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**THE
FIELD ARTILLERY
JOURNAL**

EDITED BY

ARTHUR F. CASSELS

LIEUTENANT-COLONEL (FIELD ARTILLERY), UNITED STATES ARMY, RETIRED

**THE UNITED STATES FIELD ARTILLERY ASSOCIATION
WASHINGTON, D. C.**

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Contents, March–April, 1921

Major-General Edward F. McGlachlin, U.S.A.	<i>Frontispiece</i>
Infantry Batteries and Accompanying Guns	123
By Major Lesley J. McNair, Field Artillery.	
Pack Artillery	136
By Major G. R. Allin, Field Artillery.	
The Drama of the Marne	140
By Kurt Hesse, with Notes by Major-General J. T. Dickman, U. S. Army.	
Development of the National Guard	153
By Colonel John W. Heavey, U. S. Army.	
Endurance Test for the United States Mounted Service Cup	161
Operations of the Horse Battalion, 15th (German) Field Artillery in Northern France, 1914	181
By Lieut.-Col. Seeger (Translated by Col. O. L. Spaulding, General Staff, U. S. Army).	
Fire Discipline	194
By Major F. C. Wallace, Field Artillery.	
Discussions	211
What is Divisional Artillery?	
Current Field Artillery Notes	227
French Artillery Field Service Regulations.	
Field Artillery R. O. T. C. Association.	
Vacational Training.	
Memorandum for News Items in Service Journals.	
Editorial	238
Book Review—Book Notices	242
Index to Current F. A. Literature	244

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Infantry Batteries and Accompanying Guns

BY MAJOR LESLEY J. McNAIR, FIELD ARTILLERY

1. *Defined.* The artillery employed for infantry support is of two categories, depending on its system of command and method of functioning tactically, *i.e.*, *supporting artillery* and *attached artillery*. Infantry batteries and accompanying guns are forms of attached artillery specially used in connection with an attack against a defensive zone, and in other situations where the attack involves continuous fighting over a considerable depth, and where the supporting artillery alone would not yield the maximum effectiveness. Infantry batteries are batteries attached to subordinate infantry units, ordinarily the brigade or regiment. Accompanying guns are single pieces attached ordinarily to infantry assault battalions. Thus they are distinct from the mass of supporting artillery usually present in such situations.

While infantry batteries and accompanying guns are forms of attached artillery, it by no means follows that all attached artillery is either infantry batteries and accompanying guns. For example, artillery may be attached to infantry commands in advance and rearguards, pursuits, retreats, in defensive situations (par. 575, I.D.R.), and even in attacks; where the terms infantry batteries and accompanying guns would not be applicable, strictly speaking, although the methods of the latter might be appropriate with little modification. The term "accompanying gun" is not applicable to the infantry weapons, such as the

light trench mortar and the 37-mm. gun. The term "infantry battery," as here used, is quite distinct from the same term as used in paragraph 1469, Field Artillery Drill Regulations, 1916.

2. *General purpose.* It is a well-recognized fact that no matter how powerful the general artillery and other fire support in attack may be, some elements of the hostile resistance, particularly automatic weapons, will remain in action to a certain extent, and will be encountered by the advancing infantry. Advance provision for attacking these targets cannot be made, except in a general way, since their location is not known beforehand. When they actually are encountered, it frequently is possible for the infantry to overcome them with rifle fire and movement alone, but usually this procedure results in undue losses. Again, it may be possible to employ successfully the special infantry weapons, the machine gun, the light trench mortar, and the 37-mm. gun; but these may prove inadequate in power. In this case, recourse may be had to the supporting artillery; but this expedient may prove unsatisfactory, due to long and faulty communications, lack of observation, difficulties of target designation at a distance, and inaccuracy of long-range fire. In general, the problem of meeting these unexpected resistances is to bring into play a fire action of sufficient power in a *minimum of time*, in order to save the infantry time and losses. To augment the power of the special infantry weapons and to reduce the delay and inaccuracy of the fire response of the supporting artillery, infantry batteries and accompanying guns were introduced.

3. *Historical.* The Germans made more extensive use of infantry batteries and accompanying guns than did the allied armies. In some cases the guns were taken from the division light artillery, and in others the guns were formed in independent batteries; the latter were armed with matériel of various types, such as the 77-mm. gun on low wheels, the 76-mm. Russian gun, the 75-mm. and the 77-mm. mountain guns, and 57-mm. naval guns. A captured document of about September

INFANTRY BATTERIES AND ACCOMPANYING GUNS

1, 1918, states that the guns "must engage at short range the enemy with whom the infantry is fighting at close quarters. By reason of their proximity to the infantry, they can be fired at the right moment and on the right target more easily than the artillery in the rear. Also, being at close range, they can fire on objectives which cannot be observed from the rear."

The British conception is similar. To quote from an official document: "The fighting throughout August and September (1918) has confirmed previous experience regarding the vital necessity for closely supporting the advance of the leading infantry with field guns. . . . Sections (platoons) of 18-pounder batteries, rather than single guns, should be allotted to assaulting battalions."

In our operations, accompanying guns were used first in the St. Mihiel operations, in obedience to instructions by the Commander-in-Chief, but to a negligible extent; their use was much more extensive in the Meuse-Argonne operations. The experiences varied greatly, the greater part of the cases resulting in failure to accomplish the mission, and with occasional losses of personnel, animals, and matériel. As a result, extensive opposition to the use of such guns developed, based on various contentions; and the discussion was out of all proportion to the relative importance of the guns in the general artillery scheme. A study of our experience, however, shows the following:

In all but a few cases, both the young artillery officers commanding the guns and the infantry commanders with whom they worked had little or no training in the use of such guns, and knew little of their purpose or tactics.

They were used in situations which were not appropriate.

In many cases they were mishandled to such an extent, due to both the artillery and the infantry, that failure was almost a foregone conclusion.

A mere tabulation of successes and failures is therefore no criterion of the value of such guns when properly employed. The Chief of Artillery, 1st Army, A.E.F., stated: "There have

THE FIELD ARTILLERY JOURNAL

been repeated instances on the present front of their effective use, of their abuse and of their neglect." Under date of December 11, 1918, the Inspector General, A.E.F., reported in part as follows: "According to the energy of the artillery officer handling the accompanying guns, the experience under fire of the infantry battalion commander, the liaison between the two, and the terrain, they were used with varying successes. In one division (the 82nd) one accompanying gun with the assault battalion destroyed eight pill boxes in one day which at various times held up the infantry advance." Later in the same report: "——th Division: In the ——th Infantry Brigade, one platoon of Battery A, ——th Field Artillery, was assigned as the accompanying guns to one of the assaulting battalions of this brigade. The guns went forward during the night 31 Oct.–1 Nov., 1918. Twelve horses were killed by shell fire and machine guns. This platoon was relieved 2 Nov., 1918, having accomplished nothing. Those with the ——th Infantry fell back behind the assault battalion, but fired about 175 rounds against machine-gun nests with good effect." A staff officer who witnessed the action of this same division on November 2, 1918, reported: "We encountered an infantry company commander whose company was held up before the village of X. According to his statements, he was using all the fire power at his disposal to overcome a very stiff machine-gun resistance, but seemed doubtful as to whether he could make a go of it. We asked him why he did not call for artillery support. He replied that he was trying to get artillery support, but could not get communication, although he thought it might come later. We passed through artillery brigade headquarters several hours later and General X then mentioned that the infantry was calling for artillery fire near (same village)." This village could have been attacked by artillery at short range, with perfect observation, and with the position and its approaches completely under cover; the artillery was not there, however, but was considerably to the rear and out of communication.

4. *When used.* In deciding to use batteries or guns

INFANTRY BATTERIES AND ACCOMPANYING GUNS

attached to infantry, it must be remembered that their detachment from the mass of supporting artillery weakens the latter. They are removed from that organization of command and supply which, in the general case, is designed to employ the artillery with greatest effectiveness—an organization with which they are perhaps best trained and most accustomed to work, and where they receive the supervision and assistance of higher, more experienced artillery commanders.

It follows that the use of guns in this manner should be dictated by distinct advantages over the more usual method of employment; situations arise in which this is the case. A stereotyped use of attached artillery is to be avoided; in many cases, at least, the result on the average would be diminished artillery effectiveness. In other words, *supporting artillery is the general practice; attached artillery is the exception*, called for by the situation. Small proportions of attached artillery relative to the supporting artillery are much more frequent than large proportions.

In the case of an attack against a single prepared position, it may be expected that the artillery positions are well forward, with ranges short, observation is organized, communications are established, firing data are prepared for a large number of points, some adjustment of fire doubtless has been made, artillery information officers are with infantry commanders; there is therefore no reason to apprehend delay or ineffective fire in response to calls for artillery fire, even on unexpected resistance, and the supporting artillery in general should be kept intact.

In an attack against a defensive zone of two or more prepared positions, the first position presents the same aspects as a single prepared position; and as far as this position is concerned, the integrity of the supporting artillery ordinarily should be maintained. Conditions are different for the second position. It must be expected that the attacking infantry will have lost their formations to a certain extent when they arrive at this position; the position will be out of effective range of the initial artillery positions, and the artillery in general must advance

THE FIELD ARTILLERY JOURNAL

shortly after the first position is captured; observation will be possible, but will not be organized; communications will be established hurriedly and imperfectly; a certain portion of the artillery may not have arrived yet at the new positions. It is reasonable therefore that, for the second position, the attack will have lost some of its cohesion and crushing power, and the supporting artillery will be less effective; yet the attack has acquired momentum, and must be pushed without allowing the enemy time to reorganize. Moreover, between the first and second positions the enemy will have isolated strong points, centres of resistance, intermediate and switch positions, and other organized areas, which will tend to slow up the attack and disorganize it; many at least of these points cannot be known beforehand. It is to be expected then that the infantry will feel the need of artillery constantly close at hand when they attack the second position; and probably not long after they pass the first position, depending on conditions. How much artillery thus is needed will depend still more on conditions. The second position ordinarily will require fairly complete artillery support, and strong endeavor will be made to have the supporting artillery available at this time; in this case, accompanying guns alone would answer the local needs of the infantry; and they would be supplied at the rate of about one per assault battalion. In case little resistance is anticipated at the second position, and the artillery is likely to be delayed in crossing the first position, it might be advisable to employ infantry batteries at the rate of one battery per infantry regiment in front line or one light battalion per infantry brigade in line. Accompanying guns might be taken from this quota if desirable. An infantry brigade commander having more than one infantry battery is at liberty to pass them on to his regiments.

For the attack of the third position, or after passing the last organized hostile position, the conditions which make attached artillery advisable before attacking the second position obtain to a still greater extent. The supporting artillery may keep up with the infantry with difficulty; some, particularly the heavy

INFANTRY BATTERIES AND ACCOMPANYING GUNS

artillery, may lag behind; the attack develops into a series of local combats more or less detached, and the infantry commander concerned must handle them on his own initiative, and be responsible for results. Such cases call for infantry batteries, used as such or also with accompanying guns.

In general there is no fixed practice in the use of attached artillery; its proper employment is a phase of the artful handling of artillery. While the foregoing discussion of the attack against a defensive zone illustrates situations which might call for infantry batteries and accompanying guns, their use is not restricted in this particular case. The same necessities could arise in situations where the elements of a defensive zone are lacking; these necessities may be local or general; they may be incident to open operations as well as a stabilized situation. The use of attached artillery in appropriate cases is to be encouraged. But as stated previously, the practice is an exception to the usual procedure of supporting artillery, and should be justified by existing or anticipated conditions.

5. *Duration of mission of attached artillery. Orders.* There were cases in France where accompanying guns, assigned initially for a particular operation, remained absent from their batteries for several days, during which time the operations and the situation changed completely, and the guns were idle most of the period. This is faulty procedure. *Since the use of attached artillery is exceptional for special situations, such pieces should revert to their proper organizations immediately on completion of the missions contemplated or when they no longer are useful.* Orders should be as explicit as possible as to the period of attachment; but if the orders are indefinite in this respect, the commanders immediately concerned should initiate measures to return the pieces when they are no longer useful. Ammunition and other supplies are obtained with difficulty by detached and scattered artillery units.

Attached artillery might well be used for a particular day only, on the assumption that during the succeeding night the supporting artillery can be advanced so as to make them

unnecessary thereafter. Or the orders might call for such batteries or guns during a particular phase of the operation, as after the capture of such a position, etc.

Situations might arise during an operation where a supporting artillery commander would employ some of his artillery in the manner of infantry batteries or accompanying guns, though the technical formalities of orders and commands would be lacking. Such a case would be the sending of a platoon or piece to take a particularly favorable position for a certain mission, as, for example, firing on a moving hostile column; to return on completion of the mission.

In an attack from stabilization, it usually is necessary to detail accompanying guns, if used, before the attack on the first position, though their use is not contemplated until later. Otherwise there may be difficulty in overtaking and finding the infantry unit to which a gun is attached after this unit has advanced a considerable distance. In other words, the guns will not participate in the initial preparation and general fire support for the attack of the first position, except in special cases. This advance detachment would be less necessary in the case of infantry batteries, for, as a rule, they are not needed as early in the attack.

6. *Command of attached artillery.* Infantry batteries and accompanying guns for the time being are detached completely from their artillery command, and are exclusively under the commander of the infantry unit to which they are attached. Faulty exercise of this command, usually through lack of understanding of the employment of such artillery, may lessen or destroy the effectiveness of which they are capable. In general, the best results will be obtained when the infantry commander indicates or assigns a mission from time to time, and leaves to the artillery commander all possible latitude and initiative in the technical execution of this mission. Moreover, such a procedure will relieve the infantry commander of much of the burden which otherwise would be imposed upon him, and for which he has not time. Unless conditions make it inadvisable,

INFANTRY BATTERIES AND ACCOMPANYING GUNS

the artillery commander should be given sufficiently general orders to permit him to attack favorable targets on his own initiative; this will not prevent the assignment of specific missions by the infantry commander at any time, and may avoid keeping the guns idle for lack of an assigned mission. Although it is desirable to allow the artillery commander full latitude in details, the infantry commander should feel free to give corrective instructions at all times, even though contrary to the views of the artillery commander. Should this be necessary frequently, however, the relief of the artillery commander should be requested.

7. *Missions.* The missions properly assigned to an infantry battery include those ordinarily incident to the support of infantry by light artillery; the only limitation is that the extent of the mission should be within the capabilities of the amount of artillery available; on this point the infantry commander always can secure the advice of the artillery commander. Ammunition cannot be expended in the lavish manner ordinarily possible for the division artillery as a whole; this usually precludes firing at other than definite targets; barrages and the searching of large areas are too costly in ammunition.

The accompanying gun must be used still more sparingly; not only is its ammunition supply very limited, but its advanced position makes it extremely vulnerable. When once it opens fire, it must obtain effect rapidly, or it probably will be silenced, and possibly destroyed. It is in fact an emergency weapon, to be used for those targets requiring its power, and which cannot be attacked successfully by the infantry weapons. It should not be spared, however, at the expense of infantry casualties. Typical targets would be hostile strong points, machine guns, single field guns, anti-tank guns, and tanks used in counter-attacks.

From the purpose of infantry batteries and accompanying guns, it is evident that their targets ordinarily should be those hostile elements immediately opposing the infantry advance.

The idea that they fire habitually on targets which are beyond the range of the infantry special weapons is erroneous.

8. *Handling and manœuvre of attached artillery.* The handling of both infantry batteries and accompanying guns puts to the severest test the skill of the officers and the training of the units. Prime requisites are reconnaissance, mobility, skill and rapidity in firing, and at all times boldness without rashness. Movement over exposed areas and difficult terrain is unavoidable, but delay and danger from hostile fire can be lessened by timely reconnaissance and suitable gaits and formations. Accompanying guns can be bolder than infantry batteries; vulnerability increases and mobility decreases with the size of the unit. It is desirable to occupy positions as far advanced as possible; but the extent to which this will be possible will depend on various factors, such as the difficulty of the terrain and the cover it affords, the resistance offered by the enemy, particularly in artillery fire, and the conditions of visibility. Accompanying guns ordinarily can push further forward than infantry batteries. Changes of position should be as few as possible compatible with close support. A conception that "by accompanying guns is understood a gun carried along with or nearly with the infantry first wave" is erroneous, and actually resulted in several cases in the gun being put out of action promptly.

In firing, observation is essential, and from a point near as possible to the pieces, preferably so the guns can be commanded by voice. The artillery commander must be where he can command his guns or gun effectively; in addition, it is desirable that he be with the infantry commander. If both conditions cannot be fulfilled, he remains with his guns and connects with the infantry commander by telephone or other means and by information agents. If communications are allowed to become long and complicated, or if the observation is distant from the guns, they lose their peculiar effectiveness, have little or no advantage over the supporting artillery, and have some disadvantages.

For infantry batteries, indirect laying from concealed positions

INFANTRY BATTERIES AND ACCOMPANYING GUNS

is the rule, but not an invariable one; there are instances of batteries going into action in the open with excellent effect and without losses. The catchy French saying, "A battery seen is a battery lost," is not always true; it depends on who sees it and to what extent he is in a position to inflict damage. Infantry batteries ordinarily should be able to fire at ranges of about 2500 yards or less. Positions when initially occupied may be very advanced, there being instances in our operations of as much as a battalion of light artillery taking position considerably less than 1000 yards behind the infantry front line. Accompanying guns are kept concealed as far as possible at all times; occasionally during movement and frequently in firing, they must be exposed. It is to be expected that such exposure will draw hostile artillery fire, and the gun must be moved to cover quickly, and a new position used for subsequent firing. The range usually is short—say, under 1500 or 2000 yards—and the elevation so small that very little defilade is possible, even if it were desirable to use indirect laying. In some cases the speed and simplicity of direct laying makes its use advisable. Whichever method of laying is used, the defilade thus will be little or nothing.

Infantry batteries use shell or shrapnel, depending on the missions. Many missions of accompanying guns also would call for the use of shrapnel; the shell seemed to be preferred in service, however, because of the simplicity and speed of handling it. A few well-placed projectiles of either type ordinarily will be effective.

In using accompanying guns, the terrain or conditions may be such as to prevent entirely or at times the use of horses, and make it necessary to pull the guns by hand. The artillery has not sufficient personnel for this in most cases. It sometimes is provided that the gun commander can call on nearby infantry supports or reserves in such cases; but this was found unsatisfactory, since the results depended on the good nature of the infantry that happened to be nearby. A better solution, in cases where artillerymen are not available, would be to attach

the necessary number of engineers to each gun at the outset. Such men would be particularly useful in crossing obstacles, such as trenches and streams.

Infantry batteries and accompanying guns should be provided with a full, or extra, quota of specialists for information (scouts). While the artillery commander should have access to all information possessed by the infantry commander, frequently this information is inadequate from the artillery point of view. Artillery scouts and similar personnel should be employed freely as far forward as the infantry front line; this personnel is also necessary for reconnaissance during or for movements of the artillery.

9. *Moral effect of attached artillery.* The moral effect of attached artillery on infantry is a factor to be considered. The Chief of Artillery, 1st Army, A.E.F., stated: "The mere presence of accompanying pieces frequently has a moral effect upon the infantry quite disproportionate to the services they actually render. Infantry which has been ably supported by artillery soon gets a feeling of confidence in the mere proximity of that arm, which has a direct reaction on their own performances. Such a feeling is worth a great deal."

10. *Attached artillery drawing fire.* There have been instances where infantry commanders objected to the presence of artillery and similar special weapons on the ground that they drew hostile fire to the infantry. It should not be difficult to dispose infantry reserves so as to avoid close proximity to these weapons; in this case, fire received by the artillery should save the infantry casualties, to say nothing of losses inflicted on the enemy by these weapons.

11. *Equipment of accompanying guns.* The difficulties encountered in moving accompanying guns and of supplying them from the rear, together with the animal casualties to which they are subjected, usually make it advisable to equip them specially. The following equipment has been used:

- 1 gun;
- 2 caissons;

INFANTRY BATTERIES AND ACCOMPANYING GUNS

- 1 ration cart, with water;
- 1 extra team, 6-horse;
- Ample telephone, visual signal, and pioneer equipment.

Infantry batteries ordinarily carry only the usual equipment.

12. *Suitability of 75-mm. gun for accompanying gun.* The objection frequently is raised that the 75-mm. gun is not adapted for use as an accompanying gun, and that a more suitable type should be introduced. A self-propelled 75-mm. gun on a caterpillar mount has been suggested; in other words, an unarmored tank, as far as matériel is concerned. At the time the armistice was signed, preparations were actually in progress to use the service 75-mm. mountain gun as an accompanying gun. Since the accompanying gun is used only exceptionally, and in using it the limitations of the matériel can be taken into consideration, it hardly seems warranted to introduce a special type of matériel for this purpose, particularly as long as the infantry has special weapons, as at present. More powerful infantry weapons might obviate the necessity for accompanying guns from the artillery, at least to some extent. The presence of tanks influences the necessity of using accompanying guns, but the two weapons are by no means alike in their capabilities, at least at present.

13. *Accompanying gun not a roving gun.* The roving or wandering gun is used for different purposes than the accompanying gun. The roving gun is used principally to fire for brief periods from a large number of positions, in order to deceive the enemy as to our artillery strength and dispositions, and to cause him to reveal his own artillery and waste ammunition in counter-battery work.

14. *Necessity for combined training.* The full effectiveness of infantry batteries and accompanying guns cannot be developed merely through a high state of individual knowledge and training on the part of the infantry and artillery; a team-play is necessary which can be attained only by the two arms actually working together. This combined training should be acquired in the training area rather than on the battlefield.

Pack Artillery

BY MAJOR G. R. ALLIN, FIELD ARTILLERY

INCLUDED in the report of the Calibre Board, which made a study of the armament, calibres and types of matériel, kinds and proportions of ammunition and methods of transport of the artillery to be assigned to a field army, is a type known as Pack Artillery. In the recommendations of the Board the following statements occur:

"70. (1) Gun. Ideal. A calibre of about 3 inches; to use projectiles of division gun, if possible; to permit elevation of at least 45 degrees; a range of not less than 5000 yards; to pack in loads about 225 pounds per load exclusive of pack equipment; to be equipped with panoramic sight; ammunition semi-fixed, flashless, smokeless, with about four zones, capable of being pulled on wheels by the gun crew on normal ground, and for short distances over any ground. A shield is unnecessary.

"71. Practical. Continue the present 75-mm. Vickers equipment in service. The material is, however, of an old type, and it is one of the items of artillery in most urgent need of development."

When a study of the design of the gun to meet the specifications stated above was undertaken, the specifications were amplified to provide that the total weight should not exceed 900 lbs., and only 4 loads should be required for packing; that no load should exceed 48" in length; that each load should pack close to the animal's back; that the centre of gravity should be approximately at the centre of form, and as low as possible; that the carriage should be of the single trail type, and permit of about 6 degrees traverse and of elevation from minus 5 degrees to plus 45 degrees; that the road clearance should be not less than 10" when the tires are on a solid surface; that the breech

PACK ARTILLERY

should not strike the ground when firing at any elevation; that elevation scales should be provided on the right side of the carriage; that the panoramic sight should be placed on the left side of the carriage.

The 2.95" Vickers Maxim Mountain gun, which is to be replaced by the pack howitzer, is a very rugged and dependable weapon, its two greatest defects being its lack of stability and lack of traverse. Both these defects slow up the rate of fire, and interfere more or less with the accuracy of laying. The lack of stability permits the gun to jump or run out of position each time it is fired, necessitating its being run back into position. This manoeuvre requires time, and the gun is frequently not put back into exactly the same position it had been in when laid. The lack of traverse requires that two persons participate in the final laying of the gun for direction; the gunner must communicate by word of mouth or by signal to an assistant the direction in which the trail should be moved to bring the vertical crosshair of the sight on the target or aiming point. Not knowing the amount of movement which must be given the trail to bring the line of sight in its proper position, the assistant usually moves the trail too far, or not far enough, and the gunner will frequently accept a final position for the line of sight which he knows is not exactly the same as he had used in previous rounds fired at the same target. The Mountain gun is also limited in the elevation that can be obtained to about 27 degrees, and therefore the maximum range of which the gun is capable can not be obtained without digging in the trail. In transportation, the gun, cradle and trail loads ride rather high above the mule, and the trail load particularly is awkward in shape and hard to carry.

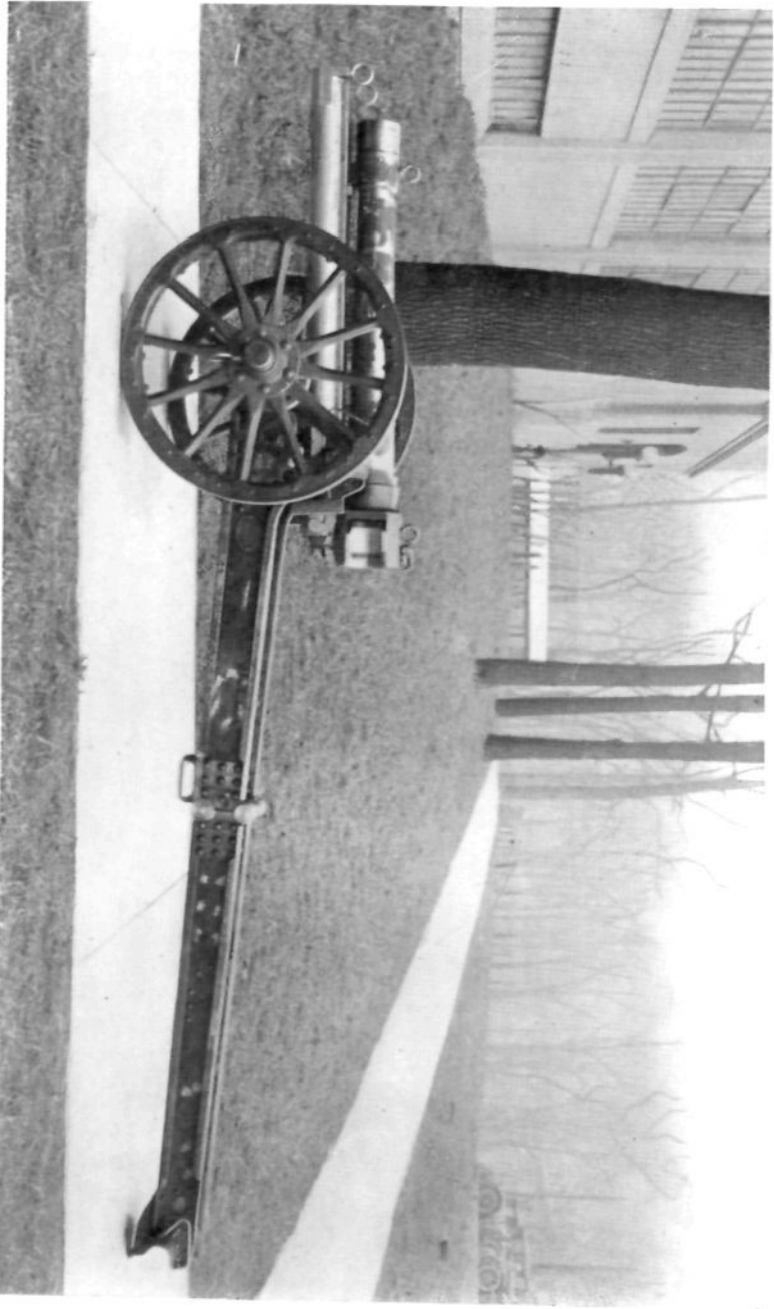
In the design of the pack howitzer to replace the 2.95" Mountain gun effort was made to overcome the apparent deficiencies of the latter. It was also thought desirable to have as powerful a howitzer as could be obtained within the limit of weight. Preliminary study indicated that a howitzer firing a divisional gun projectile with a muzzle velocity of 900 feet

per second, which should be sufficient to obtain a range of about 6500 yards, could be produced within the limit of weight set. Based on these characteristics, two howitzers were designed and constructed, one with a side sliding breech block, and the other with an interrupted screw breech block.

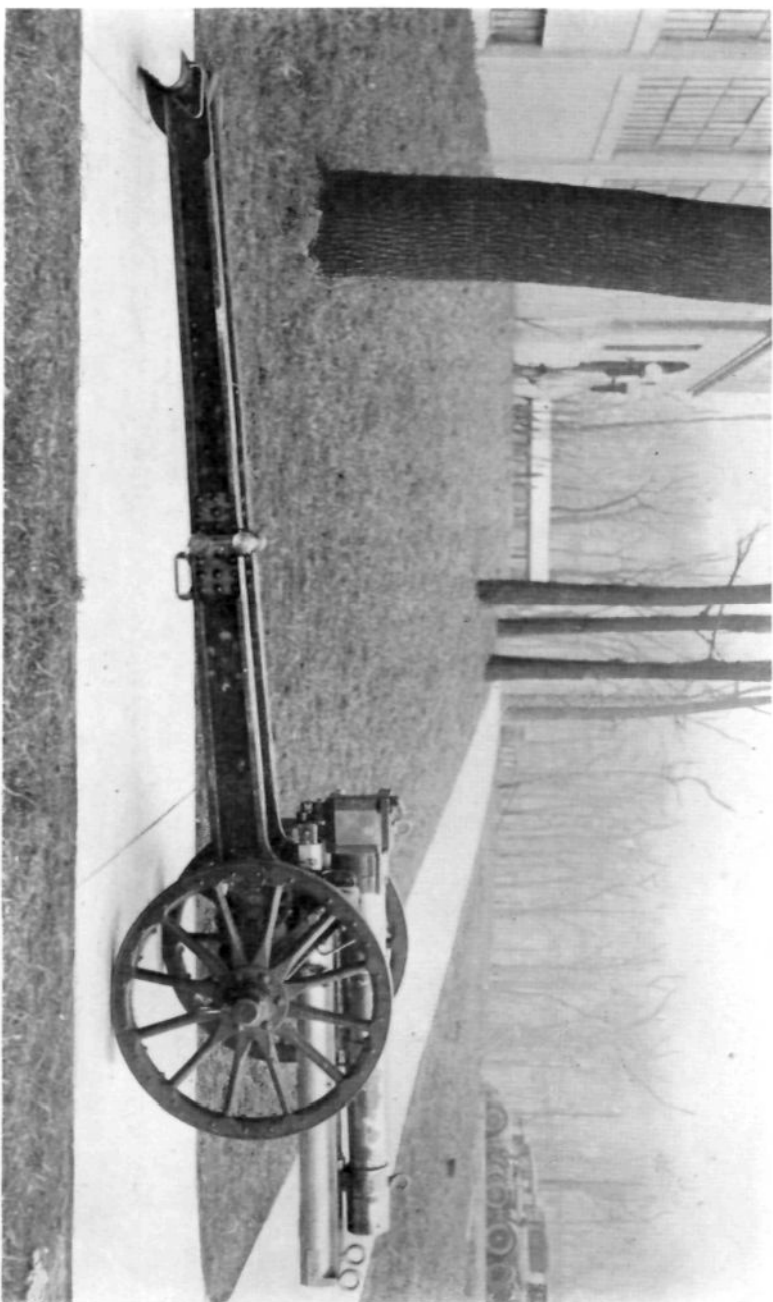
Two carriages for these howitzers have also been designed and constructed. They differ slightly in the point of attachment of the trail to the axle. The carriage provides a sleigh for the gun that slides to the rear with the gun in recoil. The recoil is controlled by a hydro-pneumatic variable recoil recuperator, so designed that the gun does not strike the ground in recoil in any elevation. The trail is of the box type, and so designed that the rear portion folds over the forward portion for pack purposes. About 5 degrees traverse is obtained by means of a hand-wheel working directly on the axle. An elevation hand-wheel on either side of the trail permits obtaining elevations from minus 5 degrees to plus 45 degrees. Provision is made for attaching a panoramic sight on the left side of the carriage and a range quadrant on the right side. Both are attached to the carriage at the trunnions by short brackets. Provision has also been made for the use of the gunner's quadrant if it is desired.

The howitzer and carriage can be quickly and easily disassembled for packing, and can be packed in four loads, as shown in the accompanying pictures. The weights of the different loads are not excessive, and the loads are of such size and shape that they can be readily handled.

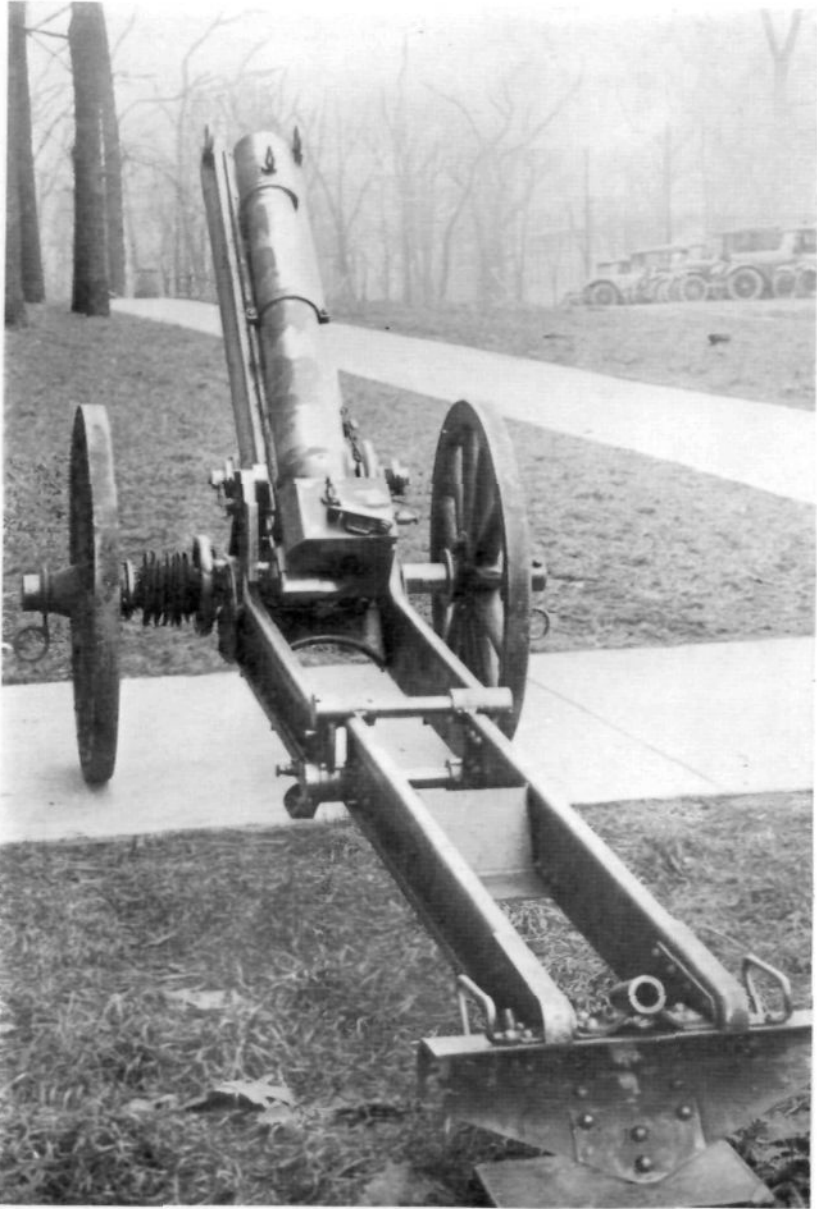
The specifications of the Calibre Board indicated that a cannon using zone charges was desired, or, in other words, a howitzer. This necessitated the use of some form of ammunition in which the projectile and charge could be separated in order to vary the size of the charge. The ammunition has been so designed as to provide a cartridge case of sufficient length and of proper shape to fit on the base of the projectile up to the rotating band, and to be easily separated from the projectile for the purpose of varying the size of the charge. For transportation purposes the complete round will be assembled in a



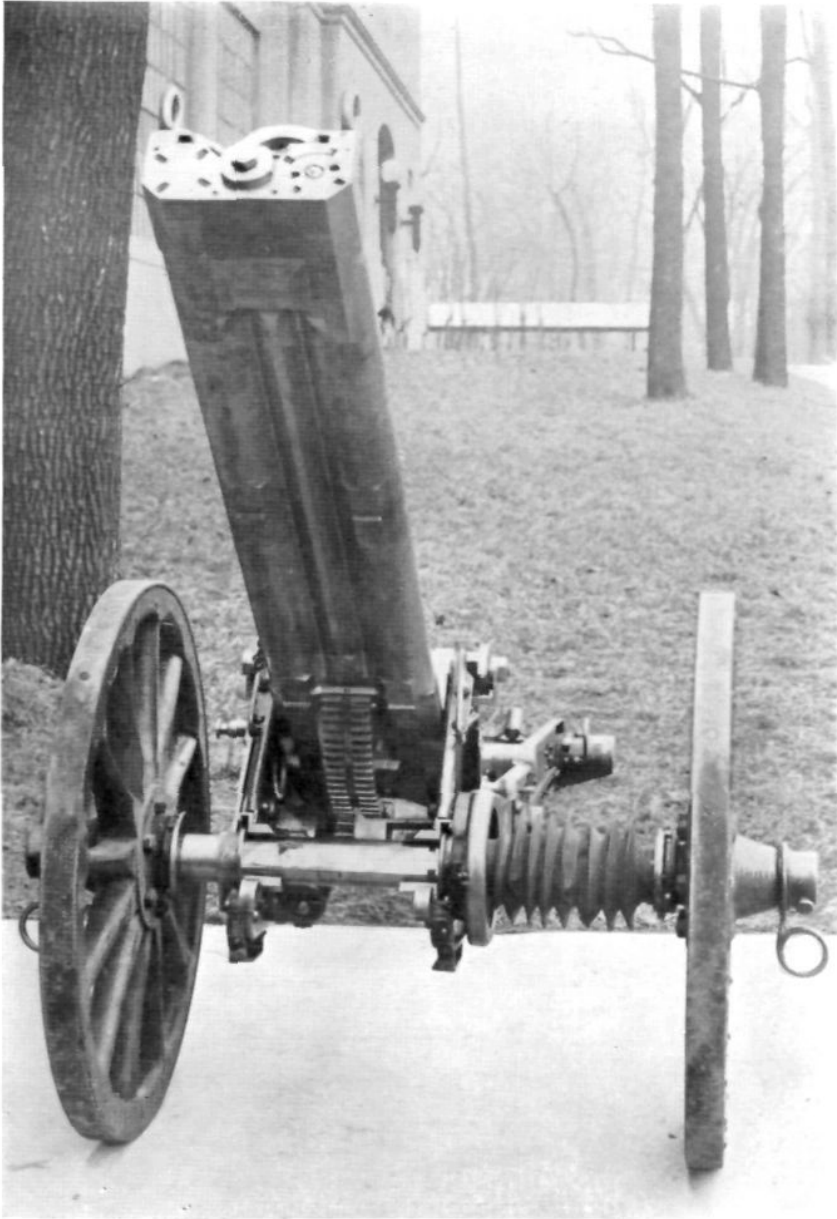
75-MM. PACK HOWITZER, MODEL 1920
Left side zero elevation



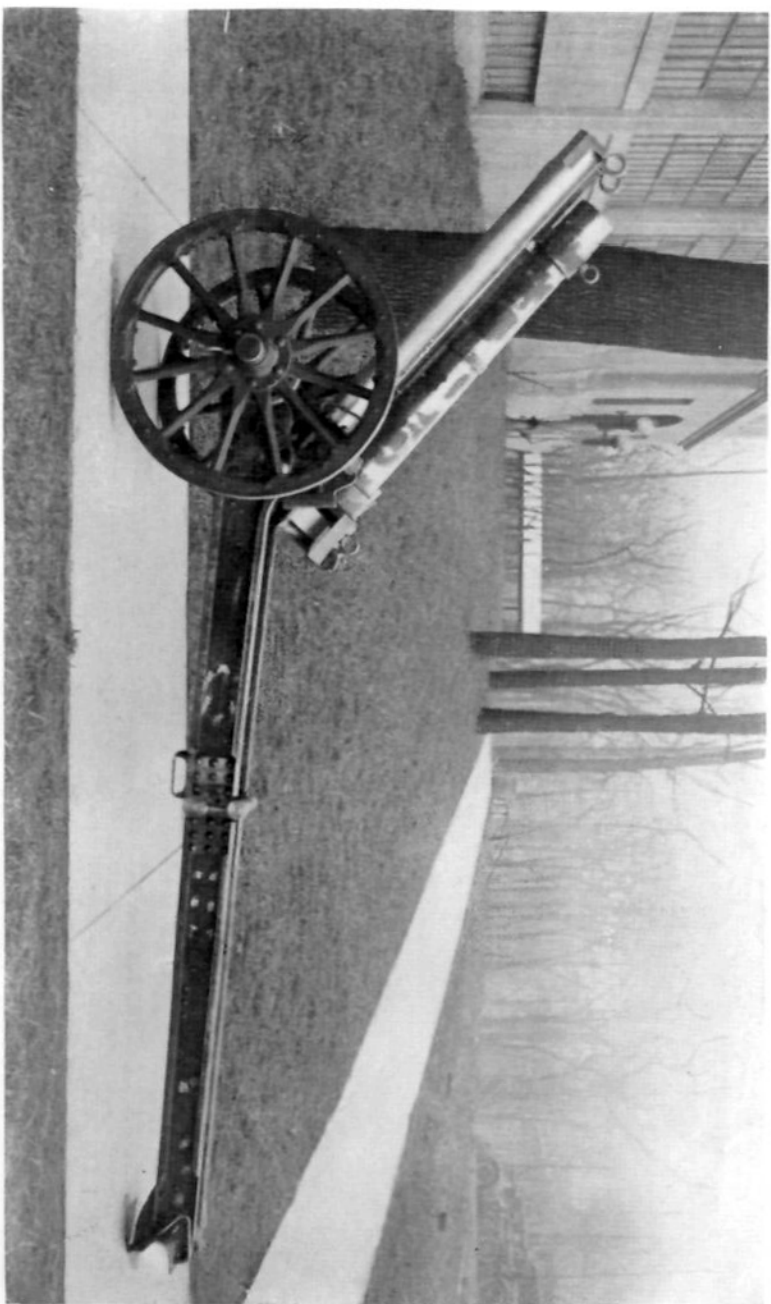
75-MM. PACK HOWITZER, MODEL 1920
Right side zero elevation



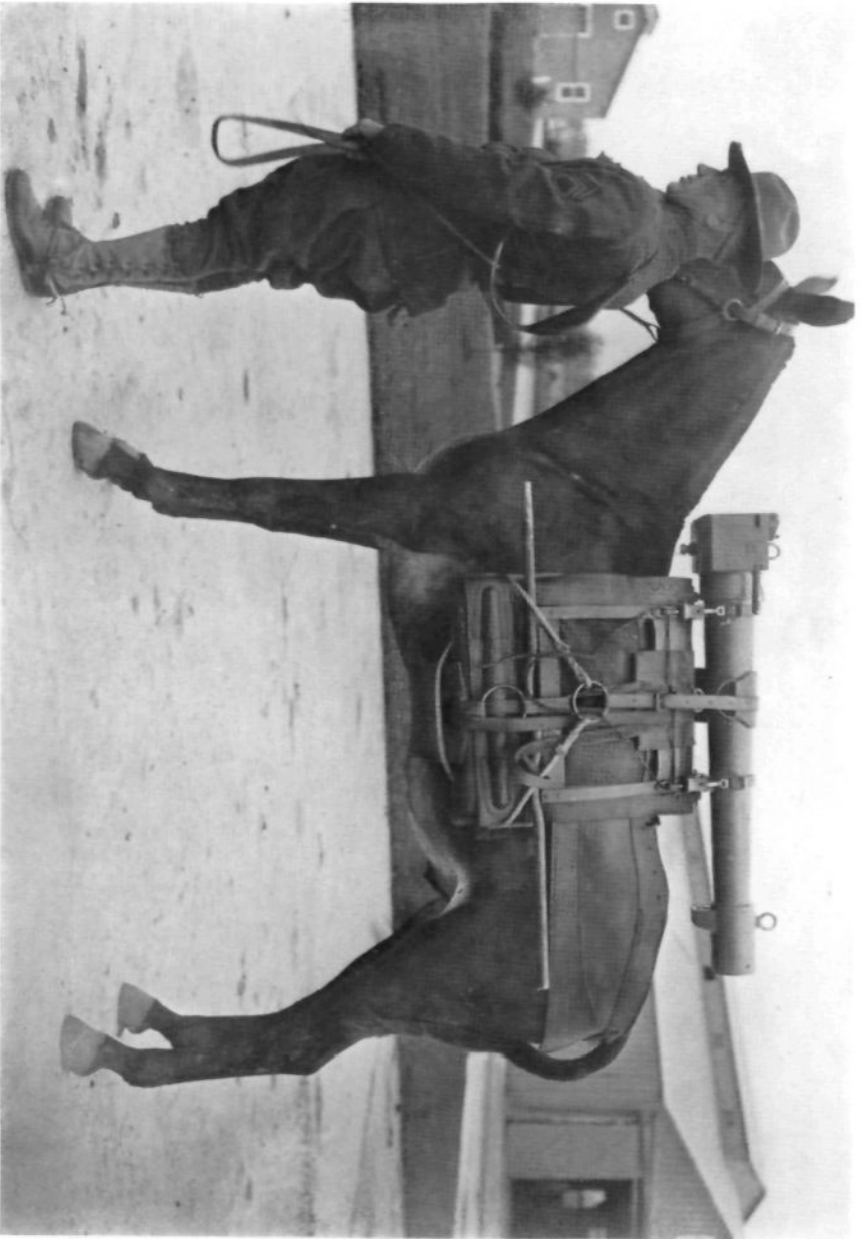
75-MM. PACK HOWITZER, MODEL 1920
Rear view full elevation



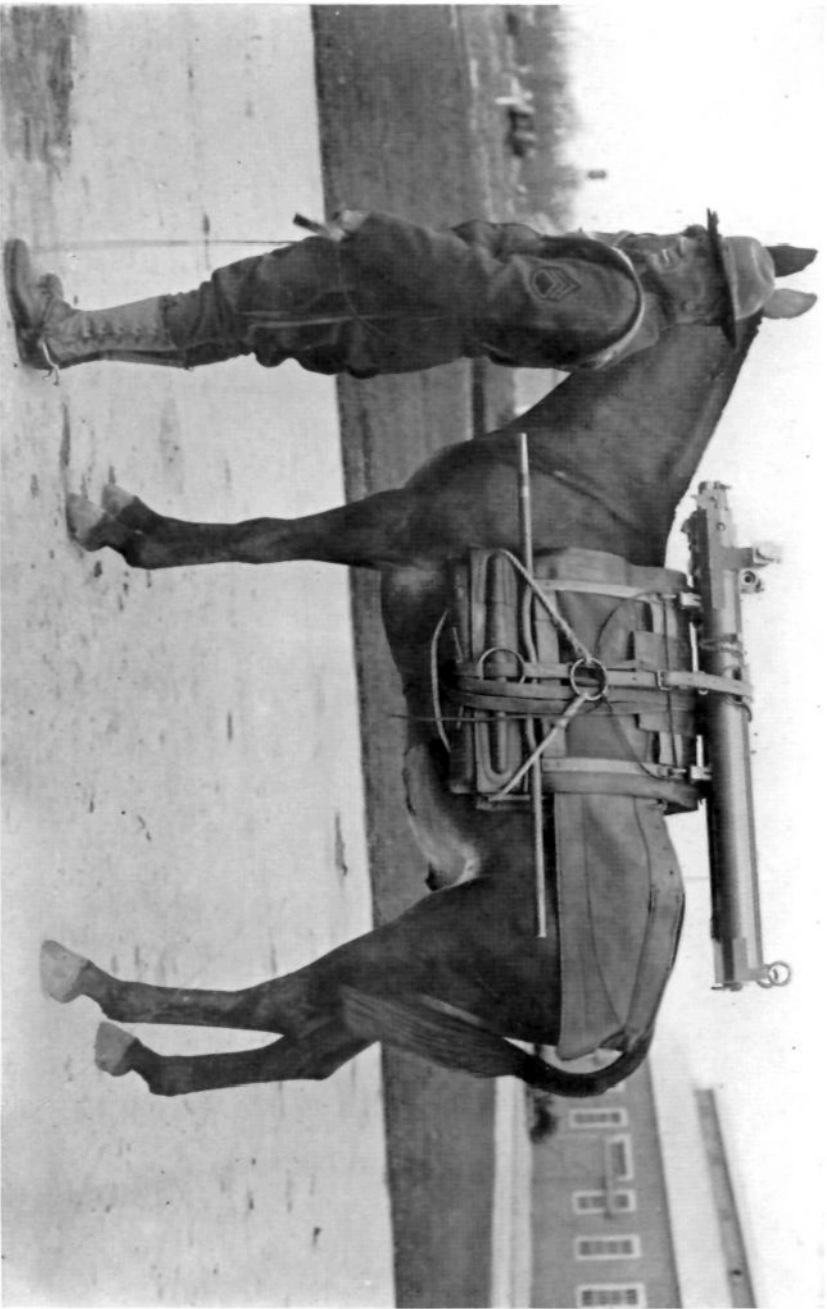
75-MM. PACK HOWITZER, MODEL 1920
Front view full elevation. Full right traverse



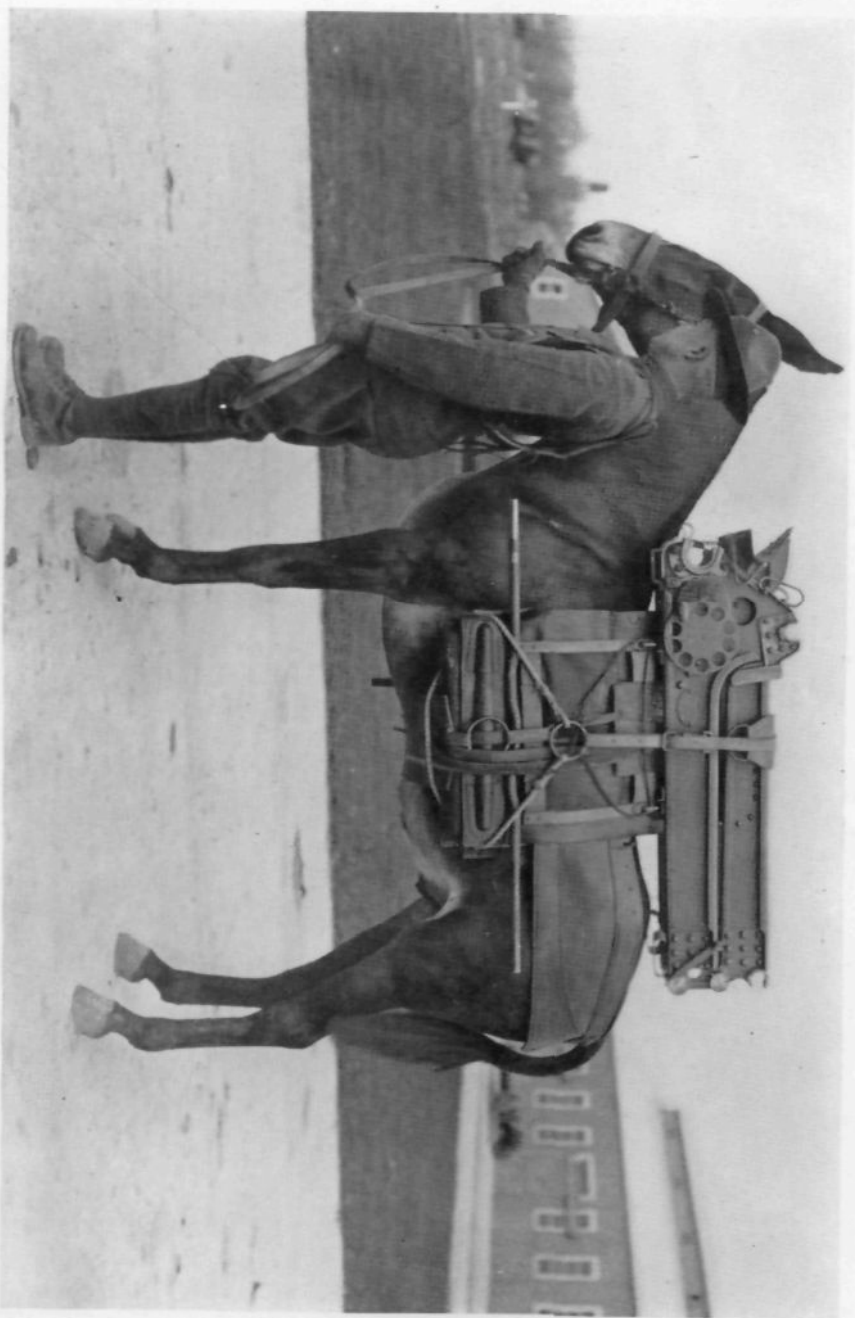
75-MM. PACK HOWITZER, MODEL 1920
Left side 45° elevation



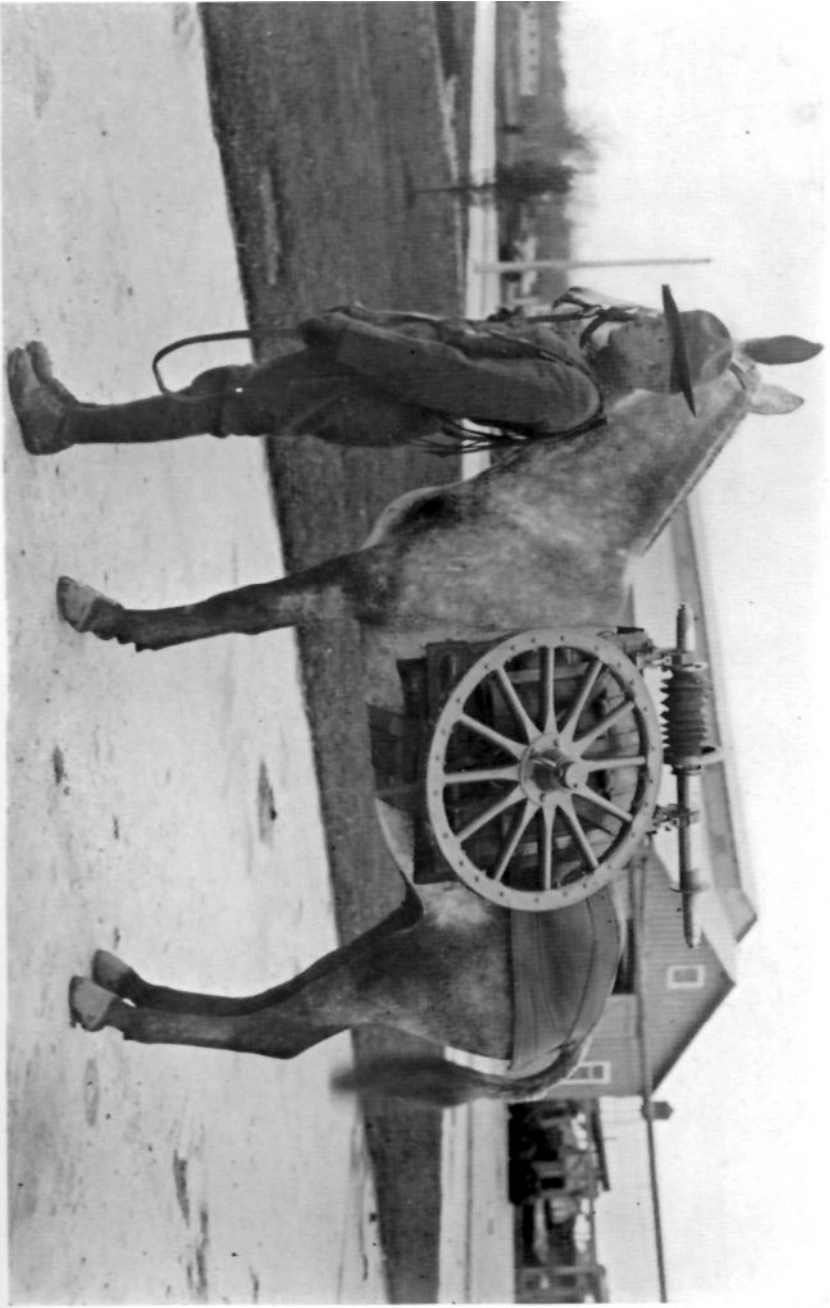
75-MM. PACK HOWITZER, MODEL 1920
Gun load, with cincha



75-MM. PACK HOWITZER, MODEL 1920
Reoperator' load



75-MM. PACK HOWITZER, MODEL 1920
Trail load



75-MM. PACK HOWITZER, MODEL 1920
Wheels and axle load

PACK ARTILLERY

tin container in which the head space has been so fixed as to retain the projectile in the cartridge case. The two projectiles designed for the divisional gun are a 15-lb, shell and a 17-lb. shrapnel. Since the use of zone charges was contemplated, it was assumed that charges suitable to obtain desired ranges would be used, and that, therefore, stability would not be necessary throughout the entire range of elevation, and that it would be necessary to secure stability at zero degrees only for the minimum charge. However, the carriage has been designed to withstand the shock of discharge of the maximum charge at zero degrees elevation. Of course, the carriage will jump slightly under these conditions.

These pilot howitzers and carriages naturally contain some defects, and they should not be regarded as perfected equipment. The defects are believed to be largely mechanical and such that they can be easily overcome with slight changes in a redesign.

The following tabulation of some of the characteristics of the pilot matériel may be of interest:

Length of bore, in cal.	14.72
Muzzle velocity in ft. sec.	900
Range, 45° elevation, yds.	6,600
Weight of projectile, shell, lbs.	15
Weight of powder charge, oz.	7.32
Maximum pressure, lbs. per sq. in.	18,000
Diameter of wheels, ins.	29
Width of tread, ins.	30
Ground clearance, ins.	9
Weight of howitzer with side sliding breech block, lbs.	207
Weight of recuperator and sleigh	236
Weight of trail, lbs.	212
Weight of wheels and axle, lbs.	145
Weight of howitzer and carriage in firing position, lbs.	826

The Drama of the Marne

(JULY 15, 1918.)

TRUTHS FROM THE FRONT

BY KURT HESSE, FIRST LIEUTENANT, GRENADIER REGIMENT NO.

With Notes by Major-General J. T. Dickman, U. S. Army

[EDITOR'S NOTE: *The American artillery referred to by the author, Lieutenant Hesse, as having played such havoc with the attacking German infantry, was the 3rd Field Artillery Brigade, consisting of the 10th and 76th Field Artillery (75-mm. guns), 18th Field Artillery (155-mm. howitzers), 3rd Trench Mortar Battery and 3rd Ammunition Train. The brigade was commanded by Brigadier-General William M. Cruikshank, U. S. Army.*

This translation of the German Officer's account, by Major-General Dickman, who commanded the 3rd American Division opposed to the enemy at this point, is particularly interesting and gratifying from an artilleryman's viewpoint, as it indicates that our field artillery did pretty good work there.]

Within the Limits of the Battle Activity of Grenadier Regiment No. 5, of the 36th Infantry Division.

"TO-MORROW we shall march to Paris," we remarked, in laughing, to the commander of the 3rd Battalion of the French Line Infantry Regiment No. 2, which had been crowded against the Marne by the vigorous attack of our grenadiers, and had been forced to surrender on the evening of May 30th, with a strength of 800 men. "No, sir! To Paris? Never! Think of 1914! The Marne!" This was the grave and dignified reply of the French lieutenant-colonel. We respected his pride, and—had a moment of reflection. Then, however, joy over the glorious success of the day prevailed. The Marne had been reached, in four days from the Chemin des Dames, across the Aisne and the Vesle, to the legendary stream. Scarcely any losses. The enemy, on the contrary, had suffered most serious damage. "Let us advance on Paris!"

THE DRAMA OF THE MARNE

During the night May 30-31 we received the orders of the 36th Infantry Division: "The line will be held."¹ We were disappointed. However, we could not see very far to the right or left. And when early in the morning our water carriers went down to the Marne they received aimed fire from the opposite bank. We had a new enemy in front of us, who did not think of further retreat.

Between us and the enemy lay the Marne, a rapid, a very deep, and canalized stream, which at Chateau-Thierry was 60 to 80 metres wide. The valley itself resembles that of the Weser above Porta Westfalia, but it is generally somewhat broader. To the right and left there are forests, orchards and vineyards in flourishing condition, many villages, and enclosures with numerous cattle. As I stood on the heights east of Chateau-Thierry with my commander, on the morning of May 31st, the ground before us really looked like a paradise. The sun shone brightly, and a cool breeze was blowing through the valley. This was a different atmosphere—not war, but peace.

Of the enemy we saw nothing. Scarcely a man in the next five weeks. But now and then there was a sharp report when somebody exposed himself carelessly. We tried hard to indicate objectives to the artillery, but mostly without success.

In the early part of July, while we were at Fere-en-Tardenois, twenty kilometres north of the river, to which place we had been withdrawn for rest, some men who had been on furlough at Charleville came back with the report "On the 15th of July we are going across the Marne."²

¹ It was early in the morning of May 31st that the 7th Machine Gun Battalion of the Third Division took position in Chateau-Thierry, covered the retreat of the French rearguards, and prevented the crossing of the Marne by enemy troops until on June 1st the bridges were destroyed.

² The high command of the Allied Armies had evidently secured information to the same effect, for it was on July 3rd that orders from the 38th French Corps directed the selection of alert positions and the adoption of an "alert" signal. From that date until July 14 our troops were given the alert signal almost every night, batteries were forbidden to fire from battle positions, and patrol after patrol was directed to cross the river to secure information, and particularly identifications. At this time the Third Division, American Army, occupied the line of the Marne extending from Chateau-Thierry to Moulin Ruine, the regiments being in the following order from west to east: 4th, 7th, 30th and 38th. The length of the line, including the sinuosities of the Marne, was about thirteen kilometres.

THE FIELD ARTILLERY JOURNAL

We took it for granted that we were going to attack. The same way, as in March, we practiced for this attack with the idea that the principal thrust would be made at the point where the enemy offered his weakest resistance; that a frontal attack against a strong position would not be made, but that the flank and rear would be sought for; and we thus followed the rolling barrage and picked up machine-gun nests in close coöperation with artillery and minenwerfer. Often at night we first heard a dull report; then for a while everything was quiet. Suddenly there was a rushing and whistling, which became clearer and clearer; then a deafening explosion, which shook the hearts of the bravest. The infantry dashed out of their houses, which furnished no cover against the shells of the French railroad artillery, into the fields, and at dawn when things had become quiet, returned to their quarters. We were in a rest area, but our life was not a happy one, and quite a number had to be buried in that place before orders were issued for a new attack.

A few days before the attack—on the 12th of July—we heard the details of the coming operation. According to orders reconnaissance was to be very limited. Regimental and battalion commanders and a very small number of company commanders were allowed to look at the first and second positions of readiness, the roads to the front, the fighting position, places for the transportation, and other things to be reconnoitred. My organization, Grenadier Regiment No. 5, was to be on the right flank of the 36th Infantry Division, and to cross at Jaulgonne in two places. Our right was to be in touch with the 10th Infantry Division, our reliable companion of the 21st of March and 27th of May, which were the first days of the offensive of Quentin and Chemin des Dames. On our left was to be the brave Infantry Regiment No. 175. The crossing for infantry and machine guns was to be made on pontoons, and later on ferries; artillery and trains were to be brought over on bridges.³

³ Our outposts had heard nightly the arrival of wagons on the north bank, the unloading of metal articles, and a "pounding upon iron" as the reports expressed it.

THE DRAMA OF THE MARNE

At Fismes we practiced on the Ourcq with some pontoons, entering and leaving pontoons, and crossing the river. In order to execute this peace manoeuvre the infantry was obliged to make two marches of eighteen kilometres each, in a dreadful heat, and in dust which was as high as the trees and lay like a pall on the roads leading through the forest from Fere-en-Tardenois. Tired to death, we returned to our quarters, and in the night were driven out again by the enemy's fire. This was only a few days before our big attack.

The definite orders for the operation were issued very late. I was seated, working them out, when a perfectly strange grenadier reported to me. Very much excited, but modestly, he asked if it was true that there were Americans opposite us, and that the attack had been betrayed. I reassured him, but made discreet inquiry as to what the men were thinking about the attack. I found there was complete confidence in the leadership, but here and there was an uncertain feeling as if the affair would not succeed. "The infantry has an instinct," as old soldiers used to say.⁴

Whoever saw clearly must have had serious doubts as to success. The enemy had repeatedly taken prisoners from us, among others a photographic officer who carried important maps, in violation of orders. A few desertions were also reported. Contrary to all experience in war, little was done to keep our intentions secret. Thus, in the forenoon, at nine o'clock, while for more than four hours the enemy's fliers were circling above them, our ammunition columns stood thickly crowded on the roads leading to the front.

The enemy's fire, however, increased daily. When, on the 13th of July we advanced to the positions of readiness, there were thick clouds of gas in the forest of Jaulgonne.⁵ We consoled ourselves, saying, "It will go all right anyway." The last offensive had encouraged us, less so the troops than the

⁴ The feeling among the American troops was different. They had confidence in their skill with rifle and machine gun, and in their own mental and physical qualities.

⁵ Some 9000 gas shells were sent into Jaulgonne forest by the American artillery on two successive nights, just before the attack. At that time it was regarded in the nature of a practice shoot.

THE FIELD ARTILLERY JOURNAL

higher command. Were the troops at the front mistaken when they had the feeling that their warnings had not been sufficiently considered? It certainly would have made a remarkable impression if in a division, a few days before an attack, expressions of timidity had been heard. And it was easy to understand that a General Staff officer, who had devoted his entire strength and intelligence to the difficult work of preparation for the attack, and was pleased with its accomplishment, would hesitate to predict "The affair is going to be a failure." The hope awakened by our pride that "perhaps we shall succeed anyway, the enemy fights so poorly," and the fact that quite at the top there was one who ruthlessly removed unsuitable persons from their positions, encouraged us.

The two days we spent under cover of the forest, five kilometres from the Marne, passed favorably. We suffered but little from the enemy's fire. The weather was good. It rained some, but the infantry, which of course was entirely without shelter, had experienced worse situations.

"At 1.10 A.M., July 15th, our artillery fire opens;⁶

At 3.50 A.M. the artillery fire lifts and moves forward
300 yards;

The infantry goes across;

At 4.50 A.M. the rolling barrage starts, and the
infantry attack begins."

Thank God, now everything was clear. All the details checked up. Some pigeon carriers were missing, and the wireless station had gone astray, but the main thing was complete. All the commands had received their orders in time.

In the evening of July 14th, shortly after nightfall, the infantry was conducted to the advanced positions of readiness. These were about half a mile from the river, in the middle of the forest, on the slopes towards the Marne. No cover in the way of trenches or dugouts had been prepared. The only things marking the places were signboards, and these we could not see in the night.

⁶ German time is one hour ahead of French time.

THE DRAMA OF THE MARNE

So dark a night as that of July 14-15 I have seldom experienced. In the woods we could not see our hands before our eyes, and we ran into the trees. The ground was smooth and slippery, and the air was filled with gas. Now and then there was a whining sound—some heavy shells sent over by the enemy.

Hour after hour passed. The infantry, for whose march two hours had been calculated (distance four kilometres), did not arrive at its positions. The guides, who had been over the ground once in the daytime, required infinitely more time to find their way than had been expected. The exertions of the march were unusually hard on the men. And when they finally did arrive the reports were not favorable. There had been casualties during the advance, great exhaustion of the troops, some sick and missing. But they were in their places as ordered.

Is it never going to commence? We were dozing. At last! A fierce artillery fire begins. I looked at my watch. One o'clock in the morning.⁷ Had our artillery made a mistake? Firing of our artillery was not to begin till 1.10 A.M. I jump out of the hole in which I was sitting, and—as quickly jump back. In front and rear I hear the strike of projectiles. The enemy had commenced! Ten minutes later our artillery fire began, not simultaneously as ordered, but here and there, and rose for ten minutes to powerful strength, so that we had the hope that now all would be well. Then it grew weaker and weaker, and often the enemy's artillery fire was more powerful than our own.⁸

In a short time all telephone connections forward and to the rear were destroyed. We hope the program is being carried

⁷ The Third Division at this time was still under French Corps and Army command. It received orders to greatly reinforce the line on the Marne, and to make the defense of the river "with one foot in the water." It was realized that this was a tactical error, and the order was only partially complied with. The Division Commander, on this occasion, suggested at Corps Headquarters, that ten thousand Germans be invited to come across the river, without molestation, into the wide open fields north of the Crezancey-Fossoy road, where they would then be destroyed by American rifle, machine guns and artillery fire.

⁸ At 11.40 P.M. July 14 (French time), a message was received at Division Headquarters from the 38th Corps stating, "Prisoners taken early this evening by a patrol from a Division far to our right, state the German attack will be delivered early tomorrow morning. Fire O.C.P. at once." This message was promptly relayed to all batteries, and accounts for the fact that our artillery "started the ball."

THE FIELD ARTILLERY JOURNAL

out accurately. At 3.50 A.M. still no messages. Urgent demands from the rear: "Report the situation. Has the infantry crossed the river?" We answer: "No messages whatever have come in. The enemy's fire is heavy. We assume, however, that everything is going according to schedule." Finally, at 4.30 A.M. we have a message from the front: "The Fusileer Battalion, the left of the two advance attack battalions, reports that the preparatory position was under very heavy fire, that two companies have been completely dispersed, and that there is serious doubt as to the success of the attack." This is immediately forwarded verbatim. Not a word had yet been received as to whether the crossing was effected. The regimental staff sends out patrols to clear up the situation. After hours of waiting we received a more detailed report as follows: "The First Battalion, which was to attack on the right, was caught by a fearful artillery fire in the narrow lane leading down to the river. Only parts of the battalion reached the river. The pioneers failed. The pontoons remained on the ground, several hundred yards from the Marne; crossing at this point is impossible, because strong enemy infantry forces with numerous machine guns are making a stubborn defense of the opposite bank. On the left the outlook is better. The Fusileer Battalion has reached the river with two companies, and is crossing. Strong detachments of the Second Battalion, which was to follow in reserve, have been brought up very skilfully by Captain von Plehwe, the victor of May 30th, are already on the opposite bank, and hold the railroad embankment, about 600 metres south of the river. The casualties in the Fusileer Battalion are very heavy; in the Second Battalion lighter. The attack has stopped. Strong forces of the enemy prevent further advance."

That is the first picture. The infantry lying without cover in the great Jaulgonne forest, where the brush is so thick that it is impossible to get through, and where, on the other hand, there is scarcely a tree thick enough to afford protection against a rifle bullet. There the projectiles of the enemy's massed artillery are falling. Not a spot is spared. The place is under the

THE DRAMA OF THE MARNE

continual fire of a heavy battery. The explosions in the forest are frightful, nerve-racking. The clearing nearby comes under the fire of a light battery every five minutes, and in a little while is black with corpses. And the narrow lane to the right is swept by heavy shrapnels pursuing their fiery course like comets. The men run about madly, looking for cover. And again there are rushing sounds with dull reports: "Gas shells! Put on your masks!" We already could not see anything—now surely not. Gloomy despair overpowers many. They feel helpless, praying for daylight. The wounded cry out. Finally a hoarse command is uttered by a company commander who even now realizes his duty: "Fall in! Has everybody got a rifle?" Then we advance in the narrow lanes, so terribly stricken, but which are the only ways leading down to the river. The pioneers are in position a little distance lower down. Their leader is helpless. He has only a few men left. The infantry itself takes hold to drag the pontoons the remaining two hundred metres down to the river.

More artillery fire. Everybody scatters. Several dead men and a broken machine gun remain lying near the pontoons. "Forward, away from here! Down below there must be other pontoons."

The accompanying artillery—each infantry regiment had one or two batteries; we had a field battery and a mountain battery—came driving up. One gun is put out by a direct hit, a second has a broken tongue. The leaders ask, "Is it any use to drive further forward?" They receive orders to stop and find a place affording some protection against fire. The mountain battery, however, has already driven into the narrow lane over which the First Battalion advanced, and is stuck; it can give way neither to the right nor the left, and can move only forward. One shot after another lands among the fine troops. The horses roll on the ground, the ammunition goes up in the air.

With the Fusileer Battalion, down on the river, the pioneers did better work. Two pontoons are in position; there were to have been six. The first pontoon goes across overloaded. A

THE FIELD ARTILLERY JOURNAL

machine gun shoots from the other side too high, everybody ducks and goes down flat. "Has our artillery produced no effect at all?"⁹ The bank is steep. Our men pull themselves up by the willows, but are hung up in a wire entanglement. Nobody had ever seen that, and no scissors telescope could have discovered it. Behind the wire there is a trench. Our men feel their way forward. It still is perfectly dark. One of them steps on something soft, which suddenly gives way, and we are in a combat at close quarters. The enemy was in a strip of trench and had been taking cover against artillery fire. The fight lasts a moment; then we have the upper hand. Thus it generally goes with "bitter fights at close quarters"; one side is seized with fear of cold steel and runs off.

The crossing proceeds rather smoothly.¹⁰ We look at our watch. "For Heaven's sake! The rolling barrage is already on! Fall in!" New objectives are assigned to the companies; everything had turned out differently from what was expected.

We cross the railroad, the station at Varennes is captured after a short fight. We pass over the road from Mouline to Varennes; we are already 1100 yards south of the Marne, and begin to ascend the southern slopes of the valley. Suddenly, on our right we hear sharp firing and yelling. In the morning fog we see in fields of high grain the advance of charging columns; in brown uniform—Americans!¹¹ They stop off and on and shoot. Our men run back. The situation is extremely critical. "Where are our neighbors, the 6th Grenadiers? Their attack must have failed. Does the artillery see nothing?" It is firing the rolling barrage according to schedule. This will last until 11 o'clock in the morning, then it will be free for other tasks. It would not have been able to do

⁹ During the attack 83 German batteries played upon the sector of the 3rd Division, and were answered by 17 American batteries, and perhaps as many of French Corps and Divisional artillery. Most of these latter, however, were put out of commission at an early hour. One battery of the 18th Field Artillery (U. S.), having just joined, was moving into its first position at this time, it was caught on the road by enemy fire and lost three of its four guns.

¹⁰ This crossing was effected about one kilometre to the right of the sector of the 3rd Division.

¹¹ Probably Companies B and D, 38th Infantry, under command of Major Keeley, advancing from Paroy and Launay.

THE DRAMA OF THE MARNE

much anyway, for observation of the battle is very difficult. A low fog covers the ground, the grain is high, and many orchards and small pieces of woods mask the movements of troops.

The leaders of the Second Battalion and of the Fusileer Battalion, Captain von Plehwe and Captain Eben, who are far in advance with their companies, realize that the greatest danger is imminent. Everything that can shoot is turned towards the enemy on the right flank. It must be admitted that he is brave. It is not until the fire of machine guns and the desperate shooting of our infantry reaps a most bloody harvest in his ranks that he stops and goes back. We all breathe again. Yet all of us are convinced of one thing: *Our own attack has failed!* We must endeavor with our weak forces to hold the position we have gained against the numerically superior forces of the enemy.

The railroad seems suitable for defense. It lies a little above the surrounding country, and affords protection against fire, but on the other hand, also is a good target for the enemy's artillery. The troops in advance are withdrawn to this position by orders. The right flank, which is in danger, is strongly secured. With our neighbor on the left we make connection at about 11 A.M. He has made somewhat better progress, but still is fighting heavily. Grenadier Regiment No. 6, which made the attack on our right, got across the river in strong force, but then encountered superior numbers of the enemy, and was destroyed. A large part of the regiment is marching as prisoners through the Surmelin Valley, which it had orders to attack.¹² One of our companies—the 6th, under Lieutenant Oberg—had pushed through the enemy's line in a remarkable way, and, thinking that the German troops were advancing, penetrates four kilometres into the enemy's territory, along the eastern slopes of the Surmelin Valley. On their right, below them, the American infantry columns are marching, on their left, above them, the enemy's batteries keep up a steady fire.

¹² Some 250 prisoners were taken by the 2nd Battalion, 38th Infantry, in the forward section—most of them by Company G near Mezy.

THE FIELD ARTILLERY JOURNAL

Finally, the little band was observed. Then it was in great difficulties, but maintained itself bravely until dark. Its intrepid leader and a few men succeed in getting through the enemy's lines during the night, withdrawing to another German force, and finally rejoin us. That was a ray of light, but the only one in this operation, and that is the reason I mention it.

In the afternoon of July 15th we managed to improve our line a little; for the enemy along the Marne, probably because he feared being turned on both flanks, moved his positions back slightly.¹³ But this made no change in the general result of the day, which was

THE HEAVIEST DEFEAT OF THE WAR!

It was only necessary to go down the northern slopes of the Marne. Never have I seen so many dead men, never such frightful battle scenes. The Americans, lying in a grain field in a semi-circle, allowed two companies to approach within thirty to fifty paces and then shot practically all of them down in heaps. This enemy had nerve; we must give him credit for that; but he also displayed a savage roughness. "The Americans kill everybody!" was the cry of terror of July 15th, which for a long time stuck in the bones of our men. In our home country people joked about the deficient instruction of this enemy, about "American bluff," and other things. Theirs is the principal responsibility for the fact that of the troops led into action on July 15th, more than sixty per cent. were left dead or wounded, lying on the field of battle.¹⁴

Our hope that perhaps at other distant portions of the attacking front better results had been achieved, unfortunately turned out to be false. The usual rumors appeared: "Rheims

¹³ Evidently the Grenadier Regiment No. 5 did not receive information that the line to the right of the 3rd Division had been withdrawn so as to run through Janvier Ferme and Celles-les-Conde to St. Aignan. This left the right of the American line high in the air.

¹⁴ If this regiment lost sixty per cent., it is fair to assume that other attacking units lost at least as much, as the 5th Grenadiers did not by any means bear the brunt of the fight. Of the five regiments engaging the 3rd Division, this would indicate a minimum loss of something like 6,000 men. The German casualties have been variously estimated by the troops resisting the attack at from 5,000 to 10,000. The 10th German Division never again appeared actively in line.

THE DRAMA OF THE MARNE

has fallen," "On our left the Bavarian Division has advanced fifteen kilometres,"¹⁵ but, as is so often the case, there was not a word of truth in them. On the Marne front a long, narrow bridgehead had been established. That powerful attacks would very soon be directed against it was, of course, to be expected.¹⁶ We made preparations for that event but had little hope of being able to hold our position. One or two kilometres behind us was the river, and that was not specially encouraging. The first attacks came on the 17th of July. They were repulsed. On the 18th the enemy made a more vigorous effort, and brought tanks into action, but without success.

The order to withdraw behind the Marne was hailed as a deliverance. We moved out in the night of July 18th to 19th. The bridges across the Marne were under fire. One bridge had already been destroyed. However, we got across fairly well. The enemy must not have noticed anything, for our patrols were able to remain on the south bank many hours, and still come across without hindrance.¹⁷

We hoped for rest. Such a day as the 15th of July leaves its effect on body and nerves for weeks. Our ranks had been thinned. A sad state of mind took possession of most of us. So very great a number of dear comrades had been left on the opposite bank! Many of them we had not even been able to consign

¹⁵ This is not far from the truth, as a considerable advance had been made by the Bavarians, to St. Aignan and La Chapelle.

¹⁶ The reserve of the 3rd Division, under orders from higher authority, consisted of only three companies of the 7th Infantry. They were placed in a *bretelle* [support] position in the vicinity of Greves Farm, but were driven out of their trenches by enfilading German artillery fire, directed by airplanes, early in the game, and the Division then had no reserve at all. The Division Commander began on the night of July 15th to seek fresh troops for a counter-attack in the direction of Reully, which must have been successful, resulting in offering direct view of and fire upon the German crossings as far as Dormans. The 28th Division, U. S., in support was fresh, but troops from that unit could not be obtained from the Corps Commander. A counter-attack with tanks was to be made by the 73rd French Division, but after long delays they did not get into serious action before dark. They had been directed to attack the German lines in the neighborhood of Celles-les-Conde. Finally on the 19th authority was given to make the attack towards Reully with such units of the 4th Infantry, U. S., as could be spared, but the opportune moment had passed, as the Germans made good their escape on the night of the 18th-19th without molestation.

¹⁷ A great counter-offensive was launched near Soissons, the delivery of which we of the 3rd Division believe was made possible by the stubborn defense of the Marne and the shattering of the right of the German attack on the Surmelin Valley—the gateway to Paris.

THE FIELD ARTILLERY JOURNAL

to the earth. Had it not been like a warning? Your turn is next! That is what the men at the front thought. Then the rumor came to us: "The situation on the right is bad. The enemy came out of the forests of Villers-Coterets and, attacking with immense strength, advanced fifteen kilometres the first day. We shall have to retreat." We set our teeth, but believed it before the official report came. And these troops, which had just undergone such great hardships, were called upon to give the last they had to stem the overwhelming tide. They did it silently and patiently, sacrificed the last of the old fellows of 1914, and did not lose their honor.

Development of the National Guard

BY COLONEL JOHN W. HEAVEY, U. S. ARMY.*

INCLUDING November 30, 1920, the reorganization of the National Guard has reached a strength of 75,027 officers and enlisted men. This development is not considered encouraging. An investigation into the reasons therefor in view of the passing of the Act of June 4, 1920, should be illuminating.

The people of the United States, through their representatives in Congress, in the above-mentioned act reiterated their intention of depending upon our citizen soldiery in the form of National Guard for military protection in addition to the Regular Army. Faith was also placed in the formation of Organized Reserves. The strength of the regular force was limited to 299,000, whereas the National Guard is to be not less than 424,800, the larger force being formed in the National Guard. The Organized Reserves was not limited in strength, and was based upon an assumption that many men who served during the World War would be willing to enter the Organized Reserves in lieu of the Regular Army or the National Guard.

Are there any causes for the slow development of the National Guard, and if so, what can be done to remove these causes?

CAUSES

(a) The delay in Congress in framing legislation covering the reorganization of our military forces left a doubt as to the future of the National Guard.

(b) A citizen of this country is not strong on discipline or being disciplined, yet at the end of the World War the best disciplined army in Europe was probably the American Army. It was a miraculous change, and one which chafed our free Americans. "Never again!" was the slogan of many real military heroes.

* Reprint from *The Infantry Journal*, February, 1921.

THE FIELD ARTILLERY JOURNAL

To secure such results as were obtained in the American Army, some cases of individual injustice were bound to occur. Our sensational press immediately spread such cases to the four winds, and mountains were made of mole-hills. These stories of injustices lost nothing of their sting in their being repeated. All of them were presented to the public *ex parte*, and the results were deplorable. The War Department, magnanimous in the security of attained success, did not see fit to place its case before the public.

(c) Too much emphasis was placed by members of the National Guard who failed to make good in the World War upon the alleged injustice of the Regular Army toward the National Guard. The National Guardsman who expected to secure political preference by reason of military service in the World War did not obtain such aid in an army in which efficiency was the watchword, and one failure the signal for relegation to the rear in more or less disgrace. After proving to their own satisfaction, by citing individual instances, that the National Guard had been discriminated against as a body by the Regular Army during the World War; the National Guardsmen are placed, during the reorganization of the National Guard, in the anomalous position of asking freeborn American citizens to join an organization which they allege was unjustly discriminated against during a national emergency. This is believed to be one of the greatest causes for the slow development of the National Guard, for no American desires to volunteer, to become a member of an organization which during a national emergency is subjected to unjust discrimination. In other words, some members of the National Guard, in their efforts to decry the permanent establishment, have done untold damage to the National Guard.

(d) The attitude of labor toward the organization of the National Guard has grown more antagonistic, due to the spread of Bolsheviki ideas throughout this country. The leaders of labor seem unaware of the fact that the labor agitator who deprecates joining the National Guard, or who insists upon a

DEVELOPMENT OF THE NATIONAL GUARD

resignation from the National Guard before admission to a union, is doing the cause of labor an immense amount of damage in this country, which is most unfortunate so far as labor is concerned. The opposition to the National Guard generally proceeds from those members of labor who are misinformed and perhaps ignorant of the vital principles of our Government. The opposition comes frequently from people *other than citizens of this Nation*. Such action affects the attitude of our citizens toward labor and labor unions, for it puts labor in an almost indefensible position so far as maintenance of law and order is concerned.

(e) Too little stress in this country is placed upon the rights and the duties of citizens. Citizens have the right of suffrage and elect the rulers of this country. They should have a just and proper conception of their obligations to the country and to the public servants whom they select. The right of suffrage should be extended only to those males who have a knowledge of their right to serve and who fit themselves for national defense obligations which may arise at any time of their lives.

REMEDIES

(a) The Act of June 4, 1920, is very explicit in that the defense of this country will depend upon a Regular Army, a National Guard, and an Organized Reserve. It was passed June 4, 1920, and leaves no possible doubt but what the National Guard is to form a constituent part of our national military forces.

(b) Great emphasis should be placed upon the development of our young men who by reason of the Selective Draft were required to take military training. You can pick them out in their community by their erect carriage, by their increased vigor, and their parents and employers can testify as to their improvement in discipline. These points should be strongly emphasized, and the Service should be given full credit for the improvement it has made in our young Americans.

(c) In the case of disgruntled National Guard officers, the placing of all the cards on the table would convince any reasonable

THE FIELD ARTILLERY JOURNAL

person that the Regular Army has not exercised unjust discrimination against the National Guard as a body. A study of the General Staff Committees under the Act of June 4, 1920, which may soon be given to the public, will show that the Regular officer is interested in the development of the National Guard; and is, at present, willing to do all within his power to reorganize this force.

A study of the development of the National Guard will also show that many a regular officer has labored long, hard and successfully for the improvement of the National Guard. It will further show that during the World War a few tactless regular officers did more harm to the good relations between the Regular Army and the National Guard than the rest of the Army can obliterate in many years to come.

Without doubt, the study to be produced by the General Staff will encourage regular officers to seek duty with the National Guard in order that they can become acquainted with our American citizen soldiery and avoid some of the glaring mistakes made during the World War by a few tactless but capable officers of the Regular Army. Why not emphasize the great results obtained by the American Army during the World War? Consider big things and forget trifles! Deprecate the selfish individual who places his own grievance in the scale against those wonderful results obtained which to the unprejudiced mind appear as a drop of water in the ocean of successful accomplishments by the Army of the United States composed of the Regular Army, National Guard and National Army. Certainly "there is glory enough for all."

(d) The education of labor with respect to the object of the National Guard and its legal status in this country would certainly remove much of labor's opposition to its organization.

The following facts should be made plain:

First: That the National Guard as now constituted is a part of our national military forces just as much as the Permanent Army.

Second: The constitutional use of this force is for our common

DEVELOPMENT OF THE NATIONAL GUARD

defense, to repel invasion, to insure a suitable form of government, to insure domestic tranquillity.

Third: There is no legitimate use of this force which should in any way interfere with the legitimate objects of labor and labor unions. Is there a solitary object enumerated above which labor can afford to oppose if it be composed of patriotic citizens of this country? Our National Guard forces when called upon by state or federal authorities are animated solely by common defense and by a desire to enforce law, maintain order, protect the rights of life, liberty and property of all classes of citizens, and to preserve the good name of the community in which they reside. They take sides with the enforcement of the law and against the enemies of law. If labor has any reason for believing that the National Guard has been employed against the rights of labor and in favor of capital, the National Guard has, probably, been improperly used by selected officials. There are *legal* methods to seek redress for such wrongs among which opposition to the laws of the land cannot be included. In opposing the formation of the National Guard, every member of labor taking such action is opposing the desires of the citizens of this country as expressed in the Act approved June 4, 1920. An individual residing in any country owes obedience to the laws of the land. The opposition of labor to the organization of the National Guard naturally leads our citizens to ask the following questions:

First: Why does labor stand in opposition to the organization of our duly constituted military forces for the maintenance of law and order?

Second: Is it through advance knowledge that the intentions of labor are not in accordance with law and order, and that our military forces, if organized, may be used against it?

Due solely to the recent "outlaw strikes" in labor unions comes the *Third* question: Is there any other class of our citizens than those engaged in labor who may develop a greater need for citizen soldiery?

(e) Our younger citizens should have instilled into them

THE FIELD ARTILLERY JOURNAL

that the attendance at evening attractions in our cities should not be the sole aim of all citizens; that, at least, a part of one evening a week could well be devoted to the acquirement of knowledge of a military nature in order that the citizen may not fail the Government in time of emergency.

The duties of citizenship in this country should be taught in the schools, and in the course of this study it should be made plain that our citizens owe it to themselves, to their parents, and to their posterity to fit themselves for military duty to a far greater extent than they have ever done in the past, except under the stress of actual conflict. We certainly know that, unless our former military policy is altered, a million armed men will NOT "rise in this country over night"; it will take probably thirteen months of strenuous effort and billions of taxpayers' money, as it did during the recent World War. But, if our young men were trained to arms for only a short period, in their unproductive days, we could soon assemble an army for field duty. Our citizens should cultivate and instill the idea that every man physically fit should see service, either in the Regular Army or in the National Guard. If he desires to withdraw from civil pursuits and concentrate his entire time on military duty, that man, under the present law, should enter the Regular Army. If he desires to pursue his civil pursuits and yet fit himself for his military obligations, he should enter the National Guard. It should be instilled in all our citizens that a man physically fit who does not place himself in one or other of the classes mentioned above, or in the R. O. T. C., long enough to master the rudiments of military training, is a "Slacker" in real patriotic citizenship.

The rejection by the Senate during the last Congress of the greatest preventive of future war for this nation, namely, universal military training for a short period, makes it imperative that the Regular Army, the National Guard and all our citizens lend their best efforts to the development of our latent military spirit. The people, through their representatives, have declared that we must place our first dependence for national

DEVELOPMENT OF THE NATIONAL GUARD

defense upon the Regular Army and then upon the National Guard. They include therewith an Organized Reserve as a third line.

To anyone who studies the finances of this country it ought to be very apparent that our future statesmen will be anxious to reduce federal expenditures. Without doubt, they will maintain a Regular Army and the National Guard. The expense entailed by the maintenance of these two forces will be so great that it is deemed doubtful if any money will be appropriated for years for the development of an Organized Reserve. A concentration of our citizens upon the development of the Regular Army and the National Guard would soon create material fitted for the Organized Reserve, and from a military standpoint it seems that these two bodies of our military forces—the Regular Army and the National Guard—should receive the attention of our citizens at the present time.

It is true that there are millions of men in this country trained in the use of arms at this time whose services could be secured by an application of the Selective Draft law, should such a course be necessary. They are all busily engaged in other pursuits and have done their "bit" as patriotic citizens. There is no necessity for organizing them into military bodies, but a few years from now, many of these men will have passed away and we should have throughout the nation other men trained by the Regular Army and the National Guard to replace them. Those trained male citizens who believe they owe an obligation to this Government should not satisfy their consciences by an enlistment in an Organized Reserve, for without doubt, they will have no opportunity for field training in the immediate future. Let us play fair and so inform them. If they believe in disseminating the knowledge which they have gained during their service in the great World War among the citizens of our country, it is their bounden duty to join and to encourage the organization of the National Guard by more than words. Their presence is required. They will be doing the greatest good to the greatest number by assimilating and entering the National Guard, which needs their battle lore. Should they elect to join

THE FIELD ARTILLERY JOURNAL

the Organized Reserves, they can look forward to having their military knowledge rust out, and not wear out.

The War Department is prepared to do its full duty in developing the National Guard. Now, Mr. Citizen, you who are beyond reasonable years for service in the National Guard, what can you do to aid this strictly American force? Don't limit your aid to a mild approval by words. Approach our young men in the spirit of patriotism, insisting that it is a patriotic duty to serve in our national forces. We carry life insurance, fire insurance, and all consider this good business, but what insurance are you carrying on the preservation of this nation from the inroads of Bolsheviki ideas? From the attack of covetous nations? When the forces of nature create death and destruction by reason of earthquake, fire and flood, to whom does this nation look for aid but to our military forces? When mob violence overthrows city police protection, who preserves your property? your lives? your good name as a law-abiding community, but the military forces of the nation? Our forefathers believed in citizen soldiery to such an extent as to provide for such in our Constitution. They framed a system of government leaving to the states the performance of certain state military duties and *have carefully guarded the use of federal troops within the state limits during times of peace by restrictions of law.*

The state officials who call upon the Federal Government for aid in enforcing state military duties publicly acknowledge their failure or inability to perform their proper function under our Constitution by reason of lawlessness of citizens, inefficiency of their selected state officials, or the existence of the slacker spirit in the men in that state between the ages of eighteen and forty-five. Congress has repeatedly reiterated this belief of our early settlers by passing laws producing an evolution in citizen soldiery. It was our Congress that passed the Act of June 4, 1920, continuing the National Guard. Are we as citizens going to make good the provisions of that law or permit this strictly American institution, the National Guard, to languish for want of sufficient personnel?

Endurance Test for the United States Mounted Service Cup

RUN FROM FORT ETHAN ALLEN, VT., TO CAMP DEVENS, MASS.,
OCTOBER 11TH TO 15TH, 1920

[EDITOR'S NOTE.—*The following extracts from the reports of Major Stanley Koch, and First Lieutenant Thomas H. McCreery, Quartermaster Corps, U. S. Army, together with certain comments by Major C. P. George, Field Artillery, U. S. Army, are believed to be of interest to readers of THE JOURNAL.*

Major Koch won first, and Lieutenant McCreery third, place in this year's contest, while Major George, who last year was a contestant, acted as Judge of Weights, and, as such, had excellent opportunity to observe conditions from day to day.

While the conditions of this year's test left something still to be desired in the way of information relative to a type horse, as did those of 1919, nevertheless each succeeding year brings with it a certain amount of knowledge gained, and it is believed that next year's conditions are an improvement in the right direction.*

The above-mentioned officers are certainly entitled to great credit for the manner in which they handled their mounts.]

EXTRACTS FROM REPORT OF MAJOR STANLEY KOCH

MLLE. DENISE is a brown mare sired by a thoroughbred, Arch Oldham, out of a three-quarter-bred mare. She was purchased in Texas for the Government, and I purchased her from another officer who had bought her from the Government. She had been used as a polo pony two or three years before, and during this summer this officer had used her as a hack at Front Royal. She was probably averaging from an hour to an hour

* See November-December, 1919, FIELD ARTILLERY JOURNAL.

THE FIELD ARTILLERY JOURNAL

and a half's work each day. She stands 15-2½ hands high, weighed on the morning of the test 980 pounds; her cannon bone below the knee measures 8 inches, below the hock 8½ inches. Her heart girth is 72 inches, and her loin girth is 74 inches. Age, nine years.

Bunkie, the horse selected for Lieutenant McCreery to ride, is a chestnut gelding, purchased by Major A. H. Jones, Remount Service, last spring in Arkansas. He is sired by a thoroughbred stallion, Bowling Green, dam unknown. On the morning of the test he weighed 1035 pounds; his cannon bone below the knee measured 8¼ inches, below the hock, 8¾ inches. His heart girth is 72½ inches, and his loin girth is 75 inches. He stands 15-2 high, and is nine years old. Since his purchase by the Government he was ridden by an enlisted man at Fort Reno about three hours daily at slow work, exercising stallions.

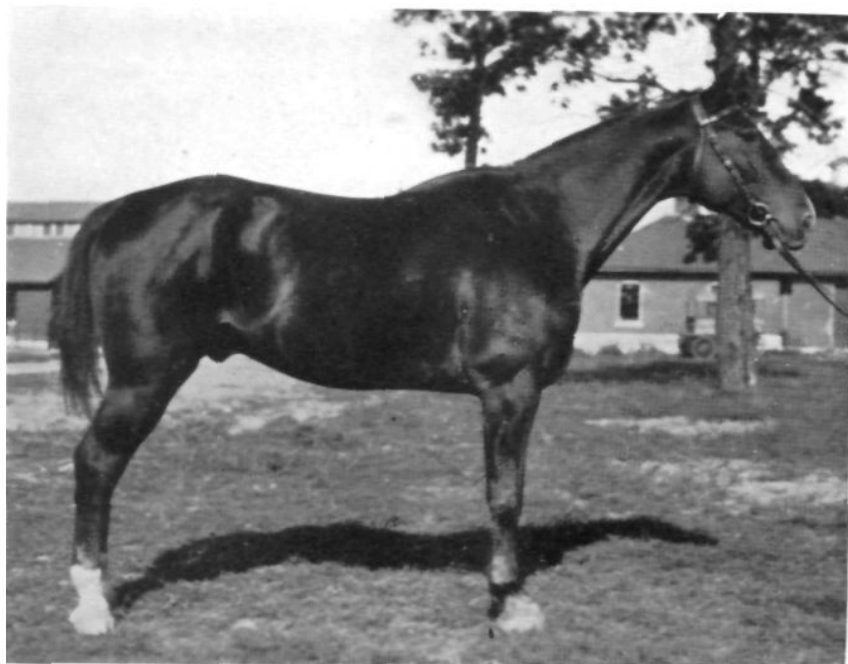
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Bunkie seemed really fit in every degree. His legs were clean and feet cool every morning. Mlle. Denise seemed perfectly fit, except her feet, which were decidedly tender. Three days before the test she was reshod, as the shoes she had been wearing before were entirely too narrow at the heels, and had undoubtedly caused a great deal of tenderness. Her feet were soaked about a half-hour each day in hot water, and were put up at night in poultices of finely ground fresh onions, which cooled them out considerably.

The equipment we carried was practically the same. The saddle was a Samur type field officer's saddle, with pommel and cantle pockets. In the pommel pockets we carried a supply of white rock already soaked up and wrapped in canvas to protect the other articles in the pockets. In one side I carried a bottle of Tweed's liniment and four Derby bandages, to be used as wet bandages. In the other pocket I carried a bottle of iodine and a supply of white lotion tablets, two empty bottles to mix up the white lotion and Tweed's liniment, and four fitted horseshoes. In the cantle pockets I carried four flannel bandages, a



MLLE. DENISE. THE WINNER.



BUNKIE



MLLE. DENISE AND BUNKIE EN ROUTE



RUSTEM BEY AND CRABBETT AT FINISH
Rustem Bey, left, was the winner in 1919

ENDURANCE TEST FOR U. S. MOUNTED SERVICE CUP

roll of cotton batting, grooming kit, consisting of a corn brush and two small towels, sponge and a small canvas bucket. In the pommel roll I carried a slicker, a halter, and a roller surcingle, to be used in holding the saddle blanket while cooling out, and to hold compresses soaked in white lotion in case of a sore back, and on the cantle roll a canvas horse-cover. I used an extra heavy saddle blanket to supplement the canvas cover when necessary at night, and to give extra protection to the back on account of the heavy weight carried. Each rider was required to carry 100 pounds dead weight, so the extra weight was made up by lead, which was carried in lead pads exactly as are used on the race track. The lead was cut in sheets about four inches long, three inches wide, and one-eighth inch thick, being carried in six pockets on each side, the top of the pockets being about two inches below the saddle-bars.

The following horses started in the race:

Name of Horse.	Breed.	Owner.
1. Moscowa	Thoroughbred	Thoroughbred Endurance Test Club, Ky.
2. Majella	Thoroughbred	Thoroughbred Endurance Test Club, Ky.
3. U-23	Thoroughbred	Thoroughbred Endurance Test Club, Ky.
4. David Craig	Thoroughbred	Thoroughbred Endurance Test Club, Ky.
5. Bunkie	Grade Thoroughbred	U. S. Remount Service.
6. Mlle. Denise	Grade Thoroughbred	Major Stanley Koch, U. S. Army.
7. Dawn	Arab	A. W. Harris.
8. Komah Prince	Grade Arab	A. W. Harris.
9. Ruffk	Grade Arab	Major J. I. Plassmyer, U. S. Army.
10. Crabbett	Grade Arab	W. R. Brown.
11. Noam	Grade Arab	W. R. Brown.
12. Sargon	Grade Arab	W. R. Brown.
13. Ramla	Grade Arab	W. R. Brown.
14. Rustem Bey	Arab Standard-bred Cross	W. R. Brown.
15. Kingfisher	Grade Arab	Colonel Frank Thomkins, U. S. Army.
16. Tar Boy	Grade Thoroughbred	Mr. White.
17. Colon	Arab-Scotch Pony Cross	Spencer Borden.
18. Lord of the Nursery	Standard bred	John E. Madden.
19. Avil Watts	Standard bred	John E. Madden.
20. Scotland	Morgan	Morgan Horse Farm.
21. Dolly	Morgan	C. C. Stillman.
22. Castor	Morgan	Morgan Horse Club.
23. Golden Glow	Morgan	Morgan Horse Club.
24. White Socks	Grade Morgan	Morgan Horse Club.
25. Salisbury	Grade Morgan	Morgan Horse Club.
26. Sally Townsend	Grade Thoroughbred	Howard S. Neilson.
27. Queen	Grade Morgan	E. A. Darling.

These horses had all been measured and weighed October 10th, the day preceding the test. The riders had all been

THE FIELD ARTILLERY JOURNAL

weighed and stripped at the same time. I weighed 147 pounds, and Lieutenant McCreery weighed 145 pounds.

Under the conditions of the test, the 60 miles each day could not be covered in less than 9 hours, and no more than 13 hours could be used. Figuring an hour's halt, which would include the noon feed and all other halts, we figured that we would have to ride at the rate of $7\frac{1}{2}$ miles an hour to cover the distance in 9 hours. We found each morning that it was necessary to walk about $\frac{1}{2}$ hour, and after the noon feed about 20 minutes, before taking our road gait, which really made us ride practically 8 miles an hour. We had figured riding on a schedule of 10 minutes at an 8-hour trot, 5 minutes at a 12-miles-an-hour gallop, 5 minutes at an 8-mile trot, and 10 minutes at a 4-miles-an-hour walk. Throughout the test we held to this wherever it was possible, but especially on the third and fifth days the roads were so hard that it was impossible to gallop. We were satisfied that this was a good division of time, and that the gallop is necessary both in order to cover the course in the required time and to rest the horses. It was not often possible to ride on this schedule absolutely, as there were many short steep hills, where it was absolutely necessary to walk, and we would make this up by lengthening our trotting periods or shortening our regular walking period.

Commencing on the morning feed of the first day, all feeds were weighed and issued to each rider in accordance with his request submitted the previous evening. Mlle. Denise drew 2 pounds of oats for the morning feed; one pound of hay and one pound of oats for the noon feed; and 5 pounds of oats and 8 pounds of hay each evening.

The Judges started us from the stables at Ethan Allen about 6.30 October 11th, and we immediately took up our schedule. The roads, almost without exception this day, were good, and the course was well marked with pasteboard arrows and yellow sign-posts each mile. About thirty miles out we stopped for the noon feed. As soon as we unsaddled, wet bandages were put on all around, and the horses fed their hay.

ENDURANCE TEST FOR U. S. MOUNTED SERVICE CUP

Sandwiches were provided for us, and by the time they were eaten we would feed grain. I would then resoak the bandages on the front legs, and shift those from the hind legs to my mare's front feet, as they were still tender. The first day we attempted to rub the horses down at noon, but later decided that was not necessary, and simply left the saddle blanket on during the entire noon hour. The first day we fed and rested nearly an hour, but the next two days cut it down to forty minutes, and the last two days to thirty minutes, which we decided was the best plan.

During the first day's ride, through carelessness, we got off the course and rode an extra three miles, which delayed us in checking in that night. Bunkie completed the first day's course in 9 hours and 25 minutes, and I came in 2 minutes later. As soon as we got in we would report at the stables with our equipment, weigh out, and then commence cooling out our horses.

In this cooling out we would let them graze, but kept them moving, in order to prevent too sudden cooling, and to prevent them stiffening. We usually worked from one and a half hours to two hours during this cooling out, and at the same time we would rub them down thoroughly with grooming cloths. Before we started the cooling out we would put wet bandages on, after sponging the legs with cold water. I would remove the bandages from the hind legs of my mare and put them on her front feet after about a half an hour. When the horses were thoroughly dry they were put in the stables and fed hay. My mare would then stand with her front feet in canvas buckets soaking in water as hot as my hands could stand. After a half an hour of this, the water was changed to cold water, which in fact was almost ice water, and she was soaked a half an hour in that temperature. I would then feed oats, and thoroughly groom her with a dandy brush and grooming cloth. She was then left alone until after supper, when I would go back and soak her feet again in cold water for one-half an hour, when I would go over her in front, from her withers to her pasterns,

THE FIELD ARTILLERY JOURNAL

and behind from her hocks to her pasterns with Tweed's liniment. Her legs, both front and hind, were then put up in cotton and bandages. Her front feet were packed with white rock. Each night I would rub all of her back and her belly back of the foerarms, where the girth rubs, with a strong solution of white lotion. She was then fed the balance of her hay and oats, and left alone for the night.

The next morning we would get up at 2.45, and, after breakfast, go to the stables about 3.45, when the mare would be fed two pounds of oats, and while she was eating these oats I would again stand her in buckets of cold water for one-half an hour. After this I would go over her again with Tweed's liniment, and rub her back well to get the circulation started. From the time we would check in one day until we started the next we would put in probably about six hours working on the horses.

The second day we finished the course in nine hours and ten minutes, over a very decent road, but with many heavy, long hills. During this ride Bunkie threw a large curb on his right hind leg, and thereafter dragged this leg considerably, which unquestionably kept him from being placed second in the final judging.

The third day the course was laid almost entirely over macadam roads, and our time was considerably slower—ten hours and fifteen minutes. Up to this time the other horses had been lying behind, believing that no horse could keep the pace we had been going and not break down. We had a lead then of five hours and thirty minutes in time over the next horse, Bunkie's time being just two minutes shorter than Mlle. Denise's. The fourth day Mr. Brown sent one of his Arabs, Crabbett, after us, and we all three finished in the minimum time of nine hours. Crabbett, as a matter of fact, finished in a good deal less, but could not check in until the total nine hours had elapsed, so that his rider showed poor judgment in forcing him on the road.

The fifth day both Crabbett and Rustem Bey came after us, and we again all finished in the minimum time, nine hours.

ENDURANCE TEST FOR U. S. MOUNTED SERVICE CUP

Again the Arabs showed poor judgment, and waited at the finishing point nearly forty minutes before they could check in.

The condition of our horses at this time was still good. At no time did either horse show signs of exhaustion. They were anxious to eat whenever they were given the opportunity, and although leg-weary—Bunkie especially—they both still had lots of go. Mlle. Denise was getting more footsore, and her gait at the trot had shortened appreciatively. The last two mornings I had added ice to the foot-baths, as the water was not cold enough to draw the fever.

The following morning the horses were paraded before the Judges, and after showing them at all the different gaits, were placed as follows:

Name of Horse.	Total Score.
1. Mlle. Denise	83.02
2. Rustem Bey	75.94
3. Bunkie	71.65
4. Kingfisher	69.16
5. Crabbett	61.00
6. Dolly	58.91
7. Castor	53.68
8. Moscowa	48.50
9. Noam	41.23
10. Kemah Prince	40.76

In placing these horses, condition scored 50 points, time 40 points, and feed consumption 10 points. The ten horses which are rated above are the only ones that finished, the others having been eliminated *en route*, due to lameness or exhaustion.

Mlle. Denise lost only 25 pounds, and her rider only one-half a pound, while Bunkie lost only 35 pounds, and his rider 10 pounds. Lieutenant McCreery was sick the last three days of the test, and only by great self-determination and grit was he able to continue at all. The blue ribbon in this test should really have been awarded to him, as he furnished the brains to condition these horses and the care for them *en route*. I would like to make it of record here that he is one of the best horsemen that I have ever known, either in the army or in civilian life.

THE FIELD ARTILLERY JOURNAL

In next year's test I would recommend that the conditions be changed very slightly. The weight should not be reduced. There is no horse can be considered a cavalry horse who cannot carry the pack that the cavalry horse must carry in campaign. Plenty of horses can cover this distance in the required time if the weight is cut down, but it takes a very serviceable horse to do so under the present conditions.

The horse that got the highest feed score on account of having consumed the least forage lost nearly 8 per cent. of her weight, while Bunkie, who finished almost at the bottom on the feed score, lost only about 3 per cent. of his weight. In my opinion this feature of the score should be ignored entirely.

It has been proposed in next year's test to allow the rider the assistance of a groom to take care of his horse. I would personally be very much opposed to this, as I believe he should do the work unaided.

The time limit I would leave as it is, except, possibly, changing the first four days to a minimum of 8 hours and a maximum of 11 hours throughout the five days. I would not reduce the minimum of 9 hours for the fifth day, as this test must not be allowed to become a horse-killing proposition.

No test of this sort can show conclusively the best horse for the cavalry. The selection of the individual, his preparation and his care *en route*, are bound to be determining factors. However, the Remount Service, which advocates the half-bred horse as the cavalry horse, started two horses of this breed in this test, and finished first and third. If the test does mean anything, it would show that the Remount Service is working along the right lines.

EXTRACTS FROM REPORT OF LIEUTENANT MCCREERY

PREPARATION OF HORSES FOR ENDURANCE TEST

Upon my arrival at Front Royal, I carefully examined these horses and found their condition as follows:

Mlle. Denise.—Weight 1040 lbs., sound, in good flesh, and a little soft. Found that she was a light feeder and

ENDURANCE TEST FOR U. S. MOUNTED SERVICE CUP

would do well on little feed. She has a rather slow walk, a good trot, and very easy canter; action true and straight.

Bunkie.—Showed that he had been getting too much work. He weighed 1040 lbs., looked dry, coat not in good condition; was sound, had a good walk, a good trot, and a poor canter. His action is true and straight, but he is rough at a canter. Found that he required a larger amount of feed.

On September 7th to 10th I rode both horses about three hours per day at a walk up and down steep hills, with about 165 lbs. up, feeding Mlle. Denise about 10 pounds grain and 12 pounds hay, and feeding Bunkie about 16 pounds grain and the same amount of hay.

From September 10th to 15th I increased their work in a gradual way from three hours to five hours per day, still at a walk up and down steep hills; also increased the weight they carried from 165 to 200 lbs., feeding Mlle. Denise 10 lbs. grain, 10 lbs. hay, and Bunkie 20 lbs. grain, 14 lbs. hay in five different feeds.

From September 15th to September 20th kept them on about the same five hours per day; increased weight they carried to 250 lbs., fed about the same. At this date Mlle. Denise weighed 1040 lbs., Bunkie 1070 lbs.

On September 20th I shipped them from Front Royal, Virginia, to Fort Ethan Allen, Vermont, by freight. They were on the car seven days; were not unloaded, each horse having one end of the car partitioned off as a box stall, bedded with plenty of straw, in which they could lie down at will. I carried in the car a large galvanized iron can to provide drinking water for the horses. I rode in the car at all times, which was an open stock car, and kept them blanketed when it became cool or drafty, or removed the blankets when it became warm. I fed them about 6 lbs. grain and 10 lbs. hay per day. Each second day I gave each horse one dram of Harlem Oil to keep them from getting shipping fever. I arrived at Fort Ethan Allen, Vermont, on September 27th; horses in very good condition, and found excellent stables provided for them at this Post.

THE FIELD ARTILLERY JOURNAL

On September 28th I rode them about two hours, slow, on good sandy roads, over slightly rolling country.

On September 29th I rode them about three hours on same roads.

From September 30th to October 3rd I gradually increased their work up to five hours per day on the same roads, also increasing the speed up to about seven miles per hour. They carried 250 lbs. in this work, and had not done much cantering up to this date. I also worked on their legs, in order to harden them, by using a lotion consisting of one quart denatured alcohol and one and one-half ounces of tincture of iodine. After rubbing this on the legs at night, I placed cotton and bandages on them. While they were cooling out after their work, and about every second or third night, I packed their feet with white rock.

From October 3rd to October 7th I gave them about five hours' work per day, covering about thirty-five miles; also increased the amount of cantering.

Major Koch arrived October 5th, and we then made a study of a time schedule, and found that in order to make $7\frac{1}{2}$ to 8 miles per hour, that it was necessary to canter more, as from 20 to 30 minutes straight trotting at about 8 miles per hour made them leg-weary. After considerable study, found that the following schedule was best suited to them, after we had walked the first twenty minutes from leaving stables:

10 minutes at 8 miles per hour—trot.

5 minutes at 12 miles per hour—gallop.

5 minutes at 8 miles per hour—trot.

10 minutes at 4 miles per hour—walk.

On October 8th, 9th, and 10th, we walked and trotted them only about 6 to 10 miles per day, and had them reshod, keeping the feet as long as possible. Weighed them on October 10th, Mlle. Denise weighing 985 lbs., having lost 55 lbs. during entire period of training, still carrying a good coat of fairly hard flesh. This mare lost only 25 lbs. during the test. Bunkie

ENDURANCE TEST FOR U. S. MOUNTED SERVICE CUP

weighed 1035 lbs., having lost only 5 lbs. during the entire training period, having a good coat of hard flesh on him. He lost 35 lbs. during the test.

On October 11th the test started.

SPEED SCHEDULE AND CARE OF HORSES DURING TEST

FIRST DAY

Up at 4 A.M. Fed horse, removed bandages, groomed; packed saddle-bags, and weighed in, Bunkie carrying 245 lbs.

We started shortly after six, and found there were a few horses out in front of us. Both of our horses were feeling fine. They showed that the let-up on fast and heavy work the three days previous had done them good.

We took up a brisk walk for the first twenty-five minutes; then trotted twenty minutes, and adjusted equipment at a five-minute stop. Both horses seemed all right, and, the roads being very good, we then started to work at the schedule we had agreed upon, which is as follows:

- 10 minutes at an 8 mile per hour trot.
- 5 minutes at a 12 mile per hour gallop.
- 5 minutes at an 8 mile per hour trot.
- 10 minutes at a 4 mile per hour walk.

This schedule is a total of about 7½ to 8 miles per hour, and we often traveled better than that by trotting faster than 9 miles per hour. Of course, the condition of roads and the steep hills would not always allow the faster parts of this schedule to be carried on, but we nearly always managed to make up lost time.

We paid no attention whatever to the other horses in the test; in fact, we did not see the others after the first morning, until the fourth day, when one of the Arabs was sent out to try to run us down.

We got off the road, and lost fifteen or twenty minutes the first morning, which was caused by going fast by one of the arrows, which was wrapped around a post, and we did not see which way it was pointed. We did not try to make this twenty minutes up, and arrived at the noon stopping place at Waterbury,

THE FIELD ARTILLERY JOURNAL

a few minutes before any of the others arrived. It was a warm day; our horses were hot, so we unsaddled them, left the saddle blankets on their backs, so as not to cool the back out, rolled cold, wet bandages around all four legs in order to rest the legs and remove fever. We next sponged their eyes, nostrils and dock with cold water; then rubbed them down for twenty minutes; then fed them. While they were feeding we partook of some sandwiches and coffee, which was very thoughtfully arranged for by Major C. P. George, who was Judge of Weights. Major George rode in the test last year, and found that necessities for the rider were not arranged for, causing a good deal of inconvenience and oftentimes a rider could not leave his horse long enough to find something to eat; but this year we found that a lunch was always there at the noon stop, also that the best hotel accommodations were arranged for us throughout the trip. This was a great convenience, and enabled us to put hours more work on our horses than we would have been able to do otherwise.

Our horses had finished their feed in twenty minutes. We then removed the bandages, rubbed down their backs, carefully saddled them, looked to see that their shoes were all right, no stones in their feet, and got started again after resting one hour.

We found the roads good, with rolling hills, and made good time except the last seven miles before reaching Norwich University Stables. It was a hard road, so Major Koch went a little slower than I did. I finished the day's run in nine hours and twenty-one minutes, two minutes faster than Mlle. Denise, and about thirty-nine minutes faster than the next nearest ones in, which were three thoroughbreds. The others arrived from one to three and a half hours after. Nearly all of the other riders expressed their belief that we were going too fast and that our horses would not last over a day or two, but we knew that our horses were trained to go on at the same pace, and were anxious to demonstrate that the Remount Service of the Quartermaster Corps is correct in using the thoroughbred stallion to produce a cavalry horse that will carry the weight of a

ENDURANCE TEST FOR U. S. MOUNTED SERVICE CUP

soldier's full equipment and proceed on a forced march faster than any other breed, and still be in condition to go into action at the end of the march, if necessary.

Upon the arrival at the University Stable, we dismounted, removed equipment from horse, weighed in, placed saddle blanket back on horse's back, led him to his stall, sponged his eyes, nostrils and dock, rubbed him down for ten minutes, placed cold, wet bandages on all four legs, put a light woolen blanket over him, still leaving the heavy saddle blanket in place on his back, in order not to cool his back out too fast, then led him around at a slow walk for one hour and a half, in order to thoroughly cool him out before standing him in the stable. I also gave him water from which the chill had been removed, in order not to give him colic or cause him to have a chill. After he was cooled out, I took him into the stable, fed him hay, removed blankets and wet bandages, then gave him a thorough grooming, after which I put white lotion on his back, and rubbed it in until the back was dry. I next bandaged all four legs in cotton and bandages, packed his feet with white rock, and, with the exception of feeding and watering, let him rest for the night.

FIRST DAY'S RUN

Total distance 58.7 miles.
Total time 9 hours, 21 minutes.
Roads Slightly hilly, soft, except last 7 miles.
Weather Clear and warm.
Condition of horse Excellent.

SECOND DAY

Up at 3.30 A.M. Fed horses, removed bandages, rubbed down legs, groomed, weighed in, and saddled. Was first to get started at about 5.30 A.M. Found roads very good, horses in good condition, and got into the noon stopping-place at Hardwick and out again before any of the other horses showed up. This is a big advantage, as it is quiet without other horses being around, and a horse will rest and eat better.

THE FIELD ARTILLERY JOURNAL

We took care of our horses in the same manner as the day previous; in fact, we gave them about the same treatment each morning, noon, and night.

We arrived at the end of the day's run at St. Johnsbury about one hour and a half before any of the others, so our horses were cooled and grazing when they began to arrive. Someone had seen us cantering up a hill this day, and promptly predicted that we would not be able to start our horses the next day. However, they were in good condition, and some of those behind them were dropping out from exhaustion.

We made this day's run in nine hours and ten minutes. Some of the others were not in for nearly four hours after, so their horses were going much slower, but they had the weight up hours longer than we did. By getting in earlier we found more time to work on our horses, and they had more rest than the others.

THE DAY'S RUN

Roads Soft, with long, steep hills.
Weather Clear and warm.
Time 9 hours, 10 minutes.
Distance 59.8 miles.

THIRD DAY

Up at 3 A.M. Gave horses same treatment and started at 5 A.M. Found roads very hard with long, steep hills, so could not make fast time, as we did not want to take chances of injuring their feet or legs. Horses finished in excellent condition.

THE DAY'S RUN

Distance 61.8 miles.
Weather Clear, very warm.
Time 10 hours, 26 minutes.
Roads Very hard, long steep hills.

FOURTH DAY

Up at 3 A.M. Started at 5. Found roads hard the first ten miles, so went slow first two hours. We had just reached

ENDURANCE TEST FOR U. S. MOUNTED SERVICE CUP

soft roads when Crabbett, one of the Arabs, joined us, he having started one-half hour later than we did, and had been sent out to see if he could keep up with us.

We kept to our schedule, and paid no attention to him. He was sometimes in front of us, and sometimes behind us. However, we finished the day's run inside of nine hours, and had to walk around about ten minutes before we could check in.

Our horses were in good condition, and the day's run was as follows:

Distance	59.8 miles.
Weather	Fair and cool.
Time	9 hours.
Roads	Fair.

FIFTH DAY

Up at 2.30 A.M. Started at 5 A.M. Two of the Arabs, Rustem Bey and Crabbett, were off in front of us, and the roads were very hard the first four miles, so we took our time the first hour, only making five miles, while the Arabs gained quite a lead.

After passing over the hard road we took up our usual schedule, and made good time into the noon stopping-place. The Arabs were there before us, and Rustem Bey looked fresh, while Crabbett did not look so well. Mlle. Denise was fresh and strong, while Bunkie was beginning to show effects of a curb on his off hock, which was getting a little feverish, and he was dragging his toe a little. This, unfortunately, caused him to lose second place in the test, as the keen-eyed Judges soon noticed it.

We had plenty of time to arrive at Camp Devens within nine hours, so took our time during the afternoon, arriving on the finish-line on the parade ground at Camp Devens, ten minutes too early to check in. The Arabs were there about ten minutes earlier than we were.

After checking and weighing in, we cared for our horses in about the same manner, and proceeded to get them ready for

THE FIELD ARTILLERY JOURNAL

the final examination by the Judges on the following morning. This examination took place on the parade ground at Camp Devens, and the horses were shown in the following manner:

First, they were weighed. The attached is a table of the weights lost by the different contestants. It will be noted that Mlle. Denise lost only 25 lbs., and Bunkie 35 lbs. This is very little, considering the fact that it was a very severe test on the horses, and some of the riders lost about half the weight that Mlle. Denise did.

After the weighing they were saddled without the weight-pack, saddle-bags, and packs, and judged at a walk, trot, canter and gallop. They were closely examined for interfering marks and unsoundness by the Veterinarian and Judges; made to back, turn on the forehand and haunches. and closely observed by the Judges in order to determine if they were able to continue the march if necessary.

After the Judges had finished this examination, they withdrew for a consultation, and then awarded the ribbons, as noted on the attached list.

THE TEN (10) HORSES THAT COMPLETED THE TEST FINISHED IN THE FOLLOWING MANNER:

Name of Horse.	Breed.	Sex.	Color.	Owner.	Amount of weight lost during test.
1 Mlle Denise	Grade Thorobred	Mare	Brown	Maj. Stanley Koch	25
2 Rustem Bey	Cross-Bred	Geld.	Chestnut	W. R. Brown	60
3 Bunkie	Grade Thorobred	Geld.	Chestnut	U. S. Remount Service	35
4 Kingfisher	Grade Arab	Geld.	Bay	Col. Frank Tomkins	50
5 Crabbett	Arab Reg.	Geld.	Chestnut	W. R. Brown	No record
6 Dolly	Morgan Reg.	Mare	Gray	C. C. Stillman	50
7 Castor	Morgan Reg.	Geld.	Bay	Morgan Horse Farm	35
8 Moscowa	Thorobred Reg.	Geld.	Bay	Thorobred Endurance Test Club	37½
9 Noam	Arab Reg.	Mare	Chestnut	W. R. Brown	60
10 Kemah Prince	Grade Arab	Geld.	Gray-Roan	A. W. Harris	no record

POINTS TO BE OBSERVED IN HANDLING A HORSE ON THE MARCH

1. A horse gets leg-weary from trotting steadily for thirty or more minutes, and a short, sharp gallop uses different muscles and seems to freshen him.

ENDURANCE TEST FOR U. S. MOUNTED SERVICE CUP

2. It is better to trot faster than a six-mile trot, which is so often used in cavalry marches. This will give the horse more time to walk or stop for a rest.

3. The weight should not be too far forward when traveling up and down hills.

4. Watering at every trough, stream, or water-hole is essential to keep the horse fresh and ambitious.

5. When a horse has finished his work, and is hot, and the air is cool or drafty, it is better to blanket him and walk him slowly in order to cool him out. If the air is warm and not drafty, walk him slowly without blankets. If you let him stand with or without blankets the blood-pressure decreases too rapidly, and causes too much reaction.

6. For a long, hard march, it is better to have the horse's feet a little longer than usual. This prevents them from becoming feverish.

7. Care should be taken not to ride with the girth too tight on a long march. This will prevent cinch swellings.

8. In order to prevent lost shoes, it is well to examine nail clinches each noon and night.

9. When a horse is tired, his digestive tract is tired also, so it is better to give him foods that are easily digested, and not too much at one time. Feed him two or three times during the night, if possible.

10. If you want a horse for a long march, try to get one that is close to the ground, and one that is straight on his legs. Splay-footed, cow-hocked, and horses that wing, do not go far.

11. If you want a horse to carry heavy weight, train him to do so. He cannot carry it on his breeding or conformation.

12. When starting on a long march, always go slow the first hour. This will give the blood a chance to circulate in the horse's feet, and the blood-vessels throughout the horse's body will expand gradually.

13. Cold water does not injure a hot horse if you can keep him moving and keep him hot, but if you let him stand after drinking it, it will give him chills, and may founder him.

THE FIELD ARTILLERY JOURNAL

14. A quart of oats, handful of hay, or a little grass often freshens up a tired horse.

15. When a horse is tired he likes it quiet. Avoid all unnecessary noise, loud talking, crowds, and excitement.

COMMENTS BY MAJOR C. P. GEORGE, JUDGE OF WEIGHTS

The conditions of the 1920 test varied considerably from those of 1919. A minimum "dead weight," *i.e.*, load, exclusive of stripped rider, of 100 pounds instead of 200 pounds total weight. A minimum of 9 instead of 10 hours, and a maximum of 13 instead of 15 hours.

Every effort was made by those conducting the test to lighten the burden of the riders with reference to their meals, sleeping accommodations, and transportation between stables and hotels, the result being the elimination of worries so irritating to a tired man.

It is assumed these rides have for their object the selection, by arduous practical tests, of the best blood lines from which to produce the ideal cavalry mount. If the tests held to date are to be taken as a criterion, the object has yet to be attained. Taking the 1920 test as the best example, as harder conditions were imposed, and a larger entry made, it has yet to be proved as a direct result of the test that any one of the saddle types of horses entered is the best. This is based purely on the fact that none of the horses entered was the best of the breed, those not failing in conformation showed some defect or "second-handedness." As an example: Of the four thoroughbreds starting, but one had not been "fired" or otherwise upholstered. This one, "Majella," was beautifully bred, but her long legs and "train of cars" back beat her before she started; as a result of this, and poor distribution of pack, she left the race lame and quite weary. It might be added that this mare had never been raced or bred. A cursory examination of her three stablemates, prior to the test, without doubt left many convinced that only the thoroughbreds would be in at the finish, but a careful scrutiny would reveal many signs of reinforcement by the firing method.

ENDURANCE TEST FOR U. S. MOUNTED SERVICE CUP

The Morgans were far from being the best of the type; the same may be said of the standard-breds. In fact, "Lord of the Nursery" (a standard-bred) was a poor type of any breed.

Surely no one can assert that the Arabs entered are the best representatives of the race; they might be of those raised in the United States.

Mlle. Denise and Bunkie are fair types of grade thoroughbreds. Bunkie is a phlegmatic, big-boned, coarse-looking half-bred, his disposition being his saving grace. Mlle. Denise is more of the polo type, and during the test suffered with foot soreness. The morning prior to the start she was figuratively "walking on eggs." Only the horsemanship of their riders brought these two horses through, and without the various lotions and other expedients, rarely obtained or used in campaign, neither would probably have finished. Mlle. Denise, certainly could not have started the second day if her rider had not given her foot-baths of hot and cold water to reduce the fever in her feet, and at other times packed her feet in ice.

The Arabs proved themselves excellent little horses, but not weight carriers. Had they been pushed the first three days, it is doubtful if they would have finished. Rustem Bey, a cross-bred, Arab-Standard-bred, finished in the best condition of any horse in the race, but was not pushed until the last day. As for type, a month later he failed to get in the ribbons at the National Horse Show in a "Cavalry Remount" class.

The Morgans were, generally speaking, a poor lot. Why try to make a saddle horse out of one bred for light draft? We saw at Mr. Watson's farm in Vermont many Morgans of better type than those entered.

To make one's criticism constructive, why not hold an "Endurance Test," if one is necessary, to determine the best blood from which to breed for our cavalry remount, which really embodies the conditions met in the Service?

Select from two to four of the best representatives of each breed, select riders of about the same weight and of equal ability as riders and in horsemanship. Carry exactly the same

THE FIELD ARTILLERY JOURNAL

equipment as that carried by a U. S. Cavalry trooper, and not its equivalent weight in lead. Form a troop, and control the gaits, requiring all entries to remain within a specified distance of one another at all times. At the end of each day's ride and during midday halts have all horses cared for alike.

Would not this be more of a test, and more nearly approach what is actually required of a horse in the Service?

The 1921 test, which will be run from Camp Vail, N. J., to Washington, D. C., allows the use of lotions, liniments, bathing of feet, and white rock; but these coddlings will count against condition. It tightens up on the conditions, but still the personal equation and physique of the rider are large factors. Men weighing more than 145 pounds are allowed a credit of 50 per cent. of the overweight, thus reducing the 100 pounds deadweight by amount of credit given. Time limits have been changed as follows: maximum, 13 hours; minimum, 9 hours.

Judging by the interest manifested by the various sponsoring clubs, the entry list will be large, and contain much excellent stock.

As a sporting event it should be the best in our country.

Operations of the Horse Battalion, 15th (German) Field Artillery, with the 7th Cavalry Division in Northern France and Belgium, Autumn, 1914

BY LIEUTENANT COLONEL SEEGER*

From Artilleristische Monatshefte, November-December, 1920.

ON October 2, 1914, our division was a few kilometres northeast of Bapaume, under orders to move west of Douai and cover the flank of the 1st Bavarian Army Corps, just arrived from Lorraine. We had been reinforced by another cavalry regiment, the 16th Uhlans. The 9th Cavalry Division, just ahead of us, had become engaged near the main Arras-Cambrai road, at Chérisy-sur-Sensée, so that we crossed its rear in a single forced march of about forty kilometres, by Vis-en-Artois, Sailly-en-Ostrevent and Vitry-en-Artois, and reached Quiery-la-Motte late in the afternoon, without seeing anything of the enemy. This last-named place is just west of Douai, whose towers were clearly in sight.

The right flank of the Bavarians had encountered small hostile forces at Izel, two kilometres west of us; farther north, it was reported, Beaumont was held by the enemy, and still farther north all the coal country of Henin-Lietard and Lens. Here, in this region, made so famous in Zola's "Germinal," the next few days saw a series of engagements, which were to determine the fate of this whole country until the end of the war. If our Bavarians, and the cavalry divisions with them, had not acted with such speed and decision, we should have lost control of this region, to whose defense strong forces, both French and English, were being concentrated. As it was, we held and used the coal mines until, in the last few weeks of the

*Translated by Colonel O. L. Spaulding, Jr., General Staff, U.S. Army

THE FIELD ARTILLERY JOURNAL

war, this part of the line had to join in the general withdrawal. For fifty months, German blood never ceased to flow at Lens and on the Loretto hill; and I have never ceased to be proud that my batteries were the first to come into action there.

On the evening of the 2nd the whole division was so worn out that it was decided, to our great joy, that we were not to go in that night, but go into quarters just west of Douai. My battalion was assigned the villages of Brebières and Courchelettes, but had to dispute possession with the 9th Cavalry Division, which arrived about the same time. It was not until after a long argument, and delay at headquarters of the Sixth Army at Douai, that our right of priority was recognized.

On the 3rd we entered upon a period of hard and costly fighting, which, for the artillery especially, had the interest of a complete novelty. We had to learn to use our guns singly, in a country where no observation was possible, and where there could be no single control of the artillery according to our previous ideas. The whole country was covered with houses, and one could never tell what village he was in. The French General Staff maps, which we had carefully brought along in the original packages, were of no use; they had slept peacefully for ten or twenty years in our strong boxes, never replaced by new editions. We had never felt so lost in the matter of maps, and were greatly relieved when we finally did get a few copies of the new German map of the region. As a rule, we had no complaint to make about the supply of maps, but the maps themselves were obsolete for many regions, and new ones could not be gotten soon enough. Even at this early period, the demand on our mapping section was enormous.

The division assembled at Quiery on the morning of the 3rd; and now our orders led us into the heart of the black country, where every commander found difficult problems to solve; for even from a church tower there was never anything to be seen but houses, chimneys, and slag-heaps. Any number of the enemy might be hidden here, above and below ground; guerilla warfare and fighting with the inhabitants might readily assume

dangerous forms. We had had no experience, either in peace or war, in such a country, so that we had to adjust ourselves very rapidly to new conditions. The first inspiration, of course, was to use the high chimneys and slag-heaps for observation towers. My staff made extensive use of them; some of my officers soon grew very skillful in climbing to high points, with or without ropes or climbing irons, as the case might be.

I remember that on one occasion, when we were relieving the Guard Cavalry Division in this country, the commander of their artillery battalion introduced one of his assistants, Lieutenant Baron von C——, a nephew of our former Chancellor, as "a fine climber—has passed the chimney-sweep examination, and can get up anywhere." And he well deserved his reputation, for he rendered good service not only to his own troops, but to ours. I recommended him to all my officers for imitation in this not overly cleanly occupation, in which the end certainly justifies the means.

In the country just described, called the Borinage, the enemy's patrol and spy system had a rich field; and all sorts of rumors gained circulation, of whole regiments of Moroccans hidden in the shafts to attack us in rear. One man came to us, a coal miner, who said he was a Spaniard and a friend of the Germans. He spoke but little French, and an interpreter was sent for from division headquarters, who conversed with him for a long time in the language of Don Quixote; but he had little of any consequence to tell us. However, he said very rightly that we must be careful, and advance only slowly and with proper dispositions for security; that we might find house-to-house fighting at any time.

Our cavalry, with the few guns of my battalion, was to take possession of the factory towns of Hénin-Liétard and Billy-Montigny, which we accomplished by evening after constant fighting in the long village streets. One of my batteries posted two guns at the entrance of the former village, and swept the whole main street, 1500 m. long and perfectly straight, with time shrapnel; at the farther end there was a barricade, with

THE FIELD ARTILLERY JOURNAL

thin smoke rising from behind it. Since all six regiments were attacking at the same time and in different places, to get the towns quickly by envelopment, there was some danger of the troops firing into each other, especially in indirect fire in such places as the numerous crossings of the Deule Canal and of the Souchez. In such country the close connection of fighting troops is even more important than elsewhere, for the difficulties of command are enormous. It becomes very evident, too, that determined troops attacking boldly do much better against an enemy who is not quite sure of himself than those who doubt or hesitate. During these few days we saw much of both types of leadership; I was always glad when we had to work with regiments whose motto was "nothing venture, nothing win."

The artillery commander had for the most part but little to do, other than to give advice to the separated batteries and bring such unity as possible into their action. Still, toward evening of this eventful day all my batteries got into action together under my own command, against an enemy in plain sight, and with good success. We got orders that the cavalry was to finish the work in the villages alone, with only one of our guns to each of the four regiments engaged; and that the three batteries were to turn their attention west instead of north, to support the action of the Bavarians at the village of Rouvroy. I quickly assembled the battery commanders, and indicated the position and targets. My staff climbed to the top of a still smoking slag-heap; from here we could get excellent observation, and conduct the fire of all three batteries by telephone, utilizing favorable opportunities and the last of the daylight. It has always been my custom to take a hand personally in the conduct of fire, when the situation demanded it and there were good targets within my reach which could not be observed by the batteries. Although there is nothing about it in the Regulations, I have often, on proper occasion, taken the firing out of the hands of the battery commanders, and have never been able to see that any harm was done. Of course, this assumes that the battalion commander is skillful in the use of his telephones,

HORSE BATT. OF THE (GERMAN) 15TH F. A.

aiming circles, telescopes, and all the rest, so as not to display ignorance before his subordinates. I believe this full mastery of our new laying equipment was not then universal in the army, especially in the reserve units and among older officers who had not had recent training. Now, after the war, every artilleryman will agree with me that all the higher officers, including brigade commanders and chiefs of artillery, must know all that his gunners, instrument sergeants and observers know; for he may have to depend upon himself alone when his peacetime assistants are killed or wounded.

After this first firing position, we moved to another—at a gallop, for the first time of late. We came into action pretty much in the open, to fire a few more rounds by the last of the evening light at the retreating enemy. The instinct to take cover was already well developed in my men, and they brought bundles of straw from the stacks near by, to mask the guns.

"If it does no good, it can't do much harm," remarked one of my battery commanders. It was a constant delight to me to see the interest and energy displayed by the battery and battalion scouts, who were ready with suggestions and comments whenever they felt justified in making them; I always encouraged this, when it was done in good faith. I have already spoken of this, in my article on Lens in January, 1916, which attracted notice in even the enemy's professional journals.

At sunset the successful fight was broken off, and, by the light of the burning buildings, we withdrew for the night to Beaumont, where the whole division, with over 5000 horses, bivouacked together. The bad thing about such a bivouac was that it took nearly all night to water the horses.

The next day we continued with the Bavarians westward toward Méricourt, while Lens and Hénin-Liétard, farther north, were taken by the cavalry and Jägers. This they accomplished by noon. Our dashing 9th Cavalry Division had broken through the enemy's lines at Loison, near Lens, and taken the burden off all the other troops, for they were able to take in reverse the enemy's posts along the Souchez. So progress was rapid toward

THE FIELD ARTILLERY JOURNAL

the north, and the Bavarians occupied Avion, a suburb of Lens. It was evident that there would be more hard fighting here. So we trotted rapidly forward; spurred on by the success of our cavalry, my batteries made a dash for the hill 60, about four kilometres north of Lens, but paid a high price for it. We were too careless, and forgot, what we should have learned already, that the French were masters in retreat. Our observation stations were discovered, and overwhelmed with fire. This was a very common experience everywhere on the west front, during the first few months of the war, as I have often heard from comrades who held commands there. In the east, against the Russians, we could be bolder, and often use open positions, for they were not as skillful with their artillery as our western neighbors.

The day had been a hard one, and the 5th was to be just as hard. Still we had been successful, and had made progress westward, through the skillful use of the numerous bodies of cavalry and the energy of the Bavarians. Lens and all its suburbs were completely in our hands. For the night we were quartered in Billy-Montigny, a large straggling town which had at last been cleared of the enemy. It was very hard to get our bearings in the factory districts, and keep our men ready for emergencies in their scattered quarters. Sometimes, when it seemed necessary, whole batteries or squadrons would be put into deserted factories; but it was not easy to care for the horses there. We were almost too careful of them at that time; quite the contrary to the practice on the eastern front, where much less consideration was given them.

For October 5th, the 7th Cavalry Division was ordered to march upon Camblain l'Abbé, by way of Liévin, Angres, Souchez and Ablain. We never reached there, however, in the whole war; there was constant bitter fighting at Ablain, Souchez and Carency, with losses almost as heavy as at Verdun and on the Somme.

The division assembled early in the morning at Sallaumines, head of column in the centre of the town, close by the monument

HORSE BATT. OF THE (GERMAN) 15TH F. A.

erected by the French Government in memory of the miners lost in an accident a few years before at Courrières. Suggestive of the feeling in France toward Germany just before the war is the circumstance that on this monument there is not a word of acknowledgment that the survivors of this accident owed their lives chiefly to the humane action of our emperor and to the promptness of the German relief expedition!

The march through Lens, with its interminable suburbs, was torture to our horses. Their shoes were about worn out, and so thin and smooth that on this slippery ground we had to dismount and lead the horses; even so, they often fell, and our progress was slow. When we finally got through Liévin, the western suburb, we heard the sound of guns just ahead; we were again in contact with the enemy.

There was a long halt, headquarters trying to decide what to do. Officers' patrols of the leading Bavarian division were on the Loretto hill, at whose foot we were halted. I discussed with my battery commanders the routes to be used if we had to go onto the hill, which seemed highly probable, especially since behind Souchez hostile troops had been encountered, who withdrew rapidly. They were French cavalry and artillery; English troops also were reported, coming up from Bethune toward Aix-Noulette.

I asked permission of the division to ride up on to the commanding Loretto hill to get a view of the country. With a few men of my staff, I galloped up the west slope to the churchyard, where we dismounted behind the wall, according to our old habit, to creep closer. The experiences of the day before had made us cautious; my own nerves were a bit shaken, but it was necessary to hide any such feelings. Still, I expected at any moment to see the familiar black bursts of the French shells. Sooner than I expected, they came. While we were riding up the hill a Bavarian officer had met us and asked us to get some batteries on the hill as soon as possible; he said the enemy were retreating in disorder, and the first few cannon shots would completely disorganize them. I pointed out to him

THE FIELD ARTILLERY JOURNAL

that patrols had showed themselves too carelessly on this conspicuous hill, and given indications of the presence of some headquarters. He answered laughingly, "This retreating mass can not possibly make any resistance; just get some guns up here quickly and open fire." As answer to this unduly optimistic suggestion, just then came two shells, almost perfectly adjusted in direction and range, and burst hardly ten paces from the bench, which, close to the chapel and between two trees, stood out in clear view of all the country round about.

My first thought was, "Here's what comes of too much optimism." Everyone ran back behind the crest, to find cover or get away altogether; the latter seemed best, for I knew that we should now get volley after volley, as we actually did. I called to my men to lead the horses a little down the hill, so that we could mount more readily, and ran back toward them. But already the volleys were coming in quick succession, and sweeping the whole hilltop. One struck close to me, in a group of hurrying horses and men; wounded horses broke loose and galloped down the hill; men and horses lay groaning on the ground. There was nothing to do but get away as quickly as possible, for there was no cover anywhere near. It was lucky for me that my horse Hans was not afraid of the heaviest fire, whether he stood near our own guns in action or shells were falling near him; he only laid his ears back and crouched a little, when they came too close. Such moments as this will always remain in our memories; it was a question of fractions of a second, whether we should get safely away or join our comrades on the ground. One leap, and I was in the saddle; my adjutant was beside me; what became of the others I could not tell. Even against our will, we went down the hill at a wild gallop; the horses themselves knew what was going on. Beside us galloped two wounded cavalry horses from the cavalry division headquarters. All the horses were so excited that it took us a long time to get out of the dangerous area and get control of them again; we could not stop them until we were clear back to the highway. The two wounded horses had disappeared by this

HORSE BATT. OF THE (GERMAN) 15TH F. A.

time. And as ill luck would have it, just at this time our commanding general, von der Marwitz, appeared, coming up the road in his car, not realizing the danger he would be in if the hostile artillery happened to sweep a little more deeply.

I informed him briefly as to the situation, and my dispositions for going into position here. The one clearly marked point of the long ridge had to be eliminated from consideration, and the batteries must make a careful reconnaissance and then go into position with wide intervals. But I shall never forget the well-meant suggestion which our highest cavalry commander thought it his duty to make to me in this particular situation; he remarked that I should establish my battalion station at the chapel! I told him what had just happened there, and said that I had no idea of suicide, for the chapel would soon be a heap of ruins. And a short time afterward, as the photographs taken in May, 1915, show, there was not one stone left upon another.

It was early afternoon before we finally got the three batteries into position, with wide intervals, on the ridge, perhaps a kilometre long. We had to take the utmost care, for we knew it was all up with us if anything should betray our position. And from the front, there was nothing exposed, neither guns nor observation stations; but the enemy's patrols and observers must have been busy in our flanks and rear. The two days that we spent on this hill were most memorable for the constant fire in flanks and even in rear, from all directions. We learned during the war to take fire from the front as perfectly natural, and to get along with flank fire if it was not altogether too much in flank; but we never could reconcile ourselves to being fired into from the rear without being able to protect ourselves or change position. Our exposed position here was due to the rapid advance of the German troops at this one point, while the attack was held up elsewhere. The hostile batteries thus got an opportunity to fire into our rear at long range.

The enemy, who had fallen back in the morning in considerable bodies of cavalry, seemed to have taken position at St. Eloi and brought a battery into position. We could see his observers

THE FIELD ARTILLERY JOURNAL

on the broad platform of the church tower, while our Bavarian infantry was trying to get possession of Carency and Villers-aux-Bois. But the attack failed along the whole line; reports soon began to come in from all my observers that the enemy was growing stronger everywhere, both in our front and on our right flank at the Bois de Bouvigny on the Loretto ridge. We could distinguish the khaki of the English troops, whom we now for the first time encountered fighting shoulder to shoulder with the more conspicuously uniformed French—which indicated that the enemy was bringing everything that could be spared from other fronts. During these early days of October the English were being withdrawn from the Aisne front, to which the earlier exigencies of the campaign had brought them. Now, when the front was becoming stabilized from Paris to Belfort, they were trying to get clear of the French front, and, as Marshal French's report puts it, "Draw nearer to the threatened coast front," and so more directly protect their own country. From now on to the end of the year, the troops that we met on the Flanders front were chiefly English; and we very soon realized that their infantry was much better trained than the second line troops that the French had put in against us. We felt this especially about the middle of the month, when our cavalry divisions came in close contact with the best of the British troops.

But now, on the Loretto ridge, our cavalry had its first experience in serious dismounted fighting, attached to the infantry. I shall never forget their long faces; they had occasionally done a little dismounted skirmisher work, but limited to reconnaissance and delaying action. But now it was a question of serious attacks on foot, on a large scale; squadron and regimental commanders had to dismount and take their places in the line, and they did not all like it. Our Jägers, who had been doing most of the infantry work for us, had been sent elsewhere. So everyone was happy when the chief of staff of the Bavarian division finally said, "We will take over from the cavalry for the attack upon Gouy; they are hardly equal to dismounted work on that scale." They were ready and willing

HORSE BATT. OF THE (GERMAN) 15TH F. A.

to take position now and then on foot, and even to hold it firmly, but had never been trained, either in peace or war, for a part in an important infantry attack. Besides, the carbine strength was always very small; a cavalry regiment could hardly put more men in line than a single full infantry company.

By October 6th our position on the exposed Loretto ridge was clearly untenable; we were exposed to flank and reverse fire, as already described, and the guns were directly threatened in case of an attack from the Bois de Bouvigny on the right. My battalion was therefore ordered that afternoon to move to the ridge of Givenchy-en-Gohelle, a little farther east, which later became famous under the name of Vimy Ridge. We had to make this change by daylight, and in the face of a watchful enemy, across fairly open ground; for even with long detours there was little cover to be found. I watched with great anxiety the arrival of the batteries, to which I had given orders simply to move as cautiously as possible and one gun at a time up the open slope of Vimy Ridge. For a wonder, they reached their new positions without being fired upon, or at least without losses, but were there again fired upon almost immediately.

From here we fired upon the more distant parts of the Loretto ridge, especially the eastern edge of the Bois de Bouvigny, from which the enemy seemed to intend to roll up our flank. We saw a Bavarian artillery battalion, which had taken position unskillfully on the slope of the Loretto ridge, overwhelmed by a sudden violent burst of fire, which exploded the ammunition baskets and drove the men behind the hill. The battalion commander told me later that his men were newly arrived, insufficiently trained, and equipped only with the old laying apparatus.

The situation that night was critical, for we constantly expected an attack by the enemy, who was being strongly reinforced. Everyone was nervous, and there was little rest. However, the news reached us that we were to be relieved, or at least reinforced, which improved our spirits somewhat. It was said that in view of the existing situation before Antwerp we must expect a serious attack, and must hold for several days. On

THE FIELD ARTILLERY JOURNAL

the morning of October 7th, when we went for orders to division headquarters at Givenchy-en-Gohelle, the news was passing along our lines that Antwerp had fallen. This later proved to have been a little premature; nevertheless, there was an improvised celebration at division headquarters, in a peaceful garden surrounded by the roar of battle. When the division commander pointed out the importance of the capture of the fortress, our joy knew no bounds. Again we thought that the war was nearly over, as we had already thought several times. We had as yet no idea of the consequences of the battle of the Marne; still less did we dream that the war would last over four years and that we should lose.

But our joy was short lived. Just at the third glass of champagne, two shells burst close by in the garden, and killed some horses grazing there. No one could imagine how we had been discovered, under the thick trees; some suggested treachery or espionage, or perhaps the famous underground telephone, which served to explain everything otherwise unaccountable. But our party broke up instantly, division headquarters moved and we others went back to our troops.

On my return, I found that one of my batteries, to celebrate the fall of Antwerp properly, had set fire to the chateau of Noulette, which had been recognized as a hostile headquarters on the Loretto ridge. Our advanced observers had reported by telephone that there was a great deal of automobile traffic there, and that flags were visible, indicating the presence of a considerable headquarters. Before long, the whole chateau was burning; indicating, at least, that our shells did have some incendiary effect, which had been considered doubtful in peacetime experiments. Unfortunately, we could get no other information as to the effect of our fire. Before very long, there was not a village left in this whole country, not a building to furnish shelter, or a wood to give cover.

Finally, on the 8th, came the long-expected order for our relief by the 7th Army Corps, which was moving by forced marches from the Aisne, to strengthen our lines here and to free the cavalry masses for use farther north. We were directed to

HORSE BATT. OF THE (GERMAN) 15TH F. A.

turn over our positions to the Westphalian batteries in good condition, and wherever possible with all telephone lines and equipment, as later became the rule. Of course, everyone tried in every way to get newer and better equipment in place of the old, but generally this was out of the question.

We exchanged experiences hastily with our friends in the newly arriving regiments, and moved off, with the comfortable feeling of having accomplished something, to see what came next. The division assembled at Liévin, and after some hours' waiting it was decided to make this a rest-day. This was particularly desirable, as giving an opportunity to attend to our badly neglected shoeing. There had been several attacks by hostile airplanes, causing considerable loss in our division; a single squadron had lost thirty horses and several officers and men. There had even been some signs of panic, as was not surprising in the case of troops who can not quickly take cover, like infantry, and whose long columns on the roads offer a fine target to the enemy's aircraft.

We took quarters in and about Lens, already crowded with German troops, keeping ourselves on the alert so as to move promptly to any threatened point. Hostile shells occasionally fell in the city, for the enemy was very near, and seemed to contemplate retaking the place.

The division assembled at Méricourt on the morning of October 9th. Taught by experience, we were to avoid losses by marching in separate small columns and reassembling to fight. Our task for the next few days was to get possession of Lille, before the French and English could seize it. It was held by only a very small garrison, and a dash for it was well worth trying. A detachment, chiefly of Saxons, was approaching it by forced marches from the east, and all available cavalry divisions were to close in from the south and west. The day was fortunately misty; and we moved out at a trot, in good spirits, ready for anything that we might find at Lille—a city which proved, almost to the end of the war, to be one of the most important places in the occupied territory.

Fire Discipline*

LECTURE BY MAJOR F C WALLACE, FIELD ARTILLERY

By fire discipline is meant that quality of training which enables the personnel of a firing battery to function and function properly regardless of conditions. The more closely this ideal condition is approached, the better the fire discipline of the command. The problem confronting the battery executive is: To what extent can this proficiency be developed in time of peace, and from what system of instruction can such a high state of discipline result? The regulations define fire discipline and emphasize in many places the necessity for maintaining it. They fail, however, to get down to brass tacks and explain how it can practically be developed. This paper has been prepared in an effort to supply these details.

In the years before 1916 there was apparent a wide divergency existing between the different batteries of the Field Artillery and even among those of a single regiment or battalion as regards their firing ability. This was the result of a number of causes.

First, and it is believed most important, the quick-firing gun had been introduced into our service in 1907, immediately following a material increase in the officer personnel of the Field Artillery. These two circumstances, coming as they did, resulted in battalions and batteries being commanded, in general, by officers who had had no practical experience in training the personnel of the gun squads of a quick firing battery, and who now had new problems of their own to solve. The result was that usually the young officer, charged immediately with this feature of the development of the battery, was largely left to his own devices, with all the handicaps of such a situation.

The result was that each battery executive had to develop

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FIRE DISCIPLINE

along his own lines. Each had to try out his own theories independently and learn by the same mistakes, also made independently. In other words, instead of being in a position to add to his rate of development by profiting by the errors of others, each battery executive had to feel his way over the entire route. Naturally some had more sensitive organs of touch than others.

The other great handicap to the development of high-class firing batteries has been found to be the premature tendency to speed and the resulting sacrifice of accuracy, which latter feature was greatly enhanced by the requirements of the examination for so-called first class gunners in force during the period referred to. The quick-firing gun was a new toy, and the first thing that appealed to the great majority was the speed element. The problem was attacked from the wrong end. In my regiment at this time, the motto "Speed and Accuracy" was adopted, and these paramount requirements were incidentally considered in that order; the speed by all means—the accuracy to be hoped for.

As stated before, this tendency was encouraged by the requirements of the first class gunners' examination. Here an error of twenty-five yards in range was permitted in either setting or laying. This practically doubled the probable error of the gun. The result was as might have been expected. The young officer, anxious to make good, was told to develop all the men he could who could qualify in this test. These men were erroneously designated as first class gunners. The young officer, therefore, his success and efficiency being measured by the number of men qualified, set himself to work, in most cases, to develop a system of instruction which would take full advantage of the leeway in accuracy officially condoned. The consequence was a deliberate sacrifice of accuracy.

It is far from being intended that these criticisms of the efficiency of the Field Artillery of that period should be accepted as made in comparison with that of our present batteries. The old batteries did have speed and plenty of it, and many of them were accurate—it was not at all unusual to find a battery firing

THE FIELD ARTILLERY JOURNAL

three and sometimes four salvos per minute during adjustment, a degree of training which it is feared, few, if any, of our present batteries can approach, even when not unduly delayed by the observer. The point is that an old *average* battery had speed, but little *real* accuracy. Our average batteries to-day, from my observation, have neither. Our problem is to promptly develop both.

The following suggestions as to a sound method of developing gun squads and the firing battery as a unit, are derived from experience as a battery executive extending over a period of seven years, and from watching the methods of other executives. I may add that up to the day when the actual handling of the firing battery became no longer a part of my duties, I was still picking up pointers and better methods. The effort here is to give the results of these experiences to the young officers present that they may start as nearly as possible to where we left off and carry the development along, instead of having to arrive at something similar after experiment on their own account.

The operations of the several members of the squad will first be discussed in detail and attention directed to what has been found to be improper employment of these men, their common errors, and what is considered to be the correct method of eliminating them. To begin with, speed at the expense of accuracy, is never true speed. A battery so trained will eventually fall down under stress, and wild shooting will result. Such a battery, once out of control, and realizing that its fire has become inaccurate, will slow down to the speed of the greenest organization. True speed is attained solely by the elimination of lost motion and by the natural facility gained by the men through constant practice. This must be emphasized.

First, and most important, among the members of the gun squad, comes the chief of section. His training is also, I might add, the most frequently neglected. The function of the chief of section is intelligent and efficient supervision. The chief of section is an important link in the chain of command and can be

FIRE DISCIPLINE

made a valuable assistant to the executive, if properly trained. He is too frequently overlooked, the executive attempting to deal at all times with the individuals of the squad instead of with the squad as a whole, through the chief of section. Responsibility is essential to his development. He must be imbued with the idea that the proper functioning of his squad is his direct concern, and that he is not merely an unessential figure-head, as he is too frequently allowed to become.

One great drawback to his proper training has been the practice of requiring the chief of section to keep a record of all data for his section. This makes him merely an assistant to the recorder and draws his attention to the keeping of his record at the very moment when he should be all eyes in watching for indications of poor work in his squad, *i.e.*, at the moment when firing commands are coming through and the gun squad is functioning. If the battery has been properly trained, it is not usually material that the chief of section should know what the final deflection should be. When he has reason to question the work of his gunner, he simply calls his gun out of action and calls upon the recorder for the necessary information. All that he should be required to remember is the last data given, so that in case any part of it should have escaped any one of his men, he can supply the command without delay. The rest of his effort is spent in watching, from a position far enough back to see the whole, every movement of his men, in order that he may detect faulty movements, or indications of confusion or indecision and therefore catch possible errors before the gun has been fired. There should be no hesitancy in requiring a chief of section to call his gun out of a salvo in case of suspected inaccuracy. The executive immediately reports to the battery commander that the particular gun did not fire. No damage is done. If, however, the round should go out at an erroneous range, it may be the very round upon which the observer will base a limit of his bracket, with the obvious attendant confusion, and loss of fire effect.

Another great mistake in the use of the chief of section is to

require him to actually check settings and laying during firing. The only time when such a procedure might be justified would be in the process of a slow fire delivered very close to friendly troops, where the time is available and confidence in the battery lacking. *In other words, the training of a firing battery is begun and essentially finished in the gun park.* When it finally comes to fire it must stand or fall upon the fruits of that training. No time is available on the firing line for elementary instruction. This is a fact that is often misconceived and far too many officers are under the impression that much actual firing is essential to the training of the battery. As a matter of fact, after the men have become accustomed to the noise of the guns, which requires very little firing, no further real training can be gained until the battery is brought actually under fire. So that, if in years to come, our ammunition allowance should be greatly decreased, this fact will afford no excuse for the inefficient executive. Its effect will only be felt in the training of the officers who are to conduct the fire.

Above all things the chief of section must not be permitted to interfere with the men of his squad, particularly the gunner and the number one. This, due to misdirected zeal, is often done. One man can perform each of these functions, not only as well, but better than two, and any unasked for assistance by the chief of section is detrimental. In short, the chief of section must be constantly alive to what is going on in his section, but should interfere only when he suspects an error. If he constantly suspects an error, the section is untrained and unfit to leave the gun park.

Another point which must be insisted upon in the work of the chief of section is that he organize the work of his section. For example, a new deflection comes through requiring a shift of trail. He, if he is well trained and alert, runs immediately and places himself in a position enabling him to line the gunner in on the aiming point. Then it may be necessary to move the caisson and perform a number of other necessary operations. To simply direct that these things be done, is not sufficient for

FIRE DISCIPLINE

the chief of section. He must divide up the tasks quickly and designate men by name for each. In other words, he must run his team.

Chiefs of section make another common omission. Suppose the target to be a column of infantry at easy range not suspecting your presence. Surprise essential.

The initial deflection brings a gun well off the centre of traverse, sometimes almost to the limit. If this is passed over, the next change of deflection may bring this gun to the limit of traverse and require a shift of trail. This will probably result in the gun's failure to be a factor during the fire for effect, which must follow the first salvo within a short time to get the target before it disappears. It would be far better to lose the services of such a gun during the adjustment and have it ready to take its place in the sheaf when its effect is of real value. Therefore the chief of section should see this, call his gun out of the first salvo, and place it in a position to fire effectively, as quickly as possible. He may then be in time to join in the fire for effect.

With reference to the gunners, a few of their common errors will be noted.

1st. Failure to make accurate settings. This also refers to all cannoneers who have settings to make. It can readily be appreciated that no battery will be quite as cool and accurate under fire as under quiet conditions. Therefore, if any leeway at all is permitted during training, the inaccuracy of the fire when the crisis comes will be enhanced. If an accurate firing battery is to be developed, the fact must be impressed upon the men from the very start that everything that isn't exactly right is totally wrong. There is no middle ground. We have instruments that can be accurately set, and the infantry we are supporting has a right to expect us to use our instruments to the limit of their effectiveness. Right here enters the greatest weakness of the inexperienced battery executive. He is too inclined to accept as satisfactory, settings that are almost correct. A great deal of the dispersion that is explained off to the

THE FIELD ARTILLERY JOURNAL

infantry as inherent in the material creeps in here. For example, very few instructors criticize a setting in which the indices touch at any part. The cannoneer assumes that in the absence of criticism such a setting is satisfactory, and to gain speed never attempts to improve. The result is that the total width of the index line is added to the probable error even when he does not even exceed this leeway, which he will often do. The natural tendency to take more than is given must be considered.

2nd. He attempts to figure the resultant deflection for his gun and set it directly. The following remarks refer to our own panoramic sight which is one of the best now made and will undoubtedly replace the French sight M 1897 on even our French carriages. Our sight is admirably adapted for use as an adding machine where notches only are counted in changing deflections and the result is left to itself. Very few gunners can be depended upon to make mental calculations even under ideal conditions, far fewer under stress. Their work must therefore be made as mechanical as possible, and where our material affords the opportunity to reduce the mental effort of the men, full advantage should be taken of it.

Our sight also permits of an extremely simple rule of thumb which eliminates the necessity of the gunners' remembering whether or not one should add or subtract in making a shift to right or left. The gunner need only be taught that the projectile will follow the direction of his left thumb in setting. Therefore, at the command R-20 the gunner need only move his thumb to the right and click off four five-notch spaces. To close on a piece to his right the same rule is followed; if closing on the second piece to the right, an imperceptible pause is made after crossing the first gun interval and the operation repeated. This is immeasurably more accurate in the long run than attempting to compute the final deflection. This is not at all necessary for the gunner to know, except during lulls in the firing, when complete checks can be made. If at any time during the firing the gunner should be in doubt as to the accuracy of his settings, he calls upon the recorder for the correct data, which is supplied

FIRE DISCIPLINE

as for that gun. This rule can also be applied to the French sight, except that for right the thumb moves to the front, away from the gunner, and for left, to the rear or towards the gunner. The muscular action of the thumb and fingers is the same on the drum of the French sight as on the knurled head of our own. The use of right and left instead of add or subtract is recommended for both sights, and by this means only can the sheaf be quickly adjusted on any but the right piece.

3rd. Now, as has been stated before, true speed is developed solely by the elimination of lost motion—not, as has been so often attempted, by encouraging the men to hurry. To achieve this, require the gunners—and all the other members of the squad—to keep their eyes glued upon the battery executive at all times when the battery is at attention and when they are not actually engaged in setting or laying. This is not an easy order to enforce, but the achievement of this condition is an excellent indication of the fire discipline of the battery. This will result in the men being awake to the work and eliminate almost completely the necessity of repeating commands. The repetition of one command for a single gunner loses more time than four average gunners could ever lose by slow work.

4th. When data is coming through, require the gunner to maintain such a position that he can go to his duties with the least possible movement. For example, require him to rest his left hand lightly on the sight, the fingers just out of contact with the worm head. Grasping for the sight after the data has been announced takes time and also permits of displacement of the setting in case the sight is grasped hurriedly or carelessly.

5th. Great inaccuracies in deflection result, especially in older material, due to lateral play in the gun. This can easily be taken up by the gunner by simply pushing his shoulder into the guard as he brings the line of sight on the target or aiming point. He does not leave his shoulder against the gun when it is fired. This play has no spring and once taken up the gun will remain as layed. The gunner should be taught to always attempt to take this play up whether it is present in his particular

THE FIELD ARTILLERY JOURNAL

gun or not. A change from a new gun to an old one will then have no effect upon the firing of the battery.

6th. Another prolific cause of the gunners' inaccuracies is his tendency to forget to verify his laying by a final glance through the sight immediately before calling ready. It frequently happens that the gunner finishes his work ahead of the number one. Sometimes when no change is announced in the data he has his gun layed before it is even loaded. In such a case any derangement of the gun by the number one or the number two will pass unnoticed if the method suggested is not insisted upon.

7th. Failure of the battery executive to properly describe the aiming point to the battery is also a great source of error. When the aiming point has appreciable width the exact part of it upon which the laying is to be made should be designated. The safest method of designating the edge of the aiming point to the gunners has been found to be "The right (or left) edge as it appears in your sight" or in sights having + and — signs etched on their reticules "The plus or minus edge."

Right here it may be stated that the selection of a suitable aiming point is logically the duty of the battery executive. The one designated by the observer is satisfactory if it can be seen at all from any one of the guns. Such a point could not be used, however, except for the initial laying of the battery, after which the executive, on his own initiative, shifts to the most suitable point in sight. To annoy the battery commander with a report that the aiming point cannot be seen from all of the guns is evidence of lack of training.

Now to pass to the number one. This man has probably the most difficult place to fill of any of the cannoneers, for the simple reason that he lays for range, where the probable error of the gun is the greatest. Inaccuracies on his part are more prominent than in the case of any of the others. His principal fault is the lack of the required accuracy in the centring of the range bubble. This is due both to the fact that this bubble is fairly sensitive and therefore difficult to centre, and to his tendency

FIRE DISCIPLINE

to centre the bubble while looking at it from an angle. He must be taught to tap the bubble into place instead of trying to centre it with a steady turn of the hand-wheel and to always watch its movement from an eye position immediately above it. He must, therefore, be taught to assume a position on his seat that will allow him to freely shift the position of his body with a minimum of awkwardness.

Great variations in the fire are also due to the failure of the number one to always take up the lost motion in elevation. This is accomplished by having him give the last motion of the gun in bringing the bubble to a centre one of elevation of the breech. As far as the number one is concerned, it is best to train him to habitually bring the bubble to a centre from front to rear. This rule is much easier for him to remember and comply with, and means the same thing.

He also often fails to check the centring of his bubble before calling "set." This is especially true in guns designed with the independent line of site.

Another bad habit of the number one is to lean his left elbow on the gun during and after laying. Besides the fact that pressure in this direction is just what the gunner has been taught to guard against, this is a particularly dangerous habit in pieces which are fired by the gunner. Failure to keep clear might result in serious injury to the number one when the piece is fired.

The number two must be a man of great physical activity. He should be taught to assume a position firmly on his feet which will enable him, with a minimum of movement to rise, receive the projectile from number four and insert it smoothly and smartly into the breech recess. He must be watched to see that he uses the base of his palm, fingers up, in pushing the projectile home, and to see that he keeps clear of the breech.

The number three sets the fuse setter. He must be watched for the same accuracy in his settings as described for the gunner.

The number four sets the fuses. Many executives fail to impress upon this man the necessity for inserting his projectile

THE FIELD ARTILLERY JOURNAL

so that the engagement of the pins in the slots is accomplished almost immediately upon turning the projectile. Much time is lost by number four's having to spin a projectile several times before engagement is made.

As to the firing battery as a whole, any conversation among the members of the squads must be rigidly suppressed. Conversation indicates either a total absence of discipline of any sort or uncertainty and indecision on the part of some members of the squad. The proper procedure is to call the squad out of action for the coming salvo and discover the cause afterwards.

The work of the executive himself will now be briefly discussed. His one idea must be to secure teamwork in his battery and establish a reciprocal understanding between his men and himself. He might well look upon his battery as a quarterback looks upon his football team. He is the battery's inspiration. Carelessness and lack of enthusiasm, as mirrored in his manner and commands, will invariably be reflected in the men. He must develop his powers of observation to the limit, and throughout the work study his men for indications of trouble. A worried look on a gunner's face, or an awkward fumbling of his hands by number one, may often lead to investigation and result in the detection of an error before the gun has been fired. Here enters the great difference between executives. The efficient one prevents errors in his battery. He is not content with discovering it afterwards and then correcting it.

He should exaggerate his enunciation to insure his men getting his commands. Much time is lost when a man has to ask for the repetition of a part of the data. To aid in this, signals understood by the battery are invaluable, especially when another battery is nearby and there is much noise. He should not hesitate to talk to his men during the fire, cautioning them against particular errors and against hurry. An executive who has gained the confidence of his men can often keep the battery cool by a few words here and there. This suggestion must be adopted with caution and in a way to accord with the individuality of the executive. Too much talking by the

FIRE DISCIPLINE

executive sometimes tends to excite the battery, especially if he talks at the wrong time. He must guard against giving the data to the battery too rapidly, especially successive data set by the same man, as the deflection and the deflection difference. More time has been lost than gained in this way.

He should never go to a drill without a clear idea of just what he intends to do. He should carry his commands written on cards with him. This saves time and misunderstandings and enables the executive to check up on the accuracy of his cannoneers at any time. These cards are given to the telephone operator, and the data given by him to the executive just as if it were being received by him over the 'phone.

There are two ideas as to the function of the telephone operator. Some battery commanders prefer to have him give the commands he receives over the 'phone directly to the battery. The other method is to have the operator repeat the commands to the executive, who transmits them to the battery. The only argument in favor of the first plan is a slight saving of time. It fails to appreciate the question of troop leadership involved. Granting that the telephone operator can be trained to give his commands properly and intelligently, the system is faulty in that it takes the actual physical and moral control of the battery out of the hands of the executive, who must dominate it throughout. He cannot impress his personality upon his men unless he gives the commands in person. *There is nothing automatic in the functioning of four gun crews in accord. Success depends upon the personal qualities of leadership of the executive.*

The chief source of weakness in the training of the firing battery is in the fact that the executive is too often inclined to merely put in an hour. Probably no one of our drills can be made so deadly uninteresting as gun drill. On the other hand, if properly conducted, that is, in such a way that the men can see their improvement from day to day, it becomes one of the most interesting. The average battery executive goes to the gun park with no prepared data, gives any series of commands that may come into his head, and at the close of the series calls

THE FIELD ARTILLERY JOURNAL

upon the chief of section for a check and report as to whether or not the data is correct. This report is always favorable. The executive leaves his battery with not the slightest knowledge of its real accuracy or daily progress.

The following detailed method of conducting the drill is suggested. This method, if followed, will enable the battery executive to gain an early and first-hand knowledge of the peculiarities of his men and of their daily progress. He will know whether or not his battery can shoot without having to wait until it actually fires to find out. It is too late then. The cards referred to should carry series of from four to six commands. These commands should follow one another logically; that is, should include such changes of data as are commonly made during adjustment in actual practice. These commands are sent to the battery; in the early stages of the training especially, ample time being given.

While the guns are being layed the executive watches the men closely for indications of error. At first he may find it necessary to concentrate his attention on a single cannoneer for each movement, but gradually, as his powers of observation improve, he will be able to see more and more of what is going on in his battery. It may be emphasized that he watches for indications of inaccuracy or violations of the rules of fire discipline. For example, if he sees a gunner take a final look through his sight before calling "ready," he can only assume that the man actually saw something. In other words, if every one of his cannoneers goes through the motions of performing his duties properly, the executive can only assume that he has actually done so. The frequent checks made will reveal the truth.

After two, three, or four of the commands have been given, without warning and after each chief of section has his arm raised as an indication that his section is ready, the executive, instead of giving the signal to fire, falls the squads in in rear of their pieces and stands them at ease. It is important that this be done unexpectedly and before the signal for firing has been

FIRE DISCIPLINE

given. A check made after the firing pin has been tripped is a mere waste of time, as the men will always feel that the jarring of the gun was at the bottom of their inaccuracies.

The executive then proceeds to check, in person, the work of every cannoneer in his battery. It may be objected that this system will require too much time, but in no other way can the executive keep himself informed as to the work of his men. This method of personal check by the executive has been objected to by some officers on the ground that it tends to kill the initiative of the chiefs of section. I do not agree. In the first place, before delegating such an important part of the work to a chief of section he must have demonstrated his fitness to properly perform it. Therefore, to delegate the checks to him during the early periods of training would be a mistake. In the second place, a check by four men introduces the personal equations of four men into the work of the battery and will result in lack of complete uniformity, especially where one neglects details and another is a stickler for them. Lastly, the battery executive is responsible and can only keep informed as to the progress of the battery by obtaining first-hand knowledge. He must see for himself. As many sins have been committed in the name of initiative as in the name of liberty.

After a battery is thoroughly trained, many of these checks can be delegated, but even then, at least one a day should be the work of the executive in person. This paper is concerned chiefly in the early training, however.

This check must be made in a systematic manner. In general the settings should first be checked, not only for big errors but also for the little inaccuracies; the hairbreadths that distinguish the work of the good battery from the poor ones. During this check no one approaches the gun except the executive, and he is most careful to see that he disturbs in no way the position of the gun.

In case inaccuracies in settings are found the cannoneer responsible for them is called up, the error pointed out to him and the result in the fall of the round, had the gun been fired,

THE FIELD ARTILLERY JOURNAL

carefully explained to him. This also takes time, but is most essential to the interest of the men in their work and to their general understanding of their problems.

After the settings are verified the layings are checked, nothing having been disturbed. Then the work of the gunner and number one in taking up lost motion is verified. Here the gun is moved. If pressure on the shoulder guard moves the line of sight or on the breech disturbs the bubble the work has not been carefully done. Here again it is essential that the result of his carelessness be carefully explained to the man. In this way he learns to appreciate the importance of his work and consequently takes an added pride in seeing that it is well done. A record of the errors discovered, posted for each gun squad, also arouses rivalry and interest. Such a record also soon shows the executive who the careless men of his battery are. These men must be assigned other duties.

In the conduct of this drill stress should be laid on the utter futility of nagging, severe measures, and the value of painstaking explanation. The practice of too severely criticizing a gunner for making an error or of trying him, as has too often been done, leads only to a desire on his part to conceal his errors, if his self-confidence and real coöperation is not lost altogether.

Any man is apt to make a mistake, and well trained gunners and conscientious gunners will sometimes make errors at service practice. Careful training will, however, reduce these errors to an almost negligible minimum.

In conclusion, there is another most important point to remember. However accurately the cannoneers perform their duties, the work of the battery will be seriously handicapped by faulty adjustments of the laying instruments. For this the executive is solely and absolutely responsible—not the chief mechanic.

The following suggestions as to a proper method of making this adjustment for the panoramic sight M-1917 are given. General principles are the same for any sight.

FIRE DISCIPLINE

The executive selects an assistant who has excellent eyesight and is accurate. This team checks or adjusts all the sights of the battery. This is essential in order to eliminate the entrance of personal equations into the work. If one officer adjusts one platoon and another the other, regardless of the care with which the work is done, there is great danger of lack of uniformity, which is of greater importance than absolute accuracy. In other words, if all the sights are three mills out of a true adjustment in the same direction, the work is better done than if three sights are absolutely true and the fourth is three mills out.

1. The executive selects his adjusting point, which must be clearly defined, and requires his assistant to lay on it with the vertical hair of the bore sights.

2. When the assistant announces that he is layed, the executive places the vertical wire of his sight on the same point.

NOTE.—Lost motion is taken up by the executive as his assistant lays in the same manner as described for the gunner, otherwise true adjustment cannot be secured.

3. The executive notes the reading of the sight, which should be 0. If it does not read so he does not, however, make any change in it at this point.

4. The executive, leaving the panoramic sight alone, checks up the accuracy of his assistant, by traversing the piece off the target and requiring him to bring it back to exactly the point he had before. If he cannot consistently do this another man must be secured who can.

5. When the assistant again announces that he is layed the executive again glances through the sight. If the vertical wire is not exactly on the target the work has to be repeated.

6. If it is exactly on, the sight is made to read 0 by the executive; not by the gunner, the chief mechanic, or anyone else.

7. The gun is then traversed off and the assistant required to bring his vertical hair on the target again.

8. If the wire of the sight is also exactly on when the assistant

THE FIELD ARTILLERY JOURNAL

announces that he is layed the work of the executive has been accurately done. If not the whole process is repeated.

The sights of the battery must be checked daily during periods of firing. With practice the work can be done in a very few minutes, and to wait until the fact that the instruments are not in adjustment is brought out by the firing is an indication of gross inefficiency. There is no other word for it.

SPECIMEN DATA SHEET FOR GUN DRILL

PROBLEM NO. 1

COMMANDS: _____

FINAL DEFLECTIONS								
Deflection	D.D.	SI.	KR.	Range	No. 4	No. 3	No. 2	No. 1
1640	On No. 1 Op. 5	305	25	2400	1655	1650	1645	1640
R 20	On No. 2 Op. 10		Up 5 (30)	2800	1655	1640	1625	1610
L 5	On No. 3 Cl. 15		D 3 (27)	2600	1645	1645	1645	1645

DISCUSSIONS

What Is Divisional Artillery?

COLONEL OLIVER L. SPAULDING, JR., FIELD ARTILLERY

It is always a little hard to predict how any suggestion from abroad will be taken in our service. We have two schools—those who will accept anything bearing a foreign label, and those who won't take anything so labelled; while most of us string along somewhere between. Sometimes one school is in the saddle, sometimes the other, but generally we are torn both ways by our sympathies with both.

Of course, extremists of either class are in error. If anything, we are perhaps safer with the indiscriminate rejecters than with the indiscriminate accepters. For if we reject all outside aid, we shall at least, provided we work seriously and conscientiously, develop something consistent with our own character and traditions; if we swallow the foreign ideas whole, we find them indigestible; or, to change the metaphor, if we put on a foreign veneer, we become imitation Germans, or Russians, or South Sea Islanders, or Martians, as the case may be, with all the bad characteristics of imitations. Better be natural and mediocre than counterfeits of something excellent.

As we all admit theoretically, the proper thing to do is to understand thoroughly what others are doing, and why they do it; then we can decide upon what is worthy of adoption, and how to adopt it without changing the national characteristics of our own systems. Keeping this in mind, it will pay us to consider, along with the other straws that show how the wind blows, the following notes from recent French periodicals.

In the *Revue d'Artillerie* for October, 1920, General Farsac makes certain criticisms on the existing French artillery organization, and certain corresponding suggestions.

He points out, first, that the normal artillery of an army corps is made up of two battalions 105mm. and two battalions

155mm. guns, for counter-battery and distant interdiction; and that each division has four battalions of 75mm. guns for direct support and two of 155mm. howitzers for local demolition. He considers that the corps artillery is too weak in proportion, and that the mission of the divisional artillery lacks unity.

Next, he notes that the divisional howitzer is too heavy and too powerful for its purpose, so that there is a strong tendency for it to lose intimate connection with the infantry.

The result of this is, in his opinion, to introduce an inharmonious element into the division; and at the same time to render it difficult for the corps commander to control manœuvre by giving additional strength to any part of his front, so that an attack tends to reduce itself to a direct advance of all divisions in line. During preparation, concentrations of fire will be inadequate; and advance will be behind a barrage which necessarily limits manœuvre, and which tends to become uniform everywhere, and uniformly weak. During this phase, the corps commander will be unable to get sufficient artillery to deal with emergencies arising on the front of any division, without securing assistance from some other division, which will necessarily be difficult and slow.

General Farsac therefore proposes to withdraw all the howitzers from the divisions, leaving each only its four 75mm. battalions, and to add to the corps artillery six battalions of heavy howitzers. This, he believes, will facilitate an echeloned rather than a linear attack, one division moving at a time, supported by a very powerful concentration of artillery. He finds similar advantages for such an organization in dealing with a counterattack; or, when on the defensive, in planning counter-preparation or withdrawal.

He admits the necessity of attaching parts of the corps artillery to divisions, on occasion, but insists that such attachment should be distinctly temporary, the batteries reverting to corps control upon termination of their specific mission.

The November number of the same magazine contains a reply to General Farsac, together with a tactical problem

DISCUSSIONS

worked out in two ways, one with the regulation organization and the other with his.

The point of view of the reply is, that the division should be the normal tactical unit, and should contain within itself all that can be looked upon as normally necessary for independent action, not omitting heavy artillery. The author refuses to recognize the advance by echelon as superior *per se* to the linear attack, but considers each as useful in its proper place; he also suggests that the echelon may be needed within the division as well as within the corps, and that the division commander should have the means for making the necessary artillery concentration. This last point, it would seem, is very well taken; an excellent illustration of echelon within the division is found in the attack of the American 1st Division on October 9, 1918.

Meanwhile, "Colonel O. B.," in *La France Militaire*, analyzes General Farsac's proposals independently. He accepts in general his reasoning, but finds certain objections. He sees that there is a danger that the divisions, no longer having heavy artillery of their own, may lose touch with its progress and interest in and understanding of its work; also, that the intervention of the heavy pieces, when necessary, may be delayed if they can not be called upon directly by the divisions; and finally, that many targets can not be reached by guns, so that divisions always need howitzers in addition. The first two objections, he says, may be obviated by proper care in training and by the inculcation of a habit of proper tactical dispositions. The last named is more serious; in fact, he regards the difficulty as insurmountable, and he therefore proposes substituting, in each division, one battalion of light howitzers for one of light guns.

Thus the cycle is completed, and France, as a result of the experience of the war, may come back to exactly the same organization as Germany had at its beginning—a divisional artillery with three battalions of light guns and one of light howitzers, and a corps artillery of heavier guns, chiefly howitzers. The only difference would be that, in view of war-time

THE FIELD ARTILLERY JOURNAL

developments, this corps artillery is much stronger, and more closely knit organically.

And compare our own experience. We fought the war with a divisional artillery made up of light guns and heavy howitzers, and with no organic corps artillery, only a headquarters with a fortuitous assemblage of pieces as required. At the end, we transferred the heavy howitzers to the corps, leaving the divisions only their four battalions of light guns. At the same time, we announced our acceptance in principle of the light howitzer idea, and a new piece of this type is now in process of development for incorporation in our divisions.

Surely, this can not all be coincidence, and there must be something sound in this organization when no one seems to be able to get away from it.

[Editor's Note.—The following letters have been received and are published, as announced in "Discussions," January–February issue.]

THE GENERAL SERVICE SCHOOLS, FORT LEAVENWORTH,
KANSAS

APRIL 9, 1921.

From: Colonel C. H. Lanza, Field Artillery.

To: Editor, FIELD ARTILLERY JOURNAL.

Subject: Equipment of Divisional Field Artillery.

1. I note in the last number of THE FIELD ARTILLERY JOURNAL an article on the above entitled subject, together with an invitation to reply thereto. The following remarks are therefore submitted for consideration, with regard to transportation equipment.

2. Before considering any special item of equipment let us first examine some of the general statements which appear to apply to all transportation, as given in the base article.

3. First among these is the statement, "The issue of motor vehicles in a horsed outfit is wrong in principle." I do not believe this statement is self-evident, but that it should be proved,

DISCUSSIONS

if true at all. If we admit the principle, by analogy a pack organization should have no transportation other than pack animals, an air organization none other than airships, a foot organization none other than carriers, etc., which would be absurd. The base article adds, probably intended as proof, "The regimental commander cannot be with his regiment on the march and use an automobile," etc. This can be allowed as proof in support of the general or universal statement only if the one instance cited is the only possible use of motor transportation. But this is an unreasonable supposition.

4. Let me state that during the World War I had many opportunities to observe light artillery regiments equipped with an automobile, and never knew of a colonel who would ride in it while marching with his regiment. Some uses are:

- preceding the regiment to reconnoitre;
- inspecting batteries in position, but scattered;
- making necessary visits for liaison purposes;
- proceeding to suddenly threatened points;
- by service (supply) officer to draw funds, supplies; etc.

All these uses diminish the time the user of the vehicle is absent from the regiment, and it is intended to be used for this purpose, and not for the comfort of the colonel while on the march. The statement that, when necessary, auto transportation can be obtained or borrowed from Brigade Headquarters is true, provided the Brigade has automobiles for this purpose, and is stationed at the same place as the regimental headquarters. The latter condition is not a war one.

5. The next statement noticed is to the effect that no "worthy" division commander will allow on a march the transportation now prescribed. This statement is only justified if the author of it has ascertained from all division commanders that such is the case. I find no evidence to that effect. I know that in France regiments of light artillery had the transportation now prescribed, less that recently added for two new organizations and substituting trucks in part for caissons, and

managed to march without any special difficulties due to the number of vehicles present. Also at the General Service Schools here we have very many problems involving calculation of road spaces on the basis of the present War Tables, and we find these to be entirely practicable. While the road spaces may not have been calculated in the War Department, they have been calculated here, and the tables of road spaces are well understood.

6. It may not be improper to point out at this point that where very large forces are involved they can move and be supplied only where roads exist. Under these conditions animal-drawn organizations do not march on the same road with either foot troops or motor vehicles, but are given a separate road, except in actual combat. In the latter case field trains are habitually absent from the battlefield, leaving only firing batteries and combat trains on the same road with other foot or motor troops. Where operations are small there is generally sufficient road space for all the vehicles now prescribed in Tables of Organizations.

7. The following remarks refer to special articles of equipment.

Automobiles. I have already indicated some uses for these; others in the same line will easily suggest themselves.

Motorcycles and Bicycles. The primary use of these is to facilitate communication, and especially to increase the fighting power of the regiment. In this connection I wish to invite attention especially to the growing importance of artillery reconnaissance patrols.

8. Under modern conditions the battlefield offers few targets to direct observation. In the daytime movements are generally limited to infantry units, often concealed by smokescreens, fog, or features of the terrain. Prior to the World War we were accustomed to control the fire of our batteries from a firing-point, from which the targets could be seen, at least with a good field-glass, at ranges of several thousand yards. In our target practice we took care to place targets so

DISCUSSIONS

that they could be thus seen. But in war this condition does not exist. Nothing is ordinarily seen from fixed observation posts. The first development was for the artillery to expect the infantry to notify them of the targets they desired fired at. This system has been a practical failure; the infantry almost never send in information of the kind the artillery needs, and then it seldom arrives in time. Experience has shown that the artillery must identify its own targets, and to do this the observation parties must be in the front line. These artillery observation parties are essentially reconnaissance patrols, who go over the top with the infantry and keep at the front, sending in situation reports at fixed or irregular intervals by telephone, radio or pigeons, if any of these are available, and, if not, by messenger. It needs little argument to show that messages from the front can generally be transmitted more quickly by use of bicycles or motorcycles than by horseback or on foot, and it is for these purposes that I would retain them. A minor use of bicycles and motorcycles, but a not unimportant one, is for liaison and administrative purposes. It speeds up matters.

9. *Carts; Ration, Water and Medical.* These carts are a development of the World War, and were supplied as a practical vehicle which could make one trip a night to a battery or aid station carrying one day's rations, etc. I am by no means satisfied that these carts are the best solution to the problem of the daily supply of batteries. But our field train of escort wagons as now organized is not a satisfactory solution either. Prior to our entry in the World War the undersigned as Quartermaster of the 5th Field Artillery undertook in manœuvres at Fort Sill to make night issues to the batteries camped on the reservation at firing positions. Notwithstanding an intimate acquaintance with this reservation, it was found to take all night to find six batteries and issue them rations and forage, from one section of the field train. The difficulty lay in finding the batteries, crossing in the dark small streams, finding the mess sergeants to make issues to, etc. I am inclined to believe that it might be better to revert to the old idea of dividing

the field train into sections corresponding to the batteries, instead of the present system of having a baggage section and a ration section which has to visit successively several battery positions, possibly quite distant from one another. Certainly if a field artillery regiment is going to camp together in a nice flat rectangular field the present field train without the carts is ample to supply the regiment. But when the regiment is in campaign and scattered over several square miles, individual wagons of some kind to go to each separate position are essential.

10. I suggest that consideration be given to abolishing the ration cart and increasing the number of escort wagons by two, reorganizing the field train so as to allow one escort wagon at least to each battery which would nightly deliver to it its needed supplies.

11. I do not see how the water carts can be always done away with. It will often be necessary to send water to battery positions, and the present water cart is preferable to sending water up in G. I. cans, which is a very wasteful method. On the other hand, there will be many occasions when the country has so much water as to make the use of special carts of slight value. I suggest that these carts might be left behind when not needed.

12. I believe consideration might also be given to abolishing the medical carts, carrying the medical equipment with headquarters property, or in an ambulance to be borrowed from the Ambulance Battalion.

13. *Rolling Kitchens*. There is no question but that these vehicles are not absolutely essential. We could go back to the field range. But that rolling kitchens enable the troops to obtain a hot meal soon after arrival at destination is also certain, and I believe this advantage more than balances the extra road space required for these vehicles. The fact that all the important armies have adopted rolling kitchens is good evidence that most military men believe in them. There is nothing else that so conduces to the contentment and morale of the men in the field than obtaining good meals soon after arrival at their camp, or *en route* if the march is long or in inclement weather.

DISCUSSIONS

14. *Anti-aircraft Machine Guns.* The base article objects to these on the ground that they are not needed. But in the same issue of THE FIELD ARTILLERY JOURNAL, on page 92, is given some illustrative examples of the need of field artillery for anti-aircraft protection. There is no question but that the mission of the field artillery is to "deliver an effective and overpowering fire," but to do this it must be possible to man the guns, and to protect the animals and vehicles from destruction by bombing. Picket lines can not be easily concealed unless woods exist, and camps of animals and wagons are a particularly vulnerable target. Those who had experience in France will recollect the serious shortage of animals in the field artillery just prior to the close of the war, and the urgent need of preventing injury to the horses we did have. Instead of abolishing these weapons I believe two should be allotted to the Service Battery, which needs them as much as anyone else.

15. The statement in the base article that the anti-aircraft machine guns will need a special mount or vehicle is incorrect. The undersigned carried these in France ordinarily on caissons. Their weight is small, and as they are for defense only, only a small amount of ammunition is needed at any one time. I agree with the base article that no special vehicle should be supplied for these. In action these machine guns are set up near the firing battery, or picket lines, mounted on tripods. They are effective up to a range of 1000 yards or so, and if they keep bombers away from the battery they many times repay for themselves.

16. It should be noted that in campaign it is very important to keep a sentinel at each battery constantly looking out over the battlefield, for rocket or other signals from our own troops, for friendly airplane signals, hostile airplanes, and hostile forces which may penetrate our lines. The same men who perform the lookout or sentinel duties can be used to man the anti-aircraft machine guns.

17. *Automatic Rifles.* Many of the remarks already made as to the machine guns apply with equal force to automatic

THE FIELD ARTILLERY JOURNAL

rifles. It may be interesting to note that on November 1, 1918, just prior to the big attack made on that day by the 1st American Army, some batteries of both divisional and army artillery were in front of the infantry line of departure, and very many batteries only a short distance back of this line. When the 1st Division relieved the 35th Division in line about October 1, 1918, the artillery line was the front line. On pages 94 and 95 of the January–February FIELD ARTILLERY JOURNAL is an illustration where automatic rifles might have been used by a field artillery organization to avoid an objectionable night march.

18. In considering such examples it appears to be quite necessary that field artillery batteries should have a reasonable number of automatic rifles to protect themselves from attacks from hostile forces penetrating our lines. While we did not lose any batteries during the World War, the Germans did lose many to us. It is seldom practicable under modern conditions in a big war to bring up teams in the daytime to withdraw a battery from a threatened position. It must, generally speaking, be defended at its position until night, fog or a smokescreen enables a movement to be made; in such cases automatic rifles will often enable it to continue on its proper mission, when otherwise it might be destroyed or neutralized by a very small hostile force.

19. Another use of the automatic rifle is with the reconnaissance patrols mentioned in paragraph 7. While these patrols are not combat patrols, they must occasionally fight, especially when necessary to send in information of value. It used to be thought that giving artillerymen any kind of a weapon other than his guns was improper and to be discouraged. The same argument was used for many years against arming cavalry with a rifle or carbine. But no one will sustain this argument now. The question must be met on its merits, and if it appears that the furnishing of these weapons will increase the effectiveness of field artillery by enabling information to be secured, or by enabling the guns to be served when

DISCUSSIONS

otherwise they would be lost or abandoned, their usefulness is established.

20. On the whole, I believe that the present equipment is justified. The argument that we got along without these things in the past, and can therefore do it again, is a poor argument. We used to get along without airplanes, tanks, and numerous other articles which no one now suggests be abolished. Improvements come with time, and we must keep up with them. We should be leaders, not followers, and be ready to utilize new equipment whenever it appears that we gain an advantage thereby.

CONRAD H. LANZA.

MILWAUKEE, WISCONSIN,

APRIL 15, 1921.

To: Editor of THE FIELD ARTILLERY JOURNAL, War Department,
Washington, D. C.

From: Irving A. Fish, Col. F. A. R. C.

Subject: Discussion of Tables of Organization of Field
Artillery.

In the main, it seems to me that the criticism is well founded. The organization in effect during the War seemed to be made on the theory that each man in the battery could only be taught one duty. A large number of surplus men, who were really without any duty or function in the battery, were carried with the organization.

Instead of being divided into two parts, the batteries became divided into three parts—a firing battery, an echelon of the limbers, and another echelon out of range, in which the surplus equipment and personnel were kept.

It seems that to get a correct organization, the duties normally performed by the battery personnel should be first considered. I discuss only what was actually used, not what theoretically should have been used.

First, consider the firing battery. The gun sections used

THE FIELD ARTILLERY JOURNAL

not to exceed six cannoneers, two corporals, one sergeant, and six drivers, or a total of fifteen men; for the four sections, sixty men.

The battery headquarters at a maximum consisted of one battery sergeant, who also acted as plotter and telephone sergeant, two telephone operators, two linemen, one telephone corporal, two officers' orderlies and one driver, or nine men. There may also properly be included an observation party of one instrument sergeant observer, one instrument corporal observer, one officer's orderly, four linemen and one driver; a total of eight men. Maximum combatant force in the battery of seventy-seven men.

Beside the four guns and four caissons, the only equipment that was ordinarily used for the firing battery was one German ration wagon, or "Boche wagon." It was a little two-horse wagon, capacity about that of a heavy two-wheel cart, perhaps twelve or fifteen hundred pounds. Two of these were used by each firing battery when they could be obtained. One contained instruments and wire for the battery position, and another carried nothing but wire for the use of the observation party. The reel-carts and various other carts provided were found inferior, and this German wagon supplanted them in actual practice. The drivers provided in the headquarters and the observation party are for this wagon.

This makes the combatant equipment of the battery four guns, four caissons, and two small two-horse wagons.

I do not believe that the reduction of the caissons is justified. During large operations which require advance of artillery close to the infantry, the ammunition supply is uncertain, and I think there should be a rolling reserve of at least three caissons per gun. There should be either in the battery or in an ammunition company in the battalion four caisson sections, each consisting of two cannoneers, one corporal or sergeant and six drivers, or nine men; a total of thirty-six men.

The extra cannoneers provided in the caisson sections were invariably kept at the rear echelon already mentioned.

DISCUSSIONS

As artillery is now used by battalion, I think it would be more convenient if these eight caissons per battery were organized into an ammunition battery under the battalion commander. However, as such an organization would not materially affect the total personnel, I will consider them as though they were still a part of the battery, and base the observations as to the requirements for administration on a strength in the firing battery and train of one hundred thirteen men.

For supply, I think that sufficient equipment would be one baggage wagon, one wagon for forage, one wagon for rations and water (this was divided into two carts during the war, both of which were used), one forge battery and store wagon, and one rolling kitchen. I do not agree that the rolling kitchen should be discarded. I know of no case of its being abandoned in the field, although almost everything else was. It is very convenient because it permits cooking in the rear, after which the kitchen can be hauled to the firing battery, and the men fed without any smoke being made there. This is of great importance.

There is one wagon per battery added to the strength we usually had in the supply company, but the horses never got enough to eat, and we certainly should have had more transport for forage.

For administration of the batteries there must be one first sergeant, one clerk, one stable sergeant with one man, one supply sergeant with one man, one mess sergeant with three cooks, two mechanics and ten drivers; twenty-two men, or a total of one hundred thirty-five men.

An examination of this strength will show that there are thirteen men carried on it who are now carried as a part of the supply company, and a surplus of at least eighteen men over actual required strength, the actual required strength of the batteries being one hundred five.

As to the auxiliary materials, I agree that they should be eliminated as far as possible. The battery should be purely an instrument of artillery fire. The only auxiliaries permitted should be those absolutely required to maintain the artillery

THE FIELD ARTILLERY JOURNAL

fire under all ordinary conditions. However, necessary auxiliaries must be carried, and I believe that the machine guns with which we were provided should be habitually with the battery for use against aircraft. In the daytime low aircraft can be disconcerting to battery personnel. Those which are forced above machine-gun range cannot. I do not think any special mounts are necessary, nor any special personnel, but there should be one or two machine guns which can be fired to force up aircraft. They may be served by the officer's orderlies and telephone men and carried on caissons.

I also think that every man in the battery should be individually armed. The pistol does not serve this purpose, and I believe they should have rifles. A large part of the personnel is used from time to time with the infantry. They should not be helpless, and forced to depend entirely on the infantry for protection. This is more a matter of morale than of fighting.

I also believe that the eight caissons organized in caisson sections could be greatly improved. It should be possible to discard the present heavy vehicles and design one which would carry ammunition in boxes, as we carried it in various wagons in action. The present system of loading the rounds into caissons, unloading them individually at the battery, and putting them into storage at the battery, is extremely cumbersome. It will be remembered that the caissons cannot stand at the guns in position. Their characteristic appearance and shadow render that impossible.

The battery requires only three officers. That is all we had present with the battery under the old organization.

The headquarters company used from fifteen to seventeen men with each battalion headquarters. It also provided itself with one of the Boche wagons whenever possible, and usually had a fourgon for baggage. The regimental headquarters used from thirty to thirty-five men, one baggage wagon, two wagons for instruments, wire and wireless, their character depending on the equipment. For the information and liaison organization,

DISCUSSIONS

as we used it in our brigade, about forty men were used, and we should have had two wagons loaded with wire.

These wagons for wire were of various types. I know one regiment used a large German supply wagon. Others used the French fourgon. The amount of wire required at regimental headquarters and by the advance detachments greatly exceeds all allowances which I have ever seen made. It should be supplied like ammunition, as the effect of the artillery in the offensive depends absolutely on an adequate supply. This makes a strength for the headquarters company of one hundred seventeen men. It requires about twelve officers, exclusive of battalion headquarters, making the total headquarters officers twenty. This assumes that information and liaison are in the hands of the regiment. Only one information and liaison organization is required for each divisional artillery.

It will be seen that the supply company has been included in these estimates, except its staff and their own rolling kitchen and ration wagon. This gives a strength of the regiment approximately one hundred forty-five vehicles and eight hundred men, or thirty-eight men per gun, one and one-half officers per gun, two vehicles (exclusive of caissons) per gun. If the regiment is organized of three battalions, we have a slight improvement. If all the divisional artillery is organized into one regiment of nine batteries of six guns, we have thirty-two men per gun—less than one officer per gun, and about one and one-third dead vehicles per gun. There is no reason that I see why this should not be done. Much larger masses of guns were habitually commanded from one regimental headquarters, and without loss of efficiency. This was usual, as command of light artillery was turned over to a colonel. I have never heard a sound objection to the six-gun battery.

I agree that the present procession provided for an artillery regiment will not be used. Perhaps I fall into the same error in baggage wagons. But my experience is that artillerymen make very long marches, never ride on any kind of vehicle, and never carry their packs, when their outfits are really mobile.

THE FIELD ARTILLERY JOURNAL

A pack weighs less than a man. If you haul the packs, the men can walk as far as the horses can haul the guns, and keep up and fight. If you make the men carry the packs, they can't equal the march of the horses. The greatest efficiency is reached by hauling the packs and walking the men. The same may be true of so many small wagons for wire. Lines must be laid by hand if they are to be good for anything. Wagons must bring the rolls of wire near the place where they are to be used. If the men have to carry the wire long distances by hand, they play out, and connection is not promptly established. If any of the elements prove superfluous, they will be left behind as gayly as we left the reel-carts and various other vehicles we did not use.

Overstrength of personnel, however, is a serious matter, and should be more rigorously guarded against than understrength.

I. A. FISH.

CURRENT FIELD ARTILLERY NOTES

French Artillery Field Service Regulations

(Provisional.)

A PROVISIONAL Artillery Field Service Regulations has been published in France, and the following discussion of it appearing in the *France Militaire* of January 31, 1921, by "Commandant G" is illuminating, and of interest as showing the basic ideas of the French Field Artillery.

I. PROPERTIES OF THE ARTILLERY

The Provisional Artillery Field Service Regulations signed June 25, 1919, by Marshal Petain is a sort of last will and testament of the French G.H.Q.

Before being dissolved, this body desired to leave us the essential results of an experience which it was better placed to appreciate than any other organization.

Having given us on April 4th, 1919, its conclusions relative to the offensive combat of small infantry units, they have supplemented their teachings by setting forth their ideas on the properties, organization and use of artillery.

This exposition, condensed into a brief and substantial book of instructions, gives the essence of our actual doctrine concerning the use of artillery, and, until further orders, regulates the instruction of that arm as well as that of the infantry (in liaison with the artillery). It is obvious that this document merits a serious study.

The first impression on reading it is one that we would not have admitted, undoubtedly, without protest about 1917, but which seems quite correct after 1918.

The power of artillery was considerably developed and unquestionably strengthened from 1914 to 1918. Nevertheless, the characteristics of artillery fire were not nearly as much changed by the war as compared with the changes which could be cited in the case of infantry fire—nothing for example comparable with the generalization of automatic fire.

The "stabilization" gave the artillery the opportunity to put in operation and to perfect beyond every anticipation the methods of siege warfare, such as the use of very powerful matériel in a series extended from trench artillery to guns firing to ranges of 120 km.; the quantity of artillery in line on a given front; the facilities of supply; the considerable increase of power obtained by the combination of obstacles and fire; the extreme accuracy of fire; the

THE FIELD ARTILLERY JOURNAL

result of the information concerning targets and the terrain; facilities of observation and liaison.

Like Anteus, the power of the artillery was increased tenfold when it was able to stay fixed to the ground in the same place. In order to remove its virtues it was sufficient that a new Hercules should prevent its remaining in place, and force it to move. Consequently, as soon as the battle was one of movement, all the facilities and possibilities of the stabilization period disappeared or were decreased. Undoubtedly the Field Artillery of 1918 was incomparably more powerful than that of 1914, as well from the point of view of matériel and projectiles as in the perfection of firing methods, means of observation and communication.

Nevertheless, we have seen in our last battles that the support to be expected from this artillery or the effects to be feared from it did not have a character essentially different from what we knew at the beginning of the war.

Nothing occurred which would have brought about a profound change in the characteristic properties of the arm, and with it changes in its methods of use, as had happened, for example, in the past on the invention of rifling, breech-loading guns, smokeless powder, and the invention of rapid-fire matériel.

Compared with 1914, there was in 1919 an undeniable gain in the quality of the artillery, and a notable increase in quantity. There is a different proportion in the distribution of calibres but there is no revolution.

This is why the general considerations developed in the introduction to these Provisional Regulations does not at all differ in essentials from those presented in the report to the Minister and in the introduction to Volume 5 of the 1910 Regulations. There are even certain passages which are reproduced word for word.

The characteristic properties of the artillery have not changed, although these properties have changed from a quantitative point of view to a more or less considerable extent.

The Regulations take good care not to confuse the technical characteristics of the matériel with the tactical characteristics of the artillery. But if these characteristics have not changed during the war, they have acquired by that experimentation of so long and so varied a character, a precision which is imposed on every one. This eliminates the necessity in these regulations to emphasize certain "tactical consequences of the properties of artillery" which the 1910 Regulations were correct in presenting in detail.

On the other hand, the fundamental tactical properties are emphasized with conviction, aided by clearness and sobriety of style, but which is certainly reënforced by the experience and the living personal recollections of each reader.

CURRENT FIELD ARTILLERY NOTES

Consequently no one will contradict the statement by which the Regulations commence "The power of artillery fire" is the predominant factor of success. Whether combat is offensive or defensive, it is necessary in order to defeat the enemy to obtain and to retain fire superiority. This is independent of the fact that in the offensive this superiority is exploited by the forward movement, and that in the defensive it is not exploited.

"The arm par excellence of distant and powerful fire," the artillery has consequently a primary rôle in the battle. At a certain period in the war this idea reached the point where many thought that the other arms, especially the infantry, were no more than adjuncts to the artillery. If this had continued a little more it might have been admitted that the mission of the infantry consisted from time on to go forward simply with their hands in their pockets to verify the victory won by the artillery. But it was necessary to reduce these claims. In other words, if the artillery is permanently the "arm of fire," it is only that. On the battlefield, movement, for the artillery, is synonymous with weakness. The gun has no other *raison d'être* but to fire. But in order to be able to fire it is necessary that it should be stopped, and that certain technical preliminaries should be taken, and these preliminaries require time. To move a gun is to suspend its fire and to impose a more or less long delay, which is independent of the length of time involved in the displacement, before it is ready to fire again.

Completely inoffensive, a gun in movement is moreover infinitely vulnerable. For that reason the artillery is not able to exploit the effects of its fire by itself. In other words, ground covered with shells is not conquered ground. The least of our infantrymen know that well, and the artillerymen are not ignorant of it. The artillery cannot any more conquer by itself than it can hold and retain by itself the ground conquered.

The Regulations do not ignore all this. We shall see in considering the missions of the artillery that they draw logical conclusions from this situation. But they omit a full discussion in the preface, undoubtedly because it is believed that the thing is no longer discussed or questionable.

This extreme discretion is to be regretted. According to the phrase of Talleyrand, "If that goes without saying, it would be better still to say it."

The artillery corrects to a certain extent its congenial infirmity as regards movement by the mobility of matériel and mobility of fire.

Mobility of matériel has always been, and always will be, an essential condition of its useful employment.

The history of artillery is filled with the struggle between this mobility of matériel and its power, for these two necessary qualities are contradictory. From now on they are less contradictory, thanks to mechanical traction, the adaptation of which to the needs of the artillery are undoubtedly, for that arm, the most important new development of the war.

THE FIELD ARTILLERY JOURNAL

The rapidity, the amplitude of movement, which result from it, as well as the great weights which can be transported in this way, have given to even the heaviest calibres a considerable strategic mobility. The command is enabled to realize powerful concentrations of matériel in very short time where it is considered necessary. But every change which brings about advantages necessitates also certain sacrifices. In the particular case cited, precious strategic mobility is acquired at the expense of tactical mobility. Tactical mobility, which means movements of short distances on the battlefield itself, includes manœuvring by hand and by power. If the motor has been able to replace advantageously the horse on roads and railroads, it lacks the power to replace it on variable terrain. We verified that in the battles of 1918, when the large calibres were frequently forced to stay behind with the spare parts, and where the 75 portee was frequently incapable of action. It is true that the motor has not spoken its last word, and that the caterpillar artillery perhaps reserved the restoration of tactical mobility. The mobility of fire knows no such restrictions. More than ever it constitutes one of the fundamental characteristics of the artillery. It is the only arm which does not have to be carried to the point where it acts, the only arm which allows the concentration or the rapid displacement of fire without displacement of the matériel.

This is certainly a considerable advantage to counteract the weakness in tactical mobility, and, all the more so, since the effectiveness of this mobility of fire has been considerably increased, thanks to important technical progress, such as increase of ranges, perfecting of methods of preparation and adjustment of fire, better design of projectile, proper distribution of ammunition in lots, perfecting of methods of liaison and communications, etc.

This fire, which is so flexible, obedient, and always available, is extremely powerful. Every day it carries further and further a constantly increasing destructive force. This power, of course, is limited by certain requirements. In order to be developed, certain determined conditions of time and space are necessary. It implies an adjustment of fire, consequently observed in one way or another. It only gives a complete return for its power when used in mass action.

We have had profitable schooling in this action. After having tried everything we have come to the conclusions which these regulations can affirm with much more authority than the 1910 regulations. A well-located artillery whose groupings are well combined, and in which the command is well organized, makes it possible for the chief who directs the battle to have an extremely flexible, powerful, and varied "manœuvre of fire."

This capital advantage disappears if the artillery is scattered and escapes from the hands of a commanding officer capable of concentrating its efforts.

CURRENT FIELD ARTILLERY NOTES

Field Artillery R. O. T. C. Association

[EDITOR'S NOTE.—*At the annual training camp for the twenty Field Artillery Units of the Reserve Officers Training Corps, held at Camp Knox, Kentucky, June 17 to July 28, 1920, the students organized a Field Artillery Reserve Officers' Training Corps Association (F.A.R.O.T.C. Ass'n), for the purpose of uniting in closer relationship those units and their members, and of promoting interest in the attendance at future camps. Field Artillery Units have been established, and are in successful operation in the following colleges and universities: Harvard, Yale, Cornell, Princeton, Virginia Military Institute, Alabama Polytechnic Institute, Ohio State University, Purdue University, University of Chicago, University of Illinois, University of Wisconsin, Iowa State College of A. and M. Arts, University of Missouri, Colorado Agricultural College, Texas A. and M. College, University of Oklahoma, Leland Stanford University, Oregon Agricultural College, University of Utah, and the Culver Military Academy.*

The Constitution and By-Laws of this association, given below, indicate the interest taken by the students in their Units, and the possibilities in general of the R. O. T. C.]

CONSTITUTION AND BY-LAWS OF F. A. R. O. T. C. ASSOCIATION

PREAMBLE

Believing that Military service is an obligation of citizenship, and that the F.A.R.O.T.C. Summer Camps afford opportunities which are extremely beneficial in acquiring training for this service, we, who attended the F.A.R.O.T.C. Camp held at Camp Knox, Ky., during the summer of 1920, do hereby form this F.A.R.O.T.C. Association and adopt this constitution in order to unite in closer relationship the Military Departments of American universities and colleges, and to do all within our power to promote the summer training camps of the F.A.R.O.T.C. With this end in view we shall endeavor: (a) to obtain the coöperation of every one interested in Military Training, and avoid friction with any other organization interested in this field; (b) to make our association conform to our one aim only, and not to act in the capacity of an honorary military society, as there are organizations to fill this capacity, and any encroachment upon their sphere of activity would only stir up resentment which would be detrimental to the attainment of our goal.

CONSTITUTION

Article I—Name

The Association governed by this Constitution shall be known as the FIELD ARTILLERY RESERVE OFFICERS' TRAINING CORPS ASSOCIATION (F.A.R.O.T.C. Association).

THE FIELD ARTILLERY JOURNAL

Article II—Membership

Section 1. Any member of the F.A.R.O.T.C. who has attended at least one summer field artillery training camp and received a certificate therefrom, is eligible to membership in this Association.

Section 2. Any government official or member of the faculty who has shown a keen interest in summer training camps is eligible to honorary membership.

Article III—Organization

Section 1.—*Officers.* Each summer the advanced camp students at the artillery training camp shall elect from among their number the following national officers to serve until the next training camp: a President, a Vice President, a Secretary, and a Treasurer.

Section 2.—*Duties of Officers.* (a) The President shall perform all administrative and executive duties pertaining to the office; endorse all authorized drafts on the treasury and perform all other duties required of him by the Constitution and By-Laws of this Association.

(b) The Vice President shall act in the absence of the President until the following election. He shall have charge of the extension of the Association into newly organized units of the F.A.R.O.T.C.

(c) The Secretary shall keep in touch with all the local branches, requiring from them a report of their work and plans to date every four months of the college year, the first report falling due the first day of November in each year. He shall keep all records and have charge of all correspondence of the National Association.

(d) The Treasurer shall have charge of and keep books on all funds of the National Association. He shall send all authorized drafts to the National President for his endorsement.

Section 3.—*Executive Committee.* (a) The Executive Committee shall be constituted as follows:

1. The National President, Vice President, Secretary and Treasurer.

(b) *Duties and Powers.* 1. The Executive Affairs of the Association shall be entrusted to the Executive Committee.

2. Endorsement of applications from newly organized local Associations.

3. Endorsement of all national committees appointed by the President.

Section 4.—(a) The chairmen of all local branches shall constitute an advisory committee with the National Vice President as chairman.

(b) *Duties and Powers.*

1. The advisory committee shall be consulted on all matters of policy and on important matters of administration.

2. If word is not received to the contrary within two weeks time, votes from members will be considered favorable on such questions.

CURRENT FIELD ARTILLERY NOTES

Section 5.—1. The Treasurers of all local branches shall constitute a Finance Committee.

2. Duties and Powers.

(a) All matters relating to budgets and the collecting of assessments shall be handled by the Finance Committee.

Article IV—Quorum

Section 1.—During the attendance at a summer camp the presence of a majority of the attending members shall constitute a quorum for the purpose of carrying on business.

Section 2.—Any business so carried on shall be authorized and binding.

Article V—Finance

Section 1.—There shall be no regular national dues. Should it be deemed necessary to raise any fund for any purpose whatsoever an assessment may be levied according to whatever plans, that may be adopted, provided the adopted plan was before each unit for one month and at the end of that time it was accepted by a two-third vote of all units. Each unit shall have as many votes as it has members enrolled with the National Secretary.

Article VI—Local Branches

Section 1.—Each college where there are five or more eligible members of the Association, may organize a local branch, provided proper application has been made and accepted. This application must be made to the National Vice President of the Association and be passed upon by the Executive Committee.

Section 2.—The local branches shall be designated as No. 1, No. 2, No. 3, according to the order in which they are organized.

Section 3.—Each local branch shall have jurisdiction over local affairs and shall make such rules and regulations for its own guidance as it shall see fit, provided that such rules and regulations are not inconsistent with this Constitution and By-Laws.

Section 4.—Each local branch shall elect the following officers during the month of April, of each year, from among its active membership—Chairman, Vice Chairman, Secretary, and Treasurer.

Section 5.—*Duties of Local Officers.* 1. The Chairman shall be the executive officer and shall see that the policies and plans of the National Association are carried out. He shall preside at all meetings and shall appoint such committees as he deems necessary.

2. The Vice Chairman shall act in the absence of the Chairman. He shall be the head of the local Publicity Committee to organize outings and

THE FIELD ARTILLERY JOURNAL

other entertainments which will boost interest in military work, and spread propaganda which will boost the attendance at the summer camps.

3. The Secretary shall have charge of all correspondence and minutes of the business meetings. He shall make a report to the National Secretary every four months of the college year with regard to the work and plans of the local branch; the first report being due on November first of each year.

4. The Treasurer shall have charge of all local funds and keep a careful account thereof.

Section 6.—Each member of this Association shall be active and subject to its rules and regulations and those of his local branch, so long as he shall be an active member of the Corps of Cadets of his institution.

Section 7.—All applications for the establishment of a local branch shall be made to the National Vice President. The applications should contain the following information:*

- (a) Name in full of each applicant, his present and permanent address.
- (b) Cadet rank.
- (c) The F.A.R.O.T.C. Camp attended with dates of beginning and ending.
- (d) A letter of recommendation by the Field Artillery Officer in charge at the institution.

Section 8.—The Vice President shall bring the petitioning branch before the attention of the Executive Committee, who shall pass on it within fifteen days' time.

Section 9.—All those institutions who had five or more men attending the summer camp at Camp Knox (1920) may consider their branch as one of the charter local branches, hence may organize as soon as they have received a copy of the constitution from the Executive Committee and have reported their action to that body.

In those schools where there are four or less eligible men for membership, these men may consider themselves members of the National Association even though they do not belong to a Local Branch.

Section 10.—*Order of Business.*

Local Branch Meetings.

1. Roll call.
2. Minutes—Secretary's report.
3. Treasurer's report.
4. Reports of Committees.
5. Reading of Communications.

*See Section 9; Art. VI.

CURRENT FIELD ARTILLERY NOTES

6. Unfinished business.
7. New business.
8. Election of new local officers.
9. Voluntary remarks.
10. Closing.

Article VII—Official Insignia

Section 1. To be decided.

Article VIII

Section 1. Upon the termination of the term of office, resignation, or other withdrawal from duty of any officer, either national or local, a complete account of all transactions, documents, etc., shall be turned over to his successor.

Article IX

Section 1. The provisions of this constitution shall be amended at any time by a three-fourths vote of all members enrolled with National Secretary, provided the amendment in its accepted form has been before the members for one month before the voting upon the amendment.

Vacational Training

A SHORT COURSE IN FOOD PROBLEMS

Lesson 1 is distinctly elementary (also alimentary, but this is a detail). It is familiar to most of the class, and is presented as a review.

Not so many years ago, the tuna was a fish of no reputation. Most of the people in the United States had never heard of him; those who had, believed him inedible.

One day a man of exceptional originality and force of character (whose name escapes me, if, indeed, I ever knew it, but whose intellectual greatness is self-evident) was in some unknown way, probably by plenary inspiration, led to think of the tuna. By reason of his great originality, he at once asked himself a question that had never occurred to anyone before, namely, "Who said this fish was inedible?" The answer, of course, was, "Everybody." But, being persistent, he asked himself another question, "Who is everybody?" The investigation thus started led him to the answer, "Nobody that knew what he was talking about." And then, having to a surprising degree the courage of his convictions, he conducted a few experiments and found that the tradition of inedibility was mythology.

Doubtless he should have begun to spread the news through articles in the ichthyological journals (if there are any). But in this particular case a

THE FIELD ARTILLERY JOURNAL

new element entered; this remarkable man had a business head, and saw that this bit of research into folk-lore had a commercial bearing; if the tuna was good to eat he had money value, and might be given a market value. So, presumably after numerous trials and tribulations, and undoubtedly going broke a few times and transferring most of his rights to men with less originality but more money, he succeeded in overthrowing the tradition, and persuading the American people, not only that the tuna was edible, but that he tasted good and was worth money. And now the Piggly Wiggly and all the rest can't supply the demand.

Lesson 2 deals with mental food.

History is generally regarded in the Army (we are not trying to draw comparisons, invidious or otherwise, so will keep this discussion within the family circle) as mentally indigestible. There is another school of thought, perhaps more and perhaps less enlightened, that recognizes its digestibility, but considers it as a frothy, meringue-like delicacy, unworthy of a real field soldier.

We are unable to find a parallel for the tuna man, for there have always been occasional Cassandras, repeating to deaf ears that history has its value even in military matters. Either the lack of the commercial incentive has reduced the voltage of the advertising campaign, or the resistance of the motor has been found greater, conservatism of the mind being greater than that of the stomach. At any rate, the laboratory worker in sociology discovers no such general movement toward history as toward the tuna; he is compelled to use the microscope, and study individual cases—as *infra*.

Not long ago there appeared in a publication by one of the offices of the War Department a gross error in historical statement. The publication was not of such specially historical character as to be referred to the Historical Branch of the General Staff before publication, as is required by orders in such cases; but it chanced that after publication the error was noted in that Branch. It was brought to the attention of the chief of the arm concerned, and the editor of the publication went to the Historical Branch for the facts.

It having been thus brought to his attention that historical allusions required verification, he became interested, and inquired further; with the result that he decided to recommend to his chief that certain historical subjects of interest to the arm be made a feature of the publication in question. In other words, while probably not yet an enthusiast, he had begun to acquire the taste. And such individual instances are not uncommon.

There is, then, evidence that history is not indigestible, and even that it is beneficial.

But now comes the unpleasant feature of this lecture course. Lesson 3 is the examination. The class will get blue books and write:

CURRENT FIELD ARTILLERY NOTES

Problem.—(a) It is recognized that tastes may be acquired, even in the absence of an advertising campaign, as in the tuna case above cited.

(b) It is noted as a matter of common experience that such tastes are generally acquired, if at all, early in life; *e.g.*, the taste for olives.

(c) Deduce, from your lecture and laboratory notes, a working hypothesis for the phenomenon that the taste for history is acquired very late, or not at all, by the military man.

Memorandum for News Items in Service Journals

The Adjutant-General of the Army has compiled a concise and complete list of educational institutions that offer concessions to Army children. It gives the name of each institution and the nature of the concession offered. This information in pamphlet form may be obtained by officers, warrant officers, or enlisted men upon direct application to The Adjutant-General's Office, War Department, Washington, D. C.

EDITORIAL

Fas est ab hoste doceri; and consequently, as our readers will have noticed, THE FIELD ARTILLERY JOURNAL keeps a close watch upon the voluminous German periodical literature, and selects for reproduction the most striking of the papers noted. But hints are sometimes found in less conspicuous places; as witness the following.

A book notice in the *Artilleristische Monatshefte* for October, 1920, shows us that the 69th (3rd Lorraine) Field Artillery has just published a regimental history. Our own regiments are constantly doing this; let us see if we can learn from the enemy.

The regiment in question is only fifteen years old, and cannot recall memories of the Continental equivalents of Lundy's Lane or Buena Vista, as some of our artillery regiments, made up of old batteries, can do. Its history contains but one war. But instead of limiting itself to "old soldier stories" and flag-waving, as do so many of our books, it aspires to a place in solid professional literature. Not neglecting the old soldier stories, nor even an occasional wave of the flag, it treats each event from the professional point of view, and, without pedantry, furnishes material for formation of a professional opinion.

Reading between as well as in the lines of the review (and General Rohne considered the book of sufficient importance not only to write but to sign the review himself), the author seems to have described with some fulness episodes of importance, both in peace training and in war service, to have outlined the technical methods used, and noted how they worked.

Now we are beginning to get personal recollections of the recent war. Unfortunately, however, they usually address themselves to non-professional readers, or else take the form of general statements of personal opinion. We need very badly a mass of uncolored technical descriptions of specific episodes, written with the single purpose of making of record how things

EDITORIAL

were done, and how the methods worked out; all sorts of things—care of horses, ammunition supply, connection with the infantry, occupation and preparation of positions, firing processes, and a thousand other things that we all want to know. A few incidents won't do; an isolated instance may be an exception, and, as General Conner pointed out in our December number, we are in some danger, anyhow, of getting a one-sided view of the war, because we saw only the end of it. We were not in close touch with the course of its evolution, and so sometimes fail to grasp the true significance of actual experiences.

Can our regimental historians make anything out of the hint?

Field Artillery Journal Prize Essay Competition for 1921

AWARD

With the closing date for the receipt of Essays, March 31st, there had been received the following:

1. Lessons of the War as Affecting Divisional Artillery, by "Hoi Polloi."
2. Class-Room Instruction in the R.O.T.C., by "Author of Class-Room Instruction in the R.O.T.C."
3. Pack Saddles, by "Mountain Artillery."
4. Some Features of the Accompanying Gun, by "Scarlet."
5. Truck-Carried Artillery in Rearguard Actions, by "12th Field."
6. Some Important and Timely Problems for the Field Artilleryman, by "Main Mission."
7. The Field Artillery of the Army of the United States, by "Number 13."
8. Artillery and Infantry, by "Worried."
9. Some Observations Concerning the Use of Accompanying Batteries During the World War, with Some Personal Experiences, by "Zanzibar."
10. The Relation of the Field Artillery Brigade to the Division, by "James."

THE FIELD ARTILLERY JOURNAL

The number of papers received, while not large, is sufficient for a starter, and indicates that at least some of our readers can find time for a certain amount of serious reflection on the past, present, and future of our arm.

We shall console ourselves with the hope that what is lacking in quantity will be made up in quality, and we take this occasion to express our appreciation of the work done.

All papers were forwarded to the Committee of Award, selected by the Chief of Field Artillery, and the following communication has been received:

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF STAFF,
WAR PLANS DIVISION,
WASHINGTON.

APRIL 23, 1921.

Editor, FIELD ARTILLERY JOURNAL,
Washington, D. C.

DEAR SIR: The Committee, designated by the Chief of Field Artillery, consisting of Colonel W. S. McNair, G.S., Colonel W. M. Cruikshank, G.S., and Colonel Fox Conner, G.S., to examine the essays submitted for THE FIELD ARTILLERY JOURNAL Competition has given careful consideration to this subject, and recommends as follows:

For First Prize: "The Field Artillery of the Army of the United States," by "No. 13";

For Second Prize: "Some Features of the Accompanying Gun," by "Scarlett";

For Honorable Mention: First: "Lessons of the War as Affecting Divisional Artillery," by "Hoi Polloi";

For Honorable Mention: Second: "Some Observations Concerning the Use of Accompanying Batteries During the World War, with Some Personal Experiences," by "Zanzibar."

EDITORIAL

The Committee in deciding as above does not necessarily approve of *all* the ideas advanced in the essays selected.

For the Committee,
WM. M. CRUIKSHANK,
Colonel, General Staff.

Upon receipt of the above communication, the sealed envelopes were opened, and found to contain the following names:

"No. 13," Major William Bryden, General Staff, U. S. Army.

"Scarlet," Lieut.-Col. Clarence Deems, Jr., Field Artillery, U. S. Army.

"Hoi Polloi," Major D. M. Beere, Field Artillery, U. S. Army.

"Zanzibar," Major R. C. Burleson, Field Artillery, U. S. Army.

BOOK REVIEW

BATTLE STUDIES. By Colonel Ardant du Picq. With a foreword by Marshal Foch, and a preface by Frank H. Simonds. Edited by Colonel John N. Greely, F.A., U.S.A., and Major Robert C. Cotton, G.S., U.S.A. Cloth. \$2.50. Macmillans.

Of this book Marshal Foch says: ". . . a very valuable work . . . amply verified in the experience of the American Army during the last war. . . ."

Of this book Frank H. Simonds says: ". . . although he died in 1870, du Picq lives, through his book, as one of the most useful guides to a proper understanding of a war fought nearly half a century later. . . ."

These two quotations are enough to establish the applicability of this old French military classic to the warfare of to-day, and to explain the first appearance of an English translation, made by two officers who fought in France in 1918.

The studies were made half a century ago by an obscure French colonel, who gave in them a luminous statement of the fundamental principles of warfare, the neglect of which led to Gravelotte and the first Sedan. He belonged to an army which was defeated, and fell on the eve of a battle which not only gave France over to the enemy, but disclosed a leadership so inept as to awaken the suspicion of treason.

Nowhere can be found a clearer statement of the bases of battle, a better analysis of the all-important human element in war, than in the paragraphs of Ardant du Picq. Reading him, "one understands something of the soul as well as the science of combat." Every American soldier reader will somewhere say, "That's Gospel truth! . . ." or ". . . . That reminds me of the day . . ."

Book Notices

THE WAR OF THE FUTURE. By General Von Bernhardi. D. Appleton & Co., London-New York. Price \$3.00 net. Review later.

When Bernhardi wrote "Germany and the Next War" it ran through many editions, but his readers never dreamed that most of his hideous prophecies would come true. From the lessons of the Great War he now constructs his ideas of the next conflict.

The volume is a detailed and comprehensive exposition of military tactics in modern warfare. The first chapter explains the change from

BOOK REVIEW—NOTICES

the old manœuvre system to trench warfare, and the development of modern armament. This is followed by treatment of the very great part played by the infantry, the use of barrage, the importance of artillery support, and the change in tactics of defense. The surest means of defense is shown to be offensive tactics, the counter-attack. The relative merits of cavalry and aircraft are discussed and one of the most interesting sections deals with "Fortifications, Engineers, and Railway Troops," the vast army of workers that accompanies the fighting unit. "Principles of the Offensive" and "General Distribution of Troops" are other chapters of great value. The battle itself is described from the first step of laying down the barrage to the final attack.

ALLENBY'S FINAL TRIUMPH. By W. T. Massey, Official Correspondent of the London Newspapers with the Egyptian Expeditionary Force. With illustrations and Maps. E. P. Dutton & Co., New York, 1920. Price \$8.00 net. Review later.

ORDERS, DECORATIONS AND INSIGNIA (MILITARY AND CIVIL). By Colonel Robert E. Wyllie, General Staff, U. S. Army. With 367 illustrations (over 200 in color). G. P. Putnam's Sons, New York and London, 1921. Review later.

NAVAL LESSONS OF THE GREAT WAR. By Tracey Barrett, Kittredge, Lieutenant, U. S. N. Reserve Force. Doubleday, Page & Co., Garden City, N. Y., and Toronto. 1921. Price \$2.50 net. Review later.

Index to Current Field Artillery Literature

Compiled from monthly list of military information carded from books, periodicals, and other sources furnished by the War College Division, General Staff.

- AERIAL NAVIGATION.—Europe. Europe prepares for the war in the air. Activities of Great Britain, France, Italy, and Japan in mastering the air. Self-propelled projectors, controllers, and carriers. Question—Can we depend upon our battleships without the addition of an air fleet that shall equal the air fleet of any European nation? Answered—No, with reasons. By Willis Steele. (*National Service*, January, 1921, p. 11.)
- AERIAL WARFARE.—Antiaircraft. Work of antiaircraft guns; progress and room for betterment; the various elements which go to make up successful barrages. By Maj. H. J. Kneer. (*Journal of the United States Artillery*, February, 1921, p. 152.)
- AMMUNITION SUPPLY.—Divisional Ammunition service. By Maj. A. J. Cooper, Cavalry. (*Journal of the United States Artillery*, January, 1921, p. 15.)
- ARMAMENTS, LIMITATION OF.—The limitation of armaments. The history of disarmament proposals; a proposal that the United States suggest to Great Britain and Japan that these two nations take a naval holiday with her. By Hamilton Holt. (*The Independent*, February 12, 1921, p. 162.)
- ARMORED CARS.—Will the armored car replace the cavalry? A discussion of the advantages of the first. By Capitaine Daubert. (*Revue de Cavallerie*, January-February, 1921, p. 37.)
- ARTILLERY.—Great Britain. A history of artillery. Part IV (conclusion). Tracing artillery activity between 1783 and 1815. (*Journal of the Royal Artillery*, January, 1921, p. 491.)
- ARTILLERY FIRE.—Gambling and groups. Target practice grouping for artillery. By Capt. D. R. D. Fisher. (*Journal of the Royal Artillery*, January, 1921, p. 481.)
- ARTILLERY.—Germany. Divisional artillery strength. By Lieut. Gen. Balck. (*THE FIELD ARTILLERY JOURNAL*, November-December, 1920, p. 609.)
- ARTILLERY FIRE.—Accompanying fire. Its uses in campaign. By Col. Spartago Targa. Translated by Col. Frank E. Harris. (*Journal of the United States Artillery*, January, 1921, p. 51.)
- BRIDGING.—Notes on military bridging. Discussing especially the service pontoon equipment for construction, method, etc., of both under various conditions of warfare. (*The Royal Engineers' Journal*, February, 1921, p. 83.)
- CAVALRY DRILL AND TACTICS.—European war. French cavalry in Palestine, Jaffa-Damascus, 19-30 September, 1918. A diary sketch of operations of French cavalry units in Palestine. By Lieut. Zamit. (*Revue de Cavallerie*, January-February, 1921, p. 65.)
- CAVALRY DRILL AND TACTICS.—European war—France. The Sixth Division cavalry (French) on the Lorraine front. A historical sketch of its operations. By Commandant N. (*Revue de Cavallerie*, January-February, 1921, p. 53.)
- CAVALRY DRILL AND TACTICS.—European war—Turkey. Cavalry work in Anatolia. (Country east of Constantinople.) By Maj. McConnell. Map. (*The Cavalry Journal*, January, 1921, p. 53.)
- COAST ARTILLERY.—Future seacoast artillery. A continuation of discussion relative to railway *vs.* fixed artillery for coast defense. This article is a discussion of an article on the same subject by Col. Sherrill in *Journal of the United States Artillery* for November, 1920. By Maj. F. E. McCammon, C. A. C. (*Journal of the United States Artillery*, February, 1921, p. 132.)
- COMMAND OF TROOPS.—European war. Criticism of the World War by a general staff officer. Criticism of the high command and its operations in the conduct of the World War. by v. Zwehl. (*Monatshfte für Politik und Wehrmacht*, October, 1920, p. 462.)
- COMMAND OF TROOPS.—Germany. Crisis in the command of the German Army on the Eastern front, 1914-1916. Hindenburg and Ludendorff *vs.* Falkenhayn. By Gen. Buat. (*La Revue de Paris*, January 15, 1921, p. 244.)

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- DEFENSES.—Belgium. The Belgian defenses of 1914. Effectiveness of Belgian defenses at Liege and Namur. By Col. Lord Sydenham of Combe. (*The Royal Engineers' Journal*, February, 1921, p. 57.)
- DISCIPLINE.—Germany. Discipline in the army and navy. A book review by Capt. Waldeyer-Hartz (German only). (*Monatshefte für Politik und Wehrmacht*, November, 1920, p. 518.)
- DISCIPLINE.—Germany. German patriotism. The soldier and discipline. A treatise on national discipline. By Albert Bencke. (*Monatshefte für Politik und Wehrmacht*, December 1920, p. 570.)
- DOUMENC, A.—Les transports automobiles sur le front Francais, 1914-1918. Paris, Plon-Nourrit. 1920. 346 p. UC 345 F 81 1914- D 74.
- EROSION.—The cause and prevention of after-corrosion on bores of firearms. By Wilbert J. Huff. (*Arms and the Man*, January 1, 1921, p. 5.)
- FIELD ARTILLERY DRILL AND TACTICS.—Being a tactical study of the Field Artillery group in retreat. By Lieut. Col. Weber. (*The Field Artillery Journal*, November-December, 1920, p. 567.)
- GENERAL STAFF.—France. G. Q. G., The French High Command. A review of the book of Jean de Pierrefeu entitled "G. Q. G." (*The New Republic*, January 19, 1921, p. 225.)
- GENERAL STAFF COLLEGE.—United States General Staff College course. Outlining purposes and work of General Staff College for year 1920-21. By Col. Harry A. Smith, Infantry. (*Infantry Journal*, January, 1921, p. 51.)
- GREAT BRITAIN.—War Office. Handbook for the Q. F. 18 pr. gun, Mk. IV, on carriages, field, Mk. III and III*. Land service. 1919. N. p. H. M. Stat. Off. 1919. 75 p. UF 575 G 74 18 pr. A 2 1919.
- GREAT BRITAIN.—War Office. Handbook for the Q. F. 18 pr. gun, Mk. IV, on carriages, field, Mk. III, III†, III*, and IV. London, H. M. Stat. Off. 1920. 76 p. UF 575 G 74 18 pr. A 2 1920.
- GREAT BRITAIN.—War Office.. *Handbook* [provisional] for the 303-in. Lewis machine gun (magazine rifle chamber). London, Harrison and Sons. 1915-16. 52 p. UF 625 G 7 L 6 A 20 1915-1916.
- HEAVY ARTILLERY DRILL AND TACTICS.—Task of the heavy artillery in an army corps and tactics for the employment. Defensive and offensive operations in movements or in periods of stabilization or pursuit. By Commandant Perney. (*Revue Militaire Generale*, December, 1920, p. 802.)
- INFORMATION BULLETIN.—For field artillery, regular, reserve, and national guard officers. Fort Sill, Field artillery school press. 1920. UF 1 I 43, No. 31.
- KNOBLOCH, WILHELM.—Fliegerabwehr durch artilleriefeuer. Wien, Selbstverlag des verfassers. 1918. 45 p. UF 409.2 A 9 K 72.
- LANZA, CONRAD H.—Books recommended for a course on military history. Ft. Leavenworth, General Service Schools Press, 1920. 7 p. Z 6726 L 29.
- MACHINE-GUN DRILL AND TACTICS.—European war. The machine-gun corps (cavalry) in France, 1916-1918. Trench work, summer, 1917; work at Cambrai. By Capt. T. Preston. Map. (*The Cavalry Journal*, January, 1921, p. 66.)
- MAPS.—Europe. The new map of Europe. Showing the boundaries established by the peace commission at Paris and by subsequent decisions of the Supreme Council of the Allied and Associated Powers. This map retains the old place names. By Ralph A. Graves. (*The National Geographic Magazine*, February, 1921, p. 157.)
- MARNE, BATTLE OF.—Battle of the Marne (1914) and the Battle of Tannenberg. A short sketch of operations and criticisms. By Gen. v. Zwehl. (*Monatshefte für Politik und Wehrmacht*, December, 1920, p. 566.)
- MARNE, BATTLE OF.—The falling back on the Marne in 1914. A short sketch on events leading up to the recoil. By Gen. D. v. Francois. (*Monatshefte für Politik und Wehrmacht*, December, 1920, p. 562.)
- MARNE, BATTLE OF.—The tide turns. Relation of a personal interview between Gens. Hindenburg, Ludendorff, and the Kaiser regarding the defense of the Marne sector during July, 1918. By Karl Rosner. (*The Living Age*, February 5, 1921, p. 317.)
- MEXICO.—Army. An outline of the projects for the organization, utility, and education of the National army. Fundamental laws by which such an army would be managed. By Col. Moises Guevara. (*Revista der Ejercito y Marina*, November-December, 1920, p. 374.)

THE FIELD ARTILLERY JOURNAL

- MEXICO.—Cavalry. Urgent necessity of reorganization of the cavalry regiments. Also on the armament of the Army of Mexico. Sketch written by Ernest De Merck, colonel of cavalry, ex-officer of the German Army. (*Revista del Ejercito y Marina*, November-December, 1920, p. 380.)
- MOORE, WM. E.—U. S. Official pictures of the world war showing participation. Wash., Pictorial Bureau. 1920. 528 p. Illus. D 527 M 82.
- PERCIN, ALEXANDRE.—Les erreurs du haut commandement. Paris, A. Michel. 1919. 284 p. D 523.1 P 42.
- PERRIS, GEORGE HERBERT.—The battle of the Marne. London, Methuen and Co. 1920. 274 p. D 634.1 M 3 P 45.
- POURQUOI L'ALLEMARNE A CAPITULÉ LE 11 NOVEMBRE, 1918. Paris, Imp. Lang, Blanchong et Cie. 1919. 66 p D 523 P 87.
- RESERVES.—Germany. In the days of the establishment of the reserve corps. A sketch of the creation of the corps, their utility, etc. By von Balck. (*Monatshefte für Politik und Wehrmacht*, November, 1920, p. 496.)
- RETREATS.—Being a tactical study of the field artillery group in retreat. By Lieut. Col. Weber. (THE FIELD ARTILLERY JOURNAL, November-December, 1920, p. 567.)
- SCHOOLS.—United States. The Engineer School, located at Camp A. A. Humphreys, Va. History of the school, its present-day curriculum, for officers of all grades now in attendance. By Maj. R. W. Putnam, C. E. (*The Journal of the United States Artillery*, February, 1921, p. 113.)
- SMALL ARMS.—German war experiences and infantry armament. Relating step by step the lessons learned by the infantry, the new needs which developed and how they were met. Work of machine guns, hand grenades, etc. Suggestions as to needs of the future infantry unit in armament. (*The Infantry Journal*, January, 1921, p. 15.)
- SMALL ARMS FIRE.—Training in the revolver. By Capt. J. Noel. Illus. (*The Cavalry Journal*, January, 1921, p. 39.)
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- SURVEYING.—Topographical air survey. Experimentation in Mesopotamia in surveying the ground by airplane. Compasses; sun azimuths; description of material used; method of work and suggestions. By Lieut. Col. Beazeley. Plates and maps. (*The Royal Engineers' Journal*, February, 1921, p. 62.)
- TACTICS.—European war. Surprise, rapidity, and concentration. The effect of surprise, rapidity of action and quick concentration of units in the World War. By Lieut. Col. H. Rawan-Robinson. (*The Journal of the Royal Artillery*, January, 1921, p. 473.)
- TANKS.—The introduction of mechanical warfare on land and its possibilities in the near future. Referring especially to the tank. By Col. J. F. C. Fuller. (*The Royal Engineers' Journal*, January, 1921, p. 1.)
- UNITED STATES.—Army Service Schools, Fort Leavenworth, Kansas. Combat orders. Fort Leavenworth, The General Service Schools Press. 1920. 119 p. U 196. U 61.
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- UNITED STATES.—Mounted Service School, Fort Riley, Kansas. Manual for army horseshoers. Wash., Govt. Print. Off. 1920. 114 p. UC 633 A 3 1920.
- VERDUN.—Verdun. A German failure to exploit. The first of a series of articles on the Verdun campaign, in which the use (or lack of use) of certain types of field artillery is shown to have been a deciding factor. By Lieut. Col. A. H. Sunderland, C. A. C. (*Journal of the United States Artillery*, February, 1921, p. 124.)
- WARFARE.—The warfare of the future. Brief history of warfare, land and sea. Development of warfare on land and sea. By Rear Admiral Bradley A. Fiske, U. S. Navy. (*United States Naval Institute Proceedings*, February, 1921, p. 157.)
- WARS—United States—Civil War. Gen. M. C. Meigs on the conduct of the Civil War. (*The American Historical Review*, January, 1921, p. 285.)