1831, was a bitter denunciation of the man whose

parsimony and mental cruelty had made his life miserable. It ended with a threat to resign from West Point, or to so neglect his duties and studies that dismissal would be inevitable.

For two weeks Poe consistently broke all regulations; he missed drills, church, and classes; he disobeyed his superiors and furnished officials ample material for "charges." On January 28 he was brought up for court-martial, charged with and found guilty of "gross neglect of duty" and "disobedience of orders." He was dismissed from the service immediately and on February 9, 1831, took his leave of West Point forever.

As Poe exchanged his last $.75 for passage to New York on the Hudson River steamboat and found a place at the rail to watch "the Point" fade from sight, it is quite probable that he experienced a feeling of genuine relief. His days of masquerading as a soldier were at an end, and there stretched ahead, unguessed by him, 18 more years of life—years to be crowded with work, love, poverty, sickness and deep despair.

Upon his last visit to this country the aged General Lafayette asked to be taken to the grave of General David Poe. Escorted there, he bowed his head and said simply: "Ici repose un coeur noble." "Here rests a noble heart." Edgar Allan Poe was alive at that time and perchance was present upon that occasion. Today he lies in a Baltimore churchyard, near his illustrious military ancestor, and to the lips of the hundreds of people who annually visit his grave there must spring a tribute to the poet similar to Lafayette's praise of the soldier: "Here lies a noble heart."

HAND-TO-HAND FOR ROCKETTS'S GUNS

SPECIAL NOTICE

U. S. Field Artillery Association Prize Essay, 1937

AN annual prize of $300.00 is offered by the United States Field Artillery Association for the best essay submitted by any Field Artillery officer of the Regular Army, National Guard or Reserve Corps on any subject of current interest pertaining to the Field Artillery.

The following rules will govern this competition:

(1) The award of prize to be made by a committee of three members to be nominated by the President of the Field Artillery Association voting by ballot and without knowledge of the competitors or of each other's vote.

(2) Each competitor shall send his essay to the Secretary-Treasurer of the Association in a sealed envelope marked "Prize Essay Contest." The name of the writer shall not appear on the essay, but instead thereof a motto. Accompanying the essay a separate sealed envelope will be sent to the Secretary-Treasurer, with the motto on the outside and the writer's name and motto inside. This envelope will not be opened until after the decision of the Committee.

(3) Essays must be received on or before January 1, 1937. Announcement of award will be made as soon as practicable after that date.

(4) The essay awarded the "United States Field Artillery Association Prize" will be published in the FIELD ARTILLERY JOURNAL as soon as practicable. Essays not awarded the prize may be accepted for publication in the FIELD ARTILLERY JOURNAL at the discretion of the editor and the writers of such articles shall be compensated at the established rate for articles not submitted in competition.

(5) Essays should be limited to 8,000 words, but shorter articles will receive equal consideration.

(6) All essays must be typewritten, double spaced, and submitted in triplicate.

COLONEL E. FRANCIS RIGGS

The many friends of Colonel E. Francis Riggs, F.A., O.R.C., learn with sorrow of his death by assassination in Puerto Rico.

Colonel Riggs joined the 6th Field Artillery in 1911, served therein two years, served two years in the 2nd Field Artillery in the Philippine Islands, was Military Attaché in Russia 1916-1918, and served in France with the 325th Field Artillery. He resigned from the Regular Army after the war and became a Colonel in the Organized Reserves.

In 1933 he accepted the post of Chief of Constabulary of Puerto Rico and served there until his death. On February 23rd, he attended church in San Juan and, on leaving, heard a pistol shot. He pursued in his automobile another car from whence the shot had been fired. The occupants, all assassins or conspirators, halted. Riggs, unarmed, placed one of them in arrest, and with only his prayerbook in his hand, faced another who fired three shots and killed him. His Army friends will bow in reverence to this sacrifice for country and for order.

To a very intelligent mind, Riggs added wide learning and great cultivation. He spoke seven languages including Tagálog and Russian. He had a kindly and sympathetic interest in his friends and, through the years, he will be much missed.

TEACHING CONDUCT OF FIRE, LATERAL

BY CAPTAIN DOUGLAS V. JOHNSON, Field Artillery

IT TAKES most officers several years to learn to shoot a gunnery problem using lateral observation with confidence. This is in spite of the excellence of the instructors and the large amount of time spent in garrison schools. Fortunately, Ft. Sill has greatly simplified the procedure and is continuing to do so. In spite of this simplification the majority of young officers who are subjected to this instruction in garrison schools continue to find the subject surrounded by a haze, and the small amount of instruction on this subject which most reserve officers can be given often has little lasting benefit due to the fact that it is usually a course in application of formulae which are soon forgotten. The subject is not sufficiently obtuse to warrant such results.

Who has not seen a young officer while firing this type of problem carefully calculate his shift and then apply it in the wrong direction. This mistake is not a slip of the tongue but an indication of a mind which has lost sight of the fundamentals involved due to a smoke screen of factors and formulae.

We of the artillery have continually insisted that a student of lateral gunnery learn first the exact computations of shift and the application of various s/c or other factors before he learns the general principles involved, maintaining as reasons for our position that, once he has learned the exact methods he will, by the application of his experience, be able largely to disregard them.

It is submitted that the following approach to the subject permits a new gunnery student to see his target at all times, arriving at the same end from the direction opposite to that normally used.

The student officer having completed a course in axial conduct of fire should next take up the subject of conduct of fire from axial forward OP's. The firing of a few terrain board problems will introduce the principle that things are not always what they seem and it will become readily apparent that the amount of the shift to be made depends on the relation of the OP range to the gun range. Thus the r/R relation is painlessly absorbed before other and more menacing considerations come into view.

The next step is terrain board firing of small T lateral. Since the present regulations covering this subject do not make a good

text book at this stage of the game this should not be preceded by any study of the subject on the part of the student nor by any lecture on the part of the instructor. The student need not even know that he is firing small T lateral. He will soon see that making the shift as measured does not give him expected results and it will become apparent that his shift must be greater or less than the deviation he measured but, if less, it will be less throughout the problem, and vice versa. The officer firing should estimate the amount he must reduce his shift to get his shots on the line. Having gotten his shot on the line the problem should be stopped and it should be pointed out to him that the percentage of reduction which he applied to the shift was approximately the same as the relation r/R which he has been using in the conduct of fire from forward OP's.

He should then start another problem and get on the line using his r/R to improve his guess as to the amount he must shift. He is now ready to seek his bracket as in axial fire. He increases his range the prescribed number of hundreds of yards and finds that his deflection moves off the target. Let him bring his shot to the line as before. The instructor now points out to him that he has moved his shot so many mils in deflection to accommodate for his range change and has thus established a relation between the two. The question of which direction he must shift does not arise because he has seen his shot go out away from his target. He now shoots another problem and this time as he seeks his bracket he estimates a deflection shift to correspond to the range shift, thus *shooting in* his relation. The student is now introduced to S, something he can use to improve his estimation, an angle which he will shift every time he makes a 100-yard range change. He next learns that if he is using forks for range changes and they are not 100-yard forks he must increase or decrease that S accordingly. It will be obvious that if he moves only part of a fork he need move only part of the angle that corresponds. Note that the student has not heard of the word factor, and has not heard of s/c. He now has all of the fundamentals of either bracket or precision fire and those mysterious fractions have not arisen to confound his memory as to which letter belongs on top.

Using small T and axial methods he should now try to shoot a large T problem. His difficulties will be many and it will be

made obvious why he must seek some other approach. This will impress upon his mind the difference in apparent effects in the small T and large T. Let him shoot a problem getting on the line by changing his range and he will not forget it, trying all the ranges he has if necessary. We now introduce him to D and tell him that for each of those D's he is off the line he must change his range by 100 yards. Do not worry about parts of a D but take the nearest whole number and this will usually be as accurate as our calculation of D warrants. As soon as he has fired his second shot he can see that he has shot in a D because he has earlier, in small T, become accustomed to shooting in his relations.

Now is the time for the instructor to point out the manner of sensing deflection and to give this general rule for the amount of shift he will arbitrarily make after obtaining a deflection sensing:

Shift 100 mils in deflection if in axial you would shift 400 yards in range.

Shift 50 mils in deflection if in axial you would shift 200 yards in range.

Shift 25 mils in deflection if in axial you would shift 100 yards in range.

These shifts should be considered similarly in the question of the time to bring in the battery or to go into effect. (If the methods described in "Digest of Field Artillery Developments, 1935," are adopted this rule should be changed to read 4S, 2S, and S in place of 100, 50, and 25 mils respectively.) The instructor will be careful that he does not offer any targets at ranges for which the above rule would be incorrect but that point should not be mentioned to the student. The latter will readily accept the idea of the additional requirement of the normal range bracket.

Let him shoot another problem using the information he has. Of course he finds as he seeks the second limit of his bracket that his range pulls him off the line and he gets back on as he previously learned to do and thus becomes aware of the fact that every time he makes a deflection shift he must change his range. Let him estimate the amount of the range change and shoot it in. Now tell him that he can get a better estimate of this range by making a 100-yard change for every S he moved in his arbitrary shift. As before he need consider only whole numbers and his second shot will free him of further calculating and will be sensed

nearly as often as if he arrived there by more accurate mathematics. The student is now equipped to shoot any lateral problem and if he never hears another word about it he can get on most targets. He now is ready to go into a consideration of more intricate affairs that will result in a saving of ammunition. It will be found however that already his manner of applying his information more nearly resembles that of an older officer who is using his "experience."

Now let him learn to alter his arbitrary deflection shifts when he has a long range or a short one. Calculating to the line, sensing by rule, and forced sensings will complete the details. Any, much less all, of these if introduced into the early instruction have only one result—confusion. Now take him to the Training Regulations and tie in for him the things that he already knows with those same truths as they are expressed therein. It can readily be shown that his rough methods give results that in no case vary more than a few mils from those set forth therein and he will be able to discuss factors or fractions and understand their use in his more exactly conducted problems. As a reference book the Training Regulations will be found comforting, and exhibiting none of the "black magic" which they threatened when used as a text book.

The approach offered herein may appear to be merely a long-winded way of saying the same thing that the Training Regulations say more concisely. That is true, but the difficulty all along has been caused not by the facts themselves but by the manner and order of their presentation. It is true that our regulations are only a guide but they guide most of our instructors down the alley they seem to indicate. The ideas advanced herein are based on actual practice. I have seen the same instructor through two different years when working with contingents of newly commissioned officers follow the first year the normal approach to the subject, and the second year the one offered herein. The first year resulted in the usual halting and stumbling performance on the range with the thrills of firing lost in a maze of calculations. The second year resulted in straightening out the first group and presenting a new group of officers who, on the range for the first time, fired lateral of all kinds without obvious difficulty.

GUNPOWDER, GUNS AND CIVILIZATION

BY COLONEL ALLEN J. GREER, Field Artillery

UNLESS a state of stability exists in a community that insures a definite feeling of personal safety and property security, commerce, industry, and culture will not develop. History shows that the period of a nation's greatest development in commerce, science, and art corresponds to a period of high military efficiency, frequently following a successful war. Notable examples are the commercial and intellectual activity in Greece after the Persian wars; the Elizabethan era in England following the destruction of the Spanish Armada; Germany after the Franco-Prussian war, and our Northern States after the Civil War.

From the dawn of history, and even prior thereto, barbaric hordes from Asia swept over Europe, destroying cities and nations, and almost obliterating civilization. An old expression was "the grass never grows where Attila's horse has trod," and of Genghis Khan and his Mongols it was said that their invasions were so devastating upon civilization that culture had to begin anew in the lands they overran.

The first Asiatic invasion in recorded history was that of Darius the Great of Persia in B. C. 490, which ended with the defeat of his armies by the Greeks at Marathon. His son and successor Xerxes fared no better some ten years later at Salamis.

For several centuries the highly trained and disciplined Roman Legions held back the barbaric hordes, and under the "Pax Romana" ancient civilization reached its highest development. However, as the Empire weakned the barbaric inroads became more frequent. About 370 A. D. the Huns appeared, coming from eastern Asia through Russia, overrunning nearly all of Central Europe, threatening Rome and Constantinople. They drove before them the Germanic tribes who ultimately overthrew the Roman Empire. Security of life and property disappeared and that period of history was ushered in, known as the "Dark Ages." During this time the Chinese and Mohammedan empires in Asia were far ahead of the European nations in the arts of civilization and their accompaniment—the art of war.

After the Huns disappeared, various hordes of Asiatics plundered

and devastated districts in Eastern Europe, sometimes settling down and ultimately amalgamating with the former inhabitants. Such cases are those of the Bulgars in the 7th, and the Hungarians in the 9th and 10th Centuries. In 1221 the armies of Genghis Khan, under his great general Subotai, invaded Russia and established the Mongol kingdom of the Golden Horde, which ruled Russian until after being crushed by Tamerlane in 1315 it was extirpated by Ivan III in 1480.

Meanwhile in 711, Moslem forces of Moors and Arabs had invaded Spain, defeating the Goths, and establishing the Moorish empire, the last vestiges of which were destroyed by Ferdinand and Isabella in 1492, when Grenada was captured.

The last Asiatic invasion was that of the Ottoman Turks, which began in 1361. Constantinople was captured in 1453, ending the Greek Empire. The high tide of Turkish invasion carried them to the walls of Vienna in 1530.

Up to this time, except for the brief interlude of the Macedonian and Roman periods, Europe had been continually on the defensive before the vastly greater numbers of the Asiatic armies, which at times it must be added were better organized, armed and equipped, and represented a higher state of culture than did those of Europe. While many causes contributed to change the course of history, so that Europe instead of being a field for Asiatic conquest became the conqueror and invader as it emerged from the Dark Ages, none was so important as the invention of gun powder and the consequent adoption of firearms and their development by European nations.

It is strange, but nevertheless true, that the first maker of gun powder is not definitely known, but remains a matter of doubt and dispute. Several centuries before gun-powder was known in Europe, it was used by the Chinese for blasting purposes, and there are records to prove that they used projectiles charged with gun-powder which were cast from flame throwers. The Mongols made some use of these inventions and Genghis Khan in his invasions of the west in 1220 had with him a corps of Chinese artillerymen equipped with flame throwers. The Tartars of Tamerlane not only made use of flame throwers and other crude artillery but frequently used gun-powder to destroy fortifications. The Mohammedan nations in western Asia were also familiar

with such weapons, and the Arabs in Spain toward the end of the 13th Century used black powder for the purpose of propelling lances.

The invention of gunpowder in Europe is usually ascribed to Roger Bacon in England or Berthold Schwartz in Germany, both of whom were monks. To the latter, however, credit is usually given for the invention of fire arms early in the 14th Century. Shakespeare's very limited knowledge of history becomes apparent when in the play of Hamlet he says: "trumpets sound and cannon shot off within," and in King John that monarch says:

"Be thou as lightning in the eyes of France,
For ere thou canst report, I will be there:
The thunder of my cannon shall be heard."

The semi-mythical Hamlet lived probably in the 10th Century and King John died in 1216.

It should be a matter of interest to artillerymen that the early history of fire arms is almost entirely that of artillery, for cannon were developed and used extensively before small arms generally appeared. There is evidence to show that the English employed them effectively at the Battle of Crecy in 1346, and from then on their importance on the battle field constantly increased as their efficiency progressed. According to Gibbon, Mohammed the Conqueror's artillery surpassed that of any army in the world, and it played an important part in the capture of Constantinople. Some of his cannon are reported to have had the enormous caliber of 48 inches, and fired round stone weighing 600 pounds. They were manufactured under European supervision, and from this period on, practically all improvements in the manufacture of fire arms and the making of explosives took place in Europe and later in America, hence European armies became infinitely more efficient in battle than their opponents, armed with much older and less effective fire arms or with none at all.

With the advent of Gustavus Adolphus (1594-1632) in the affairs of Europe, modern armies with their organization and equipment really began. The great Swede left the imprint of his genius on all parts of the art of war, but on none more than his development and use of artillery. Improvements in firearms, developed in the warfare between Europeans, enabled them to

effectually check Turkish conquests, and in the reaction that followed the cessation of Asiatic invasions of Europe, nations such as England, France, Spain and Russia commenced to push their own conquests in Asia, Africa and America. Small bodies of Europeans, equipped with firearms, with their thunderous noise when discharged, and their deadly fire effect, struck terror into the hearts of the barbarians who greatly outnumbered them, and Europe instead of being invaded, became in turn the invader. With the security that resulted, nations were formed with more or less their present boundaries, and manufacturing, commerce, agriculture, and with these culture and civilization received an immense stimulus to progress.

Early in the 16th Century, the Spaniards with a few hundred men, overthrew the great Aztec and Inca monarchies and founded their empire in America. There are many records of the superstitious awe in which the Indians held the white men, and this was greatly increased by the deadly effect and noise of their firearms. These conquests could never have been made except for the great superiority of the Spaniard's weapons.

It is almost certain that in the 10th and 11th centuries the Norsemen attempted to form colonies along our north-eastern coast, yet they were too few in numbers to overcome the resistance of the Skraelings or Indians, whose weapons were not greatly inferior to those of the Norsemen, and who were much more numerous and better skilled in forest warfare. However, the descendants of these same Indians had to give way continually to the English and French colonists, equipped with firearms. Progress was therefore, held back in America for 500 years, until gunpowder blazed the trail for civilization on a continent, where formerly nomadic savages roamed, hunted and carried on their tribal wars.

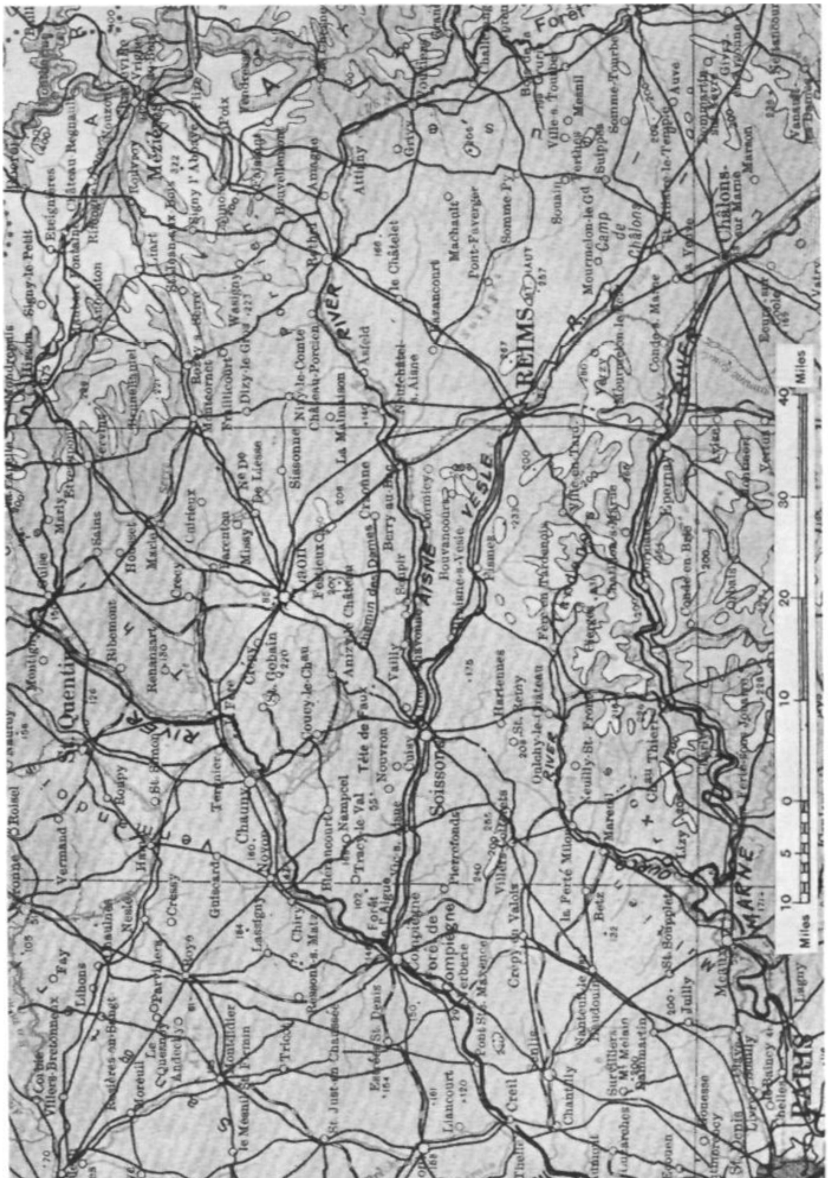
India was conquered in the 18th and 19th Centuries by a small number of Englishmen, and became one of the most important parts of the British Empire, while various colonies throughout the Orient were likewise added by small detachments from the army or navy. South Africa was won from barbarous blacks and a vast territory opened for Europeans to colonize and bring civilization, and Australia, the sixth continent, was taken from a few

thousand degenerate savages to become the home of more than five million civilized whites.

During the century that followed the overthrow of the Golden Horde in Russia, the Muscovite Czars made frequent campaigns against the various Tartar khanates in European Russia, reducing them to subjection. In 1580 Russian detachments crossed the Urals into Siberia and by a gradual extension of lines of forts subdued the entire country to the Pacific Ocean. Tartar and Mongol tribes that had once ruled Russia became subjects of the Czar, due to the superiority of the firearms of the Russians.

Only one Asiatic nation has shown the ability to adapt itself to European conditions of living and industry, and that is Japan. When this isolated feudal kingdom was opened to intercourse with the world by Commodore Perry in the middle of the last century, the Japanese statesmen realized that for them to continue an independent existence it was necessary to have an army and navy of the European type, hence carefully selected officers were obtained from foreign nations and a modern military machine was organized. From being a small island kingdom Japan has become a great empire by the conquest of Formosa. Korea and Manchuria. Her industrial and commercial development have followed and have been a direct result of her progressive and efficient military organization. As traders and agriculturists the Japanese cannot compete with the Chinese, but while the latter people have remained stagnant and a constant prey to other nations' aggressions, Japan has forged ahead in civilization and culture, due primarily to her war making ability, and her employment of guns and gunpowder.

In conclusion it may be stated that civilization and culture depend upon security and stability, that security is obtained by having sufficient military forces adequately armed and equipped so as to prevent aggression by other peoples; that the supremacy and civilization of the White Race today depend upon its being better armed and prepared for war than the far more numerous Yellow, Brown and Black Races; that being better armed means having weapons with greater fire power, and this fire power is dependent on its agent, that element called "the villianous gunpowder," but which has been one of the most potent factors in human progress and civilization.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THE LAST CHANCE

THE SECOND CAMPAIGN OF THE MARNE

BY COLONEL CONRAD H. LANZA, FIELD ARTILLERY

GERMAN PREPARATIONS

I. INITIAL PLANS.

FOLLOWING their successful campaigns in the spring of 1918, ending opposite Compiègne on 13 June, General Headquarters considered the advisability of new offensives in order to secure a decisive victory before the growing strength of the American forces made this an impossibility. The German Armies were still strong, there were about 60 divisions in reserve available for new missions. The offensive certainly offered moral advantages and really was easier to sustain than defensive combats on battlefields chosen by the enemy. But if the Great War was to be won, it had to be done quickly. It was evident that Time was playing into the enemy's hands. There ought to be no delay in the next move.

The theatre of operations in France was temporarily quiet. Only north from Chateau Thierry to past Soissons there was minor activity. The Allies made small attacks here and his artillery fired with great frequency; there was dense traffic in enemy rear areas, and an increasing number of new batteries, airfields, hospitals, and other facilities. The hostile order of battle was fairly well known, and the larger part of the Allied reserves had been located in a circle around Montdidier, Soissons and Chateau Thierry, which was their best position for covering Paris. Of course, these measures might all be part of a purely defensive program, but they were suitable also for an offensive. If left undisturbed it could be expected that this Allied mass would display considerable activity and they might attack. As stated, they had already begun to do this on a small scale. But it was believed that the morale of the Allies was low. Since 27 May, 61,997 Allied prisoners, including 1,524 officers, and 837 guns, had been taken. Captured letters stated that there were rumors that the French government was about to leave Paris for Bordeaux: that the large banks were sending away their valuable papers; that people were leaving Paris in such numbers that the railroads were unable to handle freight. Under the circumstances it was thought that the Allies, pending large increase in the American forces, would

not undertake any major offensive; in fact, that they were unable to do so.

On 14 June the decision was made to secure a decisive victory at the earliest possible date, according to the following plan:

> About 10 July reduce the Reims salient, through a joint attack by part of the Seventh Army southeast across the Marne east of Chateau Thierry; and by part of the First Army, in Champagne, east of Reims, in a southwest direction; the two attacks to meet south of the Marne.
>
> About 20 July an attack west in the Amiens area, by the Second Army. Later, an attack by the Eighteenth and Seventh Armies, from Moreuil on the north, south to the Marne; special attention by the Seventh Army to the forest of Villers-Cotterets. This to be the final decisive battle.

Preparations were to start at once to carry into effect the first phase of this plan. Other operations were ordered restricted to those absolutely necessary, except that in order to lead the enemy to believe that the first new offensive would be towards Paris, the artillery was to continue active along the old front between Montdidier and the Marne, and around Reims, and that hill 204 (just west of Chateau Thierry) must be held.

In selecting the reduction of the Reims salient as the initial operation, GHQ was influenced by the desire to improve their base between Soissons and Chateau Thierry on the west and the Reims salient on the east. There was only one railroad leading into this area, from Missy-sur-Aisne (east of Soissons), which was only 20 kilometers from the front, to Fére-en-Tardenois, which was about 25 kilometers from the front. Any advance of the Allies from the Soissons area would threaten the supply and security of the entire Chateau Thierry pocket. A reduction of the Reims salient would straighten out and shorten the line, improve communications, and afford an excellent base for the final advance on Paris. (See maps pages 278 and 279.)

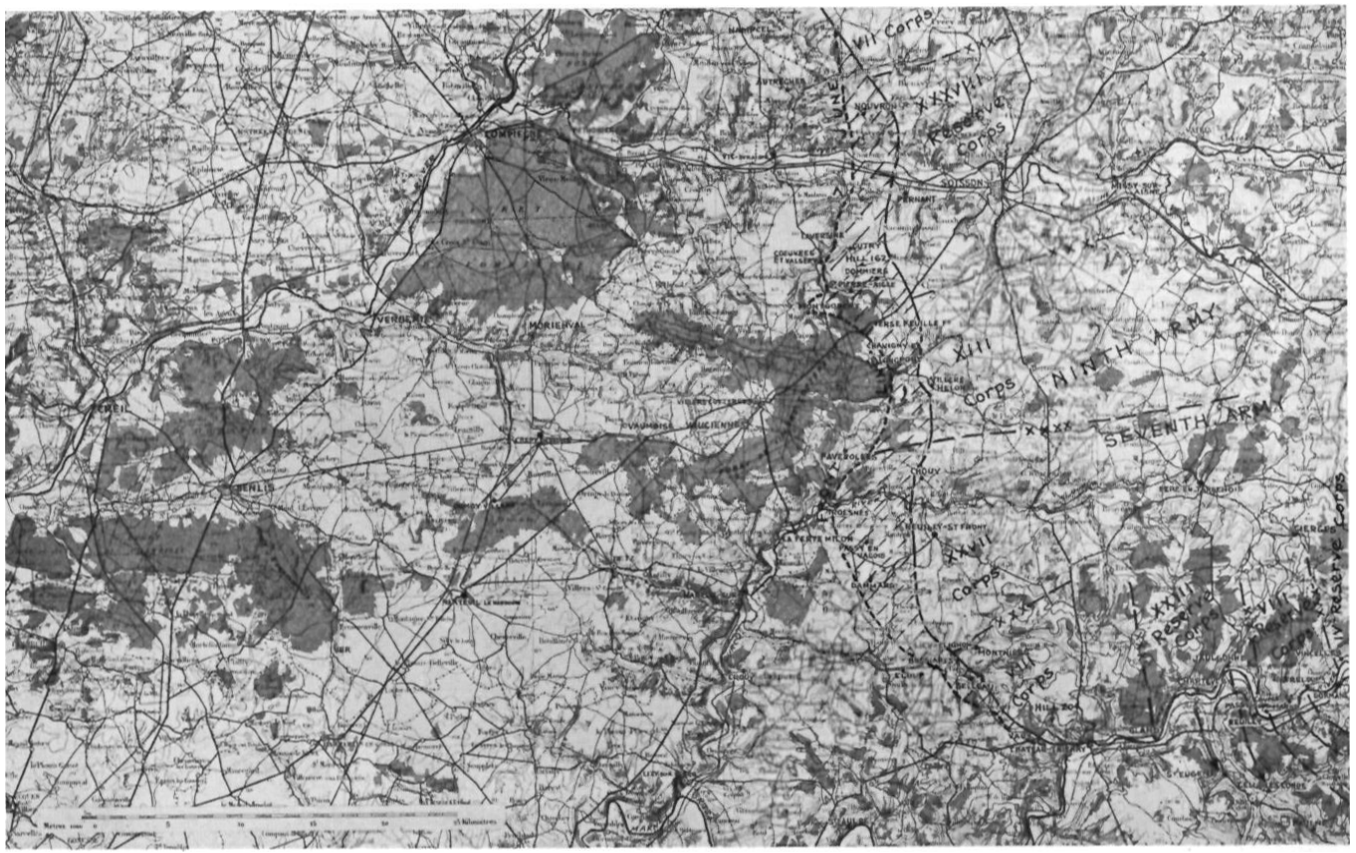
The Seventh and First Armies, scheduled for the Reims operation, were the interior armies of the Army Group of the German Crown Prince (CP at Charleville), and whose front extended from the Oise south of Amiens, through Noyon, west of Soissons, through Chateau Thierry, around but excluding Reims, and east to the Argonne. It had four armies, the Eighteenth being on the

right, and the Third on the left. The boundary between the Seventh and First Armies was Berry-au-Bac (on the Aisne)—Jonchery-sur-Vesle—Champlat (on the front line)—Epernay, all to the Seventh Army, except Berry-au-Bac.

Army commanders entered with enthusiasm in plans to capture Reims. General von Mudra, commanding the First Army, on 16 June submitted a memorandum to the Army Group. He pointed out that in the offensive of 27 May, German infantry on the first day had advanced some 18 kilometers. As the terrain in his front was much more favorable than in the instance cited, he looked forward to doing better and hoped to reach as far as the Marne the very first day. This would require an average advance of 23 kilometers. He considered it advisable to extend the front of his attack so as to cover the flanks, and secure certain roads required for supply purposes so that it would extend from Prunay to the Souain—Suippes road. For this the assistance of the Third Army was necessary. After defeating the enemy, and penetrating his front, the eventual decisive direction for his advance was from Bouzy on Epernay, which was the natural place for a junction with the Seventh Army, and which turned the strong hostile positions on the high wooded ground south and southeast of Reims. The enemy had four divisions covering the front to be pierced, but he had a very strong position, and 300 batteries of artillery on a front of about 22 kilometers. He proposed to attack with 9 divisions in first line and 3 in reserve, and needed 388 light and 212 heavy batteries to support this attack. He requested that a deficiency of 90 light and 65 heavy batteries be sent him.

On 17 June GHQ approved the recommendation to extend the attack into the Third Army zone of action, and issued instructions accordingly. It directed that the left of the main attack should proceed straight against the line Juvigny-sur-Marne—St. Etienne-au-Temple. General Ludendorff, chief of staff at GHQ, visited the First Army on 18 June and, with the chief of staff of the Third Army, discussed and approved the proposed plan of attack of that Army.

The Seventh Army, General von Boehn commanding, submitted its views on 17 June. It recommended that its attack be carried forward to the line Gland—St. Eugene—Baulne—St. Martin



Aisne

Vesle

Marne

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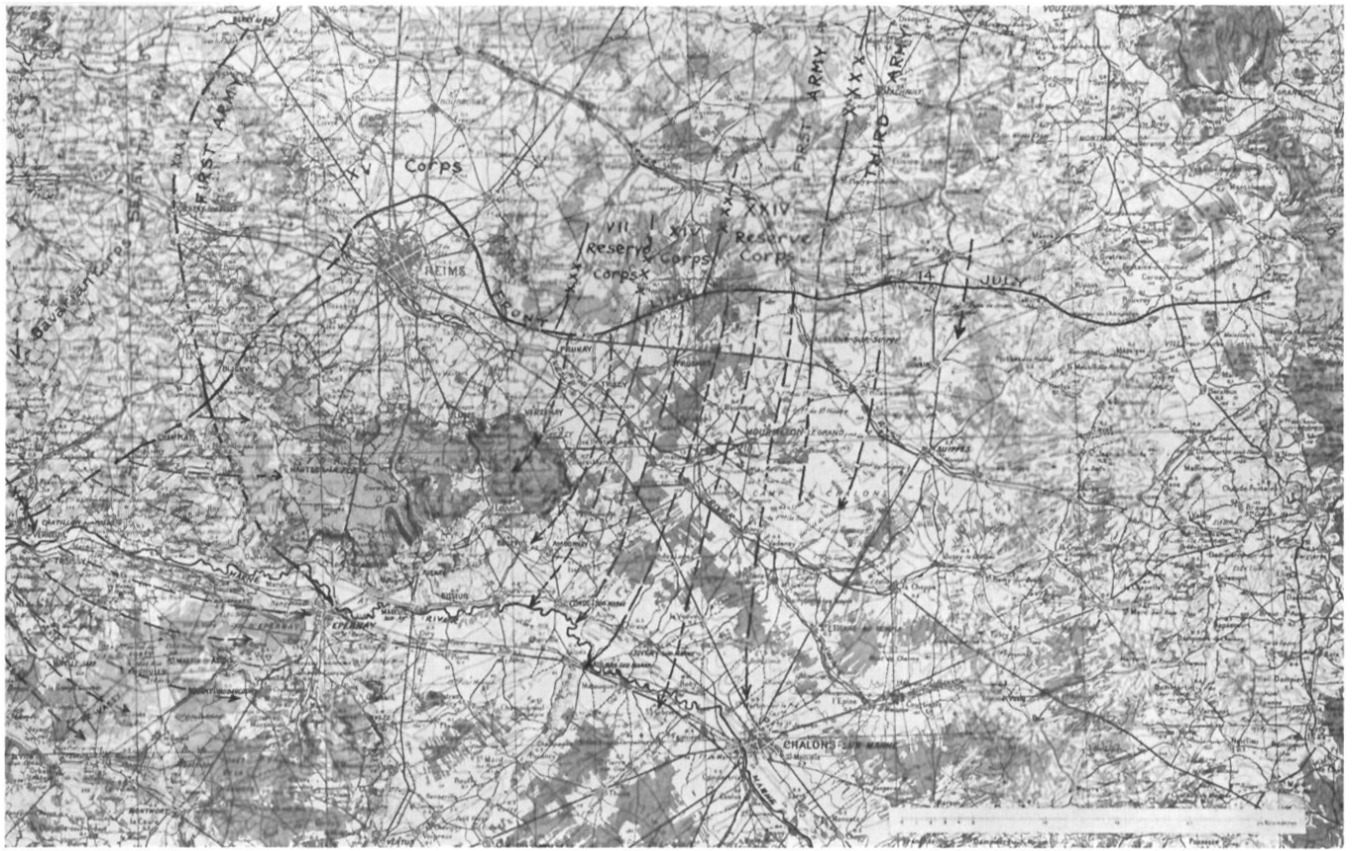

d'Ablois—Epernay—the advance on Epernay to be along the north bank also, at least in part. The Marne was to be crossed between Gland and northwest of Troissy, a front of 20 kilometers, with 8 divisions in first line, while 3 more divisions held the enemy north of the Marne, with an advance towards Epernay via Chatillon-sur-Marne. In the second line would be 4 divisions and in army reserve 3 divisions. The enemy's infantry strength was not known, but it was estimated that he had 200 batteries defending the Marne sector. To support the attack against this force there was needed 527 light and 186 heavy batteries, of which 198 light and 58 heavy batteries would have to be sent to the Army. This plan was submitted by the Army Group to GHQ for approval.

On 20 June GHQ approved the plan. It directed that the ring around Reims be closed at Epernay; operations after that to depend upon circumstances. The main point was to weaken the enemy in men and matériel. It was foreseen that the greatest resistance would probably be along the Marne, and the least opposite the Third Army in the east Champagne country. Slower progress was to be expected south of the Marne and a more rapid advance in Champagne. GHQ noted that a reconnaissance made by their own staff indicated that enemy OPs on hills southeast of Chateau Thierry could see the Marne river as far as the vicinity of Jaulgonne, and that consequently care should be taken about locating bridges in this area to places defiladed from enemy view.

Orders were now issued by Armies for necessary preparations. To insure secrecy, considered absolutely essential for securing a successful attack, it was directed,

a. No orders were to be issued to troops,
b. No complete orders were to be issued at any time; extracts, or special orders, were to be issued to those concerned, so that no one would know what was the entire plan,
c. The number of individuals connected with preparation of plans was to be the lowest possible, and each individual was to be separately sworn to secrecy.
d. The artillery was not to cut down trees for roads or battery positions.

During the period the foregoing plans were prepared the front was generally quiet, except for minor patrol actions. There was

one exception—the west front of the Seventh Army, which extended from north of the Aisne, past Soissons, to Chateau Thierry. On this front artillery activity, sometimes very strong, was constant. Attacks with limited objectives were made by the enemy somewhere every day as follows:

14 June: Fighting in the Belleau woods, and on hill 204 west of Chateau Thierry. A hostile attack near Montgobert, north of the Villers-Cotterets forest was defeated.

15 June: After a heavy interdiction fire all night long, early in the morning an artillery preparation of 1½ hours was followed by an infantry attack with numerous tanks from Coeuvres-et-Valsery (north of Villers-Cotterets forest). After bloody fighting the enemy gained a small advance.

16 June: At 5.00 A. M., a small enemy attack south of the Villers-Cotterets forest was defeated.

17 June: By a morning attack the enemy captured a hill near Autreches (north of the Aisne). A second attack in the same vicinity, after a 1½-hour artillery preparation, was defeated. Starting at 5.00 P. M., strong artillery fire commenced to fall on hill 162 (east of Dommiers), probably an artillery preparation.

18 June: The strong artillery fire against hill 162 continued all night, but no infantry attack followed at this place. South of the Villers-Cotterets forest, following another strong but shorter artillery preparation, the enemy attacked in the morning, employing many tanks, and delivered a second attack in the same area at 4.30 P. M. Very severe fighting occurred, the enemy finally securing an advance of about 1 kilometer. At 9.00 P. M. still another attack near Eloup (northwest of Belleau) netted the enemy another small gain.

The Seventh Army worried over the security of its west front between Soissons and Chateau Thierry. They reported to the Army Group that the unceasing attacks of the enemy, hammering away at their west front, were being made with fresh troops supported by unusually strong artillery, and were rapidly exhausting the divisions in the front line. There were not sufficient fresh divisions to relieve them and they requested they be given new divisions to post behind their west front. They realized that in general the situation was tranquil, as it was obvious that the

enemy had restricted himself to limited objectives on contracted fronts, the locations of which were continually changing. This might be interpreted as indicating that the enemy expected a renewal of German offensives between Soissons and Chateau Thierry and wished to have ample notice as to when this was to occur; but it might also indicate that he was trying to shake this front in preparation for a subsequent attack to be delivered by the Allies on a large scale. It was pointed out that in order to attack across the Marne, it was now believed to be necessary to weaken the west front to secure troops, therefore it was desirable in view of the situation that the troops be furnished by higher authority. The Army Group replied that it could promise no increase of troops.

On 19 June the First Army reported that from an examination of prisoners taken in patrol actions, the enemy was expecting an enveloping attack on Reims, and was constructing field fortifications to protect that salient. Numerous strong patrol actions, accompanied by artillery fire, occurred on the west front, with one serious attack at 10.30 P. M. near Monthiers which was unsuccessful. On the following day American troops attacked in Belleau woods and also on hill 204. Both attacks were defeated, which fact was attributed to the failure of the enemy to provide an artillery preparation, leaving the defending troops in unshaken condition in trenches to meet their opponents necessarily in the open.

On 22 June General Ludendorff advised the Army Group by letter that after the completion of the offensives across the Marne and in Champagne, which were to meet at Epernay, the next attack would be on the front between the Somme and the Marne towards Amiens and Paris. This to occur probably in the second half of July. Reconnaissances were to start at once, but no troop changes were to be made at present. For the time the sector indicated was to remain strictly on the defensive.

Arrangments were made to insert the Ninth Army, en route from Rumania, into line by having it take over the right three corps of the Seventh Army astride the Aisne and opposite the Villers-Cotterets forest. With this change, intended to strengthen this front, GHQ on 24 June issued instructions directing that while preparations for the reduction of Reims were to continue,

this was strictly preparatory to a subsequent one directed to the west and southwest and to be as follows:

Eighteenth Army—Protect the flank by advancing north of the Aisne.

Ninth Army:

VII Corps (Francois)—March southwest astride the Aisne, bringing right to between Rethondes and Vic-sur-Aisne; further advance to depend on progress of troops on both flanks.

XXXVIII Reserve Corps (Staabs)—March on Crepy-en-Valois.

XIII Corps (Watter)—Seize Villers-Cotterets; then march on Crepy-en-Valois, and south thereof.

Seventh Army:

XXV Reserve Corps (Winckler)—Deliver the main attack, through La Ferté-Milon on Nanteuil-le-Haudoin.

VIII Corps (Schoeler)—Advance to and cross the Ourcq between Crouy-sur-Ourcq and Lizy-sur-Ourcq; prepare to advance west.

Each army commander concerned held a conference with his corps commanders, and discussed arrangements required at this time to carry out this GHQ plan.

On 25 June the Seventh Army issued orders for the attack across the Marne, effective on D day, to reduce the Reims salient by advancing along both banks of the Marne, on Epernay, where junction was to be made with the First Army advancing on the same objective from the northeast. Corps missions were,

XXV Reserve Corps (Winckler), VIII Corps (Schoeler)—Jointly hold west front north of Chateau Thierry, protecting flank and rear of the attack. It must be expected that as soon as the enemy discovers a probability of being attacked along the Marne, he will attack the west front. Therefore prepare to resist *strong* hostile attacks during and *prior* to the Marne operation.

XXIII Reserve Corps (Kathen)—With 2 divisions, cross the Marne at Charteves, on both sides of Jaulgonne, and at Reuilly. Seize the line Gland—St. Eugene—Celle-les-Condé. To protect the right, post an artillery group north of Chateau Thierry for enfilade fire on counter attacks south of the Marne, moving east. Hold 1 division in corps reserve for prompt entry

into line west of the Surmelin Creek. Attention to protecting bridges from the southwest.

VIII Reserve Corps (Wichura)—With 3 divisions cross the Marne at Passy, Courcelles, Treloup and Vincelles. Do not cross at Dormans, which would be difficult; seize it by envelopment. Advance rapidly to the line Forèt de Vassy—Brugny-Vaudancourt. Main effort with left along the Dormans—Igny-le-Jard roal. 1 division in corps reserve to be inserted into line near Igny-le-Jard.

IV Reserve Corps (Conta)—With 1 2/3 divisions cross the Marne at Vincelles. With 1/3 division seize Verneuil and cross northwest of Troissy. With 1 division advance east, north of the Marne. Seize Epernay. 1 division in corps reserve to attack Epernay and beyond.

V Bavarian Corps (Schmettow)—With 3 divisions seize the line Bligny—Nanteuil-le-Fosse, main weight on the right. Take special care, as the enemy is expecting an attack here.

The initial width of the attack front was 37 kilometers, which, if all objectives were reached, would broaden out to 64 kilometers. Eleven divisions were in line at the start, or one to about 3½ kilometers of front; 14 would be in line at the end, or 1 division to about 4½ kilometers front.

The First Army's order for the attack was issued on 26 June as to organizations participating, and on 28 June as to plan. According to custom, before distribution the draft of this order was forwarded to higher authority for approval. On 30 June GHQ disapproved the plan in part as not conforming to a previous draft of 21 June, which had been approved. The objection was based upon the desire that junction with the Seventh Army must be obtained as rapidly as possible. It was thought that the right corps would be fully occupied in protecting the right flank from the Reims hills: that a rapid junction with the Seventh Army would be doubtful if left to this corps, which in this case would have to extend the front of its three divisions to 20 kilometers. Consequently the next corps in line must advance *on both sides* of the Marne. Attention was invited to the fact that the Marne was an obstacle and that even if there were no resistance, and even if some bridges were found intact, crossing the river was bound to take considerable time. But to cut off the enemy in Reims, no

time whatever must be lost. This could be best accomplished by pushing strong forces north of the Marne westwards between that river and the Reims hills. For this reason the division in corps reserves ought not to be in rear of the left as planned, but should either be in rear of the center or of the right of the corps.

The First Army revised its plan immediately, although it was not issued until 9 July. Its order prescribed missions to corps as follows:

> XV Corps (Ilse)—Demonstrate on both sides of Reims. Prevent enemy from withdrawing unobserved, and pursue hotly if he retreats; maintain constant artillery fire on roads in hostile rear.
>
> VII Reserve Corps (Lindequist)—With 2 divisions cross the Vesle, between Prunay, and north of Thuizy. Gain high ground between Verzenay and Bouzy, and block the Ludes—Louvois road early. Weight of attack on left to cover the XIV Corps. After Bouzy has been reached, by artillery fire block bridges at Mareuil-sur-Ay and at Bisseuil, 1 division in corps reserve to enter line and advance via Avenay to north of Epernay, to secure a junction with the Seventh Army.
>
> XIV Corps (Gontard)—With 2 divisions pentrate hostile front from north of Thuizy to Prosnes, and advance to both sides of Condé-sur-Marne. Upon reaching vicinity of Ambonnay send a strong force north of the Marne to Epernay, to a junction with the Seventh Army. 1 division in army reserve follows closely and will be used to reinforce the attack from Ambonnay, or to force the Marne, or to defeat counter-attacks from Chalons-sur-Marne.
>
> XXIV Reserve Corps (Langer)—With 3 divisions penetrate hostile front between Prosnes (excl) and Auberive-sur-Suippe, and advance to south bank of the Marne between Aulnay-sur-Marne and Chalons-sur-Marne. 1 division in army reserve follows attack. Bring artillery fire very early on Marne bridges. Attention to strong counter-attacks from direction of Chalons-sur-Marne.

The initial width of this attack front was 20 kilometers, with 7 divisions in line, or one division to each 3 kilometers of front. Contrary to the practice of the Seventh Army, divisions in second line, with one exception, were in army instead of corps reserve.

Assuming, however, that all would enter line promptly, this would give 10 divisions to an enlarged front of 27 kilometers.

The task of the Third Army was to cover the left of the First Army by moving its right sufficiently forward to prevent counterattacks north of the Marne.

An additional corps headquarters was kept in reserve. If the attack succeeded according to plan it was proposed to insert this corps into line, south of Epernay, between the VIII Reserve and the IV Reserve corps, taking over one or more divisions in line reinforced by other troops from army and army group reserve. The mission of this corps would be to advance to the line Montmort—Soulières—Vertus, under the Seventh Army. The First Army could then prolong this line to either Condé-sur-Marne or to Chalons-sur-Marne, according to circumstances.

In issuing the foregoing orders, missions and objectives were made known down to regiments only. A special plea for secrecy was made with the admonishment that success depended entirely on taking the enemy by surprise.

While preparations for the reduction of the Reims salient were pushed rapidly, the fact that this operation was merely preliminary to a more important one was not lost sight of. On 26 June the Army Group issued instructions for the offensive from its west front which was to start *suddenly* about the end of July, with objectives as follows:

> Eighteenth Army—Protect the right of the attack by an advance north of the Aisne, left to reach Verberie.
>
> Ninth Army—Attack from present lines astride the Aisne, southwest to the line Verberie (excl)—Nanteuil-le-Haudoin (excl), as first objective; thence to the line Creil (excl)—Senlis—Foret d'Ermenonville (incl).
>
> Seventh Army—Advance to beyond the line Ver—Lizy-sur-Ourcq—St. Aulde.

Depth and extension of the attack would depend on troops available and the general situation at the time. Preparations were to start at once, with special attention to reconnaissance, with laying of telephone net and *accurate* orientation of positions for the artillery. Under no circumstances were any but front line troops to be used in preliminary work. Requisitions, with maps and plans, were to be submitted by 5 July. In a confidential addition

the Eighteenth Army was informed as to the possibility that this attack might be extended to the north against Amiens, or that this latter extension might be made at the same time as the attack around Reims. In either case additional forces would be employed under the Second Army and to these the right corps of the Eighteenth Army would probably be transferred.

Not overlooking the main offensive to come later and for which preparations were started, great care from now on was given to details of the operation which was to bring Reims within German lines. The plan did not call for any attack on Reims itself; it was expected that the enemy would evacuate the salient as soon as he realized that progress was being made by the two horns reaching toward Epernay. There was a considerable number of troops within the salient and much valuable property, which it was desired to capture. The Army Group instructed G-3 to draw a plan covering

a. Supposing the enemy within the Reims salient tries to escape by a strong penetrating attack; where should the reserves be located?
b. Supposing that combat troops would advance to the pursuit *around* Reims: what tactical and MP provisions should be made for the occupation of Reims?

Warning orders were issued stating it was possible that the enemy might discover the proposed attack, and thereupon start a violent counter-offensive artillery fire to break up preparatory measures or assemblies. Local attacks might occur anytime, with a view to obtaining prisoners, in order to determine German plans. To cover these possibilities orders were issued prescribing

a. Batteries must stand by on D minus 1 day, ready to return hostile fire, and protect their own infantry moving into position; however, no battery would fire without first securing approval of the Army to which it belonged;
b. Warn all personnel that the enemy had gas shell and most likely would use it, particularly on infantry in assault positions.

Consideration was also given to eliminating the entire attack about Reims and proceeding directly to the main mission of advancing toward Amiens and Paris. Organizations were warned to be ready to receive orders annulling the Reims offensive.

While all these arrangements for winning a decisive victory over the Allies were in progress, the latter had not been idle, but had continued to exercise pressure on the front between Soissons and Chateau Thierry. Soissons was bombed or shelled practically every day and the Allied artillery was as lively as ever in this area. Hostile attacks on a limited scale were frequent. Air reconnaissanse of this sector, on account of its importance, was thorough and was omitted only on days when weather conditions prevented. Events in this area were about as follows:

19 June: A hostile night attack north of Bussiares gained about 1 kilometer of front.

20 June: The American 2nd Division attacked at Bois Belleau and the American 3rd Division at hill 204 (west of Chateau Thierry). Both attacks broke down; which fact was attributed to attacking *without* an artillery preparation, resulting in infantry in entrenched positions with artillery rather easily overcoming infantry attacking in the open.

21 June: Progress was discovered in enemy construction between Chateau Thierry and Compiegne, but nothing was seen south of the Marne. At 10.00 P. M. an enemy attack again near Bussiares, on the Clignon brook, was defeated; the enemy securing a small part of a wood.

22 June: More fighting early along the Clignon brook; a counter-attack failed to recover the lost ground. The machine gun factory at Fère-en-Tardenois was destroyed by artillery fire.

23 June: Enemy made raids north of Chateau Thierry. Strong forces of hostile infantry—French and British—were noted about Epernay. Two Italian divisions were identified in Champagne, one in line and one in reserve.

24 June: A strong hostile artillery preparation started at 7.30 A. M. north of the Aisne near Nouvron. At 8.15 A. M. infantry attacked and captured the outpost zone. A counterattack later recovered the lost ground.

25 June: The American 2nd Division, after a violent artillery preparation, captured the last part of the Bois Belleau. The First Army reported that from statements of a prisoner, the enemy considered a German attack east of Reims as probable.

On this day the First Army reported that enemy observers had been repeatedly noted in the tower of the cathedral of Reims, which was "off limits" as a target, but in view of this fact they requested authority to fire on the cathedral. GHQ replied on the 28th that provided that there was no possibility of doubt that the cathedral was being used as an OP, fire could be directed against it. It was opened.

26 June: Especially strong artillery fire north of the Aisne.

27 June: In a raid east of Reims, the enemy failed to take a prisoner. After very strong artillery preparation, the enemy succeeded in securing a small advance in the Aisne valley.

28 June: After a very heavy artillery preparation of 2 hours, starting at 6.00 A. M., enemy infantry attacked south of the Aisne, opposite the fronts of three divisions, main effort near Cutry, employing unusually large numbers of tanks. Enemy after severe fighting captured the hills north and south of Cutry. The line now ran through Lignieres*—Raperie* (incl)—St. Pierre-Aigle. Hostile troops were observed detraining at Crépy-en-Valois, Vaumoise and Ormy, and there was extraordinary rail and road circulation in enemy rear areas. A new air field near Nanteuil-le-Haudoin and numerous new battery positions in the territory between the Villers-Cotterets forest and Compeigne were noted.

The success of this latest hostile attack, and the strong force that the enemy showed he possessed worried the Seventh Army. It realized that the position secured by the enemy would serve as an excellent jump off line for an attack against Soissons. The Army foresaw the possibility of the enemy's attack being extended, and felt that the lost ground ought to be recovered by a regular counter-attack, as otherwise the threat against their line of communications was too serious if they themselves were to attack across the Marne, as already arranged. Some of the divisions in line were exhausted and needed relief and they all wanted more artillery, which could only be given to them by taking it from batteries earmarked for the prospective Marne attack. They wired these views to the Army Group.

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* Not shown on map. Near hill 162, vicinity of Dommiers.

The Army Group promptly passed the problem on to GHQ, with the recommendation that a counter-attack against Cutry be not made. It felt that the solution was to hold the Chateau-Thierry front, defending by organization in great depth. Pressure on this sector could be expected to decline as soon as the offensive across the Marne was launched. At 1.20 A. M., 29 June, a telegram was received from General Ludendorff stating that the recommendation was approved and that there would be no counterattack against Cutry.

Shortly after, at 1.55 A. M., the Army Group received a wire from the Seventh Army stating that it considered it advisable to recover the hills around Cutry. It would take several days to arrange for the necessary counter-attack, but this could be done without assistance provided that a corresponding delay was authorized in starting the attack across the Marne. The Army considered the situation along the west front between Soissons and Chateau Thierry to be so threatening that it intended to transfer there 30 batteries from the front along the Marne, and in addition attach the artillery of two divisions then in reserve. With this artillery reinforcement it was believed that it would be possible to get along, and the loss of time already suffered through the battle of Cutry would not materially affect the plan to force the Marne River. However, it was considered probable that the enemy would extend his attacks around the Soissons area and if this should be the case, it would interfere with the Marne plan. Attention was also invited to the epidemic of grippe, then prevalent, which was very serious, materially reducing strengths; this, of course, did adversely affect future offensives. In this regard the First Army had reported that it too was having an epidemic of grippe and that as a result in 21 infantry regiments the average number present per battalion was only 746.

During the night the enemy made an attack north of the Aisne which brought him no success. A partial counter-attack by German troops south of Cutry was also unsuccessful. Enemy artillery fire in the Soissons area continued all night and was extraordinarily heavy. All night long there was active enemy radio communication between the front line and what appeared to be strong reserves concealed in the Villers-Cotterets forest. The First Army reported their front as relatively quiet.

The German high command realized the danger of hostile success in the Soissons area. It was quite plain that should this occur, the security of the Chateau Thierry pocket would end and a disaster be entirely possible. The question was, were the Allies in a position to carry on with such an offensive, and if yes, would they do this in the near future, particularly before the Reims operation commenced? The Crown Prince, commanding the Army Group, gave the entire morning to a study of the situation. He then notified GHQ that it must be assumed that the enemy would continue uninterrupted attacks against the west front of the Seventh Army prior to and during the attack along the Marne. This need not be interpreted as forming a basis for a subsequent attack on a large scale, but could rather be considered as a defensive measure to relieve himself of what from his point of view was a dangerous situation about the forest east of Villers-Cotterets. He proposed to move one division then in reserve north of the Aisne to south of that river. With this increase of force, it was believed that the Seventh Army would be strong enough to attack across the Marne, while at the same time preserving its west front. Even if the enemy did attack the west front the Marne attack was considered absolutely essential. The Seventh Army was notified of this decision.

The Seventh Army telephoned orders not to proceed with plans for retaking Cutry, as there would be no counter-attack. Arrangements were made for relieving one exhausted division in line, and three other divisions were moved closer to the west front in corps or army reserve. With these changes it was thought that the Soissons—Chateau Thierry front was reasonably safe and could be counted on to hold, during the preparations for, and the attack, across the Marne by remaining strictly on the defensive.

The foregoing decision of the German high command to proceed with the Marne campaign regardless of Allied threats against the Soissons front, in the belief that these threats were not very serious or could not be carried out in time in sufficient force, we now know to have been an erroneous estimate of the situation. It was this decision that later led to the first great German defeat, which was the turning point which ended all German offensives for the remainder of the great war.

During the 29th there was much air activity and artillery fire on both sides. Air photographs showed new enemy trenches and strong obstacles on the west front. Construction of lines south of the Marne were observed as making good progress. Interrogation of prisoners resulted in statements that recent attacks on the west front were primarily to relieve the Allies from holding swamp positions, and that there was no intention to make an attack on a large scale. However, one sergeant stated that the latest attack had been for the purpose of securing a good line of departure for an important offensive which would come later. Intercepted French radio messages from Lyon emphasized strongly the purely defensive missions of recent fighting, which was said to be to prevent German attempts to advance north of the Villers-Cotterets forest toward Compiègne. Late in the day, after a short artillery preparation, the enemy attacked along the Ourcq and captured a narrow front. At 11.00 P. M. another artillery preparation started, followed by a night attack, on a front of 1½ divisions near Troesnes, by which the enemy secured a substantial gain, pushing his line forward to hill 163 (southwest of Passy-en-Valois). The First Army had a tranquil night.

The Seventh continued to worry over the enemy attacks along their west front. On 30 June General von Boehn, commanding, wrote to the Army Group stating that the enemy's conduct during the past two days indicated that he had no intention of allowing this sector to become quiet, as had been hoped, but that he evidently proposed to do his best to inflict all the damage possible. During the month he had succeeded north of the Aisne in advancing sufficiently, so as to prevent the medium artillery from any longer being an important factor in any fighting south of the river. South of the Aisne he had obtained firm hold on the east bank of the Laversine, had disengaged the German partial envelopment of the Villers-Cotterets forest, and had advanced north of Licy-Clignon. Hostile artillery had been materially increased opposite Soissons, in one corps sector, 91 positions being noted on the 29th instant. Hostile radio communications indicated that one, and maybe two, hostile divisions were in the Villers-Cotterets forest. Prisoners stated that more and larger attacks were coming. The writer did not believe that the French would risk a major attack anywhere while they were menaced by a new German

attack. But as the enemy would undoubtedly keep strong artillery and reserves between the Oise and the Marne, it was natural to expect that he would utilize these to harass the Germans. A hostile advance south of Soissons would endanger all communications of the Seventh Army, and at the same time would relieve the enemy from his most pressing fear—an advance on Paris. The limited battles during June had caused great losses; it was clear that defense measures taken had been inadequate. This was not so important as long as strong and fresh reserves were available, as at present. But after these had been withdrawn for the attack across the Marne, stronger forces than had been contemplated would be required to protect the west front. Therefore the Army requested to be supplied with 54 light and 18 heavy batteries more than were estimated for the Marne attack, with an additional division to be posted in reserve southwest of Soissons, and one more division to relieve one now exhausted in line.

During the 30th the enemy pressure continued. A severe artillery preparation was followed by an infantry attack which secured St. Pierre-Aigle to the enemy, although elsewhere the attack failed. Later in the day St. Pierre-Aigle was recaptured by a counter-attack, but an effort to recapture woods southeast of Troesnes was not successful. Strong enemy infantry concentrations noted on hill 204, west of Chateau Thierry, were dispersed by mass artillery fire. Artillery was everywhere active along the west front. Large numbers of railroad trains were observed all day at Connantre.* This had also been the case on the previous day. Much enemy trench construction was noted along the west front and south of the Marne. On the front of the First Army there was only air activity.

Next day, 1 July, renewed attacks occurred. By a joint French and American attack the enemy occupied Vaux (west of Chateau Thierry). He made a slight advance between Passy-en-Valois and Dammard; here a counter-attack stopped further progress. In each case strong artillery preparations were employed. The OPs and Air Service jointly located 117 hostile batteries in action west of Soissons; and a large increase in the number of hostile batteries north of the Aisne. Heavy railroad and motor truck

* Not shown on map, about 30 kms south of Epernay.

traffic was noted between Villers-Cotterets and Compiègne, with unusual rail activity northeast out of Paris. In the enemy rear area opposite Soissons great motor traffic was observed. Along the Marne two new bridges northwest of Verneuil were noted.

GHQ considered all this information, and the letter from the Seventh Army. They decided to make no change in their decision as to proceeding with the reduction of Reims, while maintaining a purely defensive attitude along the west front. They did, however, authorize that during the next few days priority be given to strengthening the west front, in preference to pushing preparations for the Reims offensive, which they agreed might be delayed slightly, and for which they would issue appropriate orders after the length of delay needed had been determined. But they desired that neither the enemy, nor their own troops, should receive the impression that German attacks along the west front had come to an end.

The Army Group thereupon issued orders relieving one division along the Aisne by a fresh one, and placing two other divisions in corps reserve, one southwest of Soissons and one northwest of Chateau Thierry. A third division, earmarked for the attack across the Marne, was withdrawn for subsequent use to relieve another exhausted division, and GHQ was requested to replace this division. The artillery on the west front was strengthened as already arranged. Towards midnight, General Ludendorff telephoned that he approved of these measures to reenforce the west front, but that he had no division to furnish as requested. He added that protection of the menaced front could be best obtained by deep depth formations and provisions for mass artillery fire. He did not think much of standing barrages, it was better to use the artillery to *attack* enemy assault forces.

On 2 July, after strong artillery preparations, the enemy at 1.00 P. M. attacked near St. Pierre-Aigle and captured the edge of that village. Another attack at 9.30 P. M. near Vaux went to pieces under artillery fire. Prisoners taken near Vaux stated that they knew of no intention of an attack on a major scale; their attack had been to improve the local situation. Strong traffic was noted south of the Marne, with numerous railroad trains and motor trucks around Epernay. The enemy made a minor attack

east of Reims, but the artillery stopped this before it had penetrated the line of obstacles.

At 5.00 A. M., 3 July, the enemy attacked north of the Aisne, gaining 1 kilometer on a front of 1½ kilometers, under cover of an especially strong rolling barrage. In the evening the enemy renewed his attack, and gained more ground. Troops along the Marne captured a 2nd Lieutenant from the American 4th Infantry, who was leading a patrol across that river. In his examination he revealed that officers of the 4th Infantry had no official information as to a German attack, but that they did expect one. They had formed this opinion from the increased traffic and strong artillery concentrations in their sector. The Air Service reported much hostile traffic back of the west front.

On 4 July GHQ announced that as the measures taken to protect the west front now appeared adequate, the attack to reduce Reims would proceed without further delay. D day was fixed as 15 July. They called attention to the fact that this operation was preparatory to a main offensive to come later, directed through Villers-Cotterets, which offensive it had been decided would be extended northwards to include Amiens. Until after the Reims operation, only general plans and preparations for the main attack could be undertaken as it was at this date impossible to determine, even approximately, what forces would be available. General Ludendorff personally visited the CP of the Seventh Army and discussed the foregoing decisions, the preparations for forcing the crossing of the Marne and advancing on Epernay, while simultaneously holding the west front against possible, and even probable, hostile counter-attacks. He was satisfied with what had been done and the measures proposed for carrying into effect the approved GHQ plans.

II. FINAL PLANS.

The High Command understood that to win the war a complete defeat of the enemy was necessary. They realized that there was but little time left to accomplish this mission. They hoped to succeed by an advance westwards from the line Amiens—Chateau Thierry, which would pierce the enemy's front, and separate his forces into two parts. Whether, if this occurred, an advance on Paris would then be made, or the divided enemy forces be next

attacked one at a time, was to be determined later, according to the situation. For the moment the mission was to divide the enemy through a wide tactical penetration.

The reduction of the Reims salient was a preliminary operation. It would, if successful,

a. afford a better base for that part of the main attack south of Soissons,
b. cause important losses to the enemy,
c. cause the enemy to move part of his reserves from the sector between Amiens and Chateau Thierry, where they now were, to south of Reims.

The last reason was very important. Preparations were therefore pushed for the attack around Reims, with the intention, at the proper time, of suddenly breaking off this operation, reorganize quickly and then advance towards Amiens and Paris. Danger lay in the possibility of a hostile attack between Soissons and Chateau Thierry before the Reims operation started. If the operation succeeded, as it was hoped it would, it was believed that the Allies would have to transfer a considerable part of their reserves, then in front of Paris, to bolster their shattered lines south of the Marne and in Champagne. In this condition they would be entirely incapable of undertaking any major offensive anywhere. Of course secrecy was a prime requirement for any war plan, but it was thought this also could be accomplished.

The First Army began to have doubts as to secrecy having been obtained. On 4 July, they became alarmed, and reported that although their front had been comparatively quiet, some raids had occurred, and it was assumed that from them the enemy had obtained some information as to German intentions. It was noted that a new division had been brought into line by the enemy. The Third Army reported that a new hostile corps had been identified as opposite their front. It might be that these were defensive measures against a German attack, or they might be rearrangements for greater activity in raiding and watching for information. In either case some hostile attacks might be expected. The two armies ordered their artillery to be instantly ready to fire on any attempts to enter the positions held, while the infantry was directed to maintain supports close by, so as to drive out any enemy entering during a limited or a patrol attack. Extreme precautions

were ordered taken by reconnaissance parties, which were not to be led by officers above the grade of captain. Outposts were to consist of only a few men with a machine gun, posted at least 300 meters in front of lines of resistance. If necessary, the enemy would be driven back, so as to have this depth available.

The 4th passed quietly. New hostile batteries were observed on both sides of Reims, some of which fired apparently for registration; this was attributed to defensive measures. South of Soissons, enemy artillery was also registering in the vicinity of the Villers-Cotterets forest.

At 8.00 A. M., 5 July, the Ninth Army, brought from Rumania, took over from the Seventh Army its most northerly three corps from north of the Aisne to opposite the Villers-Cotterets forest. General von Eben, commanding, had been in the sector for some days and was familiar with the situation. He had no part to take in the reduction of the Reims operation other than to join in the artillery preparation on the opening day. His mission was to protect this operation against a hostile attack opposite Soissons, and to prepare as far as possible, and unobtrusively, for the decisive offensive towards the west, which was to follow quickly after the expected fall of Reims. Upon assuming command, the Ninth Army found 9 divisions in line and 6 in reserve. Upon inspection it was found that only 4 of these divisions were fit for attack, 9 others might be if they could have 2 to 4 weeks for rest and reorganization, while 2 divisions were fit only for position warfare. Due to heavy losses of horses, 3 divisions were unable to move themselves; while due to the epidemic of grippe the sick report was everywhere high. One division had 1,200 men in hospital.

After making the transfer to the Ninth Army, the Seventh Army had 29 divisions. It classified these as 18 fit for attack or nearly so, 2 divisions as exhausted, 8 as needing 1 to 4 weeks for rest and reorganization, and 1 as fit for position warfare only. In six divisions, for which reports were located, the sick averaged 757 each. Twenty divisions were scheduled for the attack across the Marne, 11 in first line, and 9 in reserve; the remaining 9 divisions were available to protect the right flank north from Chateau Thierry to the boundary with the Ninth Army.

The First Army reported that out of 13 divisions 8 were considered as fit for attack, and the remaining 5 would be within 1 to 3 weeks after rest and training. The sick list was high; in one division over 1,500 men were in hospital, but the sick rate was reported as declining. According to plan, this Army had 7 divisions ready to attack in first line, and 3 to follow in reserve. The remaining divisions were to cover the sector opposite Reims.

All armies arranged through the G-1 sections for the orderly entry into line of the divisions to attack. This was to be done on the last night. In the meantime the front was to be held by one division to each corps front, which divisions passed to corps reserve when the attack divisions passed through their lines. They would then be assembled at indicated localities, ready at the proper time to follow in rear of the advance.

During 5 July, the enemy conducted several patrol actions, evidently to obtain information as to the German intentions. During the morning a strong artillery preparation fell on the sector near Licy-Clignon, followed at 12.00 noon by an infantry attack. Through a counter-attack the enemy was driven back. At 5.00 P. M. another severe artillery preparation started northwest of Chateau Thierry, followed by a smoke screen, but no infantry attack followed. Air reconnaissance showed heavy railroad traffic between Paris and the Compiegne—La Ferté-Milon area, but not much road traffic. New enemy trench mortars were noted about Reims, and as an enemy OP was definitely recognized in the tower of the Reims cathedral, two problems were fired with the cathedral as the target.

At 9.45 P. M. the Ninth Army recommended that as a result of a study of the part they were to play in the coming offensive to the west, they considered that the large woods northeast and southeast of Compiegne were well thinned out and practicable for troops and that an attack through these woods could expect to make good progress. However, the crossing of the Aisne would present difficulties for the right wing if the enemy held the south bank. It was therefore suggested that an attack be made now, when the right bank of the river south of Soissons was still in German possession, to push forward southwest from the line Nampcel (north of the Aisne)—St. Pierre Aigle, to reach the line Morienval (southeast of Compiegne)—Vauciennes (on main

road west of Villers-Cotterets). If the Seventh Army could at the same time advance south of the Villers-Cotterets forest, greater success would be probable. The Army Group failed to approve this suggestion.

On 6 July one division was transferred from the Seventh Army to the Ninth Army zone, to strengthen the west front opposite Soissons, but to remain in GHQ reserve. About noon, the enemy started a fierce artillery preparation against the line Vaux—hill 204 (west of Chateau Thierry). An infantry attack followed, resulting in bitter fighting, and heavy losses. Part of hill 204 was lost. Patrol actions occurred at several other places. Large numbers of railroad trains were reported as at Vaumoise, west of Villers-Cotterets, but otherwise enemy traffic appeared to be normal.

On 7 July, instructions were issued as to organizing the ground captured in the coming offensive. The main point was that the infantry was to form in great depth, weak occupation and strong reserve, to minimize losses from artillery fire preceding counterattacks, which must be expected. Batteries were to protect themselves against small hostile parties by use of their machine guns. The corps around the city of Reims were directed, while not participating in the main attack, to advance as soon as enemy withdrawals were observed.

At this time there was much movement of infantry, artillery and other troops assembling for the battle. To prevent enemy observation it was ordered that all movements must be at night, and that troops must be in their billets by 5.00 A. M. each day, and stay there, until darkness returned. All RSOPs were to be made by a single officer, moving very cautiously.

From prisoners captured in the previous day's fighting near Vaux, the American 28th Division was identified as on the Marne front back of the American 3rd Division. It was also ascertained that two other American divisions, the 27th and 30th, were nearby, and that altogether there were 20 American divisions in France, of which 11 were now in reserve back of the front. An extraordinary number of railroad trains were seen in the area east of Compiegne—Meaux. Spies and secret agents sent in statements that there was a continual movement of American troops, artillery and munitions going south, and that the general

opinion was that the Americans would start an offensive in Alsace. In this regard, information was received that a high ranking French general, believed to be Marshal Foch, had gone towards Belfort.

At 9.00 A. M., 8 July, the enemy started a strong artillery preparation around the Chavigny farm, just east of the Villers-Cotterets forest. The foreground was immediately evacuated, and the infantry attack which followed gained about a 1 kilometer advance, being stopped on the main line of resistance. A second attack, at the same location, at 10.00 P. M., was smothered by the artillery mass fire. Heavy traffic was reported this day on the Crepy-en-Vallois—Villers-Cotterets railroad and much motor traffic on roads adjacent to the railroad, which appeared to be due to unloading and distributing of ammunition and supplies.

On 9 July, GHQ was advised by a secret agent that the Allied GHQ intended to reduce the Chateau Thierry salient by simultaneously attacking its two flanks, the attack to be delivered probably prior to the French national holiday on 14 July, but if not possible then, later.

During the afternoon, after a violent artillery preparation, the enemy made a limited attack against the Verse Feuille Farm, southwest of Soissons and gained about 300 meters. A counterattack failed to regain the lost ground. A renewed attack by the enemy at 6.30 P. M. secured to him some more ground, on a front of 1,200 meters. On their side, the Germans attacked hill 204, west of Chateau Thierry, starting with a short artillery preparation. The enemy infantry sought to avoid the fire by withdrawing, but were caught by the rolling barrage of 150mm howitzers and low flying planes. The infantry attack thus recovered with little loss the terrain which had been seized from them on the 6th instant. Due to low clouds, air reconnaissance was limited. It disclosed dense railroad traffic, south of and parallel to the Marne.

On 10 July, the Army Group sent a memorandum to GHQ as to the proposed offensives scheduled after the reduction of Reims. It pointed out that simultaneous advances southwest toward Paris *and* northwest toward Amiens would be on divergent lines, which would come to an early halt, unless sufficient forces were on hand for a constantly widening front. If such forces were not available,

it was suggested that the attack be against Paris, *or* against Amiens. If against Amiens, only the right of the Army Group would be involved; in this case it was recommended that the Eighteenth Army be transferred to the next Army Group to the north, which had charge of the main attack. But if the attack were to be toward Paris, then naturally the Army Group of the Crown Prince would be in charge, and in this case it was recommended that the:

> Eighteenth Army—attack with a strong left between Montdidier and the Oise, and seize the line hills near Bailleul—Verberie.
>
> Ninth Army—attack between the Foret de Laigle and woods around Villers-Cotterets. Along forest fronts enemy to be neutralized by artillery fire.
>
> Seventh Army—make the main attack through Crepy-en-Vallois on Nanteuil-le-Haudoin. Protect left flank by occupation of line from Chateau Thierry to the mouth of the Ourcq.

For this plan 50 divisions were considered necessary. Instructions were requested as to whether GHQ desired the Army Group to proceed with such a project. Reconnaissance, orientation and selection of positions for batteries had started, but the front was at present a defensive one with only a few labor troops, as most labor units had been withdrawn for use along the Marne front. The troops in this sector were tired and worn from constant enemy attacks and were unable to do the required preparatory work.

The Seventh Army had not much faith in the secret report that a major Allied attack on their west front was imminent. They issued orders for the withdrawal from this front of a considerable number of artillery units and ammunition trains on the night 16/17 July for duty on other fronts. But when GHQ inquired as to whether there were signs indicating that the enemy was trying to secure good OPs, an examination made by G-3 of his situation map made it apparent that recent limited attacks had secured to the enemy excellent OPs. The Ninth Army made a similar report. The Seventh Army now began to think that maybe there was danger in this sector.

Their doubts were influenced by a renewal on this day of enemy attacks extending from Verse Feuille farm through Longpont

to Corcy. These attacks were all prepared by artillery, briefly but with great force, and the enemy succeeded in making small penetrations. The German artillery prevented deep losses. Opposite this sector unusually heavy railroad and road traffic was reported. Along all the west front enemy artillery was active, which fire for the first time extended around to include the Marne front. The enemy fired numerous problems with gas shell, which appeared to be mustard gas, and caused numerous burns and much sickness. A prisoner was taken opposite the Villers-Cotterets woods who belonged to the French 48th Division. The prisoner declined to make any statements, but it was known that this division was an excellent attack division, was at full strength, and had not previously been reported in this sector. In view of all these facts, the Seventh Army now cancelled their orders for the relief of artillery units and trains, and advised the Army Group that their opinion now was that the enemy did intend to make an attack on a large scale against the Soissons—Chateau Thierry front.

At the Army Group CP, G-3 pointed out that the evidence indicated that the enemy was preparing to attack the west front. In face of this situation, he called attention to the fact that the threatened front was held by divisions which had long been in line and whose fighting value had materially decreased on account of the epidemic of grippe and the constant activity of the enemy. This was the result of earmarking the best troops for the Reims operation, which was scheduled to occur on the 15th.

The next day, 11 July, the Army Group received more reports from deserters and prisoners fairly establishing the fact that large forces of American, British and black troops were concealed in the Villers-Cotterets woods. Tanks and cavalry were stated to be in positions of readiness. It was easily noted that the enemy artillery had been strongly reenforced; some of it was far forward, while large numbers of trench mortars had been observed in front lines. Prisoners taken near the Villers-Cotterets forest stated that their units were to be reenforcd by colored troops that very afernoon, for attack purposes. Inquiry was made around noon of the Ninth and Seventh Armies as to what they thought of the situation, and what measures they recommended. At the same time, the First Army reported that in Champagne the

enemy had made five more raids, and had secured some prisoners; also that large forces of hostile artillery, which had not yet fired, were concealed in the wooded hills around Reims.

The Ninth Army reported that it believed a hostile attack on a large scale directed toward Soissons was imminent. The Seventh Army after considering the events of the day, which passed fairly quietly, with no important enemy attacks, and reports from the Air Service that reconnaissance of enemy rear areas showed circulation about normal, answered the Army Group inquiry with a reply stating that the statements of prisoners and deserters were incomplete, offered nothing tangible and failed to clear up the enemy's intentions. Attack on a large scale was considered probable; but there might be only limited attacks. Should a major attack be intended, this would probably be launched as a surprise, consequently, its date was hard to determine. In this regard, the French national holiday, 14 July, or the day preceding it would seem to be likely dates. Local defense measures were indicated by both armies as necessary.

The Army Group decided about 8.00 P. M. that an attack south of the Aisne towards Soissons was indicated, to occur not later than 15 July. This would not change the mission of reducing the Reims salient, which was to proceed according to plan. But to protect the west flank of this operation, the following measures, to be initiated immediately, were to be completed by the night 12/13 July:

a. the artillery, to start gassing at once the Villers-Cotterets forest, and other enemy billets,
b. precautions to be taken against tank attacks,
c. Ninth Army to shift troops from north of the Aisne, where no attack appeared to be pending, to south of the Aisne; the artillery remaining on the north bank to be prepared to enfilade enemy advances south of the river,
d. a rear position to be laid out, extending from east of Pernant—west of Villers-Hélon—Chouy—to west of Neuilly-St. Front; and to be occupied immediately with infantry in great depth, well supported by artillery; the Ninth Army, which was most threatened, to place 4 divisions in its part of this line,
e. 6 divisions were to be posted in rear of the west front in

reserve; they were to be reenforced by 17 batteries, withdrawn from the Marne front.

With these measures it was thought that it would be possible to hold the west front while proceeding with the attack across the Marne, notwithstanding enemy attempts to break through. Troops were warned that such an attack might occur as early as the next day—12 July—and they were ordered alerted.

During the night 11/12 July, the enemy made three raids in First Army territory, one of them preceded by a three-hour artillery preparation. Eleven men were missing after one of these raids, presumably captured by the enemy. Another enemy raid occurred on the west front, near the Ourcq river. Three Senegalese soldiers were brought in opposite the Villers-Cotterets forest, definitely confirming previous reports as to concealment here of black troops. Other prisoners taken reported numerous enemy tanks in the same forest.

In accordance with the orders issued, the artillery commenced to fire numerous problems during the night, and all day of the 12th, blocking roads and gassing presumed enemy billets and batteries. The enemy artillery reacted vigorously and the west front was covered with fire. The enemy, using flame throwers, made a vicious attack near Longpont, just outside the Villers-Cotterets forest, after a strong artillery preparation. Around noon, the Air Service reported heavy motor traffic and infantry in column marching east just north of the Villers-Cotterets forest. Dense clouds prevented better reconnaissance. Some prisoners taken reported that they knew nothing about any impending major offensive, but they had noted a great increase of artillery in their sector, and consequently supposed that some kind of an extensive operation was being planned. GHQ estimated that on this day the enemy had some 12 divisions in line between Soissons and Chateau Thierry, with 6 or 7 more divisions in rear. One additional division, in reserve, was located southeast of Chateau Thierry.

On 13 July, G-1 of the Army Group reported that in the Ninth Army, which had only a defensive mission, 16 divisions were present, of which 3 divisions were fit for fighting, 10 needed 2 to 4 weeks' rest and training, and 3 were fit only for position warfare. The average strength was 545 per battalion, giving about

5,000 infantry per division. The Seventh Army had 30 divisions, of which 23 were fit for fighting, and of these, 20 divisions were on the Marne front ready to attack. One division was fit for only position warfare, and the other 6 divisions were in need of rest for 2 to 3 weeks. The First Army reported 14 divisions present, of which 9 were fit for fighting, and ready to attack. The other 5 divisions needed 2 to 3 weeks' rest and training. Exact strengths were not reported by the Seventh and First Armies, but they did report that effectives were weak. It appears therefore that the combat strength of German divisions on this date was around 7,500 men. The artillery strength was around 5,200 guns for the Seventh and First Armies.

The enemy on this day renewed his attacks in the vicinity of Longpont, and extended them to Faverolles. Fighting lasted all day. In the first instance some ground was lost, but in the second case hostile attempts were defeated. The German artillery continued to gas presumed hostile billets, but to a lesser extent, as they were largely occupied with replying to the enemy's activities. A deserter brought information that the entire area west of Longpont was filled with large masses of hostile artillery. In view of these events, the line south of the Aisne, to east of the Villers-Cotterets forest was quietly withdrawn to the new defensive position, leaving only observation detachments in the old line.

Final arrangements were made for the attack to take place early on 15 July. The orders were issued. The divisions then in line were instructed to let the attack divisions pass through them, and the latter were ordered close to the front by night marches, to be ready at H hour—1.10 A. M. (German time)—to be prepared to follow the rolling barrage, which was to start at 4.50 A. M. The intervening time, within the Seventh Army was to be utilized to cross the Marne River, under cover of the artillery preparation, so as start their advance from the south bank at the prescribed hour. Elsewhere, the troops having no obstacle before them, need only keep under cover until the hour for their advance. The divisions passed through received their instructions as to assembly areas, from where they could be used as corps reserves. In each case this was but a short distance in rear of the present front line, and was already occupied except for the few battalions on outpost duty. The remaining divisions, in army, army group or

GHQ reserve were similarly ordered assembled in suitable areas still further to the rear.

During the night of 13/14 July the enemy artillery was unusually active along the west front. It did not particularly interfere with the troop movements for the attack of the 15th, but it did explode an ammunition dump near Cierges, northeast of Chateau Thierry. A night attack, preceded by a 1½ hour artillery preparation against Vaux, was defeated. An enemy raid in Champagne netted him 2 prisoners.

During 14 July the enemy made minor attacks northeast of the Villers-Cotterets forest, which procured him a slight advance. A counter-attack failed to drive him out, and at night fighting was continuing in this sector. Along the remainder of the west front there was only artillery activity. The front on both sides of Reims was tranquil, appeared to be held only by the divisions in line, on wide fronts, and as far as known, with only weak reserves. The main force of the enemy's divisions in reserve still seemed to be massed in the area between Amiens and Paris.

Everything was now ready for the LAST CHANCE. Success depended on,

a. that the attack on both sides of Reims be a surprise,
b. that this attack be so successful that the enemy would have to withdraw part of his reserves, now in front of Paris, to the east, to prevent a disaster,
c. that a rapid rearrangement of German troops on interior lines would then be made, followed by the decisive attack to end the war, against the enemy weakened lines before Paris and/or Amiens,
d. that the west front between Soissons and Chateau Thierry hold until this decisive attack was ready to be launched, a matter of at least 2 weeks,
e. that the final decisive attack be such as to win the war before the stream of constantly arriving American reenforcements made it utterly impossible to win any victory.

It was a chance, maybe the only chance, and the LAST CHANCE.

THE OLD ARMY LIFE

BY LIEUTENANT COLONEL GEORGE F. LULL, Medical Corps

WHEN one sees the wonderful barracks, the well-balanced diet and the recreational activities furnished the present day soldier the opinion is very readily arrived at that he is a favored individual. It is interesting to read over some of the old sanitary reports and to see just how the American soldier fared years ago. A group of these reports rendered prior to the Civil War have been reviewed and they contain much valuable material. In those days the soldier's life was not exactly the Life of Riley and he was not always quartered in comfortable barracks.

In 1856 the 6th Infantry were stationed in cantonments near Fort Pierre, Nebraska Territory. The Surgeon of the command reported "That the temperature during the year ranged from 27° below zero to 106° F. During the cold season the troops were much exposed in procuring fuel for the fires and cottonwood bark for the mules to eat. The mules were not permitted to be used at all for the transportation of these supplies and the men were compelled to attach themselves to the wagons." * * * "The officers' quarters, the soldiers' quarters, and the hospital, are similar structures. They are built of cottonwood logs, filled in and roofed with earth. As the buildings were erected long after the ground had become frozen in the autumn, they could be but imperfectly constructed; they were consequently cold in winter. Upon the occurrence of the spring rains we found that the roofs were no protection against the water. It became necessary for the hospital department, for the companies, and for the officers, to pitch tents adjacent to the buildings, in which to take refuge upon the approach of a storm. Window-glass was allowed to the hospital, although at first refused by General Harney; none was permitted to the officers or companies. The rooms were attempted to be heated by large open fireplaces; so unsuccessful was the effort, however, that it was sometimes impossible to write, in consequence of the freezing of the ink in the pen."

Surgeon B. I. D. Irwin, at Fort Buchanan, Arizona, in February, 1859, writes, "The structures used as quarters for the men, most of those used by the officers, the laundresses' quarters, storerooms, and workshops, are formed of pickets placed perpendicular

to the ground, the chinks filled up with mud, and the roof covered with the same material. It is needless to say that such buildings present any other than a neat or comfortable appearance. The chinking remains only long enough to dry, shrink, and tumble out, never to be replaced lest it should destroy a new system of ventilation which its absence had established. During the wet weather the mud roofs are worse than useless—save it be for the purpose of giving dirty shower baths to the unhappy occupants. After a day of rain, the condition of the quarters of officers and men is abominably miserable" * * * "Stables, corrals, pig-pens, root houses, open latrines and dwellings, are indiscriminately scattered all over the camp."

In 1859 a portion of the Colorado expedition (Companies F and I, 6th Infantry, and a detachment of 3rd Cavalry) remained at a point on the Colorado River which later was called Fort Mojave, New Mexico. The command was on half rations of flour, beans and rice, very scantily supplied with clothing and bedding, without tents or paulins and entirely out of tobacco and other extras. Notwithstanding these *small* privations Asst. Surgeon John J. Milhau reported, "the men went to work cheerfully; and there being no wagons at the post, they were obliged to carry on their backs for a distance of over a mile nearly all the material required to erect the necessary huts; to add to their difficulties, the river overflowed the bottom and the weather became excessively hot."

Malaria, dysentery and many other acute infectious diseases were little understood and caused a great deal of suffering. Yellow fever was almost a seasonal visitor to the stations on the eastern and southern seaboard. At Fort Moultrie, S. C., during the summer of 1858 the strength of the garrison was 148. Among this number there were 52 cases of yellow fever with 29 deaths. At Fort Jupiter, Florida, during the summer of 1855, Company H. 1st Artillery, was stationed with a strength of 2 officers and 62 men. Both officers and 45 of the men had severe attacks of fever, no doubt malaria. The following summer in a new command of 4 officers and 72 men there were 160 cases of fever, probably some of them relapses rather than new infections.

Alcoholism was a great source of trouble except to troops on the far western plains, where it was hard to get. Surgeon R. H.

Coolidge, reporting from Fort Riley, Kansas, in June, 1857, says:

"Intemperance has been the fruitful cause of both diseases and injuries. The extent to which this vice prevailed may in part be inferred from the number of cases of delirium tremens reported. During the year previous to my joining this station, say from October 1, 1855, to September 30, 1856, six cases of delirium tremens are reported, the average strength of the command being 392. From October 1, 1856, to June 30, 1857, nine months, there occurred sixteen cases in a command averaging 335."

"From the statements of convalescents and from other sources, I am satisfied that three quarts of whiskey was the customary daily allowance of quite a number of the men; one quart, as they expressed it, being required 'to set them up before breakfast.'"

Scurvy was expected each winter in many places, and it was known to be connected in some way with the diet. Many were the theories and during the fifties dried vegetables became an article of issue to troops in the west. The Surgeon at Fort Randall, Nebraska Territory, reported in the fall of 1857 that the previous winter the whole command suffered more or less from scurvy prior to receiving some Irish potatoes which had left St. Louis by boat in the fall and were deposited 100 miles below the Fort and hauled, frozen, later on in wagons, arriving during the first week in January. These were eaten raw and helped the scurvy, but soon gave out and the disease reappeared.

Some garrisons made use of wild artichokes and wild cherry (really a water cress) and several places used a preparation made from cactus juice to prevent scurvy. The latter was first heated slightly over a fire and then the juice extracted. A strong advocate of cactus was Asst. Surgeon E. W. Johns, who wrote a long report concerning it. At the end he states "I have omitted to mention that the dose of the juice of the cactus is nearly a tumblerful mixed with half a gill of whisky (bought from the commissary department out of hospital funds, as the hospital liquors would otherwise be expended) and flavored with extract of lemon." No doubt this was a fine cocktail to precede a dinner of salt pork and beans.

Asst. Surgeon Albert J. Myer in June, 1856, reports from Fort Duncan, Texas, the following:

"With the exception of one company—C, First Artillery, who, despairing of obtaining quarters from government, have, after eighteen months' life in tents, in garrison, erected quarters at their own expense—the men are living in huts, leaky and open, with grass roofs, sides of poles plastered with mud, and mud floors. The shelter is not sufficient for men in garrison in this climate; by these exposures health is sacrificed without apparent necessity. The hospital is of stone, and as a main building for a hospital is good; but it has, at present, no ceiling, no piazza, and no outbuildings. These necessary additions have been requested."

A year later Dr. Myer reports the companies partially at their own expense and by their own labor constructed quarters of stone and adobe, with thatched roofs and earthen floors. Bunks were constructed of such fragments of wood as the men could collect and rudely put together. The hospital was repaired and he states, "The construction of the 'bath house,' a building of a single skylighted room, has been ordered, and will be undertaken at the earliest opportunity. It is also contemplated to use this building as a dead house and for post-mortem examinations, when there may be the necessity."

In the summer of 1857 a portion of the force that had been previously concentrated at Fort Leavenworth, Kansas, commenced a march of over 1,200 miles to Salt Lake City, Utah Territory. The winter of 1857-8 was passed at Camp Scott and Fort Bridger, in Utah, and the march continued to Salt Lake in the spring.

Asst. Surgeon Roberts Bartholow was assigned as the medical officer with the 10th Infantry and the march started on July 18th. The surgeon reported that "By way of preparation for the labors and exposure of such a journey, an immense amount of drunkenness was indulged in." On July 31st the regiment arrived on the Little Blue River, distance covered, 210 miles, total strength of the eight companies, 547, having lost by desertion from the time of departure 82 men. The troops then continued toward Fort Laramie. "The professional monotony of the march was varied by two cases of labor. Both of these cases were delivered in a wagon, en route—a novelty in obstetric practice not to be recommended to professors of the art."

Those were the good old days. Perhaps.

ARTILLERY NOTES FROM FOREIGN JOURNALS

(DIGESTS BY LT. COL. JOHN S. WOOD, F.A.)

MODERN HOWITZERS—GEN. CHALLEAT

(*Revue d'Artillerie, October, 1935*.)

OUR French artillery heritage lends added interest to General Challéat's article on howitzer development. He deals with the reasons for the shortage of light howitzers in the French army, gives a basis for a better classification of modern artillery, outlines the characteristics of suitable weapons for division and corps, and recommends changes in the present artillery organization.

In 1900, the Germans had adopted an artillery organization of 36 light howitzers (105mm) and 108 field pieces (77mm) per corps. The French Artillery Committee likewise established a program for light howitzers comprising calibers between 95mm and 120mm. Unfortunately, however, this program was not executed with conviction, and attention was devoted rather to modifying the 75mm ammunition to provide higher angles of fall. A delay action fuse was devised to give action on ricochet against entrenched personnel and reduced charges were provided for fire against reverse slopes.

In spite of the efforts of many French officers during the ten years prior to 1914, the infatuation for the 75mm remained so great that no steps were taken to carry out the howitzer program. Division and corps artillery entered the war with field guns (75mm) only. In seeking a palliative, the Malandrin nose plates were provided for 75mm projectiles but these were far from successful as a measure for obtaining greater angles of fall.

During the long period of trench warfare that immediately ensued, attention was naturally directed to providing heavy howitzers. Moreover, French industry was equipped to produce the 155mm which was adopted accordingly for both division and corps. Since the war, the influence of trench warfare has remained too strong to allow the removal of this caliber from the division.

A new system of designating artillery matériel by caliber and range is needed to avoid the unfortunate misunderstandings and dismal results of the present terminology. It should give a true

measure of the ballistic possibilities for a particular tube, recognizing the limits of range for the various calibers to avoid excessive wear: 11 to 12km for the 75mm, 15 to 16 for the 105mm, 20 to 21 for the 120mm, 25 to 26 for the 155mm, etc. However, old habits are hard to change, and undoubtedly the old terms of howitzer and gun will continue. Definiteness might be added, nevertheless, by limiting the name howitzer to those weapons which give, for all charges and all ranges beyond 2 or 3000 meters, minimum angles of fall from 20 to 30°.

As thus defined, General Challéat concludes that the following characteristics are indicated for howitzers of division and corps:

Characteristics	*Division*	*Corps*
Caliber	105mm	150-155mm
Range	10-11kn	12-16km
Weight of projectile	15-16kg	44kg
Weight of explosive (minimum)	2.5kg	7kg
Field of fire (vertical and horizontal)	45°	45°
Weight in battery	1500-1550kg	4-6 tons
Practical rate of fire	4-6 r/m	2-3 r/m

He considers shields unnecessary for the corps weapon; and, to simplify construction, favors omission of an independent line of site in both types in view of the given cadence of fire which allows sufficient time for correct leveling. In both cases there should not be more than two loads for transport and the piece should be capable of movement in and out of battery as a single unit.

Believing the 155mm too heavy for the division in war of movement but extremely useful at times, the author recommends that it be replaced in divisions by the 105mm and that the corps be given an increase in 155s to allow detachments to the divisions when required. He also recommends one battalion of infantry accompanying guns per division. This includes three 6 gun batteries of 75/47 on interchangeable mounts, nine 47mm tubes per battery being kept on hand for anti-tank use.

NOTE: Foreign military journals for the past year list many developments of the light infantry accompanying piece with interchangeable mount for two tubes, one for normal use and the other for anti-tank action. The following table gives the typical characteristics of such weapons.

Country:	Sweden	England	Sweden	Checkoslovakia
Firm:	Bofors	Vickers	Bofors	Skoda
Caliber:	81/37 or 47	70/25.4	75/25	90/75
Range:	160-6000m (81mm) 7100m (37mm) 6700m (47mm)	3100m (70mm) 4300m (25.4mm)	5100m (75mm) 4700m (25mm)	7400m (90mm) 8900m (75mm)
Weight of Projectile:	4.4kg (81mm) 1kg (37mm) 1.5kg (47mm)	4kg (70mm) .25kg (25.4mm)	4.5kg (75mm) .25kg (25mm)	8.5kg (90mm) 6.3kg (75mm)
Initial Velocity:	320 m/s (81mm) 800 m/s (37mm) 500 m/s (47mm)	213 m/s (70mm) 750 m/s (25.4mm)	300 m/s (75mm) 600 m/s (25mm)	
Weight in Battery:	450kg	357kg	365kg	710kg

The Vickers gun provides for sliding the smaller tube within the larger; the other weapons interchange barrels on the same mount. All may be separated into 6 or 7 loads for transport by hand. Twelve men form the usual crew for such transport.

CALIBERS OF DIVISION ARTILLERY

The success of the 81mm Stokes-Brandt mortar in the Chaco, with its recent adoption as an infantry accompanying weapon by various armies, has revived the perennial argument as to the proper caliber for division artillery. Undoubtedly, the new mortar's volume of fire and accuracy up to 3,000 yards have greatly increased the possibility of close and adequate support for assaulting infantry. Whether or not this justifies a change in the present division artillery causes many differences of opinion.

In France General Challéat proposes the 105mm howitzer with the addition of infantry accompanying batteries with interchangeable

tubes, 75/47, for ordinary use or for anti-tank action. General Culmann* opposes him, remaining faithful to the 75mm. Major Hilton† of the British Army, in his Duncan Prize essay on shell, takes up the cudgels for accompanying artillery (Stokes-Brandt mortars, 3 pounder gun) with the infantry and for heavier types in the division (25 pounder gun, 95mm, instead of the present 18 pounder). On the other hand, Colonel Justrow‡ of the German army advises caution in adding weight to division artillery, remarking that even if the 75mm expends twice as many rounds as the 105mm in accomplishing a mission the advantage still rests with the smaller caliber.

In view of the World War stocks of matériel, munitions, machinery, guages and dies which remain, like the poor, with us always, caliber discussions appear somewhat academic. The subject of modification of the types on hand to meet modern conditions seems more profitable from a practical standpoint. In our own case modifications of the French 75mm (more rapid traverse, increased field of fire, adaptation for rapid hauling), together with needed alterations of the German 105mm and the improvement of ammunition for both, would seem to offer a more reasonable and attainable solution of the division artillery problem than replacement by new types and calibers.

THE ITALIAN ARTILLERY

As reorganized in 1935, the Italian army comprises 11 corps of 30 divisions to be formed into 4 armies on mobilization. An additional force of 27 Alpine battalions with 27 mountain batteries covers the mountain passes.

Infantry divisions contain 3 regiments of 3 battalions and one artillery regiment of 48 guns. The light divisions (2 at present) comprise 2 or 3 cavalry regiments, a like number of Bersaglieri cyclist regiments, motorized infantry, motorcycle companies, tanks, and 1 regiment of motorized artillery. Fascist militia infantry and machine gun battalions are included in the light divisions and in each corps as a corps reserve.

Both artillery and infantry armament are influenced by the mountainous terrain of probable combat. In the former, mobility

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* LaFrance Militaire, August, 1935, September, 1935.

† Journal of the Royal Artillery, July, 1935.

‡ Wehrtechnische Monatshefte, September, 1935.

is sought rather than long range and power; in the latter, the proportion of trench mortars is striking. Battalions are equipped with 64mm mortars and companies with smaller ones of 38 to 50mm.

Division Artillery

One regiment of 4 battalions of 3 batteries (4 guns). In general there are two battalions of 75mm, horse-drawn (Deport 1911, split-trail, range 11200m); one pack mule battalion of mountain guns (Skoda howitzer, 75mm, 7 loads, range 7000m); and one of light howitzers, horse-drawn (Skoda, 1916, 100mm; Ansaldo, 1918, 105mm, range 9500m).

Corps Artillery

One regiment of 4 battalions of 3 batteries, tractor-drawn (Pavesi, 40 H.P., 15 m/h). There are two howitzer battalions (Skoda, 1916, 149mm, range 8200m) and two of guns (Schneider 105mm, range 11400m).

Army Artillery

There is a total of 10 tractor or truck regiments of army artillery, comprising 38 battalions and 76 batteries. On mobilization one regiment of 5 battalions (one of 152mm howitzers, one of 210mm mortars, and three of 149mm guns) will be assigned to each army. The rest will constitute the general artillery reserve, together with the fortress and railroad artillery. The army artillery matériel lacks homogeneity, comprising many different types and calibers, both new and old.

Anti-Aircraft Artillery

5 regiments of 2 battalions of 3 batteries (75mm, self propelled mount, range 6000m, 20-30 r/m; 1 section of A-A machine guns). Each regiment has a search light battalion of 2 batteries.

Observation

There is one observation battery (sound and flash) for each corps.

Air observation is to be assigned in war as follows:

One observation group and one balloon group per army.

One observation group and one balloon company per corps.

Strength

The peace strength of the Italian artillery is 3,559 officers, 4,028 non-commissioned officers, and 57,600 men.

Doctrine

A recent discussion of artillery in war of movement by the Italian inspector of artillery, General Augusto de Pignier, indicates adherence to the doctrine of centralization, mass concentrations for neutralization, rare and exceptional use of detached batteries, continuous observation, close liaison with infantry, necessity for air observation, and the paramount importance of a continuous and large supply of ammunition.

General Pignier emphasizes the necessity for greater concentration of artillery means in open warfare, with batteries close to the supported infantry and with short lines of communication. The proper allotment of artillery ammunition for the various phases of combat is more vital than ever in war of movement. Here, particularly, large quantities of ammunition are more valuable than a large number of guns.

(Revue d'Artillerie, August, 1935; Wehrtechnische Monatshefte, August, 1935; Rivista d'Artiglieria e Genio, May, 1935.)

THE JAPANESE ARTILLERY

The Rivista di Artigliera e Genio for June, 1935, presents an informative study of the Japanese army as derived from Russian sources.

Organization

According to this article, the Japanese forces are organized into armies and divisions, without corps. The division comprises 4 infantry regiments in 2 brigades, 1 regiment of cavalry, 1 regiment of light artillery, 1 battalion of engineers, 1 battalion of tanks, and the necessary services.

Infantry

The infantry is equipped with the Arisaka rifle and a light machine gun of the Hotchkiss type, together with the usual auxiliary weapons (37mm cannon and 72mm trench mortar). The 37mm is to be replaced by a 57mm anti-tank gun and the 72mm mortar by an 81mm weapon of the Stokes-Brandt type. One weapons company per battalion is contemplated, comprising 2 guns and 2 mortars. In addition, each regiment will have one battery of 4 field guns (75mm, horse-drawn, range 5400 meters, projectile 5.8 kilograms in weight).

Artillery Division

The light artillery regiment comprises 3 battalions of 3 light batteries (75mm, Nagoya and Osaka built, Krupp 1905 model, range 12km) and one light howitzer battalion (105m, Schneider, range 12km). Only a few of the 105's have been supplied to replace the old types of 120mm and 150mm with ranges of 6000 and 9000 meters. A new organization into mixed battalions is contemplated.

Certain divisions are allotted a mountain gun regiment with 3 battalions of 2 batteries (75mm Krupp type, range 6540m). Horse artillery is composed of 2 battery battalions (75mm Krupp type, range 8300m).

Army Artillery

The army artillery comprises, on a peace footing, 4 brigades of 2 regiments (105mm guns and 150mm howitzers). The 1930 split-trail 105mm gun has a range of 18km. The 150mm howitzers fire from 10 to 12km. Heavier artillery includes calibers from 150mm to 410mm, the basic piece being the 240mm howitzer.

Anti-Aircraft Artillery

The latest models are the 75mm with a vertical range of 9500m and a horizontal range of 14000m, speed of fire 25 r/m, all-round traverse, and 85° maximum elevation; and the 105mm firing at 12000m vertically and 17000m horizontally with a speed of 15 r/m.

Artillery Doctrine

The fundamental principle of artillery tactics in the Japanese army is employment in mass, directed by the division artillery commanders. Tactical groupments in direct and general support and for counterbattery are controlled directly by the commander of the division artillery. No general missions are assigned, such as the support of certain infantry units, but a concrete assignment of objectives is made to further the main effort. This idea of a center of gravity of combat toward which all efforts must converge holds in both offense and defense and the centralization of artillery to that end is constantly emphasized.

Motorization

The Japanese artillery is being motorized rapidly, as there is always a shortage of horses in the country.

Industry

Japan is well organized industrially, but it must rely on the importation of many essential raw materials such as iron, lead, nickel, and cotton. These can not be produced in sufficient quantity even with Manchuria and Mongolia in Japanese hands.

GERMAN FIRING REGULATIONS, 1935.

An analysis of the new German Firing Regulations by the editors of the December *Revue d'Artillerie* shows the following changes from the old regulations:

1. The 77mm Model 1916 has been given a reduced charge and the number of charges for the 105mm howitzer has been decreased.
2. Ricochet fire is again recognized—a change due probably to improved fuses and to the practical abandonment of time fire.
3. Conduct of fire has been simplified. The battery is handled as a whole—changes of individual pieces have disappeared. There is no manipulation of sheaf, no sweeping, no use of a distant common aiming point.
4. The fixed fork has been eliminated in precision fire.
5. Rapidity of fire action is particularly emphasized. The importance of rapid calculation, effective observation, swift and sure communications and ample details is stressed throughout.

BOOK REVIEWS

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