

28TH YEAR OF PUBLICATION

# THE FIELD ARTILLERY JOURNAL

MARCH-APRIL, 1938

*The 1938 Prize Essay*

## **ARTILLERY MAP-MAKERS**

—1st Lt. John F. Greco



PUBLISHED BIMONTHLY BY  
THE UNITED STATES FIELD ARTILLERY ASSOCIATION

# March-April, 1938

## CONTENTS

Hail to the Chief .....	83
Artillery Map-Makers .....	85
By 1st Lieutenant John F. Greco, FA	
Mechanized Field Artillery .....	96
By Major B. H. Perry, 68th Field Artillery	
To the Finish .....	109
By Peter B. Kyne	
To the Victors .....	115
Fred T. Austin, 1866—1938.....	116
Convoy .....	120
By Captain Reuben K. Ransone, 15th FA-Res	
How to Make a Convergence Fan .....	124
By Lieut. Harry E. Mikkelsen, FA	
Workman Meets Tools .....	127
By Lieutenant Colonel Vincent Meyer, FA	
The Conference-Demonstration Method of Tactical Instruction .....	137
By Colonel A. G. Paxton, 114th FA	
One Hundred Percent Regiments of the National Guard Field Artillery .....	142
Lateral Conduct of Fire .....	144
By 1st Lieutenant D. C. McNair, FA	
The Problem of Military Education .....	151
By Madge Elwood	
Letters .....	153
Foreign Artillery Notes .....	156
By J. S. W.	
Analytical Studies .....	165
By Colonel Ned S. Rehkopf, FA	
Military Books .....	168
New Members .....	169
Reviews .....	171
Carbine and Lance	
The War in Abyssinia	
The Caissons Roll	
Some Forward Observations .....	175

**AUTHORS ALONE ARE RESPONSIBLE FOR STATEMENTS CONTAINED IN THEIR ARTICLES**

VOL. 28

28TH YEAR OF PUBLICATION

No. 2

MARCH-APRIL, 1938

# THE FIELD ARTILLERY JOURNAL

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Patron Saint of Artillery

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"The objects of the Association shall be the promotion of the efficiency of the Field Artillery by maintaining its best traditions; the publishing of a *Journal* for disseminating professional knowledge and furnishing information as to the field artillery's progress, development, and best use in campaign; to cultivate, with the other arms, a common understanding of the powers and limitations of each; to foster a feeling of interdependence among the different arms and of hearty cooperation by all; and to promote understanding between the regular and militia forces by a closer bond; all of which objects are worthy and contribute to the good of our country."



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# Hail to the Chief

**M**AJOR General Robert M. Danford, the new Chief of Field Artillery, has performed his entire military service, since graduation at the Military Academy, in the Field Artillery arm. He has made an enviable record of accomplishment on every assignment he has been given and is known as an indefatigable worker and thorough student of the tactics and technique of Field Artillery, as well as those of the combined arms.

At West Point, where he was affectionately known as "John," he was studious, efficient, and maintained strict discipline, but withal was generous and kindly toward underclassmen. He participated in athletics and held the record for the fence vault at the Academy.

As a young officer at Fort Riley, Kansas, he was a thorough student of horse-mastership. He was a graduate of the School of Application for Cavalry and Field Artillery and a recognized authority on the breeding, training, and feeding of horses. He took a particular delight in the study of Thoroughbred blood lines; a study since put into practice in breeding better types of horses and mules in our Remount Service. Later he acted as Secretary in the improvement and development of the Mounted Service School.

He made a name for himself as Inspector-Instructor of National Guard, New Haven, Connecticut, and in organizing the first ROTC unit at Yale University, where he was held in the highest esteem and was honored with the A.M. degree in 1917. His students formed the nucleus of the Yale Batteries which went to the Mexican Border in 1916, and later many of these men served with distinction in the World War.

He organized our first Replacement Depot at Camp Jackson, South Carolina during the World War, where he finally had over fifty thousand officers and men in training. He handled the replacement of all field artillery specialists from cooks

to horseshoers. General Snow, our first Chief of Field Artillery, stated that General Danford's work at Camp Jackson was a monument to him, and that he (General Snow) had never ceased to be grateful to him for making such a complete success of one of the most worrying problems that beset the Field Artillery during the World War—that of replacements. For this service he was awarded the Distinguished Service Medal.

General Danford was one of the first of the junior field artillery officers to be made a Brigadier General during the World War.

As Commandant of Cadets at West Point, after the War, General Danford added further distinction to his record. The Military Academy, because of the early graduation of classes during the War, had lost most of its old traditions and customs. The new cadets knew nothing of the old West Point. Due in great part to General Danford's efforts, these cherished ideals, traditions, and customs were taught the new cadets, and in a short time, the Academy life reappeared with all its worthwhile heritages.

General Danford is a graduate of the various service schools to include the War College. He has served in the various commands of field artillery at home and in the Philippines, and recently commanded the 13th Field Artillery in Hawaii. His latest important assignment was as Chief of Staff of the Sixth Corps Area, under General Drum.

General Danford comes to the Office of the Chief of Field Artillery with a thorough knowledge of that office, having served in it on four different occasions.

Needless to say, the entire personnel of the Field Artillery is happy in getting a Chief whom they admire and respect, and who has always been recognized as a superior leader, and a sincere and sympathetic friend.



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**MAJOR GENERAL ROBERT M. DANFORD, FIFTH CHIEF OF FIELD ARTILLERY**

# THE FIELD ARTILLERY JOURNAL

VOLUME 28

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## The 1938 Prize Essay ARTILLERY MAP-MAKERS

BY 1ST LIEUTENANT JOHN F. GRECO, FA

### I

THE importance of survey in modern artillery operations, as initially developed during the World War, is granted by all artillery officers of today, although very regretfully by a great many. The principle of survey was first introduced into the gunnery problem of preparing firing data for two primary reasons—to attain surprise and effect; thus enabling artillery to mass its weapons in predetermined, camouflaged positions, and without registration (or with extremely limited registration) to concentrate its fires on targets over which ground and air observation was impossible. In the words of Brevet Major M. Hatline, Royal Engineers, British Army, "The days when artillery could do its job with a single fire order—to cock the old bitch up a bit—are definitely gone."

"The dragons are all dead and the lance grows rusty in the chimney corner. Wars are exercises in ballistics, chemical ingenuity, administration [and] hard labor. . . ."

In the succeeding pages I propose a study of the extent to which the firing charts of the artillery battalions in an infantry division require brigade

coordination; and intend to demonstrate the necessity for a brigade-survey platoon. What I will have to say about this problem does not afford a definite and tried solution; it amounts only to an indication of the direction toward which we must turn. But although not a tested solution, what can be said at present seems to me to bring out a deficiency in the present division artillery organization.

With the recognition of the fact that neither terrestrial nor air observation for artillery fire will always be available and bearing in mind the mission of the artillery—"to support the infantry by fire"—we must fix *now* the best procedure for the delivery of effective unobserved fire.

I will first briefly review the results to be gained and that have been gained from artillery survey and then by a comparison of the present procedure with the one proposed by the writer, justify the recommendations as made above.

"The purpose of artillery survey," quoting FAB 161. *Gunnery*, page 148, "is to gather topographical data of the proper character and in the proper amount to enable battalion and higher headquarters to assign targets, and batteries to compute firing data." Considerable benefit is derived from artillery fire by proper use of survey.

*a. Concentration:* When the relative

\*From "Rats, Lice and History," by Hans Zinsser.

positions of each battery are unknown, it is necessary for one gun in each battery to adjust on all targets being fired on; however, when the battery positions are known and plotted on a common coordinate system, any battery can fire at short notice on any target registered on by another battery.

*b. Surprise:* If the topography of the target area permits a detailed and accurate survey, the targets can be taken under fire without registration, with the obvious benefit of surprise. But this accurate survey requires visible targets, and the enemy cannot be expected to pass in review for our survey parties who are locating them. Many targets, however, can be located from air photos, which, when sufficient control exists, are also satisfactory for the conduct of unobserved fire.

The tactical situation permitting, registration should always be allowed, although it should be reduced to a minimum in order to deny information to the enemy as to the mass of artillery concentrated against him.

*c. Security:* The quieter artillery stays during the registration period the

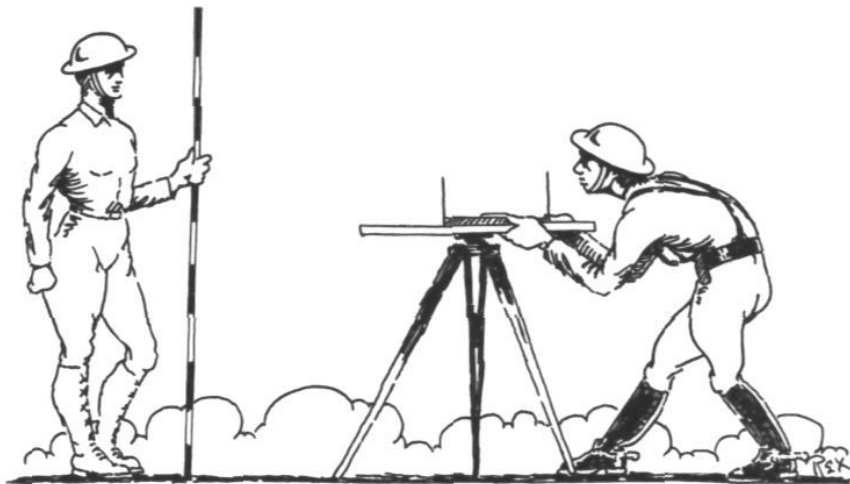
less its risk of being located by the enemy intelligence service. This danger of location by the enemy may be reduced for the registering batteries by having them move from one surveyed position into another upon completion of registration.

*d. Economy:* More efficient tactical handling of the artillery by the use of survey methods, with consequent greater concentration and accuracy of its fires, will clearly result in more effective overcoming of opposition and in economy of employment of other arms.

## II

It is well here to examine briefly several examples of the use made of survey by artillery during the World War:

During the early years of the war, registration by each battery was considered necessary; therefore any attempt to conceal the amount of artillery present in any engagement was impossible. To overcome this, the British established survey battalions (a separate service) charged with performing survey work for artillery units.





## ARTILLERY MAP-MAKERS

Prior to the Battle of Cambrai in November of 1917, we find that the artillery was given three don'ts.

a. Don't register.

b. Don't destroy obstacles by preliminary bombardment. (In other words—no preparation.)

c. Don't fire on wire and trenches, but fire at guns.

Our principal concern here is the first of the "don'ts," for up until this battle the artillery had insisted on registration. The newly established survey battalions performed the necessary survey work and visited all the batteries in order to explain the new fire methods. So the British gunners made their debut of going into battle without registering. The infantry broke through in the attack, and the intense, surprisingly accurate artillery fire was greatly responsible for this success, despite the fact that this battle marked the introduction of tanks into warfare. The success of the infantry in continuing to a point beyond the support range of the artillery necessitated a displacement of the pieces from the original surveyed position into unsurveyed positions. There, registration was not accomplished, and as visible targets were limited, the artillery fired blindly in the general direction of the enemy. Consequently the infantry were unable to resist the strong counterattack delivered by the Germans, and the British successes of the first few days, gained under the cover of effective artillery supporting fires, were lost because of the artillery's ineffective fire from the unsurveyed positions.

At the time of the preparation for the battle of Amiens in 1918, we find again the same restrictions placed upon the artillery as there were before the battle of Cambrai. Again there were initial successes for the infantry gained under cover of artillery fire from surveyed positions. But there the analogy ceases.

After the initial phase, the battle was apparently broken off to consolidate the gains, local attacks being made to keep the enemy guessing. No further attempts were made to advance along this front, but meanwhile the survey battalions were surveying completely new artillery positions in a different area—north of Ancre. As soon as it was clear that the front had stabilized in front of Amiens, all guns not required for defensive purposes were withdrawn to the new front north of Ancre. Arriving there, the artillery found everything ready for them, and went into positions already completely surveyed. Then, before the enemy realized that one battle was over, another surprise attack was delivered; again supported by effective artillery fire.

John R. Innes, in his book "Flash Spotters and Sound Rangers," writing of the British army during the World War, states, "The claim is made that it was only proper utilization of the survey battalions that made possible the successful attacks of 1918, and that there would not have been so many attacks that missed fire if their work had been understood earlier. The influence of these units on the tactical use of artillery was very much greater than the scanty references to their work in official histories would seem to indicate."

In the same vein I quote Major General Sir Frederick Maurice, K.C., M.G., C.B., "In the early years of the war, fog or bad weather of any kind had been regarded as a fatal obstacle to successful attack, because it blinded the gunners and prevented them from creating the breach for the infantry assault. Time and again in the early days of trench warfare, when the Germans were firing five shells to our one, a day of fog had been hailed by our infantry with joy as a day of rest and

## THE FIELD ARTILLERY JOURNAL

of relief from shell fire. Time and again attacks planned by us and our French allies were postponed because the weather conditions made it difficult or even impossible for the artillery to ascertain by preliminary trial the exact adjustment of their guns needed for bombardment of the targets allotted to them. This process of registration of targets had been regarded as an indispensable preliminary of battle, and when a great mass of guns was to be employed it had given us warning of the enemy's intention to attack and had warned the enemy that we were preparing to attack him; it was one of the factors which made it all but impossible to achieve surprise. But by 1918 the development of scientific gunnery had made it possible to ascertain for the gunners beforehand the exact adjustment required to enable them to reach any given targets under any reasonable condition of weather. So the slow process of registration became unnecessary. It was possible to open a great bombardment without previously alarming the enemy, and best of all, the attacks became far more independent of the weather than they had ever been. Fog became an aid instead of an impediment to attack, because under its protection, guns, tanks and infantry could be massed unseen. So for this battle of August 8 (The battle of Armageddon), two thousand guns were collected on Rawlinson's front of attack, many of them being brought into action at the last moment and hardly any opened fire from their new positions before they all crashed out together. A friendly mist covered the final assembly of the assaulting troops and of the tanks, and these burst through the enemy's lines almost simultaneously with the opening of the bombardment which rolled on ahead of them in the form of a crushing barrage."

Note that if each of the five hundred batteries employed in this battle (assuming four guns per battery) had been permitted to register and that the ammunition allowance per battery had been 8 rounds, a total of four thousand rounds would have been required to complete registration. Then the possibility of a surprise attack would have been slight indeed.

Consider the highly successful attack on the Italian front in October, 1918, for which all survey work was done by the 6th Field Survey Company. Artillery was massed in the usual large World War quantities, yet so few guns registered that prior to the attack the enemy had no knowledge whatsoever of the amount of artillery opposing him. If it had not been for the work of this survey company there would have been so much time and ammunition expended in registration prior to the attack, that the enemy would have had ample warning of it. As it was, at 11:30 PM the artillery opened fire and the Earl of Cavan stated in his dispatch, "The bombardment and subsequent barrage were excellent."

It is significant too that in the German attack of March 1918, of the three armies that took part in the attack only one succeeded in breaking through, and it planned its attack on survey lines similar to the methods of the British, whereas the other two armies did not.

Contrast sixty thousand casualties sustained during the first day of the comparatively unsuccessful battle of the Somme of 1916, with the one thousand casualties incurred in the successful battle of Amiens in 1918. In the latter battle the survey battalions were at work and they made possible the successful counterbattery by the British artillery, although there was no observation because of the prevailing misty weather. This resulted in the

## ARTILLERY MAP-MAKERS

silencing of many German guns and the consequent reduction of casualties from sixty to one.

The examples cited illustrate clearly the great importance of *coordinated survey* for all artillery operations, without which the artillery cannot guarantee continuous support. During the World War, stabilized as it was, the British were able successfully to employ Field Survey battalions, an entirely separate service, to accomplish the necessary survey work for all artillery units down to include the battery. Obviously such a unit would have no place in rapidly moving situations, and with highly mobile forces such as are employed at present. The time required for a separate unit to furnish each battery (or even each battalion) of a brigade with essential survey data would preclude rapid entry into action by artillery. This same disadvantage applies to a brigade survey platoon, whose function it would be to perform all survey work within the brigade. However, such use is not contemplated for the survey platoon I propose. Before discussing this platoon, let us first inspect our present survey organization. With it, can the artillery guarantee successful continued support for the infantry when unobserved fire is necessary, or must we, like the British gunners at Cambrai, fire blindly after a displacement from surveyed to unsurveyed positions, and thereafter permit successful counterattacks to wipe out our infantry's initial gains?



### III

From the Engineers and the Air Corps, the artillery brigade will expect to receive the basic ground control, which is the compilation of known points in the form of coordinates, fire-control data sheets, or a final improved 1/20,000 fire-control map. This may be augmented by information from the corps artillery sound-and-flash units, although this is only a possibility, inasmuch as these units will have pressing problems of their own. So it can be accepted that the artillery brigade is dependent upon the Engineers and Air Corps for the basic ground control. The brigade in turn distributes its information down through its battalions. Each battalion then must locate its base pieces, targets, check points, and the like, accurately with respect to each other, and build up what is actually the ultimate aim of all survey work—a firing chart—which is defined as a (FAB 161, page 149) "sheet upon which base pieces, observation posts, targets, and other points of importance are plotted. . . . It may be a fire-control map, a grid or control sheet, or a photo mosaic or other photo map. It is used by battalion and higher headquarters in designating targets, and by batteries in calculating firing data."

During a war, especially in its initial stages, maps, even of a small scale, can be expected only for limited areas, thus the artillery must be prepared to rely solely on air photos supplemented by standard highway maps. That each battalion under these conditions can accurately locate base pieces, observation posts, base points, and orienting lines, is questionable. Briefly my doubts are based on the following facts:

- a. Basic control points will *not* be supplied by the engineers at all times,

and when supplied will often be insufficient.

b. Air photos, without control either vertical or horizontal, are not sufficiently reliable in themselves for accurate delivery of unobserved fires.

c. The prescribed grid, numbered arbitrarily by each battalion when no control exists, combined with unrelated vertical control for each battalion (inasmuch as each battalion started its chart by assigning the initial orienting point an arbitrary altitude), does not permit centralized control of fire for units higher than the battalion, and practically denies higher headquarters any opportunity for assigning targets.

As a remedy for the foregoing disadvantages, present regulations provide only the following: (FAB 161, page 149) "When it is necessary and time permits, the brigade or regiment may issue such instructions as will coordinate the survey work of its battalions in supplementing existing data." It is this method of coordination of the survey work of the battalions which I believe to be inadequate, and for which I would recommend:

a. Brigade coordination of the survey work of its battalions to be a standard practice.

b. The coordination to be accomplished by the addition of a brigade-survey platoon to existing survey groups.

c. The tactical and technical employment of the proposed survey platoon and its relation to the survey sections of the lower units in the brigade to be set forth in a manual on Artillery Survey.

The rapid development of aerial mapping methods has brightened considerably the map outlook in the event of a war in either an unmapped or poorly mapped area. Briefly, it is expected that



the mapping program during such a war should progress as follows:

a. There will initially be available a very general 1/62,500 map, compiled from G-2 information, which will show important roads, stream and towns.

b. Air photos of the entire area of expected operations taken with a 1/40,000 multilens camera, will be assembled into mosaics and used to augment the originally compiled map. Thus there will be available a 1/62,500 map which will show roads, railways, streams, towns and wooded areas with a good degree of accuracy.

c. Simultaneously with the photo mission described in b. above, the Air Corps will photograph the present and immediate future operation area with a 1/20,000 single-lens camera. From these photos will be obtained lithographed

## ARTILLERY MAP-MAKERS

mosaics within six days, and strip mosaics within twenty-four hours.

*d.* By photogrammetric processes, using the aerocartograph and the multiplex projector, the Corps of Engineers will construct the Fire Control Data Sheet, which is a 1/20,000 skeleton map showing roads, streams, and woods, and a number of critical points located accurately both horizontally and vertically.

*e.* Contoured maps, prepared by photogrammetry, from the photos mentioned in *b.* above, will be issued on scales of 1/20,000 and 1/62,500. The time necessary for the production of these maps is dependent on the number of aerocartographs and multiplex projectors available to the Engineers. However, with adequate equipment, a contoured 1/20,000 map should be available covering the first twenty-five miles of depth within fourteen days after the photos are taken, and from then on at a rate of three miles per day.

Assuming that the mapping program does progress as outlined above, the artillery must still fire blindly or at least with one eye closed, in the opening phases of any operation requiring support with unobserved fires because:

*a.* A controlled map will be lacking until the issue of the Fire Control Data Sheet.

*b.* The accuracy of the strip mosaic for fire control purposes varies as does the terrain—from a fair accuracy in a gentle, rolling country to a questionable accuracy in rough terrain.

In addition it is extremely probable that the mapping program will not progress as per schedule in which case maps will often be nonexistent. The artillery, however, must still be able to deliver effective unobserved fire when called upon to do so. My "three doubts" as to the effectiveness of our present survey organization still exist.

## IV

Such a statement, however, is not proof in itself of any deficiency in the present artillery survey procedure, so I will assume an operation in an unmapped theater of operations in order to illustrate the advantages to be gained by the employment of a brigade-survey platoon. The advance guards of a reinforced division, operating independently, have encountered the enemy and have developed their positions. The two battalions of light artillery which are with the advance guards are in position, firing with observation. They have each started a firing chart, the grids having been numbered arbitrarily and the altitudes computed from an initial orienting point given an arbitrary elevation.

The division commander decides to attack, giving to the artillery brigade its usual mission of supporting the infantry. The only map available was compiled from G-2 sources and is on a scale of 1/62,500, therefore not suitable for fire control. The Air Corps has delivered photos taken of the areas over which it is thought the attack will progress—the Engineers, however, have not yet supplied control points. Artillery firing, except by the two battalions with the advance guard, is prohibited until the preparation, which will precede the attack by twenty minutes.

Each successive battalion of the brigade, during the occupation of position, builds up a firing chart, using the same methods employed by the two advance guard battalions. The completed survey within the brigade results in *seven unrelated firing charts*. The difficulty of a unit higher than a battalion in assigning targets is obvious, as is also the difficulty of a light battalion in calling for reinforcing fires from a medium battalion. To illustrate this by an example is hardly necessary, but imagine a brigade S-3 who

## THE FIELD ARTILLERY JOURNAL

has been ordered to place the fires of several battalions in a specified area! The problem of assigning such a mission, with each battalion working on unrelated charts, is formidable, and the probability of obtaining effective fire on the area within a reasonable amount of time is very slight.

Requoting from the defined purpose of artillery survey in FAB 161, "The purpose of artillery survey is to gather topographical data of the proper character and in the proper amount to enable battalion and HIGHER HEADQUARTERS TO ASSIGN TARGETS, and batteries to compute firing data." (Capitals are the writer's.)

Coordination of the seven unrelated charts is certainly indicated. As previously quoted, FAB 161 provides, "When it is necessary and time permits, the brigade or regiment may issue such instructions as will coordinate the survey work of its battalions in supplementing existing data." Thus coordination is provided for but it can be accomplished only by makeshift methods, that is, either by improvising a survey section or by requiring that one of the battalion survey parties provide the necessary coordination. Neither method is satisfactory. The coordination resulting from the work of such details would be of doubtful value for the training and equipment of such sections would not be such that the essential accuracy would be obtained. In addition and more important is the fact that certain officers and men would be taken away from their normal duties just prior to an attack and made to do work with which they were unfamiliar. Their normal work would be neglected or performed by some other substitute. All this just prior to the launching of an attack.

It is believed that a brigade survey platoon could provide the necessary coordination and aid materially in the

successful accomplishment of the support mission. To recommend in detail the personnel and equipment which this platoon should have is beyond the scope of this article, it being merely my intention to demonstrate the necessity for such a platoon. In general, however, there should be at least two officers, both of whom are well qualified artillerymen and specialists in artillery survey, plus a number of noncommissioned officer surveyors and enlisted specialists, sufficient to perform the required survey work, and equipped with *accurate survey instruments*. The platoon would be transported in light, fast-moving, cross-country reconnaissance vehicles, equipped with SCR 194 radios.

A possible employment of this platoon in the above situation could be as follows: One of the brigade survey officers, with a small party, accompanied one of the advance guard battalions. Upon employment of these battalions, their survey work proceeded as prescribed at present, with the exception that the initial origin and orientation was supplied to one battalion by the brigade survey officer who was present. This control was extended into the area of the other advance guard battalion. Immediately upon the employment of the advance guard battalions, the forward brigade survey officer had radioed the remainder of his platoon to come forward, which, when it arrived, extended the control established by its forward party into the areas to be occupied by the remaining battalions of the brigade. Each battalion, working from the initial point as established by the brigade survey platoon, continued its survey as at present. Depending upon the time available the platoon could also locate base points, lateral observation posts, and observation posts for each battalion area. It is evident that an intimate

## ARTILLERY MAP-MAKERS

knowledge of artillery fire-control methods is a prerequisite qualification for a brigade survey officer.

The completed survey within the brigade now results in seven *coordinated* firing charts. The advantages gained by the employment of this additional platoon are:

*a.* Units higher than a battalion can now assign targets readily.

*b.* The results of registration and correction, as obtained by the advance guard battalions, can be furnished each incoming battalion.

*c.* The prohibition of registration is not so serious, now that the data in *b.* have been received throughout the brigade.

*d.* The need no longer exists for improvising units and removing officers and men from their normal duties, in order to coordinate the survey work of the brigade. The coordination is guaranteed by trained specialists.

It is well to note here that this brigade platoon takes over none of the survey functions of the lower units, but coordinates and extends their efforts. Such a platoon's usefulness is not only confined to operations in unmapped or poorly mapped territories, for where controlled maps are available, the existing control can be extended into each battalion area, thus facilitating and expediting their survey operations.

Care must be exercised that such a platoon does not result in immobility. For example, during a tactical exercise held in Great Britain, which consisted of a river passage by a brigade in the face of weak opposition, contact with the enemy was expected at dawn the next day. The artillery arrived in position late in the afternoon and the artillery commander stated that, because only a one-inch map was available, at least six hours of daylight were necessary for him to

complete his survey, and so there was little possibility of the delivery of any effective supporting fire at dawn. We must not place ourselves in such a position—survey is but a means to the end; namely, to support the infantry with fire when and where it is wanted and under all conditions. It is to guarantee this support that the addition of a survey platoon is recommended. If the time for a complete survey should not be available, it should progress piecemeal. In order to prevent a situation such as occurred in the British tactical exercise, the employment of the brigade platoon should be set forth in a Manual on Artillery Survey, which would cover not only the technique of survey but the tactical employment of survey details in varying situations.

The brigade survey platoon would have duties in addition to coordinating the firing charts of the battalions. For example, on obtaining photos from the Air Corps it could be this platoon which would assemble the photos into mosaics and furnish to the subordinate units a controlled mosaic. This function for artillery units is one indicated by the policy of the Chief of Field Artillery.

"If lack of an accurate map should require the use of a controlled mosaic for firing purposes, such as has been used at the Field Artillery School in instruction which assumes no other more accurate form of map to exist, the Chief of Field Artillery believes that the provision of photographs therefor should be a function of the Air Corps units under orders of the local high command—an expansion of the system supplying intelligence photographs—the assembly into mosaics to be performed by the Field Artillery units concerned. This is in accord with the principle heretofore brought out, i.e., non-divergence of the activity and effort of the Corps of Engineers from its primary ultimate objective—a complete

## THE FIELD ARTILLERY JOURNAL

and accurate map."

As a basis for an experimental peacetime organization of this survey platoon, the following is a possibility. Since July 1, 1937, there has been in each brigade headquarters a meteorological section consisting of four men and one officer, with the function of supplying to several posts metro data when required for firing. Each metro officer could also act as a brigade survey officer by adding four to six men and the essential survey instruments to the present metro section. Then, in addition to furnishing metro data, the section could, while at the posts within its area, function as a survey platoon. This would give to all artillery units an opportunity to work out problems with situations similar to those outlined below.

A method of obtaining control quickly and with fairly accurate results was tried during General Field Exercise Number 8 at Fort Sill, Oklahoma in June, 1936. Two parties, each equipped with the survey instruments now available and with SCR 194 radios, took positions at two well-separated points, both on commanding terrain and in the position area. The coordinates of these points were determined by calculation from an intersection using a short base line, the ends of which had been assigned arbitrary coordinates by the acting brigade survey officer. Several station wagons, each equipped with SCR 194 radios, were posted at various critical points. By radio communication between the roving station wagons and the two survey parties, it was easily determined when the vehicle was visible to both parties. The station wagon was then located by simple intersection methods and upon a radio signal from both survey parties, it proceeded to another predesignated point. Numerous points were located within a short period and thus from nothing there

was developed a firing chart, with sufficient control to enable the artillery to restitute targets from air photos and to conduct fire under all circumstances. This work was done by an improvised brigade survey section which it was found necessary to organize in order to augment the existing ground control furnished by the Engineers. How much better it would have been to have had a platoon already organized and equipped for such work.

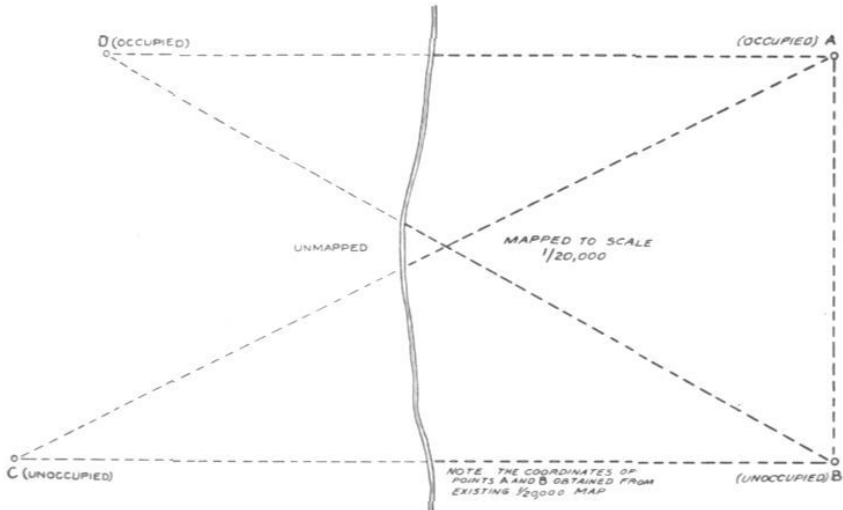
On the same exercise in June of 1937, the brigade headquarters was allotted a survey officer and a section of five men, equipped with transits for angle-measuring instruments. In the 1936 solution of the same problem, the obvious disadvantage was that the firing charts of the brigade, although coordinated, had no relation to the existing control on maps for adjacent territory. In order to remedy this, a base line was selected in the mapped area from which the artillery was withdrawing; the ends of which were triangulation markers on two commanding hills. (Points A and B, in the figure.) So the problem consisted in extending this control to the rear a distance of some eight miles. Two points, visible from both A and B, were selected in the new position area, shown as points C and D. Stations A and D were occupied by parties with transits. The party at A read the angle BAD and angle BAC, and also the vertical angles to points C and D. The party at D read angle ADB and angle BDC, and the vertical angles to A, B, and C. The solution of two triangles then resulted in the coordinates of points C and D; and from the vertical angles there was obtained the altitudes of the two points.

This work was done almost entirely after dark and yet the locations were accurate to within two yards in one case and eight yards in the other case.

The party at A then moved forward



## ARTILLERY MAP-MAKERS



to point C, and by intersection from points C and D, sufficient points were located both horizontally and vertically to enable the battalions to initiate their own survey work.

As each battalion located additional points, an overlay of the battalion survey was furnished the brigade survey officer, who then distributed that information to the remaining battalions of the brigade.

The result of the survey was a firing chart that, when augmented by points determined by restitution from air photos, was completely sufficient in itself for the firing requirements of the entire brigade.

### V

I have reviewed the value and effectiveness of coordinated survey in the task of the artilleryman—supporting the infantry by fire. The present survey procedure is admirably suited to operations in mapped areas, but in unmapped or poorly mapped theatres of

operations, dependent as the Artillery is upon the Engineers and Air Corps for basic control, without which the effectiveness of unobserved fire is very greatly reduced, the present survey procedure has been found to be inadequate. When basic ground control is not forthcoming, there exists a definite gap between the Engineers and the Artillery which at present can be filled only by makeshift, inadequate means. It has therefore been found advisable, in order to fill this gap, to recommend as an addition to the artillery brigade a platoon, trained and equipped to perform accurate survey, to work well forward and to provide for each battalion the necessary data in order that at all times and under all conditions the artillery can "Support the Infantry by fire."

NOTE: The principles outlined above would be equally applicable if the divisional artillery were reduced to a regiment of four battalions.

# Mechanized Field Artillery

## Its Organization, Functioning, and Tactical Employment

BY MAJOR B. H. PERRY, 68TH FIELD ARTILLERY

IN treating of the subject which has been assigned to me today, I shall attempt to present a picture which may prove of assistance to you in understanding the functioning and tactical employment of the Mechanized Brigade as a whole.

Just as Mechanized Cavalry is Cavalry and is charged with essentially Cavalry missions, so Mechanized Field Artillery is but a particular type of Field Artillery, charged with the usual field artillery missions. For the mission of all field artillery is to support, by fire, other arms, usually cavalry or infantry. In our case, of course, we are charged with the support of mechanized cavalry.

### Organization

There is a tendency to regard mechanized artillery as essentially different from division light artillery. Of course there are differences, but they all are results of environment and necessity. For we must, in order properly to support mechanized cavalry, take into account those characteristics of mechanized cavalry—mobility, fire power and shock action—which set it apart as different from horse cavalry; and especially as different from infantry tank units. We must be so organized, equipped, and trained as to permit us to support a force which marches tremendous distances at high speed and attacks with great rapidity; but which itself cannot promise to mop-up the enemy.

There are certain other factors which have influenced the organization of mechanized field artillery. The first is the outstanding characteristic of all artillery—fire power. We must have a sufficient number of artillery weapons to enable us to place an immense quantity of explosive projectiles on a designated target. The second is mobility, in order that the weapons may be moved about and placed into positions from which fire may be delivered on the target. The third is communication, so necessary in order that commands, tactical or technical, may be given to artillery echelons. Around these factors our organization is built.

The 1st Battalion 68th Field Artillery was originally organized in December, 1934, as an experimental battalion, to determine the tactics and technique, as well as the equipment, needed to permit adequate fire support to be furnished to mechanized cavalry. Starting with a small nucleus of men drawn from older field artillery regiments, the battalion, consisting of a Headquarters, Headquarters Battery, and two firing batteries, had a strength of but a few over 300 men. As more men became available the strength of our batteries rose, but restrictive legislation prevented the formation of more batteries, even though we felt that they were necessary. It is true that when

*A Conference Given at a Session of the Officers' Tactical School, Seventh Cavalry Brigade*

## MECHANIZED FIELD ARTILLERY

but the 1st Cavalry was present in the brigade, two gun batteries were probably sufficient to furnish the needed support. But with the addition to the brigade of the 13th Cavalry, the need for additional fire power became apparent to all. It was at this time represented to the War Department that only if the artillery were actually present in proper strength could the technique of support and the tactics of the mechanized brigade itself be properly determined. In the end, the War Department was able to see its way clear to further the development by providing substitute equipment and more personnel with a fair allotment of grades and ratings. We therefore were able to reorganize the battalion on November 1st, past.

The new battalion is the only mechanized field artillery in our service, and is composed of a small Headquarters, a combined Headquarters and Service Battery, and four howitzer batteries. The authorized strength of the battalion is 615 enlisted men; the strength in officers has not yet been definitely fixed, although apparently it will be 32, excluding attached medical, etc.

The battalion is commanded by a colonel, who is assisted by a small staff. In order that he may exercise proper control over his howitzer batteries on the march and in action, and may care for and administer it in garrison and in the field, a composite Headquarters and Service Battery has been provided. By far the largest section of this composite battery is the Headquarters Battery section. This section provides transportation for the battalion commander and staff, the communication and command-post facilities and personnel, and the usual housekeeping details, such as messes for officers and men.

The Service Battery section is charged with the procurement and

transportation of supplies, other than ammunition. It is directly under the battalion supply officer for training and control, but not for administration. The combat train, existing in peacetime at reduced strength, is charged with the procurement of ammunition, its transportation, and its delivery to the firing batteries to replace expenditures. The Motor Maintenance section is organized so as to assist the batteries in the performance of first- and second-echelon maintenance. It consists of a forward echelon, which tails the combat elements of the battalion on the march and renders assistance to them, and a rear echelon, which tails the trains and assists them. This section is in charge of the battalion motor maintenance officer.

Although this composite battery has no fire power, except small arms for its own close defense, it fills an important place in the command and administrative functions of the whole battalion. It really is an important cog in the machine. As at present organized, however, this composite battery is rather unwieldy. This is due to the difficulty of controlling, training, and administering sections which have such diverse duties and which, in action, operate on different parts of the battlefield. For instance, the headquarters section will usually be found well forward, supplying the battalion commander and his staff with transportation and communication; while on the other hand the service section will usually be found with the trains at the service park. We recommended, and hoped the War Department would approve in ordering our recent reorganization, that the Headquarters Battery and the remainder; that is, the Service Battery, with the Combat Train and Motor Maintenance included, should be separated. Although practically

## THE FIELD ARTILLERY JOURNAL

enough personnel was provided, the separation was not ordered or authorized. We shall continue to represent the need therefor to the War Department, in the meantime separating the two, insofar as Army Regulations will permit, for operation.

The four gun or howitzer batteries, of course, provide the real fire power of the battalion. Eventually each of these batteries is to be armed with four 75-mm. howitzers of latest design, capable of being towed at high speed behind prime movers. At present, because of delays in

behind deep defilade, or to fire directly on visible targets. The howitzer shell is provided with a fuze which may be set for instantaneous or slight delay action. For the gun, three types of ammunition are provided; the shrapnel, the high-explosive shell, and the chemical or smoke shell; each being provided with appropriate fuzes.

The prime movers used in our old batteries to tow their howitzers are half-track trucks; in the new batteries, four-wheel-drive trucks are being used at present. A comparison of the road and



### **75-mm. HOWITZER WITH HALF-TRACK TRUCK, T-5**

**The prime mover has a 6-cylinder motor developing 125 HP (block test). Cargo load 3,600 lbs. Passenger capacity, ten.**

procurement, two of the batteries have the howitzer, while the other two are armed with the 75-mm. gun, temporarily. Each battery carries with it into action about 125 rounds of ammunition for each gun or howitzer. Two types of ammunition are at present provided for the howitzer, the shrapnel and the semifixed shell. By semifixed, I mean that the shell is but loosely fitted into the cartridge case, thus allowing the two to be separated and the amount of propelling charge to be varied within certain limits. This variation in the propelling charge changes the form of the trajectory, making it possible to have a steep or flat trajectory; and thus enabling the weapon to drop projectiles on targets

cross-country mobility of these types of prime movers during the next few months may go far in determining future equipment of the battalion, and possibly of division artillery as well.

The battery also has within itself personnel and equipment for fire control and communication purposes. While, in the mechanized artillery, we rely on radio as our primary means of communication, we recognize the need of other means as auxiliaries. Accordingly, the battery has a small telephone detail and personnel trained as messengers and in the use of signal flags. The communication and fire-control personnel together make up what we know as the Battery Commander's Detail.

## MECHANIZED FIELD ARTILLERY

I have mentioned the use of half-track and four-wheel-drive trucks as prime movers by the batteries. In addition thereto, scout cars are used for transportation of personnel and radio equipment by the old batteries and by Headquarters Battery; the new batteries are to be provided with station wagons and trucks for these purposes. Trucks are of course also used for supply purposes and as ammunition carriers in the Service Section and Combat Train, and throughout the battalion as kitchen trucks; all in all, too many types of vehicles for efficient operation. It is hoped that in the future a reduction in this number may be made.

To sum up: We have howitzers and guns to provide fire power, high-speed motor equipment to provide mobility, signal equipment for communication purposes, and sufficient personnel efficiently organized to man this equipment.

### **Functioning of Mechanized Artillery**

As I stated earlier in this conference, the three factors—fire power, mobility, and communication — are the pegs upon which our organization is built. They are likewise the bases of employment of artillery, and are in reality interdependent. Each of them is important; without any one of them the others are rendered less effective or useful, if not impotent. Fire Power, for instance, without the mobility needed to place the weapons in suitable locations from which to bring effective fire to bear on the target, is of little value. In order to appreciate this interdependence, let us examine the functioning of mechanized artillery.

In order that he may intelligently plan for the employment of his battalion, the artillery commander must have every bit of hostile and friendly information he can

get; he must know the plan of action of the cavalry; he must in particular know how the cavalry mortars and machine guns are to be used; and finally he must know where the artillery fires should be placed in order to be of maximum benefit to the brigade. Likewise, the battery commanders must know the situation, where their fires are to fall, where the batteries should be emplaced, the amount of time, if any, available for preparation of firing data or for preliminary firing, the location of observation posts from which direct observation of the target area is available, and kindred information. How is this information made available to the battalion commander, to his staff, and to his battery commanders?

Suppose we take a typical example of action of the Mechanized Brigade and try to visualize the part played by the artillery. Assume that the brigade is marching to meet the enemy with a mission which demands speed and offensive action. Let us further assume that contact is expected within a day.

Last month Captain I. D. White gave you an excellent picture of the functioning of the Reconnaissance Troop, particularly in the advance. You will remember he stated that the troop normally leaves bivouac at least an hour in advance of the main body. With uninterrupted travel, this results in the troop preceding the main body by 25 to 50 miles, reconnoitering the main route of advance, seeking signs of the hostile approach and, by frequent reports, keeping higher headquarters informed of its whereabouts and of the situation. The march of this troop affords an opportunity to see the terrain over which the advance is to take place and on which battle may be joined. Accordingly, it is of sufficient interest to the artillery to justify sending with the troop one or more reconnaissance officers. The number sent depends

## THE FIELD ARTILLERY JOURNAL

upon the width of the zone of advance, the road net, and the probability of contact with the enemy. These reconnaissance officers attach themselves to the commander of the troop or to platoons or sections of the troop, preferably to those thought most likely to make hostile contact. As they move forward, each studies the terrain passed over, the ground forms, the condition of the roads, the hostile and the friendly situation. When contact is made, each estimates the situation, learns whether the reconnaissance troop will attempt to brush aside the hostile resistance, if it will remain in observation, or will sideslip the enemy. The reconnaissance officers then report by radio to the battalion commander, in order that the latter may be fully informed of the situation and the probability of intervention. If it appears that the hostile resistance is such as to make it probable that the reconnaissance troop can not by itself clear it away and that the main body may have to fight in order to continue its forward movement, the reconnaissance officers immediately seek suitable position areas and observation for the artillery to cover the probable subsequent action. They then inform the battalion commander of the general location of these areas and ask for instructions. If one of these reconnaissance officers is ordered to return to meet the battalion commander (and this is the usual course) he does so, looking for other position areas as he comes, in order that the artillery commander may be able to select those areas best fitting the brigade commander's plan. If he is not ordered to return, he remains forward either with the reconnaissance troop or in observation by himself, and continues to send such information of the changes in the situation as he is able to determine from time to time. It often will happen that he

will find himself in a position from which he may act as forward observer to observe the fires of the battalion, and by reporting upon their efficacy be of great assistance to the batteries.

The next party to the rear in the march of the mechanized artillery is the battalion commander, who, with his plans-and-training officer, when action is imminent, is with the brigade commander. Through his reconnaissance officers and the brigade communication system, and by conference with the brigade commander, the artillery commander is constantly informed of the situation and should be able to foresee the action that is to take place, even before the orders of the brigade commander clarify the part the artillery is to have in the perfected plan. Through his own communication agencies he keeps his staff and battery commanders in touch with the situation, in order that they also may be ready for action when ordered. From time to time the brigade commander will call on the artillery battalion commander for recommendations as to the use of the artillery in the present circumstances. The battalion commander must be prepared to give this advice at once and freely; the ultimate decision is of course that of the brigade commander.

When the orders of the brigade commander have been received, the battalion commander, either directly or through his staff, supervises the occupation of position by the batteries and the delivery of initial fires. He then returns to the post of the brigade commander in order that the further wishes of that commander may be received and carried out with dispatch.

The march of the battalion is ordinarily conducted by the battalion executive, who, with the remainder of the staff, marches at the head of the battalion

## MECHANIZED FIELD ARTILLERY

proper. When action is imminent and it is apparent that orders for the occupation of position will soon issue, the battery commanders are ordered to leave their positions in column, and to direct their batteries to be marched by their battery executives under supervision of the battalion executive, while they, with a small party, go forward to meet the battalion commander or his representative. This representative may be one of the reconnaissance officers or the plans-and-training officer. The situation is explained to the battery commanders, position areas are assigned, the location of ground observation is indicated and initial targets, if known, are assigned. The battery commanders then select the actual battery positions and, leaving markers there, move to positions from which direct observation of the target areas is possible. Preferably this observation should be as close to the battery as it can be found. Here each calculates data necessary to place the fire of his battery on the assigned targets, and observes the area in question to determine other possible targets.

In the meantime, the march of the firing batteries has continued up to a point where, in order that they may go to their several positions, they must be released from battalion control. They then march directly to the assigned areas and take position as ordered by the respective battery commanders, who meanwhile have sent data for the opening of fire.

The battalion executive, having released the firing batteries, establishes the battalion command post as directed by the battalion commander. We make a point of locating this command post rather close to the firing-battery positions, for ease of communication. The command post, or its component, the fire-direction center, is the nerve center of the

battalion in action; upon its smooth functioning largely depends the efficiency of support in any situation involving concentration of fires. We require each battery under battalion control to report to the fire-direction center, on the conclusion of fire on each target, the adjusted data for that target. These data are recorded and plotted. Based on several such recorded fires, it soon becomes possible for the battalion commander to concentrate the fire of all batteries on subsequent targets in the area with a minimum expenditure of time and ammunition.

At the command post is therefore centered a considerable portion of fire-control traffic, including all orders from the battalion and higher commanders to the batteries. A skeletonized message center, as well as panel and pick-up grounds, is established nearby. In order to relieve the radio of as much traffic as possible, auxiliary means of communication, such as wire circuits, are used from here to the batteries, when time permits.

I am especially anxious that I do not give you the impression that we are making a fetish of centralization; or that thereby the battery commander never controls the fire of his battery. On the contrary, an alert battery commander will find many opportunities to fire on targets discovered by himself while observing the battlefield. And we expect him to take these targets under fire, unless his battery is firing at targets assigned by the artillery commander in accordance with the desires of the brigade commander. Even so, if he discovers a target of greater importance to the success of the whole force, he should act on the time-honored principle that subordinates must take such action as they believe the higher commander would have ordered had the latter been present.

## THE FIELD ARTILLERY JOURNAL

Nor do I mean to indicate that we always use the fire-direction center. As a matter of fact, I am convinced that in mechanized artillery the usual case will be for all batteries to be well up, with most of the firing being controlled by the battery commanders themselves; hence a fire-direction center will not always be necessary. This I believe to be true due to the rapidity of action of the force as a whole.

As the cavalry regiments are given their missions and move to their appointed places, the artillery commander attaches to each a liaison officer. The duties and responsibilities of this officer

furnish this information. In actuality, I believe that with mechanized artillery, the greatest service both to the cavalry and to the artillery that the liaison officer can perform, is his ability to see and sense the point of fall of the projectiles. Being generally quite close to the target area, he may inform the artillery of the effectiveness of the fire, and, if observation from other points is rather restricted, he may observe and sense each round that falls, communicating by radio to the battery such errors as occur. Actually this method of conducting fire is so simple, when the observer is close to the target, that great use is made of it, as it saves time



**BC GROUP MOVING FORWARD IN FORT KNOX MANEUVERS**

**Note smoke of artillery fire in background.**

are many. Primarily his duty is to insure the necessary artillery support for the unit to which attached. He accomplishes this by keeping the artillery thoroughly informed of the dispositions, activities, and needs of the supported unit and the situation in its immediate front; keeping the supported unit thoroughly informed of the artillery plan of support; and by assisting in the maneuvering of the fire of the battalion. He should advise the cavalry commander of the capabilities of the artillery to furnish support, and, in case a battery of artillery is attached to the cavalry regiment, advise as to the best use that may be made of it, if the battery commander himself is not at hand to

and ammunition. As Captain White hinted the other day, during the Second Army Maneuvers of 1936, at least one of his cavalry officers used this method of obtaining fire on a desired target.

I shall not go into detail on the establishment on communication. You are all familiar with the difficulties encountered in this brigade in maintaining communication. The paucity of available frequencies and the terrific punishment taken by radio sets in hard cross-country going are greatly to blame for our difficulties. But I do want to mention the essential communication channels we must use, leaving to others their provision. In the



## MECHANIZED FIELD ARTILLERY

first place, the artillery commander must have a channel over which he can exercise command over his subordinates and receive information from them and from his reconnaissance agencies. Then each battery commander must have a channel, distinct from that of the battalion commander, over which he can transmit his commands to his firing battery and receive information from his subordinates. In addition there should be channels over which the liaison officers can communicate with the fire-direction center or with the batteries direct. Although it is most desirable that the liaison officers each have a separate channel, it is realized that the number of frequencies available in the band of present equipment may temporarily prevent such provision. The reconnaissance officer does not need a separate channel, although traffic on the battalion command channel may prevent his using it freely; this is not as serious as it sounds, as the peak loads of reconnaissance and command use are not reached at identical times. Another channel is needed for artillery-air communication when planes are available. Now I do not insist that all of these channels are always equally important; that would not be reasonable. Nor must they be provided at the expense of the cavalry units; but I do wish you to consider these needs and realize that the efficiency of operation of the artillery, and its ability to render maximum support, suffer when one channel is made to do the work of two or more. We have tried to lighten the load on our present radio channels by using direct wire communication without switchboards whenever and wherever possible. However, in doing so, we insist that the installation of such circuits must not delay the opening of fire; radio must be used in the initial phases of the

occupation of position; as wire becomes available the load is shifted thereto. In this connection, at present we are so short of radio equipment, the new batteries being provided with none, that we have found it necessary to use old hand-generator sets in communicating with them in position. On the march, only motorcycles are available in the new truck-drawn batteries for this purpose, as we haven't enough scout cars to permit of our furnishing any to these batteries for the present.

I have tried to picture the functioning of the artillery as it goes into action in support of an attack. Obviously, if the attack is successful and is to be continued, the artillery must eventually displace forward. While in general, the same series of actions again takes place, the period of displacement is one fraught with danger, not only to the cavalry by reason of diminished artillery support, but also to the artillery as it moves from one position to another. Accordingly, it is imperative that the displacement be timely, and that it be made with as great rapidity as is consistent with efficiency. It is also important that all of the artillery be not displacing simultaneously; some must remain in position to protect the cavalry in its assembly positions. Prior to the initiation of the actual displacement it should be known whither and when the displacement is to take place; observation should be pushed up to the front; if possible the artillery should be given a clear road from one position to another. By taking these precautions the dangers will be greatly diminished.

What I have said thus far has presupposed that the four batteries were all under battalion control. It will frequently happen that one or more batteries will be detached from the battalion and attached to cavalry units. This attachment will usually be made

prior to the deployment of the brigade, before the cavalry regiments leave the march column. As soon as the battery commander is notified that his battery is attached to one of the cavalry regiments, he contacts the cavalry commander and discusses the situation with him. He learns where his battery is to march in the march column and orders his executive to place it there. He accompanies the cavalry commander on his reconnaissance and, after learning the cavalry plan of action, makes recommendations as to the use to be made of his battery. He should be careful to learn where the machine gun troop and the mortar platoon are to be used, and make sure that their fires and his are well coordinated. Having determined where his fire is to fall, he should select a position for his battery from which these fires can be laid down most effectively. In general, we prefer a position slightly off the flank of the cavalry movement, in order that the fire may not be masked until the last moment before the attack goes home. As the attack progresses and the battery is no longer able to fire on its initial targets, the question of displacement arises. It will not always be wise to displace the battery on the heels of the combat cars, due to the possibility of hostile counterattack on the cavalry in its assembly area. If the battery commander, or his reconnaissance officer, has gone forward immediately in rear of the assault, the fire of the battery may quickly be brought to bear on such hostile targets. Of course, if the attack is successful and no counterattack is realized, the battery hastens to rejoin the cavalry and take part in future action, unless the original orders of the brigade commander have directed a reversion to battalion control at this time. It is well for the battery commander to come to a definite understanding with the cavalry commander as to when and where he is to

rejoin. Unless there is no choice of routes over which to make his displacement, the battery commander will usually find that a slightly longer route over favorable terrain will save time in rejoining.

### **Tactical Employment**

At the beginning of this conference I stated that the mission of mechanized field artillery is to support, by fire on the battlefield, the cavalry elements of the brigade. This is true regardless of the mission of the brigade, and regardless of the type of action in which it is engaged, be it the mounted attack or the fire fight. It is generally conceded that artillery is entitled to look for its protection to the troops it is supporting; this protection sometimes is afforded by the location of the artillery with respect to the mass of the command, and sometimes by the location of the force reserve. In the mechanized brigade we may not always be able to obtain this protection. The proper tactical employment of mechanized field artillery requires a highly self reliant force so equipped, so commanded, and so maneuvered as to be a source of aid and maximum support to the mechanized cavalry, while causing as little diversion as possible from the operations of the main force in insuring the safety of the artillery.

Artillery tactics really amount to movements to place the firing batteries into positions from which adequate fire may be placed where it is desired, and the delivery of that fire. There are certain well-established principles which should govern the operations of field artillery. Three of these are so vitally important to us that I wish to discuss them briefly and then touch on conditions favorable to their attainment. In stating them I shall reword them so as to make them directly applicable

## MECHANIZED FIELD ARTILLERY

to mechanized field artillery.

The first principle is: *Artillery with the Mechanized Cavalry must be readily available for early entry into action*, and, similarly, it must expect to remain late. Artillery is capable of exerting, by its fire power, considerable influence on the course of an action. Placed into action early, it may be able to cause premature development and deployment of hostile forces, or at least so slow up the advance of the enemy as to permit the fighting of the battle on ground of our own choosing. The decision to place the artillery into action early, in support of the advance guard, for instance, must be made by the brigade commander. He must not be hampered in making this decision by the nonavailability of the artillery. As to the artillery remaining in action late, the flexibility and long range of artillery fire permit of accompanying by fire a mounted attack for considerable distances without the necessity of changing battery positions; this characteristic is of especial value when withdrawal from action is forced on our troops, or in delaying action.

The second principle is: *Mechanized artillery must be so emplaced that it can render close and effective support to the attacking echelons throughout the action*. While the amount of artillery with the brigade has recently been increased, there still exists the necessity for making full use of what we have. The maximum fire power of all batteries will be needed in order to give the attacking echelons adequate support, unless the enemy is known to be weak. This support must be given over as long a period of time as possible, in order that the cavalry may not meet a superior enemy at the objective.

The third principle, although self-evident, I repeat because of the number of times this question has arisen:

*Mechanized artillery must consider its most important targets those most dangerous to the cavalry at the particular time*. I do not refer, of course, to natural or artificial obstacles which can obstruct the path of the combat cars, causing them delay; but rather to weapons or personnel. In general, the targets most likely to prove most dangerous are artillery and antitank weapons. As artillery, unless used as antitank weapons, will usually be well hidden from our observation posts, we will generally be forced to use observation aviation for the purpose of observing and reporting on our fire. Antitank weapons, if skillfully used, will be concealed until the attack jumps off; they will seldom be located sufficiently closely prior to our attack to permit of our destroying them; neutralization of suspected localities is about all that can be done. As a matter of fact, although we always are pleased when our fire causes destruction of hostile materiel, we usually will have to be satisfied with neutralization of hostile fire by preventing the enemy from using their weapons.

I believe this is a good opportunity to take a moment to indicate why, when time is pressing or ammunition is none too plentiful, we resort to neutralization rather than seeking destruction. Both of these conditions are present with us, due to the rapidity of action of the brigade and the small amount of ammunition we can carry into battle. When conditions as to observation, communication, etc., are favorable, a bracket adjustment, which is the basis of zone fire, sweeping the area in which the target surely is located, should not take more than two minutes; and, with an expenditure of 30 to 40 rounds of ammunition, fairly good results as far as neutralization is concerned, can be obtained in a total

## THE FIELD ARTILLERY JOURNAL

elapsed time of say 5 minutes; and by chance we may happen to hit and destroy the target. Under similar conditions of observation, destruction fire will almost certainly require greatly increased time and a prohibitive ammunition expenditure. For to neutralize, you merely have to come close enough to the target to cause personnel to vacate; to destroy requires direct hits. Neutralization will just as effectively fill our needs as actual destruction, considering the short time the Brigade will be in action.

Now in order that we may comply with the principles I have mentioned, several conditions must be met in our operations.

First: *Artillery should march well toward the head of the main body.* It is not necessary that the entire battalion march near the head of the main body, although I do think that all combat elements of the battalion should not be farther to the rear than the interval between the cavalry regiments. But at least one, and preferably two, of the firing batteries should march practically at the head of the main body, preceded only by a small protective group of cavalry. In this way some artillery would be available for rushing into position in support of the advance guard, and all of it would be able to occupy positions and cover the deployment of the brigade.

Second: *Artillery should occupy positions well forward, with direct observation from near the guns.* These forward positions should also be such as to permit of the guns being pushed forward into direct-fire positions. Several advantages accrue as a result of such locations. In the first place, a certain amount of protection is afforded by the proximity of the cavalry, up to the time the attack is launched. And then, the location of the observation posts close to

the batteries simplifies the problem of communication and control. And, finally, although control of fire by the battery commander results in more accurate fire than does control by the chief of section, the irregular progress of the combat cars prevents close firing in advance of the cars, unless each gun is individually controlled. It is, therefore, advisable to have the guns so emplaced as to permit of this control in the crises of action.

Third: *Reconnaissance and liaison officers accompanying the forward echelons of the brigade must obtain the necessary tactical and technical information to insure timely occupation of position and opening of fire.* This information must be transmitted to the battalion commander in time for him to make proper use of it in directing the occupation of position. In this connection, it is pertinent to remark that it is of course necessary for the brigade commander to keep the artillery commander informed of his intentions; especially as regards the general plan of action and where and how he desires the artillery to support the brigade. Without such early information, the occupation of proper positions is rather a matter of chance.

Fourth: *Close coordination must be maintained between artillery fires and those of the cavalry machine guns and mortars.* These fires are often supplementary one to the other; one covering the front not covered by the others. Ordinarily it would seem to me that the targets of the artillery and of the smoke mortars should not be the same, and might even be on different parts of the terrain. It is quite probable that the main fire mission of the artillery during the early stages of an attack will be to smother the objective with high explosive, thus preventing hostile movement and their use, against the oncoming combat cars, of such

## MECHANIZED FIELD ARTILLERY

antitank weapons as they have on the objective. I believe the enemy will, if he has sufficient time to do so, place the majority of his antitank weapons, not in the path of the combat cars, but rather on the flank, where they may attack them in flank as they move forward against the main position. Hence it seems to me that the mortars should place their smoke so as to blind these flank weapons, leaving to the artillery the smothering of the objective. Experience has taught us that the presence of smoke on certain parts of the battlefield may obscure artillery observation and thus prevent the batteries from firing effectively on their assigned targets. Especially is this so if the proposed location of the smoke is not known in time to permit the choice of alternate observation points, or where the wind direction has changed suddenly.

Fifth: *The organization of the artillery must be flexible.* The artillery must be available for use in general support of the entire brigade or in direct support of one or more units thereof. In addition it must be so organized as to permit one or more batteries to be attached to the attacking echelons. The main advantage of the attached battery is the ease of communication between itself and the supported unit, and thus the increased rapidity of furnishing needed support. A secondary advantage is the fact that the battery commander, moving with the assault echelon, or closely behind it, can determine the apparent needs of the unit without the necessity of being told, and can therefore bring suitable fire to bear on sensitive points. It must be understood, however, that the attachment of batteries reduces to a considerable extent the fire power under the control of the brigade commander. Often this reduction is not repaid by the increased battle efficiency

of the unit to which the attachment was made. Each case of attachment should therefore be considered carefully by the brigade commander; if attachment seems necessary after a full consideration of all factors involved, then the attachment should be made without hesitation. As a general rule attachment is not justified if the battery, under battalion control, can carry out the mission and be available for other missions as well. However, I believe that the attachment of batteries will more often be justified in the case of mechanized field artillery than in the case of division field artillery.

Sixth: *For communication, primary dependence must be placed on radio.* On the march and in the early stages of occupation of position, two-way radio communication has proven itself invaluable. We must have speed in our communication, in its installation and in its use; nothing approaches radio in these respects. However, in order to reduce the burden on radio installations as far as is consistent with efficiency, auxiliary means, such as motorcycle messengers, wire and visual signals, will be used where and when possible.

Seventh: *Artillery observation personnel must be pushed forward with the attack.* Fire in support of the attacking echelons must be continued even after the first ridge line has been crossed; but it must be observed fire, else accidentally we may fire on our own troops and destroy the cohesion of the attack. Until the batteries themselves can displace, their forward observers, assisted by liaison officers and aviation, must control the fire.

Eighth: *While the attack echelons are reforming the artillery must cover them from counterattacks.* At this time the brigade is most vulnerable; artillery must not fail to provide protection. It is therefore essential that all of the

## THE FIELD ARTILLERY JOURNAL

artillery be not in the act of displacing at this time. In all probability the assembly of the cavalry will take place well within the range of the artillery, firing from its initial positions.

Ninth: *The artillery must be ready to act on information of hostile movements and formations furnished by aviation.* To state this somewhat differently and emphasize the other side of the picture, *observation aviation must be prepared to observe artillery fire on targets discovered by the aviation.* This is especially important after the attack of the cavalry has been launched, for then movements of the enemy countering an attack must be met with powerful artillery fire in the shortest possible time. We won't be able to wait until such movements have come into our field of observation. In order to effect this necessary cooperation, a plane must be made available as soon as action is imminent, and air-ground communication must be reliable and rapid.

Finally, *the artillery must work at top speed in all phases of its operation.*

This is particularly true in its preparations prior to entry into action, its entry into action, its actual firings, either

in preparation for the attack or in support thereof, and during displacements. There will be little time for refinements in the selection of positions, or for the location of and firing on auxiliary targets. In fact there is a real need for speed; and speed will dictate the abandonment of all nonessential technique.

To sum up Tactical Employment: The brigade commander should be responsible that: Artillery march well forward in the march column; its fires be coordinated with cavalry fires; its displacement be not ordered at critical times; and that it be furnished assistance by aviation. For our part, we should see to it: That positions are well forward, with nearby observation; that artillery officers accompanying forward echelons of the cavalry obtain and transmit timely information; that our organization remain flexible; that our communication systems are in order; that observation personnel push well forward; that we cooperate with aviation; and that we work at top speed.

If these conditions be met, we shall continue to keep pace with the advance made by the cavalry, and we shall be able to fulfill our mission, the support of Mechanized Cavalry.



**ARTILLERY HALF-TRACK TRUCK FORDING STREAM  
DURING MANEUVERS, FT. KNOX, KY.**



FIRST SERGEANT  
MULDOWNEY OR WHATEVER  
HIS NAME WAS . . .

ONCE I read a piece by a philosopher to the effect that, quite early in life, all men of any intelligence adopt a role to play and, come hell and high water, they play it to the finish.

I believe this to be true, because quite early in life I adopted a role and, to a certain extent. I am still playing it, else I would not be writing this article for the *FIELD ARTILLERY JOURNAL*.

It started down on the farm. It was a late afternoon in June, 1896. The old man and I were haying, and from my OP on top of the load I glanced across a terrain I loathed—and observed, debouching from the mouth of a distant canon through which the

country road ran, a long queue of horsemen in blue, riding in column of twos. They boiled out of that canon like a tapeworm, stirring up the gray dust that lay four inches deep. So I said to the old man. "Pa, what the hell is all that?" And Pa said: "Damn you, how often have I told you not to swear? That's United States cavalry."

I watched them and suddenly the column turned down the lane toward our place: I yelled to Pa: "Hurry up. Let's get this hay unloaded. They're coming to call on us."

My old man never used strong language. He simulated it. "Dang my buttons," he declared, "you're right. I bet they want to

## TO THE FINISH

BY PETER B. KYNE

## THE FIELD ARTILLERY JOURNAL

camp in the lower pasture and water in our creek. Unhitch the team. We'll unload tomorrow."

I unhitched the team, mounted one of the nags bareback and larruped him home to the barn; I was in the farm yard when an individual who said he was a Major Whistlebritches rode in and allowed he was commanding a squadron of the Fourth United States Cavalry on a practice march, and could his command camp in our field and would my old man furnish fuel to cook supper and hay for the animals and it would be paid for.

My old man said "Why, of course! Welcome, and no charge for the use of the field and if it were not for the hard times (we were hip-deep in the Cleveland panic at the time) I wouldn't charge you for the fuel and hay."

Cripes, what a perfect end to a long hard day! I watched the squadron boil in from the lane, form in columns of troops (I think there were four) and sit there all so even and quiet. Then a bugle blew and two hundred and fifty right legs waved a brief moment over the backs of the horses, as the squadron dismounted.

"By God," I said to myself, "some day I'll wave my leg like that, too."

They had the picket lines up about five minutes after a long pack train of chunky black mules with mealy noses came mincing in; details fell on our wood-pile while the rest of the outfit unsaddled and wiped off their horses; after the horses were cooled out they led them, not down into the creek, but to our watering trough, and I pumped and pumped for them and was proud of it and the lazy rascals let me pump myself clear out, too. They never suspected I'd been shoveling hay since 7 o'clock that morning. They all had a feed of oats in the *moralles*, as we called them in that Hispano-Californian community—but they were nosebags in the army.

I wanted very much to eat with the troopers but I had the blasted cows to milk, so I drove them into the shed under the watchful eye of a most magnificent first sergeant, with broad yellow stripes on his trousers and a forage cap cocked over one eye. He was a crinkly-haired black Irishman, tall, lithe, good-looking, and merry, and a very old soldier, the service at the time being quite glorious with men of his type and old German drill sergeants, although this I learned later. When I had the cows in their stanchions and started milking a Holstein the sergeant came into the shed, sat him down on a spare milking stool and patiently and kindly answered a million questions about the cavalry. When I finished the Holstein and moved in under the flank of a grade Jersey, the sergeant said: "Now, that's the kind of a cow to keep. That Holstein's milk is blue and lackin' in butter fats (which it was) but not so with this Jersey. Give me a sip of her milk, me lad. Glory be to God, I haven't had a noggin of milk hot from the cow's udder since I left Ireland," and he shoved over his big tin cup. I filled it and he drank, sighing with contentment. And he came back for seconds and thirds and fourths and told me what a fine lad I was, with just the right build for a cavalryman. He was full of blarney and I loved it — so much, indeed, that I asked him if he wouldn't like to have dinner with us. "Oh, by the Great Gun av Athlone," he murmured, "but your mother must be a famous cook." She was and I admitted it, so the sergeant accepted (the sly dog) and after the milking I brought him in to our farm-house and introduced him to mother, who promptly invited him to supper. We didn't have very much in those days but my father and mother came from Galway, where hospitality is a religion; if a murderer, reeking with the gore of his most recent victim, had ever stuck his



## TO THE FINISH



**"SOME DAY I'LL WAVE MY LEG LIKE THAT"**

nose into my mother's kitchen she would have invited him to sit down and have at least a cup of tea.

Quick as lightning my sergeant caught the Celtic burr on my mother's speech. The Galway Irish do not speak with a brogue, but with a faint clipped accent, a foreshortening of words. They're civilized. So my big Celtic sergeant bowed and said in the Gaelic: "Thank you, madam. I shall be delighted," and mother replied to him in his mother tongue and I understood it, too, and if you think that old soldier wasn't at home you're crazy. Mother had apple pie for dessert and the sergeant, protesting he couldn't eat another bite, twice reluctantly persuaded himself that maybe he could, if he tried real hard. After dinner he told us tales of derringdo, chasing Apaches, et cetera, and when the call to quarters went he left us pop-eyed with wonder and admiration and I can still see his fine white teeth in a smile when father

said: "Come over for breakfast, sergeant."

He accepted—of course. He said reveille was at four o'clock and mother said reveille with us was at five, so half an hour earlier wouldn't kill us.

I was up at three-thirty and in the light of a late moon I walked among the rows of men sleeping out on the ground and gazed at the horses asleep with their heads down or lying outstretched. I marveled at the camp guards stalking lonely in the moonlight and I thrilled when first call was blown and those long rows of sleeping men awakened and commenced to surge and heave and the Irish and German first sergeants shouted: "Everybody up!"

I did not pump when they watered the horses that morning, however. My top sergeant had a detail for that job. And they breakfasted and the quartermaster paid my father and they were on the road again at five-thirty. I saddled my horse and rode with my first

## THE FIELD ARTILLERY JOURNAL

sergeant a couple of miles and then, heavy of heart, I returned to the disgusting job of milking cows, chambermaiding farm horses and shoveling hay. That day I adopted a role to play in life. I would be a soldier. I would have yellow stripes down my young legs and wear a forage cap cocked over my right eye. I would swagger with a big saber rattling against my left leg and a .45 single-action Colt's revolver slapping against my right. From that day forward I was lost to the farm, at least in spirit. And two years later I left it, to take a job as general factotum in a general merchandise store in a town seven miles distant. I had a swell job — twenty dollars a month, board and lodging, and I only had to work from six AM to nine PM seven days a week. But I had an objective. In a year I would have saved up one hundred and twenty dollars and then I would quit and go up to the Presidio of San Francisco and enlist in the Fourth Cavalry, which was still stationed there.

I quit when I had ninety dollars saved, because the Spanish War came along, so I raised a hell of a yell of pure patriotism to conceal from my boss the fact that I was sick of him and his job, sick of doing business for him in Spanish, Italian, and Portuguese, and getting all three mixed up. He did not wish me to leave his employ but something told me I had to join the army if I would lose my environment, else would my environment get me. I could look ahead through the years and see myself sitting on an empty beer case in front of the store, rolling brown-paper cigarettes and discussing county politics in Spanish with Pablo Vasquez, the local constable, and with Luigi Biachichi, the local drunkard, in Italian, or swapping snappy stories in Portuguese with Vicente Valladao, when what I wanted to do was discuss soldiering in English with First Sergeant

Muldowney or whatever his name was. So one bright morning I pulled out for the fields of glory, perched on the top of the big Concord stage that was our sole connection with the world beyond the San Pedro mountains.

Of course I had defied my parents. This was June and I would not be eighteen years old until the following October. However, they didn't fight me much, being convinced that, following one look at my pink cherubic countenance any sane recruiting officer would advise me to go home and tell my mother to wipe my nose.

I fooled them. My vision was a bit impaired due to having read a thousand books under the light of kerosene lamps, but a corporal gave me the sight test and I gave the corporal five dollars, so I hurdled that obstacle. When the recruiting sergeant looked at my application and saw that I would be twenty-two years old, come grass, he asked me if I knew the penalty for fraudulent enlistment. I didn't but I said I did and he said: "Son, you've lied about your age. You're about seventeen and do not add to your crime by denying it. I have enlisted too many seventeen-year olds not to know one when I see one." I replied that the Kyne clan all grew old gracefully (which we do. My old man turned ninety in December and he still orders me around.) Anyhow, that was my story and I was going to stick to it, and the corporal who stood hard by and who must have been an honest fellow and wishful to give a full meed of service for the five bucks he'd grafted off me, murmured: "He's a pretty stout, well-muscled young feller, lieutenant; he weighs a hundred and forty-five pounds and there isn't a speck of fat on him."

So the officer said wearily: "Very well, hold up your hand. You are, as the corporal says, a stout seventeen-year-old."

## TO THE FINISH

In thirty seconds I was a soldier, but alas, not in the Fourth Cavalry. I had permitted myself to be trapped and seduced from my original intention by a magnificent old private with moustachios like the horns of a yearling carabao. That fellow dominated me and reminded me that when a foot soldier got through his day's work he could sit down and pick his teeth, whereas in the cavalry there was that infernal horse to feed and curry and

water. I'd hiked more than twelve miles and out of a company of ninety that started on the morning of the 9th I was one of thirty-two left. I was as empty as a drum and I weighed one hundred and eighteen pounds in my very sketchy so-called uniform. I was sick and miserable and exhausted as, following a sharp skirmish before the village of Las Pinas, we entered the town and sagged down in the dirt on the shady side of the street for



rub, and the brute always went lame on you in campaign and you had to get off and walk anyhow, so why not be an infantryman to start and be done with fooling?

Well, in the year that followed I added a fair knowledge of Tagalog to my extensive vocabulary. And now we come to another day in June, but in 1899. The 10th, to be exact. All day on the 9th I had been in a combination forced march and running fight, in dreadful heat and sans

all the world like a lot of tired fox-hounds after a long chase.

Presently down the street came a squadron of the Fourth United States Cavalry, mounted on wretched Filipino ponies, all stallions and all biting or squealing. When the squadron halted, a big black top sergeant sat his miserable mount and as his glance met mine he grinned, as well he might, for I needed a shave and a hair-cut, the knees were out of my trousers and, my

## THE FIELD ARTILLERY JOURNAL

campaign hat having fallen in a fire, had a large crescent burned out of the brim. I was a sorry sight and I looked even younger than I was.

The sergeant said, in a west Irish clipped accent: "Kid, you look like something the cat might bring in. For God's sake, what inspired you to join the army?"

"*Honia ma jhoul*," I yelled at him in Gaelic, which means approximately "Go to hell." And I broke into English as his black eyebrows went up in vast surprise. "You inspired me to join the army! Yes, you, you—you Mick, with your damned lies about the delights of a soldier's life. Yes, YOU—you're the dog that betrayed me!"

"Good God Almighty," he cried. "Are you the kid that milked the cows at that ranch where we bivouacked on the practice march?"

I said: "Yes, I am—and after you left I never had any peace until I became a soldier—and now look at me."

"Oh, wirra, wirra," he keened, "what wouldn't I give for a gallon of that nice rich milk fresh from the cow's warm udder! How are your father and mother? Oh, but I remember her apple pie!"

"You ought to remember it," I reminded him. "You had three helpings and that shorted the family and so I got none."

He threw back his reckless handsome Irish head and roared with laughter, and he was decent enough to dismount and come over to shake hands with me, for I was too exhausted to go over and shake hands with him. He took off my ruin of a campaign hat and ruffled my young head and assured me he would go to hell in a hand-basket if this wasn't a small world after all. And

I said: "Listen, old hero, have you got anything to eat? We threw our rations away yesterday to reduce weight so we would survive, but you have a horse to carry your rations. I'm dying of hunger pains."

So First Sergeant Muldowney, or whatever his name was, of the Fourth Cavalry, went to his haversack and took stock of his meager rations and gave me two big hardtack and four strips of perfectly horrible sow-belly—all fat with a streak of lean like a thread running through it—and two potatoes, raw, and twenty cents in American money, with the suggestion that maybe I could buy some eggs or a chicken with the cash. Then he accepted from me a bag of Bull Durham and a packet of brown papers and a ten-cent plug of Star chewing tobacco, which I had won in a poker game—and a bugle blew and he ran back and mounted his pony and as he went away he waved back at me and over his shoulder he tossed me in Gaelic the sweetest of all good wishes: "God be your comforting!"

What a job that old soldier did on me! His medicine was still working in 1917, when I decided to continue playing my adopted role, but this time there was no rookie-trapping old buck at hand to lure me back into the infantry and as they were not sending cavalry to France without first galvanizing them into field artillery, I took on in the field artillery so I could have a horse to ride like old First Sergeant Muldowney (or whatever his name was). By the time I got home I was speaking fair French, but the Frogs always smiled whenever I opened my mouth. They couldn't understand why an American soldier with a very noticeable Celtic burr to his English should speak French with a Spanish accent!

## To the Victors—

*On the right*—Brig. Gen. E. D. Peck, commanding Ft. F. E. Warren, Wyo., awards the national Knox Trophy and the Third Field Artillery Brigade Howland Cup to Battery B, Seventy-Sixth Field Artillery. "B's" BC, Captain John C. Cook, stands in the background, while, receiving the Trophy, is 1st Sgt. H. L. Cooper, of whom Capt. Cook says, "He acted as Battery Executive throughout the test . . . to his qualities and those of the noncommissioned officers and enlisted men, was due the success of the battery."



Photo by Brammer, Cheyenne



Photo, Courtesy "The Chicago Tribune"

*On the left*—Major General Hugh A. Drum, Sixth Corps Area Commander, pins the Knox Medal on Sergeant Glen L. Foote, Headquarters Battery, Sixth Field Artillery Brigade, Fort Sheridan, Illinois. The winner was born Aug. 14, 1911, in Canon City, Colorado, and is still serving in his first enlistment, having joined in Chicago September 5, 1935. Sergeant Foote won his award as a member of the class in Communication, Enlisted Specialists Course, The Field Artillery School, Fort Sill, Oklahoma, graduating June 12, 1937.



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**Fred T. Austin**

1866—1938

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## FRED T. AUSTIN

It is with deep regret that the Field Artillery Association announces the death, on February 26, 1938, of Major General Fred T. Austin, USA-Ret, its former President, and Chief of Field Artillery from 1927 to 1930.

General Austin had been the second Chief of the arm, and among the honorary pallbearers at his funeral, February 28, from the Fort Myer Chapel, with interment in Arlington National Cemetery, were the first Chief, Major General William J. Snow, USA-Ret, and the fourth, Major General Upton Birnie, Jr., USA.

General Austin had combined a reputation as an outstanding artillerist with so kindly and considerate a manner as to attract to himself the esteem of superiors and subordinates. He is survived by his widow, Mrs. Leonore H. Austin, 2032 Belmont Road, N. W., Washington, D. C., and a son, 2d Lieutenant Gordon H. Austin, AC, Bolling Field.

The history of General Austin's notable service to his country follows:

Born at Hancock, Vermont, December 28, 1866. Appointed from "At Large," Massachusetts, First Lieutenant and Adjutant, 5th Massachusetts Infantry, July 1, 1898; honorably mustered out, March 31, 1899; First Lieutenant, 46th U. S. Volunteer Infantry, accepted, Aug. 23, 1899 (To rank from Aug. 17, 1899); honorably mustered out, June 30, 1901; First Lieutenant, Artillery Corps, accepted, Feb. 8, 1902 (To rank from Aug. 22, 1901); Captain, April 14, 1906; assigned to Field Artillery, May 4, 1907; assigned to 3d Field Artillery, June 6, 1907; transferred to 2d Field Artillery, Aug. 16, 1915; Major, 1st Field Artillery, July 1, 1916; Lieutenant Colonel, 21st Field Artillery, May 15, 1917; assigned to 18th Field Artillery, June 29, 1917; Colonel, Field Artillery, National Army,

accepted, Aug. 22, 1917 (To rank from Aug. 5, 1917); Brigadier General, National Army, April 30, 1918 (To rank from April 12, 1918); honorably discharged as Brigadier General, National Army, only reverting to grade of Lieutenant Colonel, March 1, 1919; unassigned, June 14, 1919; assigned to 1st Field Artillery, Oct. 22, 1923; Inspector General's Department, by detail, Aug. 27, 1924; Colonel, Sept. 17, 1925; relieved from detail in Inspector General's Department, Dec. 21, 1927; Major General, Chief of Field Artillery for period of 4 years from Dec. 20, 1927; accepted, Dec. 22, 1927; retired from active service on account of disability in line of duty, Feb. 15, 1930.

General Austin (M. S., Norwich University, Vermont, 1888) served with the 5th Massachusetts Infantry Volunteers, War with Spain, at South Framingham, Massachusetts, from June 30, 1898, to September 11, 1898; at Camp Meade, Pennsylvania, to November 16, 1898, and at Greenville, South Carolina, to (Regimental Adjutant, September 23, 1898, to March 31, 1899) March 31, 1899.

As a member of the 46th U. S. Volunteer Infantry, Philippine Insurrection, he was on recruiting duty from August 25 to October 10, 1899; with that regiment, at San Francisco, California, to November 14, 1899; enroute to the Philippine Islands, to December 15, 1899 and in the Philippine Islands, to February 26, 1900. He participated in a skirmish at Calabcab, near Silang, Cavite, P. I., January 25, 1900. From February 26 to April 19, 1900, he was on special duty mapping in the vicinity of Binan, P. I. He was then on duty repairing bridges between Dasmariñas and Imus until May 19, 1900. He was architect in charge of the construction of the U. S. Refrigerating and Ice Making Plant at Manila, P. I., from May

## THE FIELD ARTILLERY JOURNAL

19 to June 1, 1901, and Supervisor of the Province of Cavite, with station at Cavite, P. I., to June 30, 1901, when he was mustered out of the Volunteer service.

He accepted his commission in the Regular Army February 8, 1902, at Cavite, P. I., and remained on duty as Supervisor of the Province of Cavite until April 1, 1902, when he was relieved to return to the United States. He was en route to the United States, in command of a provisional company of casuals, to June 1, 1902, and on leave to July 1, 1902.

He served as Adjutant of the Artillery District of Puget Sound, with station at Fort Flagler, Washington, from July 1, 1902, to September 8, 1904; with the 71st Company, Coast Artillery, Fort Casey, Washington, to June 8, 1904, and commanding detachment and Post, Fort Flagler, Washington, to August 20, 1904. He was stationed at Fort Monroe, Virginia, from August, 1904, to August 11, 1905; with the 9th Company, Coast Artillery, Fort Barrancas, Florida, from August 15, 1905, to September 1, 1905; with the same company, at Fort Pickens, Florida, to March 20, 1906; on leave to March 30, 1906; on detached service at Fort Monroe, Virginia, to April 11, 1906. He then rejoined the 9th Company of Coast Artillery at Fort Pickens, and served at that station until September 30, 1906. He was in command of the 77th Company, Coast Artillery, Fort Barranca, Florida, from September 30, 1906, to July 12, 1907. During this period he also served as Acting Adjutant, Artillery District of Pensacola, and was in command of the 8th Band, Coast Artillery Corps, from June 13 to 30, 1907.

He served with the 3d Field Artillery, Fort Sam Houston, Texas, from July, 1907, to October 27, 1910; en route to Fort Monroe, and with a battery of the 3d Field

Artillery, at that station, until December 15, 1910. He was on duty at Rock Island Arsenal, Illinois, as a member of the Cavalry Equipment Board from December, 1910, to March 13, 1911. On duty with the 3d Field Artillery at Fort Myer, Virginia, to March 26, 1911; en route to Texas to April 1, 1911, and with his regiment as a part of the Maneuver Division, San Antonio, Texas, to June 28, 1911. He then returned to Rock Island Arsenal, Illinois, to serve as a Member of the Cavalry Equipment Board until March 31, 1912. He served with his regiment, at Fort Myer, Virginia, from April, 1912, to September 14, 1912; at Fort Sill, Oklahoma, to December 19, 1912, and at Fort Myer, Virginia, to July 24, 1913. He was again on duty at Rock Island Arsenal, Illinois, from July, 1913, to December 10, 1913; with regiment at Fort Myer, Virginia, to November 8, 1914. He served with his regiment at Fort Sam Houston, Texas, from November, 1914, to November 29, 1915; en route to the Philippine Islands, via San Francisco, California, to January 3, 1916; at Camp Stotsenburg, P. I., from January 7, 1916, to December 2, 1916; on leave to December 14, 1916; en route to Hawaii to January 5, 1917, and with the 1st Field Artillery, at Schofield Barracks, T. H., to August 4, 1917, when he returned to the United States.

He was on duty at Fort Sill, Oklahoma, from August 4, 1917 (Instructor, School of Fire) to August 24, 1917; commanding the 346th Field Artillery, Camp Lewis, Washington, from September 2, 1917, to October 30, 1917; commanding the 350th Field Artillery, Camp Dix, New Jersey, November 6, 1917, to April 29, 1918; commanding the 167th Field Artillery Brigade, Camp Dix, to May 9, 1918; commanding the 156th Field Artillery Brigade, 81st Division, at Camp Jackson, from May 12, 1918, to June 17, 1918. He was in



## FRED T. AUSTIN

command of the Field Artillery Replacement Depot, Camp Zachary Taylor, Kentucky, from June, 1918, to November 19, 1918. He was on sick leave from November 20, 1918, to April 7, 1919, and on duty as Demobilization Officer at Camp Zachary Taylor, to June 18, 1919, when he departed for Europe to make a study of the theater of operations. He returned to the United States on July 18, 1919. After a period of sick leave, he became an instructor at the Field Artillery School, Fort Sill, Oklahoma, on December 3, 1919. On June 24, 1922, he was relieved from that assignment and assumed command of the 1st Field Artillery (School regiment) at that post. He was relieved from that command on June 24, 1924. General Austin served as

Corps Area Inspector, 7th Corps Area, from August 27, 1924, to January 18, 1926, when he departed for the Philippine Islands to become Inspector of the Philippine Department on February 22, 1926. He was en route to the United States from February 15, 1928, to March 17, 1928, and on April 9, 1928, assumed his duties as Chief of Field Artillery, Washington, D. C., in which capacity he served until the date of his retirement.

He was awarded the Distinguished Service Medal:

"For exceptionally meritorious and distinguished service while in command of Camp Zachary Taylor, Kentucky, and particularly during the period that said camp was subject to a severe epidemic of influenza."



*New president of San Antonio Chapter of National Guard Association is Colonel Raymond Phelps, 133d FA, who helped organize Btry B 1st Texas FA, in 1916, and served with 131st FA and 61st FA Brig during the World War . . . When 155-mm. howitzers substituted for 105's in the test of the PID, pieces of the 2d Bn 133d FA were used.*

### CORRECTION

The January-February number of the JOURNAL contained an article entitled "The New Instructions for Employment of Artillery in the German Army." An entire line had been dropped from the first sentence, which, if corrected, would read: "The July-August number of the *Rivista Di Artigleria e Genio* (Italy) contains an interesting study of the 1937 German Instructions for the Employment of Artillery, by Lieutenant Colonel Guiseppe Mancinelli of the Italian Army." The JOURNAL wishes to apologize for the error, particularly to the *Rivista*, and to Lt. Col. Mancinelli for the omission of his name.



# Convoy

BY CAPTAIN REUBEN K. RANSONE, 15TH FA-RES.

"THE 1st Battalion, 15th Field Artillery, with attached personnel, will convoy vehicles to Fort Crockett Airdrome at Galveston, Texas, and will remain to service same prior to loading on the U. S. Army Transport *Ludington*, which will sail on December 14. . . ."

Such was the beginning, on December 7, 1937, of one of the largest convoys of government motor vehicles since the World War.

Major Henry Burr Parker, FA, commanding the above organization, was assigned "in addition to his other duties" as Convoy Commander. He assembled and organized the necessary personnel to move this convoy from Fort Sam Houston, Texas, to Galveston, Texas, a distance of 250 miles.

The officer personnel, in addition to Major Parker, included Captains Roy A. Carter and Walter H. DeLange, 15th Field Artillery; Captain Joseph Massaro (FA) QMC, under whose supervision the vehicles were inspected and serviced prior to the movement, and who preceded the convoy to Galveston, Texas, and made all necessary arrangements for the occupation of Fort Crockett Airdrome; Captain Reuben K. Ransone, 1st Lt. Max F. Schlather, and 2nd Lt. Gus H. Froebel, Reserve Officers assigned to the 15th

Field Artillery; and 1st Lt. Robert J. Hoagland, 2d Medical Regiment, who established and maintained an aid station during our stay at Galveston.

The enlisted personnel included 1 First Sergeant, 3 Staff Sergeants, 13 Sergeants, 26 Corporals, 68 Privates, first class, and 185 Privates, from the following units: Headquarters Battery, Service Battery, 1st Battalion Headquarters Battery, 2d Battalion Headquarters Battery, Batteries "A," "B," "D" and "E," all 15th Field Artillery; 2d QM Regiment; 2d Medical Regiment; 2d Signal Company; and 2d Division Military Police Company.

The vehicles were received from the QM Motor Pool at Fort Sam Houston and had to be serviced prior to the movement. They were as follows: 1 Buick Sedan; 75 Chevrolet Sedans; 151 Chevrolet 4×2 Cargo Trucks; 15 GMC 4×4 Cargo Trucks; 55 Indian Motorcycles, w/side car; 10 Indian Motorcycles, solo; and 8 1-ton Trailers. These vehicles had been 2,200-2,500 miles, as they had been purchased prior to the Proposed Infantry Division Tests, on which they were used at Fort Sam Houston from July to November, 1937.

These 315 vehicles were shipped as follows: CO Boston QM Depot—13; QM Ft. Jay, New York—55; SO 1st



AT FORT CROCKETT AIRDROME

## CONVOY

Sq 3d Cav, Ft. Ethan Allen, Vt.—1; SO 65th Inf, San Juan, P. R.—1; CO Holabird QM Depot, Baltimore, Md.—63; For 3d CA—3; Edgewood Arsenal, Md.—1; Front Royal, Va.—1; Aberdeen Proving Grounds, Md.—1; Post QM, San Francisco—79; For 9th CA—3; QM Ft. McKinley, Manila, P. I.—17; QM Ft. Shafter, Honolulu, T. H.—57; SO 29th Engrs, Portland, Oregon—2; SO 4th Inf. Ft. Missoula, Montana—1; SO 6th Engrs, Ft. Lewis, Washington — 1; and QM Quarry Heights, Canal Zone—16.

The following additional vehicles were taken: 1 Reconnaissance Car and 22 trucks of the 1st Battalion 15th Field Artillery, to bring back the officers and enlisted men; 4 Service Battery Trucks (kitchen and baggage); 2 Signal Company pick-up trucks (each with short-wave voice radio); 1 repair truck; 1 500-gallon tanker; 1 wrecker; and 1 ambulance.

The time set for departure was 5:30 AM, Friday, December 10. On December 8, a stiff Texas "Norther" made its unwelcome arrival, which necessitated an additional preparation that was not included in the original plans. Alcohol had to be put into each radiator to insure against its freezing. This was accomplished on December 9 and required approximately 6 hours.

After servicing the vehicles preparatory to moving, a qualified driver was assigned each vehicle and they were then spotted in 4 lines of approximately 85 vehicles each. An officer was assigned to each of the 4 Sections.

Headquarters Battery 1st Battalion, and Battery A established messes at Galveston. An advance party with one truck for each convoy kitchen, one baggage truck each, and the reconnaissance car with the necessary kitchen personnel departed in advance of the convoy the morning of December 10, under a noncommissioned officer. The



THE LUDINGTON

kitchen trucks carried wood and 2/3 days rations; the baggage trucks carried bedding rolls, officers' wall tents, latrine screens and kitchen flies.

The field uniform with mackinaw was worn. The trip to Galveston, the stay there, and the return trip were accomplished without an absence without leave, without an arrest, or without any reported misconduct whatsoever.

The men had breakfast at 4:30 AM on December 10, were given lunches, and reported to the convoy area to warm up motors and make final preparations.

The leading vehicle moved out on time at 5:30 AM and maintained a rate of 25 MPH. The order of march was as follows: Convoy Commander, Radio truck, Section 1, Section 2, Section 3, Section 4, Ambulance, Tanker, Wrecker, Repair truck, Radio truck, Trail car.

There was no vehicle nor unit distance prescribed. Each driver was instructed to maintain that distance which he considered necessary to prevent accidents, bearing in mind that it was desired to maintain as closed a total column as was consistent with safety. The results of this system of march were reflected in the fact that the convoy arrived at Galveston intact; each vehicle arrived under its own power, there were no accidents, wrecks, nor traffic congestions to mar the trip—not even a dented fender.

Constant radio communication was

## THE FIELD ARTILLERY JOURNAL

maintained moving and at halts between the head and tail of the column, which was approximately 6 miles in length. In this way, Major Parker was kept informed of the progress of the movement, the fall-outs, repairs made, clearance of towns, formation of the column, and the like.

One military policeman, and Texas State Highway Patrolmen Byron K. Bowen and Oscar D. Jackson accompanied the convoy and they should be praised for their willing cooperation and assistance in clearing traffic en route, particularly in passing through towns and at highway intersections.

En route, the halts were made by sections on synchronized time. The head of each section pulled out to the side of the road at 15 minutes before each odd hour, halted, and each section closed up entirely within the section. Likewise, each section moved out on the odd hour and the expansion made up the gaps soon after the column started. This schedule was strictly maintained, except at the noon halt, which was made at 12:30 PM, thus allowing 30 minutes.

At the noon halt, each driver of a truck gassed his vehicle from a case of gasoline given him prior to the departure and all men ate their lunch. The tanker gassed all of the sedans at this halt.

The convoy arrived at Fort Crockett Airdrome at 7:00 PM. Exclusive of the regular halts and an extra hour required at the noon halt for the tanker to gas the sedans, the travelling time indicated that the average speed for the 250 miles was 25 MPH. All vehicles travelled "light" with the exception that the motorcycles were loaded in some of the trucks. The gasoline mileage per gallon was as follows: Buick Sedan—12; Chevrolet Sedans—16; Chevrolet Trucks—11; and GMC Trucks—9.

The "Norther" was very evident at Galveston—and it was accompanied by

rain and fog. The hot supper prepared by the advance party was, therefore, very welcome. Rations during our stay at Galveston and for the return trip were supplied by the QM, Fort Crockett.

The officers were quartered in the Operations Office at the Airdrome. Pyramidal tents were already put up for the men. Very few of the men used the folding cots provided, as a nearby haystack furnished more comfortable bedding.

The servicing of the vehicles began the following morning and included draining the water and gasoline; blowing out the gas line; disconnecting the carburetor; running the motor until the carburetor was dry; draining the sediment bulb; disconnecting the positive terminal from the battery, taping same and tying away from the battery; checking the pressure in each tire; locking each spare tire; removing the tops from all trucks, folding same and placing in truck cabs; removing the bows and securing same in body of trucks; checking each ignition key to insure its working, and tying all keys in a small cloth bag to each steering wheel; putting cosmoline on all chromium parts.

A report was accomplished on each vehicle, showing the condition, missing parts, and repairs necessary. The missing parts were replaced and the necessary repairs made prior to loading.

A loading schedule was obtained and one radio set up at the Airdrome and the other at the dock in Galveston for needed communication during loading. Each vehicle was towed from the Airdrome to the dock (4 miles), manhandled onto the dock into position and loaded into one of the five hatches of the *Ludington*, which was mastered by Captain Fifer.

The vehicles were turned over at the dock to Major Harry R. Evans,

## CONVOY

QMC, Fort Crockett, who supervised their loading. Furniture, household goods, oil, 2 horses, and other freight were also taken on at Galveston by the *Ludington*. The entire loading was under the general supervision of Captain Thomas J. Weed, QMC, OQMG, Washington, D. C., who was sent to Galveston for this specific purpose.



**UP AND OVER**

The inspection after loading the vehicles included putting the gear shift levers in neutral; setting the hand brakes; fastening the engine hoods tightly; shutting and securing the doors; and closing the windows and windshields.

The loading was accomplished in approximately 17 hours on December 14 and 15. Major Parker turned over the last vehicle on the dock at 11:00 AM, December 15. Preparations were immediately started for the return trip. Lunch was served, the area was thoroughly policed, the convoy broke

camp and left Galveston at 12:45 PM—which must also be some kind of a record. However, it was nearing Christmas and the weather was disagreeable, so it is needless to say that, to a man, the warning order to move was welcome.

On the return trip, the freezing temperature, fog, and rain were more than disagreeable; however, the direction and destination of the movement compensated to some extent for the weather, which was taken in stride, and the convoy arrived

**DOWN THE HATCH**



intact at Fort Sam Houston at 10:20 PM, averaging 30 MPH. Thus ended a new and educational experience that will long be remembered by all who participated in one of the largest distant peacetime convoys on record—successful in every detail.

# How to Make a Convergence Fan

BY LIEUT. HARRY E. MIKKELSEN, FA

EDITORIAL NOTE: *Readers are reminded that publication of articles in the JOURNAL does not imply official sanction of their contents. Many and ingenious have been the recommendations for changes in the methods of obtaining convergence difference, of which this is one. It is published as a basis for study by all officers, and will furnish a point of departure from which, perhaps, further sound advance can be made. It will be noted that use of the recommended device, however advantageous in certain respects, is handicapped in others, notably in that it adds to the duties of the gunner and the recorder, requires additional illumination at night, is not proof against mistakes in laying, and introduces an important departure from precedent in changing the laying of the piece without a recorded order therefor. Its principal advantage is that it speeds the delivery of fire.*

**N**OWADAYS when guns are spaced at irregular intervals, the guns must converge at a certain range before they are opened to give a sheaf of proper width at that range.

In our battery, consisting of British 75-mm. guns equipped with panoramic sights, the system used to converge guns was to have each gunner read from a card the number of mils in order to close on No. 1 gun after the Executive commanded: *Converge at* (such and such a range). Each gunner used to have about ten cards, totaling thirty for the battery, one card printed

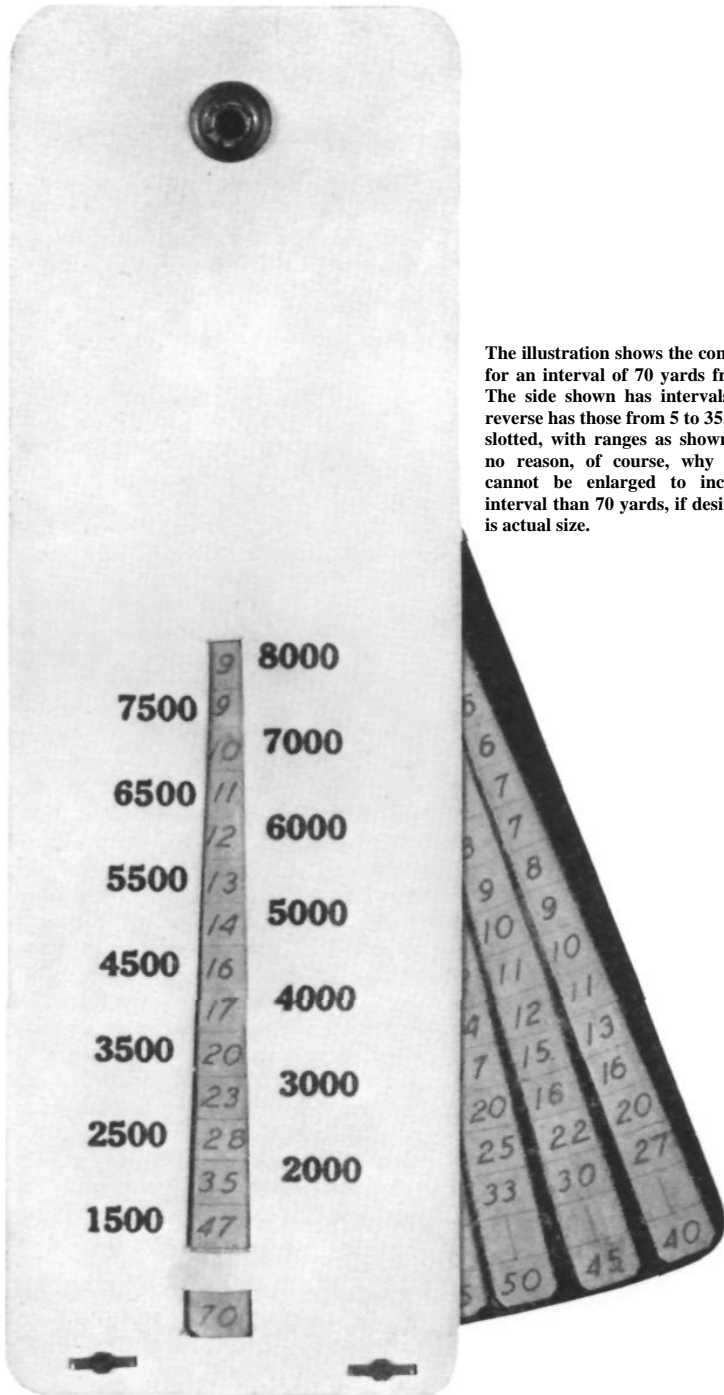
on both sides for each 5-yard interval up to 100 yards.

To overcome the disadvantage of using so many cards, entailing much work in order to replace worn, lost, and faded ones, or those blurred from rain. I thought of combining about ten cards into one. My convergence fan is the result.

Originally each one of the ten cards contained three elements: First, the ranges; second, the intervals or distances from No. 1 gun; third, the amount of mils to go right or to close on No. 1 when converging. Since the ranges were common to all intervals on the various cards, I printed, on a rectangular cardboard, ranges running vertically from bottom to top. These ranges, at 500-yard intervals from 1,500 yards to 8,000 yards, are within the minimum and maximum limits of range.

Because we seldom use an interval greater than 70 yards from No. 1 gun I printed adjacently along the bottom of a fan-shaped card which was to pivot at the upper or narrow end of the fan, 5-yard intervals commencing with 5 yards and ending at 70 yards (5 yards to 35 yards on one side and 40 yards to 70 yards on the other in order to halve the width of the lower part of the fan if only one side of the fan were used, and for this reason two rectangular cards are necessary). Directly above each printed 5-yard interval I printed the number of mils the gunner must close on No. 1 in order to converge at one of the ranges, so that the numbers on the finished cards radiated from the pivot at the top of the fan as illustrated on the actual card submitted herewith.

On the rectangular card I cut out a vertical window in order that the numbers



The illustration shows the convergence fan set for an interval of 70 yards from No. 1 piece. The side shown has intervals 40 to 70. The reverse has those from 5 to 35, and is similarly slotted, with ranges as shown here. There is no reason, of course, why the fan section cannot be enlarged to include a greater interval than 70 yards, if desired. The picture is actual size.

## THE FIELD ARTILLERY JOURNAL

on the fan would correspond to the ranges beside the window when the fan was slipped from side to side on its pivot beneath the rectangular card. Under this window another separate small window was cut out of the rectangular card in order to show the interval or distance from No. 1 gun printed on the fan.

To protect the completed product from being banged up at the corners and from rain, all corners are rounded and a coating of liquid celluloid (I used natural-colored lacquer which women apply to their finger nails) is painted on all surfaces before the complete convergence fan is assembled.

The regimental shoe repairer furgished the metal pivot at the top of the convergence card. Two paper clips forced into the bottom of the rectangular cards together with the metal pivot hold the cards with the fan between and also furnish the necessary friction to keep the fan from moving once it is set at a certain interval.

In use, the gunner sets off in the bottom small window of the rectangular card the distance his gun is located from No. 1 gun. Then with a wooden clothes pin (one containing a spring, of the kind used by most housewives) he clamps the convergence fan to the shield or other convenient place directly in front of the panoramic sight where it may be readily seen.

On the British 75-mm. gun. I have found a place already made to order for the convergence fan. The brace on the upper part of the shield has a hole in the lower end of it. The convergence fan is placed against the flat side of the

brace and clamped there where the gunner has ready access to it. Thus attached, wind does not move or shake it.

For the past four months our battery has used the convergence fan with excellent results. Another firing battery in this regiment has adopted the idea. After many service practices and frequent daily usage, we have found the convergence fans flexible, simple, foolproof, and cheap, and at the same time they reduce the number of cards formerly carried.

The convergence fans are still in a state of development. Originally, I pasted blueprints of the fan and card on pieces of cardboard before fastening them together, but they peeled from the cardboard in time. I then had the range numbers printed on one piece of cardboard—red ink for even thousands of range which appear on one side of the window, and black for each 500-yard interval between the even thousands on the other side. This color scheme and arrangement helps the gunner to look up his ranges quicker and easier.

The cost of a metal plate from which the interior fan can be printed in quantity has prohibited me from having the fans printed on a single piece of cardboard eliminating the pasting of the blue printed strips on the fiber card as on the convergence fan sent in. However, I am working on a rubber stamp made by gluing rubber type (such as that found in a children's toy printing or stamping set) on a wooden block. With two such stamps I intend to stamp each side of a fan before coating with the liquid celluloid.



# WORKMAN MEETS TOOLS

BY LIEUTENANT COLONEL VINCENT MEYER, FA

## I—Introduction

THIS discussion is limited to the training of Reserve lieutenants who have had little or no experience as officers of the Reserve Corps, and who are attached, in small groups, to regular units for two-week active-duty periods. It is based upon experience in the summers of 1935 and 1936 with officers so assigned to the First Battalion, Seventy-Seventh Field Artillery (155-mm. howitzer), at Fort Sill, Oklahoma.

Some dissatisfaction had been expressed by the regular officers of the battalion with respect to methods sometimes employed. It was recognized that Reserve officers, during their brief periods of active service, should be attached, insofar as possible, to headquarters and firing batteries for straight duty; yet it was felt that rigid adherence to such a procedure would make the training of the individual officer subject to the resourcefulness of a particular battery commander, as well as to such time as the latter could make available.

To obviate this, it was decided that these officers should be grouped for a definite amount of coordinated instruction, both theoretical and practical, under the supervision of the battalion headquarters, which, when combined with their practical duties as battery officers, would result in a better rounded-out period of two weeks' service.

In May, 1935, a group of nine Reserve lieutenants was assigned to the battalion and we tried out our ideas. So satisfactory were the results that the same methods were adopted in handling a group of nineteen lieutenants who reported for duty the following month and again for those who reported in 1936. The results in each case justified the thought and effort expended.

We went on the principle that the subjects selected for the schedule should not be so numerous, nor the instruction so complicated, as to result in confusion. We felt that a clear and simple exposition of a few essential things a field artilleryman should know would be all that we could expect them to absorb in the two weeks' period. The change from civilian to military life, especially for such a short period, is abrupt, entails a mental and physical readjustment, and produces a psychological reaction. Such reaction may be either very beneficial or very harmful to the Army, and the responsibility of the unit to which the Reserve officers are attached becomes just that much greater because of this fact. Hence, any unit which regards such training as something to be accomplished with the minimum effort on its part, and which resents any disturbance to its accustomed routine because of such training, is false to a most important trust and is deliberately weakening the ties which bind the Regular Army and

## Some Notes on the Fourteen-Day Training of Reserve Officers With Regular Army Units

a worthy branch of its civilian components.

## II—Reception

In Hawaii, the lei is a symbol of welcome, but the lei in itself is without significance, being merely an effective decoration. What matters is the *essence* of the welcome to the guests, and this can be created only by the unquestioned sincerity of the hosts. Our desire was to have the Reserve officers immediately sense the fact that the unit to which they were attached regarded them, not as something extraneous, but as an integral part of itself. We knew that their attitude would be a reflection of ours.

With this in mind, the Reserve officers immediately on reporting for duty were welcomed by the battalion and battery commanders. They were then assigned to one or more study sections for the purpose of coordinated battalion instruction, and were also attached to batteries for practical training as battery officers. A regular officer was assigned by battalion headquarters to each section, and he acted as adviser and instructor to the section during those periods of instruction over which the battalion exercised immediate supervision. The number of sections into which the Reserve officers were divided depended upon the number of officers attached for training, the maximum limit being twelve per section.

Their first day of duty included the physical examination, and, during this day, certain time was allowed to acquaint them with what might be termed the "business area" of the post. As a rule, their military clothing and equipment were not sufficiently complete for their needs; so the regular officer assigned as section leader conducted his group to the Clothing Warehouse and the Post Exchange to advise the members on essential purchases. This did not consume

an undue amount of time and was an important feature of their processing. In addition, official calls were paid on the Post, School Troops, and Battalion commanders, at their respective headquarters, and on the evening after their arrival, a courtesy call was made on these same officers at their homes. By having the section leader accompany them on these calls, uneasiness was avoided, and by virtue of these calls the Reserve officers received their introduction to the "customs and courtesies" of the service.

At Fort Sill the housing and messing of the trainees are generally a function of post headquarters and for that reason, though highly important to their morale, they are not discussed here.

## III—Preparation of the Training Schedule

The notification of the assignment of Reserve officers for active duty training usually reaches a unit in ample time for the careful preparation on its part of a two weeks' schedule. However, this "warning order," issued by the headquarters of the Reserve Division to which the Reserve officers belong, was incomplete since it included only the name, rank, serial number, date of rank, unit to which assigned for mobilization purposes, and home address of the officers concerned.

This insufficiency of data handicapped battalion headquarters in preparing a schedule best adapted to needs. It could have been corrected by the following additional information:

1. Age.
2. Educational qualifications. (Schools attended, courses pursued, degrees awarded, and military subjects covered thereat.)
3. Practical experience as a Reserve officer (summer camps and other periods of active-duty training).
4. Theoretical military training. (Extension

## WORKMAN MEETS TOOLS

- courses completed, with their numbered designation.)
5. Number and types of problems fired at service practice both during the college course and during active-duty periods.

After due consideration was given to the relative importance of artillery subjects, the necessity for avoiding an indigestible schedule, and the fact that nothing was known of the previous military training of the Reserve officers, we decided to cover the following subjects as fully as the two weeks' period allowed:

<i>Subject</i>	<i>Hours</i>
a. Preparation and conduct of fire (classroom and outdoors)	10½
b. Use of instruments (outdoors) .....	4½
c. Battalion fire direction (conference) .....	3
d. Practical duties of the battery executive .....	6
e. Battalion and battery survey (classroom) .....	4½
f. Battalion and battery survey outdoors—practical—two periods of four hours each ...	8
g. Functioning of the battery headquarters detail and how it "ties in" with the battalion.	2½
h. Motor transportation (conferences at motor shed) .	2½
i. Driving instruction—motors—practical .....	4
j. Battalion RSOP, including overnight camp in the field ..	18
k. Materiel (conference) .....	2
l. Service practice .....	18½
m. Airplane flight, including air reconnaissance .....	½
Total .....	84½

We admit there is considerable classroom work included in this schedule, but our experience showed that the Reserve officers were not ready for service practice and the RSOP until they

had received the coaching derived from this instruction. Therefore service practice and the RSOP were not attempted until the second week.

A casual examination of this schedule may subject it to the criticism that it does not allow sufficient time for the actual performance of battery duties. That this is an erroneous conclusion will be shown as our discussion progresses. Suffice it to say at this point, that throughout the period of service practice, which was held during the second week, the Reserve officers reported to their battery (or batteries) at the *gun park* along with the regular officers, and were assigned specific battery duties prior to leaving the park. They accompanied the battery to the gun position, laid the guns in the center of the sector with the aiming circle, and set out aiming and safety stakes. One Reserve officer then remained at the gun position to act as executive during a part of the firing session, while the others reported at the OP. Duties at the battery position as Executive, and at the OP as observers and battery commanders, were alternated during each session of firing, with the result that every Reserve officer received a proper proportionate share of training in each of these important jobs during the week in which service practice was held.

### IV—Assignment of Instructors

The officer appointed by battalion headquarters in charge of each section acted as general director for the section activities and offered help and advice whenever necessary. He gave the theoretical instruction in gunnery and also conducted the service practice. Through his efforts, the section was tied together, and received the benefit from the personal interest which this officer took in its welfare. Incidentally, a just and fair estimate of the abilities and aptitude of the Reserve officers was

## THE FIELD ARTILLERY JOURNAL

formed by the section leader, which materially aided the battery commander in preparing the efficiency reports.

For purposes of efficient instruction and intimate contact with the Reserve officers, we found that a section should consist of not more than twelve officers. This made a heavy demand upon the battalion, since it removed one or more regular officers from their normal duties for a considerable part of the two weeks. However, the instruction given to each section was so thorough and so personal, that we are convinced the results obtained fully justified the sacrifice involved.

For instruction in subjects other than gunnery, a battalion specialist was assigned. Thus, in motor transportation and driving, the battalion motor officer gave the instruction.

We bent every effort toward handling the Reserve officers with impartial courtesy and consideration. We avoided the assumption of an impatient, indifferent, or patronizing attitude. Leadership paid its dividends. The Reserve officers sensed at once that their interests were the main consideration of the unit to which they were assigned, and they cheerfully accepted the reasons which prompted the battalion to work them daily over long hours and at top speed. In addition, we felt assured that on parting company from us, they did so with a warm feeling of respect and friendship for the service.

### V—Training with Organization

While a considerable number of hours was devoted to the conference method of instruction, particularly in gunnery, we found there was sufficient time remaining for practical training with a firing battery or a headquarters battery, during which the battery commander was given an opportunity to judge the general ability of the Reserve officers.

With the firing battery, the Reserve officers conducted standing gun drill, worked with the battery headquarters detail on communication, and commanded a platoon at drill, during road marches, and on RSOP's. Furthermore, they acted as executives at their own service practice.

At least once during their tour of duty with the organization, they were required to clean the material after its return to the gun park following service practice.

Interest, ingenuity, and a little thought by the battery officers resulted in carrying out the spirit and letter of the training directives issued by higher echelons.

### VI—Discussion in Detail of the Schedule of Training

#### a. *Preparation and conduct of fire.* (10½ hours)

The classroom instruction of the Reserve officers was conducted on the blackboard and on the terrain board. Text assignments were given for evening study, and we were gratified at the extent to which the officers prepared themselves on these assignments.

From the beginning of the instruction in gunnery, the necessity was emphasized for giving commands in their proper sequence to the firing battery.

During 1935 and 1936 Reserve lieutenants only were attached to the battalion for training, and nearly all were second lieutenants with little or no commissioned service in the Reserves. Since their practical experience in conduct of fire was extremely limited, no attempt was made either to teach or to fire *lateral* methods. Nor was instruction in *time* firing attempted for two reasons; first, it was felt to be wasted time and effort with only two weeks available; second, nothing but *37-mm. shell* was used in service practice, since, with the small money allowance available,

## WORKMAN MEETS TOOLS

many more rounds of 37 could be used than either 3-inch or 75. After converting our money allowance into 37-mm. shell, we found that each Reserve officer would be able to fire about 40 rounds. With judicious use, this allotment of ammunition permitted each officer to fire a fairly satisfactory number and variety of problems.

Having decided to limit our gunnery instruction and service practice to axial percussion (precision and bracket), we concentrated on the following types of fire:

1. Percussion precision.
2. Percussion bracket.
3. Use of  $\frac{r}{R}$  and liaison methods from forward OP.
4. Transfer of fire.

For instruction in transfer of fire, the 3-inch contoured map was used. This is not a difficult subject to teach, even in the short time available, and we found from the results obtained in service practice that a great majority of the Reserve officers was able to effect a transfer from check point to target so successfully as to get within one  $c$  of the target on the first salvo. In fact one of the officers, who had great facility as a draftsman, came within  $\frac{1}{2}c$  of the target.

This type of fire was most illuminating to them, and the accurate results they obtained undoubtedly caused more satisfaction and favorable comment than any type of firing attempted by these officers.

During the second and last week of training, a certain amount of classroom instruction in preparation and conduct of fire was continued in conjunction with service practice. For example, the schedule showed just what type of fire was to be conducted on a certain day and extra coaching on this type was given for an hour or so on the preceding day.

A further discussion on the conduct of service practice will be found later on in this narrative.

### *b. Use of instruments. (4½ hours.)*

Instruction in the use of instruments was coordinated with the instruction in the preparation and conduct of fire. About all we hoped to accomplish in our allotted instructional periods was to familiarize the officers with the BC telescope and the aiming circle so that they could measure a deflection either from an aiming point, by a deflection shift, or by a compass. We found that very few possessed any facility in handling the instruments, and the time allotted to this work was too brief to notice any marked improvement therein. However, they did derive enough benefit from the instruction to be able to measure their own angles at the firing point, though it was a laborious process, despite the fact that the determination of the firing angle was simplified by the axial set-up which involved little or no offset. On the last day of service practice, we placed the OP several hundred yards to the flank of the guns in order to invite their attention to the offset and also to the fact that, even though they were using axial methods, there was an  $s$  deflection shift to be applied when increasing or diminishing the range.

### *c. Battalion fire direction. (3 hours.)*

These were purely orienting conferences to prepare the Reserve officers for the 18-hour RSOP, which was so drawn as to include a fire-direction exercise. Strip mosaics were used. In this brief conference period, the Reserve officers were able to absorb only a few fundamentals. However, we believe that even so abbreviated a reference to the subject was of value since it gave them some familiarity with one of the most important and far-reaching

## THE FIELD ARTILLERY JOURNAL

developments in the approved modern methods of battalion fire control and enabled them to follow more intelligently the fire-direction exercise which was incorporated in the RSOP for demonstration purposes. It was gratifying to observe the interest the Reserve officers took in this exercise and to feel assured that they derived considerable instruction therefrom.

*d. Practical duties of the battery executive.* (6 hours.)

We limited the training in these duties to handling the firing battery at standing gun drill and at service practice; using the aiming circle to lay the guns and to form parallel sheaf; setting out aiming and safety stakes; giving the commands for converging the sheaf as determined from the "table of deflection difference for converged sheaf"; and caring for the piece after service practice.

We realize it is beyond human power to develop a battery executive in two weeks' time, but we did succeed in giving the Reserve officers a working knowledge of how such a job should be performed and of the exacting nature of the executive's duties.

*e and f. Battalion and battery survey.* (Classroom, 4½ hours; outdoors, practical, 8 hours.)

We devoted 4½ hours to teaching the theory of this subject and followed this by two sessions of four hours each in practical work outdoors. A different problem was solved during each of the outdoor periods, using verticals and strip mosaics.

We instructed the Reserve officers in restituting targets from verticals to the strip mosaics, after which we had them run a battalion orienting line and locate by survey the OP and right piece of each battery of the battalion. The orienting line, base point, targets, and position of right piece were plotted on their mosaics, and a day or so later they tested out the

accuracy of their work by firing with the data obtained therefrom.

While the Reserve officers received considerable help from the regular officers in charge of this instruction, they nevertheless worked with surprisingly little confusion and were unanimous that the instruction had been of real value. That they achieved a fair degree of accuracy in their survey was proven to their satisfaction and ours from the results of the subsequent firing with the data taken from the mosaics.

*g. Functioning of the battery and battalion headquarters details.* (2½ hours.)

This conference was given for the purpose of orienting the Reserve officers on the 18-hour "canned" RSOP which was to follow. The instructor was the battalion communication officer and he explained the principles underlying the functioning of the battery headquarters detail and showed how it tied in with the battalion. He then sketched the sequence of the RSOP and outlined the manner in which the headquarters detail would operate during the various phases of the exercise.

By the time this conference and those on fire direction were completed, the Reserve officers were fairly well posted on the nature of the RSOP and, because of the knowledge thus obtained prior to the exercise, they derived correspondingly greater benefit when they saw it develop on the terrain.

*h and i. Motor transportation* (conference, 2½ hours); *Driving instruction — motors — practical* (4 hours).

The conferences on motors held at the motor shed and the driving instruction which followed were largely informative and designed to emphasize a few essential points in the proper care, maintenance, and handling of automotive

## WORKMAN MEETS TOOLS

equipment. The fundamentals of march discipline were stressed during the driving period, part of which was conducted in traffic and part across country. The Reserve officers operated the vehicles, aided by the regular drivers who were seated beside them in the cabs. So limited was the time allotted for the instruction, that no tow loads were carried behind the vehicles.

### *j. Battalion RSOP. (18 hours.)*

In order to develop definitely and simply the various stages of a Howitzer battalion in an RSOP, the successive phases of the exercise were "canned" as previously stated. For the opening phase, the battalion was extended in march column on the road in accordance with the proper road spaces dictated by the ground and air tactical situation. The column was then halted and the Reserve officers in open trucks rode the column from front to rear in order to inspect and study the formation and the road spaces. The battalion communication officer accompanied them and explained the make-up of the column in detail. For example, the composition and transportation of the battalion and battery details were discussed as each one was inspected in turn, and the reason for the location of each in column was explained. After completing the inspection of the column, the Reserve officers took their assigned duties, and the column was then placed in movement, march control being effected by a battalion radio set with the battalion party at the head of the column which operated with another battalion set at the head of the gun column.

The problem included the reconnaissance, selection, and occupation of a defensive position by the battalion pursuant to orders issued by the artillery regimental commander. An outpost line of resistance several thousand yards in front of the main line

of resistance was assumed to have been occupied by our troops, and an officer from the battalion staff, with a small detail and a radio set, was sent forward to establish an advanced OP on this line. He then radioed back from this forward OP such tactical fire missions as would come under his observation during the stage of the hostile development. In addition to this forward observer, a liaison officer with a liaison detail was sent to the supported light gun regiment, transmitting fire missions therefrom by wire, radio or messenger (overlays). Other fire missions came from an airplane observer.

As the situation developed, a fire direction center was organized at the battalion command post, and, after the position was occupied, the Reserve officers were gathered there to observe the operation of fire direction by the battalion and the manner in which fire missions were received and handled by the staff. The communication setup was explained to them in great detail.

Following the exercise, the battalion made camp for the night, returning to the post after breakfast the following morning.

### *k. Conference on Materiel. (2 hours.)*

The average young Reserve officer knows little about the preliminary steps that must be taken before a piece is safe for firing. As a battery officer, such responsibility is inherent, and if he is ignorant of these matters he may be the cause of the death of some of his men or the wrecking of his cannon. Hence there is a vital reason for directing his attention to the weapon and its ammunition.

During the battalion conference on this subject, the care and operation of the breech, recoil, elevating and traversing mechanisms were stressed. These mechanisms were disassembled during

## THE FIELD ARTILLERY JOURNAL

the period in order that the functioning of the parts might be shown.

Attention was invited as to how certain dangers might be avoided by taking proper precautions in the handling of shells, powder, and fuzes.

We admit that the Reserve officer will forget most of the *details* of this instruction. But we believe that we so emphatically impressed him with the fact that he must take certain *precautions* and make certain *inspections* of his weapon before firing, and that he must refrain from taking any *liberties* with shell, powder and fuzes, that he will never in the future handle these matters with the indifference that arises from ignorance. Thus, while the Reserve officer will forget how much liquid goes into the recoil mechanism, he will remember that *something* must be put into that system before the gun is fired, and furthermore that an inspection must be made to determine whether this has been done.

We feel that this much can be accomplished in a two-hour period of instruction, and that it should serve as sufficient warning to the Reserve officers to enable them to forestall accidents whenever the emergency should arise for them to assume definite responsibilities as battery officers.

### 1. Service practice. (18½ hours.)

We have discussed previously the subject covered by the battalion gunnery instructor in his course in the preparation and conduct of fire. They were:

Percussion precision (axial).

Percussion bracket (axial).

Use of *r/R* and liaison methods of fire.

Transfer of fire.

In order that none of these types should be neglected during service practice, we allotted five half-days to firing and fired only one of these types of fire during each of the first four sessions. The last half-day was devoted

to firing both precision and bracket problems.

With about forty rounds of 37-mm. shell available for each officer, he was able to fire from four to six problems, each problem being a different type of fire. In addition, he had the benefit of observing the problems fired by the other officers of his group.

Throughout the service practice, the proper designation of targets with respect to skyline features as reference points was stressed, and the correct manner of conducting a critique was emphasized. After the second day of firing, the Reserve officers were called upon to critique their comrades' problems.

Firing by liaison methods and using *r/R* was done from a forward dugout considerably in advance of the gun position. For each problem that was fired by liaison methods, the instructor detailed one of the Reserve officers to act as liaison officer, and another to act as battery commander. These two officers sat beside each other while the problem was being fired. The liaison officer made his observations by the usual method of announcing the number of yards short or over, and right or left of the target which he estimated the burst to be. The battery commander thereupon converted these observations into firing data commands for the guns. These commands were then radioed to the gun position. Having the battery commander in the dugout with the liaison officer was a forced situation, but it allowed all of the Reserve officers to be present in the dugout throughout the firing and they fully understood the reason for the irregular set-up.

Despite the number of hours of instruction allotted to the blackboard and the terrain board, the problems fired during service practice, generally speaking, were extremely slow. However,



## WORKMAN MEETS TOOLS

this is not surprising, since speed is a facility resulting from the observation and the conduct of fire of many varied types of problems. The instructor, therefore, refrained from urging the Reserve officers in this respect. What he did stress was the proper sequence of commands, correctness of methods of fire, proper sensings, correct handling of range, deflection and distribution, and whether effect was obtained on the target, and, if so, its extent.

The location of our front line was designated for each problem, in order that the Reserve officers might be impressed with the danger of firing on our own troops—the inexcusable offense.<sup>7</sup>

The nature of the target was clearly explained to the section upon its designation. Thus, although the firing was done with 37-mm. shell, commands were simulated as if for the 3-inch or 75-mm., and consequently the proper choice of shell and fuze had to be made by the officer firing.

During the last day of service practice, the Reserve officers were stationed at an OP far enough to the flank so that the angle  $T$  was slightly less than 100 mils. From this location, they were forced to take into account the offset in figuring deflection, and the necessity for making an  $s$  shift in deflection whenever the range was increased or diminished.

### *m. Airplane flight. (½ hour.)*

On the last day of his active-duty period, each officer was given about thirty minutes in the air. He took along with him a 1-inch contoured map and strip mosaics of the area over which he was to make the air reconnaissance, and with the help of the pilot he identified as many ground forms as possible.

The Reserve officers were much enthused over this brief experience in the air, and the flight furnished a fitting



**THAT'S MEDICINE BLUFF TWO**

"...with the help of the pilot he identified....ground forms..."

climax to their two weeks' period of active-duty training.

## VII—Conclusions

1. The Reserve officer component occupies a most important position in the scheme of National Defense. Hence every opportunity should be given these officers to improve their technical knowledge whenever they are ordered for active duty training with regular army units. The regular unit to which they are assigned should exert itself to the utmost in order to give these officers an exceptional opportunity for training. Regardless of other official duties, the primary consideration of the unit should be the instruction of these officers during the two weeks' period. From a selfish viewpoint, the very favorable reaction of the Reserve officers to such instruction will be of tremendous value to the service.

2. The schedule of active-duty training, as discussed in this paper, is entirely

## THE FIELD ARTILLERY JOURNAL

practical. That it can be carried out in all particulars is established by the fact that it has been used regularly in this battalion. It received the unqualified indorsement of the regular officer on duty as Chief of Staff of the Reserve division, of the regular officers who have participated in this training, and of the Reserve officers who have benefited therefrom.

3. The schedule of training constitutes a review of essential field artillery subjects and is well adapted for the two weeks' training of artillery reservists who report to a field artillery unit of the regular army for active duty on M-Day. It is also well adapted for use as an abbreviated refresher course for artillery officers of the regular army who are ordered to duty with field artillery units upon mobilization and who have been out of touch with the development of their arm because of the nature of their duties prior to mobilization.

4. The schedule in time of peace serves as an excellent refresher course to artillery reservists of considerable experience since it enables them to

visualize what subjects they have studied or plan to study in the Army Extension Courses. For the same reason, it is of value to young Reserve officers just graduated from college who intend to pursue these courses.

5. Regardless of the thoroughness and efficiency of the instruction on the part of the regular army unit, the period of active-duty training is of little value to the Reserve officers unless they pursue their artillery studies after completing it. On the other hand, it is of great value if they pursue their studies in the Army Extension Courses, since it has clarified for them certain textual matter which otherwise they might have difficulty in understanding. In addition, it has served to bring them up to date on a few of the most recent and most important artillery developments, oriented them on the job of the battery officer, given them some practical experience as artillerymen in command of troops, and indicated the possibilities of the modern field artillery arm.



*Maintaining perfect alignment, a battery of the 82d FA (Horse), passes the camera at a spanking trot, as part of a review of the First Cavalry Division, Fort Bliss, Texas. Their weapons are the 75-mm. field howitzer.*

# The Conference-Demonstration Method of Tactical Instruction

BY COLONEL A. G. PAXTON, 114TH FA

THE mission of the Field Artillery is to assist the other branches, especially the Infantry and Cavalry, in combat by fire power. The normal mission of the howitzer field artillery regiment is the general support of the division. Therefore, it is highly essential that the officers of a well-rounded field artillery howitzer regiment should not only be proficient in the tactics of their own branch, but should have a good general knowledge of the tactical employment of the division and its combat elements, as well.

The tactical training of National Guard field artillery is handicapped in three ways: First, the combined training of the several branches in large bodies has been very limited, and the average officer fails to visualize the "big picture" of the division and how it functions; second, even in the combined training of the several arms, it is impractical for the field artillery to fire its supporting fires and defensive concentrations, because of the necessary safety requirements; third, with the limited allowance of service ammunition at field training, we terminate our gunnery problems with the announcement of the "Adjusted Elevation" by the battery commander, and execute our fires for effect by commands only. In this procedure, the junior officer, particularly, quite often fails to realize that the adjustment of our batteries is only a means to an end in the delivery of our tactical fires in support of the infantry and cavalry.

With a view of overcoming these handicaps, the 114th FA has adopted a method, which might be called the Conference-Demonstration Method of

Tactical Instruction. While it has its limitations, nevertheless it does present a clear picture of the division and how it functions; it affords a complete discussion of field artillery tactical fires; and it demonstrates how and why these fires are delivered in a given situation.

The first conference-demonstration, "The Tactical Employment of Field Artillery in Support of the Reenforced Infantry Division in a Defensive Meeting Engagement" (Passive Defense), was presented at the National Guard Armory at Jackson, Miss., February 6th, by the officers of the regimental school, ably assisted by the regular army instructors. This demonstration was preceded by a conference at each of the battalion schools, on the employment of the combat and supply elements of the Reenforced Infantry Division, in order to familiarize all of the officers with the strength, composition, equipment, and normal functions of the organic and attached units of the several branches composing the division, in a defensive situation.

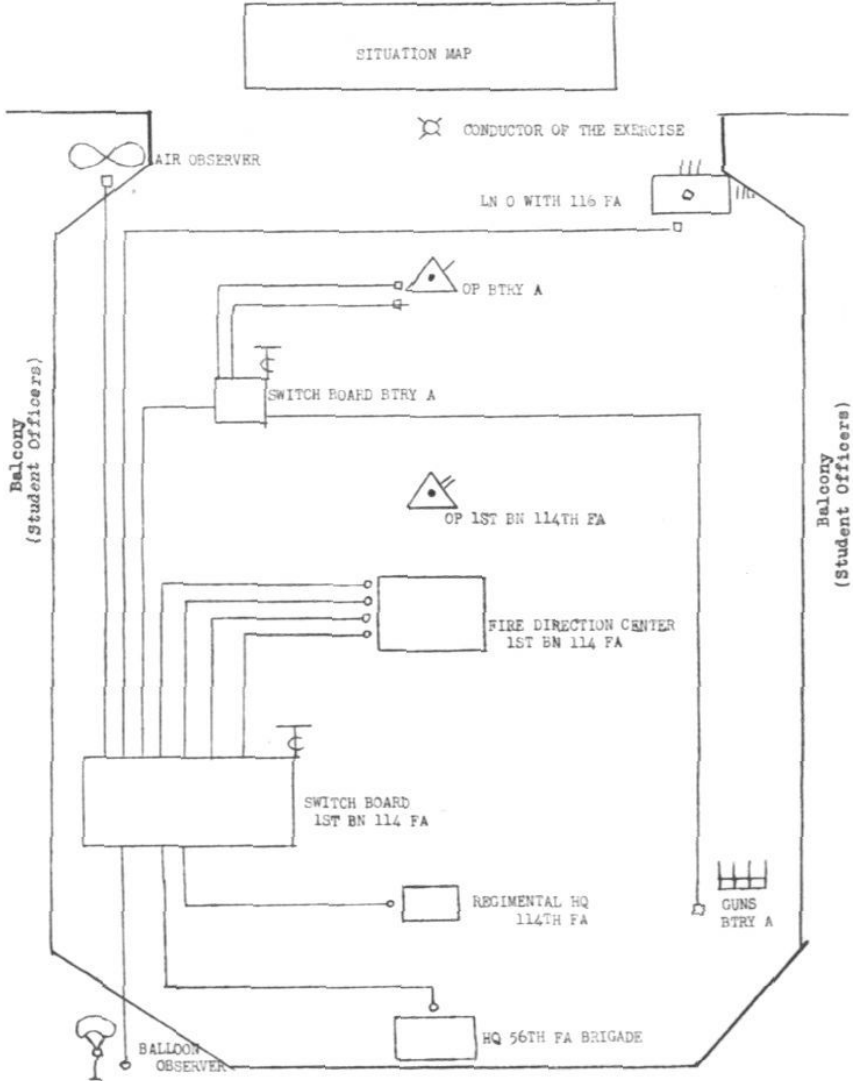
The morning session of the demonstration was devoted to the presentation of the General and Special Situations, and the reading of the division commander's order to the student officers, grouped in front of an Army War Game Map (Scale 12" to 1 mile), on which was graphically illustrated the disposition of all troops. Throughout the Demonstration, this map was posted to follow the situation by further imposing the disposition of other troops engaged, boundaries, positions of artillery, hostile movements, and artillery fires prior



THE CONFERENCE IN SESSION

# METHOD OF TACTICAL INSTRUCTION

## INSTALLATIONS FOR THE DEMONSTRATION



Balcony  
FIGURE 1

## THE FIELD ARTILLERY JOURNAL

to the attack, counterpreparation, fires during the attack, and fires after the attack, etc. By this means a very clear graphic illustration of the division was presented. Following the reading of the division commander's order a conference on "The Artillery Fires in the Defense" was presented, illustrated freely by graphical charts.

For the afternoon session, all of the student officers were moved to the balcony. On the floor of the armory were established the CP's of Battery A, 1st Bn 114th FA, Regt, and 56th FA Brig, Fire Direction Center 1st Bn, and Battery and Battalion OP's (Fig 1), all connected by telephone communications, and equipped with the proper situation maps, firing charts, etc. The session opened with a conference on the "Fire Direction Center," giving its organization, functions, and methods of operation. The director of the demonstration then proceeded to read the narrative, reciting the progress of the situation from the initial contact of the covering forces up to and including the launching of the attack and the delivery of the counterpreparation fires. As the situation progressed, one type problem for each kind and method of fire was delivered by commands from the Fire Direction Center, Bn and Battery OP's. The procedure of the resupply of ammunition and Class I supplies was illustrated. Each of these problems was appropriately timed to the situation, and illustrated on the Situation Map.

The demonstration lasted 6½ hours, including the serving of the noon meal, and was attended by Maj. Gen. George Van Horn Moseley, Commanding General, 4th Corps Area, Col. A. L. P. Sands, Officer in Charge of National Guard Affairs, officers of the 114th FA, 155th Inf. 106th Engrs, and Reserve Officers.

The discussion of the division is a large subject. It requires much thought and study for its proper conception, and can be fully

mastered only by experience in the field. Even the most ardent National Guard officer student finds his hours of study so engaged by the Tactics and Technique of Field Artillery that he has little time to devote to the tactics of the division. Therefore, the regimental commander, being responsible for the training of his unit, which has a mission of the general support of the division, is faced with a problem of devising some method of instruction of the officers on the tactical teamwork of the FA, in connection with the division. The Conference-Demonstration Method of Tactical Instruction, while lacking the advantages obtained by employment of large bodies of troops, is considered an excellent method available during the Armory Training Period, and has borne fruitful results in this regiment.

The program followed in this demonstration is presented herewith:

### TIME SCHEDULE

10:00-10:10 AM—Opening Remarks. Colonel A. G. Paxton.

10:10-10:40 AM—General Situation and detailed orders issued by the 31st Division for the occupation of position. Capt. G. S. Smith.

10:40-10:50 AM—Break.

10:50-11:30 AM—Lecture—Artillery Defensive Fires. Colonel A. G. Paxton.

11:30-12:10 PM—Lunch.

12:10-12:30 PM—Lecture—Fire Direction Center. Major B. B. Lattimore.

12:30-1:15 PM—Orders issued by CO 114th FA as column commander of the center column. Orders issued by Brigadier General 56th FA Brigade to Arty Regimental Commanders at Spangler. Orders issued by CO 114th FA at Round Top (hill) to his battalion commanders. Orders issued by CO 1st Bn 114th FA and his actions, from time he received his first orders from CO 114th FA as column commander. Orders issued by BC Battery A.

## METHOD OF TACTICAL INSTRUCTION

1:15-1:30 PM—Occupation of position—units report ready to fire. Battery A registers on Base Point.

1:30-1:40 PM—Break.

1:40-2:30 PM — Battalion assigns Check Concentrations. Air Observer assigned to work with 1st Bn visits FDC. Battalion receives overlay of harassing and interdiction fires from Regt. (These fires have been assigned to Regiment by Brigade.) Problem 1—Air Observer; Problem 2—Ln O with 116th FA; Problem 3—Observed fires by batteries; Problem 4—Priority mission by Brigade received through Regiment.

2:30-2:40 PM—Break.

2:40-3:30 PM—Bn receives overlay for close defensive fires and counterpreparation "A" that have been coordinated by Brigade as a result of overlays submitted by light regiments.

Problem 5—Balloon Observer; Problem 6—Ln O with 116th FA requests a Bn concentration; Problem 7—Ammunition report requested by regiment as a result of a call from Brigade; Problem 8—Interdiction mission assigned by Brigade is received through Regiment; Problem 9—Counterbattery mission; Problem 10—Harassing mission; Problem 11—Weather Correction; Problem 12—Fire Counterpreparation "A."

3:30-3:40 PM—Break.

3:40-4:25 PM—Officers in battalion groups (2d and 3d) to visit installations to see Opn Maps; set-up of Fire Direction Center; records kept re firing data and ammunition.

4:25-4:30 PM—Replies to questions submitted, and closing remarks by Colonel A. G. Paxton.



*Private Jones had been in the Army a very short time—in fact, not long enough to become familiar with all the terms used in everyday military parlance. Seeing his name on a certain posted list one day, he straightway betook himself to his bunk and fell down upon it with a delicious feeling of comfort, mentally congratulating himself on having such a considerate boss as Uncle Sam. He was just dropping off into the arms of Morpheus and like Alexander, dreaming of future worlds to conquer, when he was rudely awakened by the sergeant, who in stentorian tones and no uncertain language, duly punctuated, demanded to know why he was sleeping valuable time away. Private Jones, utterly bewildered, said meekly, "Well, I thought you meant for me to go and lie down and rest. My name was on the Fatigue List." —Master Sergeant C. C. Cooper, Retired.*



# One Hundred Percent Regiments of the National Guard Field Artillery

Something about those regiments of Field Artillery, National Guard, all of whose officers are members of the United States Field Artillery Association:

## ONE HUNDRED AND ELEVENTH FIELD ARTILLERY, VIRGINIA

(COLONEL WILLIAM H. SANDS, *Commanding*)

*War of 1812:* Portsmouth Light Artillery organized February 15, 1809, later known as Grimes Battery, the name of its Civil War commander. Present designation—Battery C 111th FA.

*Civil War* (Confederate States Army): Grimes Battery (Battery C), Norfolk Light Artillery Blues, organized February 22, 1828 (Battery B), Richmond Howitzers, organized November 9, 1859 (Battery A). Service in all principal engagements with Army of Northern Virginia.

*Mexican Border Service:* Battery A. Battery B. Battery C and Battery D, First Virginia Field Artillery, the last-named organization being in Hampton, Virginia.

*World War Service:* Organized into 111th Field Artillery, 54th Field Artillery Brigade, 29th Division. A. E. F. participation.

Reorganized after World War with Regimental Headquarters at Norfolk, Virginia. Federally recognized May 26, 1923.

Converted from 75-mm. Horse Drawn Regiment to 75-mm. Truck Drawn Regiment, November 10, 1934.



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## ONE HUNDRED AND TWENTY-FOURTH FIELD ARTILLERY, ILLINOIS

(COLONEL C. C. HAFFNER, JR., *Commanding*)

The shield is red, yellow, and white for Artillery, Cavalry, and Infantry, respectively. The "Y" dividing the colors of the shield suggests the pairle on the unofficial arms of the City of Chicago, home of the Regiment. The high point of its service in the World War was on the west bank of the Meuse near Luneville in the Arrondissement of Montmedy in support of the 89th Division. The rampant lion on the crest is from the arms of Montmedy and symbolizes not only where the regiment distinguished itself but also its fighting characteristics. The motto, "Facta Non Verba" (Deeds Not Words).



The 124th Field Artillery was organized at the beginning of the War from the famous old Seventh Infantry Regiment of Chicago and from the downstate squadron of the First Illinois Cavalry. The Seventh Regiment in turn



## ONE HUNDRED PERCENT REGIMENTS

had been formed from the "Hibernian Rifles," a civilian military organization formed in Chicago after the Civil War. The Seventh Regiment served in the Spanish-American War and on the Mexican border.

The 124th Field Artillery became part of the Thirty-Third Division on September 21, 1917, and in France, as part of the 58th Field Artillery Brigade, supported at various times the 89th, 1st, 91st and 32d Divisions. World War Streamers authorized are: Lorraine, St. Mihiel, Meuse-Argonne.

At present the Regiment is one of the three horse-drawn Field Artillery regiments of the National Guard in the United States. In November, 1930, the Regiment moved into its new Armory, one of the largest and finest in the United States, considered the center of horse activity in the City of Chicago because of its unique facilities for training mounted troops.

Its stable alone is well worth a visit; its stalls are of the finest construction with automatic watering troughs, movable stall floors, ventilating system, and high, airy ceiling kept scrupulously white. All metal is protected with aluminum paint.

While proud of the past, the Regiment lives in the present with an eye to the future and is trying to develop alert and well-trained young men. Its constant endeavor in addition to its military activity is to serve as a vital part of the community in which it lives, providing club, recreational, and athletic facilities for its personnel.

Its regimental football team has twice in recent years won the Calumet League Championship. Last year the 124th basketball team won the Chicago City

Title and the Central A.A.U. Championship. *Over half of the personnel of the Regiment participate in its track meets.* Its polo teams have repeatedly won Metropolitan League Championships and have twice won national titles in indoor play.

The 124th FA jumping team has during the last year and a half defeated teams from the 14th Cavalry, the 10th Cavalry from Fort Leavenworth, the Third Field Artillery, the Canadian Army team, and the 61st Cavalry team of New York.

The 124th FA boxing team has one of the outstanding strings of amateur fighters in the Middlewest.

Each battery has excellent basketball, baseball, track and pistol teams with the regimental leagues in these sports continuing throughout the season.

At polo and military exhibitions on Saturday nights during January to March there are many mounted events for enlisted men, including battery drills through flares in the dark, the lance drill of the 124th FA "Red Devils" (which is similar to the drill the Canadians put on at Madison Square Garden), stake-driving contests, mounted basketball, mounted wrestling, and other events.

This complete program has greatly aided in the development of the morale of the Regiment and is indirectly reflected in many ways in its military ability. The Regiment has no problem in drill attendance, averaging well over 90 percent for each of the last five years.

The State of Illinois has spent large sums to afford, in this armory, unusual facilities for the training of field artillery drivers.

# Lateral Conduct of Fire

## A Comparison of the German, French, and American Methods

BY 1ST LIEUTENANT D. C. McNAIR, FA

A GREAT deal of controversy has been aroused in the past few years about the methods of lateral conduct of fire. A great deal has been written on the subject and various means of solving the problem have been proposed. The present American method, described in Field Artillery Book 161, is the result of considerable experiment and development. Many people, however, still believe that it is open to improvement. It is thought that a further and pertinent means of investigating the question is a comparative study of the German, French, and American methods. It is the purpose of this article to compare these three methods and to attempt to determine which method is best suited to our needs.

This study is composed of the following parts:

A brief summary of the main points in each of the three methods.

A problem in conduct of fire solved by each of the three methods.

A brief comparison of the three methods.

The summaries of the three methods have been made as brief as possible in order to bring out the main points of difference, without including material which is more or less irrelevant to the main question involved. These summaries have been obtained from translations of appropriate sections of the German and French artillery manuals and from Field Artillery Book 161. The precision adjustment is used as the basis of comparison, since it constitutes the foundation upon which the methods are based.

### The German Method

No distinction is made between large and small angle  $T$  methods.

*To bring a shot to the line observer-target:*

Shots usually are brought to the line by range changes. These are arbitrarily made by the BC and their size is dependent on his judgment.

*To keep the shot on the line:*

When a shot has been brought to the line, deflection changes are made in conjunction with range changes, to keep it there.

To determine the deflection change necessary to keep the round on the line in conjunction with a 100-yard range change, the approximate locations of the OP, gun, and target are plotted on the map and the angle  $T$  is measured. With angle  $T$  and the range, the  $s$  table is entered and the proper change in deflection for a 100-yard range change is determined. This  $s$  table is similar to ours and is contained in the firing tables. For range changes other than 100 yards,  $s$  is modified a proportional amount.

*Making the adjustment:*

The Germans emphasize getting on the line by range changes, although shifts in deflection are permissible if they will facilitate the adjustment. By making several range changes to get the shot on the line, the line of fire is marked on the ground by the several bursts. The BC then estimates the distance from the line of fire to the target and makes a deflection change to correspond to this estimation.

Usually, either range or deflection

## LATERAL CONDUCT OF FIRE

is adjusted separately with changes in one element alone. If desired, however, both may be adjusted simultaneously, as is done with axial methods. The size of the change in range and in deflection depends on the accuracy of the initial data. Bold changes are made if necessary to obtain a bracket.

In precision fire, either the elevation scale, the quadrant, or the range drum may be used.

When a range bracket is obtained, it is verified by one or more rounds at each limit. If both overs and shorts are obtained at a range or elevation, this is used as the center of the bracket.

Fire for effect is commenced at the center of this bracket in half series of three rounds. It is continued with changes in range or elevation until the number of rounds in one sense is approximately equal to that in the other.

*Firing with range commands—after obtaining a 100-yard bracket:*

If the three rounds of the first series are in the same sense, the range is changed 50 yards. If this proves to be too much, a 25-yard change is made.

If one round in a series of six has a sense opposite to the rest, the range is changed 25 yards and another series is fired. The adjustment is completed when the sensings of a series are 3 and 3, or 4 and 2.

If one range gives a preponderance of shorts and a range 25 yards greater gives a preponderance of overs, fire for effect is carried on alternately at the two ranges.

*Firing with elevation commands—after obtaining a 1-fork bracket:*

If the first three rounds have the same sense, the elevation is changed  $\frac{1}{2}$  fork.

If, in a series of six rounds, one has a sense opposite to the rest, the elevation is changed  $\frac{1}{2}$  fork and a new series is fired.

The adjustment is completed when the ratio of the rounds is 3 and 3, or 4 and 2.

If, during the adjustment, one elevation gives a preponderance of shorts and  $\frac{1}{4}$  fork greater gives a preponderance of overs, fire for effect is carried on at both alternately.

*Adjustment of deflection:*

During the adjustment of elevation or range, the necessary deflection changes are made to keep the shot on the line. As in the American method, when a 2-mil deflection bracket is split, the deflection is correct.

### The French Method

The French, like the Germans, make no distinction between large and small angle  $T$  methods. When  $T$  is less than 80 mils, axial methods similar to ours are used. When  $T$  is greater than 80 mils, lateral methods are used.

*To bring a shot to the line:*

Rounds may be brought to the line by either range or deflection changes.

If data have been estimated and the size of angle  $T$  has not been accurately determined, the angular difference in the deviations of two rounds fired with the same deflection but different ranges may be measured. The proportional change to bring the round to the line may then be computed. Similar results may be obtained by using rounds fired with the same range but different deflections.

If it is difficult to bring a round to the line because of dispersion, and irregularities of the terrain, series of 2 or 4 rounds are fired with the same data.

*To keep the shot on the line:*

When a line shot has been obtained, rounds are kept on the line by making deflection changes to correspond to the range bounds made.

The factor used to determine the size of the deflection changes necessary to stay on the line is called the Coefficient

## THE FIELD ARTILLERY JOURNAL

of Observation. It may be determined as follows:

*By calculation.* Deflection change equals range change times tangent of angle  $T$ .

*Graphically.* The setup is plotted to scale and the deflection change corresponding to any desired range change may be measured with a protractor.

*By firing.* The deviations obtained with arbitrary coefficients are modified to obtain the correct factor.

*Making the adjustment:*

Adjustment of elevation by precision fire is conducted with the quadrant.

Range and direction may be adjusted separately or simultaneously.

*Adjustment of range and direction separately:*

*Adjustment of direction.* When the terrain permits, the line of fire is marked by rounds fired with the initial deflection and with several elevations 2 or 4 forks apart. From this line the shift is estimated to place the line of fire on the target. Bold shifts in deflection are made to obtain a bracket, continuing until a 4-mil bracket is split.

*Adjustment of range.* When the deflection has been adjusted by the foregoing method, the most probable elevation is estimated and a 1-fork bracket is sought.

Fire is executed in series of 2 or 4 rounds. If data are not accurate, single rounds are fired.

The adjustment is composed of two phases: Trial Fire and Improvement Fire.

*Trial fire.* A one-fork bracket is sought. Bounds of 2, 4, or 8 forks are made, according to the estimated error. This bracket is verified by at least 2 rounds at each limit. The mean of these elevations is the trial elevation.

If a bracketing or mixed series, or a target hit is obtained, the elevation is

repeated. If the results of these two series give at least 2 rounds in a sense opposite to the rest, the trial elevation is determined. If only one round is obtained in an opposite sense, all rounds are considered to have been in the sense of the greater number and trial fire is continued with one-fork bounds.

*Improvement Fire.* Fire is commenced at the trial elevation with series of 4 rounds so as to have at least 6 rounds sensed. The elevation is then modified by as many *nths* of a fork as there are rounds difference between the overs and shorts.  $N$  in this case is the number of observed rounds. The elevation thus obtained is used to commence fire for effect.

If a target hit is obtained, it is considered as an over and a short. If the first series of improvement fire gives rounds all in the same sense, the elevation is corrected by half a fork in the proper direction before continuing fire.

If all rounds bracket the target, they are assumed to have been fired at an elevation equal to the mean of the two elevations used, and fire is continued with this elevation. If all rounds are of the same sense, trial fire is recommenced, beginning at the last elevation fired, and making one-fork bounds.

Only the sense of the errors can be estimated, both in range and in direction. The deflection is improved when positive sensings are obtained.

*Adjustment of range and direction simultaneously:*

*Trial Fire.* Fire is executed in series of 2 or 4 rounds. If no rounds are on the line, changes in direction or in range are made to obtain line shots. When at least one line shot has been obtained, the sense, both in direction and range, of the center of impact of the series, is estimated. A deflection bound of 8, 16, or 32 mils is made, depending on the accuracy of the data.

## LATERAL CONDUCT OF FIRE

At the same time the elevation is changed in order to keep the rounds on the line. For this purpose the Coefficient of Observation must be known or determined. This process is continued until a 4-mil deflection bracket is obtained.

If a short and an over are observed in the same series, or if a target hit is obtained, improvement fire is commenced.

*Improvement Fire.* Fire is commenced with series of 4 rounds until at least 6 rounds have been sensed. The adjusted elevation is obtained by the rule of *nths* of a fork. The rounds near the line are used to improve the deflection by determining whether the line of fire is to the right or left of the target.

When improvement fire is completed, fire for effect is commenced.

### American Method

Conduct of fire is termed lateral when the target offset exceeds 100 mils. It is divided into two parts—small *T* when the offset is less than 300 mils, and large *T* when the angle exceeds that amount.

#### Small T

*To bring a shot to the line:*

The shot is brought to the line by deflection changes equal to  $r/R$  times the observed deviation. *R* is the guntarget range and *r* is the distance from observer to target. The range is not changed until a line shot is obtained.

*To keep the shot on the line:*

When the shot has been brought to the line, the necessary change in range is made. The round is kept on the line by making a shift of the same number of *s* bounds as there are forks in the range bound. The value of *s* may be obtained from the firing tables as a function of *T* and the range. It may also be computed by the formula: *s* equals  $1/10 T$  divided by *R*. When the fork is used as the unit of

range change, *s* must be modified by multiplying it by the factor  $F/c$ , *F* being the value of the fork in mils and *c* the number of mils change in elevation necessary to secure a 100-yard range change.

*Making the adjustment:*

When a trial elevation is obtained, fire for effect is started. A trial elevation is the center of a one-fork bracket, an elevation giving a target hit, or an elevation giving both overs and shorts. The deflection is not changed unless a positive sensing is obtained from a line shot. After a positive sensing the deflection is changed  $\frac{1}{2} s$  or 2 mils, whichever is greater, until a deflection bracket is obtained. This bracket is then split until the deflection is correct. During fire for effect, range may be sensed by rule, shots on the side of the line toward the guns being short, and those on the other side, over.

#### Large T

*To bring a shot to the line:*

Rounds are brought to the line by range changes. The size of each change is obtained by multiplying the observed deviation by the factor  $c/d$  (*d* being the change in deviation between two rounds fired with the same deflection and 100 yards difference in range.) Both *c* and *d* may be obtained from the firing tables, *d* may also be obtained by dividing  $1/10 T$  by *r*.

*To keep the shot on the line.*

When a line shot is obtained, the deflection is shifted 1 *s*, 2 *s*, or 4 *s*, depending on the accuracy of the initial data. The elevation is changed by a number of forks equal to the number of *s* bounds made.

*Making the adjustment:*

When a deflection bracket is obtained it is split. The bursts are kept on line by splitting the corresponding elevation changes. This process is repeated

THE FIELD ARTILLERY JOURNAL

until a trial deflection is obtained. A trial deflection is one giving a target hit, the center of a one-s deflection bracket, or the center of a 16-mil deflection bracket when s is greater than 16 mils. Fire for effect is started at the trial deflection and at the range to put the bursts on the line.

*Adjustment of elevation in both types of fire:*

One sensing at each limit of the bracket is sufficient to determine a trial elevation. The fork is the unit of elevation change used.

As previously stated, fire for effect is started at the trial elevation. Groups of six sensings are sought. Rounds are fired in half-groups of three. If the first half-group has all rounds in the same sense, the elevation is changed 1/2 fork in the proper sense. The group of six is considered to have been fired at the mean of the two elevations used.

**A SITUATION**

Precision Small T  
Observer on the  
Left

Estimated Data

T = 260 R = 4.4 75-mm. Gun  
r = 3.0 F = 4 Shell Mark I, Fuze Short

**AMERICAN METHOD**

$$c = 6 s = \frac{26}{4.4} = 6 s' = 6 \times \frac{4}{6} = 4$$

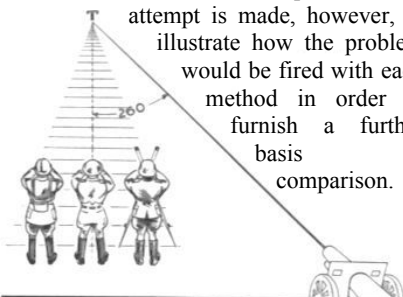
$$F = 4 \frac{r}{R} = \frac{3}{4.4} = 7$$

After firing each group an adjusted elevation is determined and used to fire the next group. If the number of overs and shorts is equal, the adjusted elevation is the one at which the group was fired. If not, the adjusted elevation is determined as follows: Determine the difference between the number of overs and shorts. Change the elevation in the proper direction by this number of twelfths of a fork.

Further fire is continued in groups of six, the deflection being improved where possible.

*A problem solved by each of the three methods:*

The following problem in conduct of fire is, as closely as possible, solved by each of the three methods. These solutions admittedly are somewhat artificial because of the many uncertain elements which enter into a problem. The attempt is made, however, to illustrate how the problem would be fired with each method in order to furnish a further basis of comparison.



SENSING

COMMAND	Elev	Dev	Rn	Df	REMARKS
Q	150	50R	?		50 × .7 = 35
L35	150	4R	+		(L3 + L16) = L19
L19	134	5L	—		(R4 + R8) = R12
R12	142	Line	—		
R4	146	2L	+		Consider as Line
L2, 3 Rds	144	2R	—	?	Range sensed by rule
		5L	+	?	
		Line	—	—	
R2	144	3R	—	?	
		4L	+	?	
		Line	+	+	
L1, 6 Rds	144				Deflection is correct 11 ROUNDS USED

LATERAL CONDUCT OF FIRE

**GERMAN METHOD**

$$F = 4 \quad s \text{ (from Tables)} = 6 \text{ (for 100 yds.)}$$

$$\frac{r}{R} = \frac{3}{4.4} = .7 \quad F = 70 \text{ yds.}$$

$$s \text{ for 1 fork} = .7 \times 6 = 4$$

SENSING					
COMMAND	Elev	Dev	Rn	Df	REMARKS
Q	150	50R	?		Line of fire has been outlined on ground and is right of target.
	166	20R	?		
	180	4L	?		
	176	Line	+		
L40	136	5L	—		s is used to stay on line, range bracket obtained.
R20	156	6R	?		
	160	Line	+		
L10	148	2L	+		Verifying bracket.
L5	144	Line	—		
	144	2R	—		
R5	148	Line	+		
L3, 3 Rds	146	2L	+	?	Series all in same sense, change elevation ½ fork.
		Line	+	+	
		3L	+	?	
L2	144	Line	—	—	
		2L	+	?	
		3R	—	?	
R1	144	2L	+	?	Ratio of series is 4 and 2 ∴ continue at this elevation.
		3R	—	?	
		Line	—	—	
	144				

20 ROUNDS USED

**FRENCH METHOD**

$$\frac{r}{R} = \frac{3}{4.4} = .7 \quad \text{Fork} = 4 \text{ mils} = 70 \text{ yds.}$$

$$\text{Coefficient of Observation} = 70 \times .26 = 18 \text{ yds.}$$

$$18 \text{ yds. at } 4400 = \frac{18}{4.4} = 4 \text{ mils.}$$

SENSING					
COMMAND	Elev	Rev	Rn	Df	REMARKS
Q	150	50R	?		Line of fire has been marked on ground and is right of target. Shot brought on line by range changes.
	166	20R	?		
	180	4L	?		
	176	Line	+		
L40	136	5L	—		Coefficient of Observation used to stay on line.
R20	156	2R	+		
L10, 2 Rds	146	2L	+		
		Line	+		

THE FIELD ARTILLERY JOURNAL

L5	142	Line	—		
		2R	—		A 1-fork bracket has been obtained and verified.
R3, 4 Rds	144	Line	—	—	
		2L	+	?	
		3R	—	?	
		2L	+	?	Deflection is left.
R2	144	Line	+	+	
		2R	—	?	
		3R	—	?	
		4L	+	?	Deflection is right.
L1	144	2R	—	?	
		Line	—	—	
		Line	+	+	
		2R	—	?	7 short, 5 over
4 Rds	144.7				$\frac{2}{12} \times 4 = .7$
					22 ROUNDS USED

*A brief comparison of the three methods.*

The German system, at first glance, appears to be the simplest. Fewer words are required to describe it than are necessary for the other two. However, like the French method, it is not believed to be sufficiently specific. Both methods give the BC a great deal of latitude and leave much to his judgment. While this is an admirable characteristic if the BC is an experienced shot, it is believed that the inexperienced officer will encounter much trouble as the result of this latitude. He will not know exactly what to do in many cases and consequently will waste time and ammunition in making his adjustment. As may be imagined, and as indicated in the examples given, both the German and French methods appear to require more ammunition than the American method.

Both the German and French methods presuppose very accurate initial data, which much of the time are secured from a map. We have practically no maps, even of our own country. Consequently, in war, we may not always have accurate

initial data, especially with inexperienced BC's and battery details.

Germany and France have compulsory military training system by which officers and enlisted men are available in considerable numbers for periodic training. We do not have this system. Our present number of reserves will be rather small in case of emergency. Speed in training will consequently be essential if we become involved in a major conflict. It is believed easier for an officer to learn a simple method which can be followed logically and easily in all cases than it would be for him to acquire the judgment and experience which only result from considerable firing. Experience with the three-month course for National Guard and Reserve Officers at the Field Artillery School bears out this conclusion. In an emergency we will have neither the time nor the ammunition necessary to train our new officers thoroughly. It would seem better, therefore, to teach them a simple method which they could learn quickly and apply easily.

The American method has the advantage of furnishing a definite set of



guiding principles in a simple form. By following these principles it is possible for an officer to become a fairly proficient shot within a period of three months. It is not believed that this would be possible if the method were not so specific. The American method has the disadvantage of being divided into two cases, large *T* and small *T*, with slightly different methods for each. This increases the difficulty encountered by the beginner. With proper instruction, however, the average officer

appears able to overcome this difficulty with little trouble.

For the reasons stated in the foregoing discussion, it is felt that the American method has definite advantages over the German and French methods. It is further believed that the disadvantages of the latter are more serious than those of the American method. It is therefore concluded that the American method is better suited to our needs than either of the other two.

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## The Problem of Military Education

BY MADGE ELWOOD

FATHER Major sighs and looks worried when Junior asks about his studies. He decides that this is going to be a difficult year. Father Major has his own problems. Father Major is also going to school and learning how to be a General. Learning how to be a General is, at best, a difficult subject. There really should not be two students in one family.

"What is a parallelogram?" repeats Junior.

Father Major sticks a blue pin on top of a red pin and announces that the Blue Army has captured the Red Army's hill number 13 and that the Red Army has been forced into a gully with the grasshoppers. Father Major has a mind above parallelograms. But he adds (because after all, a father, even though he may someday be a General, is still a father), "You might ask your Mother. She will be glad to help you."

Mother Major, though, has a mind *below* parallelograms. She returns: "Help me pick up these pins before the baby swallows them. The baby has a weakness for pins and I'm afraid the Doctor is going to get tired of coming to the house before the winter is over. Parallelograms? Oh,

dear, you are certainly growing up." Mother has a vague recollection that parallelograms were a nightmare during her high school days. (But she also remembers that there was a helpful boy who sat back of her in class.) Parallelograms do not seem to have any practical connection with the commissary, maids, and keeping the baby quiet so Father Major can capture the Red Army headquarters. But since, after all, a Mother must not discourage her Child, she says: "You might ask Captain A. He is very good at keeping bridge scores."

Captain A. is very busy. Captain A. is a student at the Bakers and Cooks school. Captain A. is attempting to figure what to feed an Army. Captain A. is also trying to decide how he can exhibit his newly acquired knowledge at home. But how? He can not cook for less than a hundred people. And his wife insists that she does not have plates for a hundred people.

"Parallelogram," muses the Captain. "Is that a new vitamin? I thought that I knew them all—there is D for sunshine, C for anti-scurvy. B for appetite and—" Captain A. sighs. Captain A.

## THE FIELD ARTILLERY JOURNAL

cannot see any relationship between parallelograms and field kitchens. But he mentions (for he believes in aiding the younger generation—their fathers might someday become Chiefs of Staff): "Ask Captain B. He is very good at Firing Problems."

"Captain," Junior inquires, "What is a parallelogram?"

"What horse is that?" returns the Captain, "Don't know him. Is he a remount? Does he look like he'd make a jumper?" Captain B. frowns when he hears that parallelogram is not a horse. Captain B.'s mind is on horses. He is studying Advanced Equitation. Parallelogram would be a suitable name for the horse he rode today. Captain B. is wondering if motors might not, after all, be more practical than horses. But Captain B. believes in being kind to children and animals. He suggests that Junior see Lieutenant C. First Lieutenant C. is not a student at any school.

But Captain B. is wrong. First Lieutenant C. is taking a course in Military Law, and is currently pondering the question of legal ethics. And tonight as Junior queries, "What is a parallelogram?" he begins to practice the subject.

"Your teacher will tell you tomorrow. It would not be ethical for me to explain. It is her assignment. We might have different ideas. It is surprising the number of ideas that exist on the subject of nigher education. Why in the Army alone there are hundreds of schools. A man is never really educated in the Army. Even a Colonel, when he has exhausted all the new things to be learned, has to take a refresher course in the old things. But you might ask—"

But Junior has fled to the Dictionary. The Dictionary says: "A parallelogram is a quadrilateral with opposite sides equal."

"Mother?"

"Yes, Junior."

"What's a quadrilateral?"

●

*Posthumous award of the Soldier's Medal has been made to 1st Lt. Jonathan C. Foltz, Jr., FA-Res, who lost his life attempting to rescue a drowning man . . . Btry B 111th FA, Virginia (Col. Wm. H. Sands) celebrated its 110th anniversary Feb. 22 . . . Brig. Gen. Carl A. Badger, 65th FA Brig (Utah) made feature address in Salt Lake City Americanism Week celebration . . . And on Washington's Birthday, Brig. Gen. W. E. Prosser, commanding the 6th FA Brig, spoke on National Defense over WJSV in a presentation under the auspices of the Reserve Officers Association.*

●

*Twelfth Field Artillery basketballers triumph over Kelly Fielders on latter's courts, 30 to 28. But 82d FA five, after tying New Mexico Military Institute at the half, 20-20, succumbs to fresh reserves, 56-38.*

●

*First Battalion 124th FA, with 96.4%, wins January Illinois NG attendance, no unit of the Chicago 58th Brigade (122d, 123d, and 124th regiments) having an attendance as low as 90 percent . . . Master Sergeant T. M. Costello, Hq Btry 52d FA Brig (N. Y.), is honored at a dinner celebrating his 25 years of service.*

●

*Brigadier General A. H. Beebe, 66th FA Brig (Washington NG), will soon house his Seattle outfits in a field artillery armory 360×256 feet, to cost \$850,000. The length is that of a football field, complete with end zones.*

# Letters

## Regimental Insignia

TO THE EDITOR:

Since my last letter to you on the subject of regimental insignia, our collection has grown rapidly. Thanks are due to the JOURNAL for publishing our little project to such evident good effect.

Will you kindly publish in your next issue the inclosed list of organizations whose insignia are on display in the Museum? And will you further add a remark to the effect that we are most appreciative of the response from those listed, and hope that *all* other Field Artillery units, whether Regular, Reserve, or National Guard, will let us have one of their distinctive insignia to help us fill out our collection.

ALEXANDER G. STONE,  
1st Lt., 18th FA, *Curator,*  
*The Field Artillery Museum,*  
*Fort Sill, Okla.*

### LIST OF DISTINCTIVE INSIGNIA RECEIVED (To February 17, 1938)

#### I. REGULAR ARMY

- 1st FA—Fort Sill, Oklahoma.
- 2d FA—Fort Clayton, Canal Zone.
- 3d FA—Fort Sheridan, Illinois.
- 4th FA—Fort Bragg, North Carolina.
- 5th FA—Madison Barracks, New York.
- 6th FA—Fort Hoyle, Maryland.
- 7th FA—Fort Ethan Allen, Vermont.
- 9th FA—Fort Lewis, Washington.
- 10th FA—Fort Lewis, Washington.
- 11th FA—Schofield Barracks, Hawaii.
- 12th FA—Fort Sam Houston, Texas.
- 13th FA—Schofield Barracks, Hawaii.
- 14th FA—Fort Snelling, Minnesota.
- 15th FA—Fort Sam Houston, Texas.

- 16th FA—Fort Myer, Virginia.
- 17th FA—Fort Bragg, North Carolina.
- 18th FA—Fort Sill, Oklahoma.
- 24th FA—Fort Stotsenburg, Philippine Islands.
- 25th FA—Madison Barracks, New York.
- 27th FA—(An inactive unit).
- 36th FA—Fort Bragg, North Carolina.
- 68th FA—Fort Knox, Kentucky.
- 76th FA—Fort Francis E. Warren, Wyoming.
- 77th FA—Fort Sill, Oklahoma.
- 80th FA—Fort Des Moines, Iowa.
- 82d FA—Fort Bliss, Texas.
- 83d FA—Fort Benning, Georgia.
- 84th FA—Fort Riley, Kansas.
- 2d Am Tn—3d Am Tn—FA School Detachments—Fort Sill, Oklahoma.

#### II. NATIONAL GUARD AND RESERVE

- 101st FA—Massachusetts.
- 102d FA—Massachusetts.
- 103d FA—Rhode Island.
- 104th FA—New York.
- 105th FA—New York.
- 107th FA—Pennsylvania.
- 108th FA—Pennsylvania.
- 109th FA—Pennsylvania.
- 110th FA—Maryland.
- 111th FA—Virginia.
- 112th FA—New Jersey.
- 113th FA—North Carolina.
- 116th FA—Florida.
- 118th FA—Georgia.
- 119th FA—Michigan.
- 121st FA—Wisconsin.
- 122d FA—Illinois.
- 124th FA—Illinois.
- 125th FA—Minnesota.

## THE FIELD ARTILLERY JOURNAL

132d FA—Texas.  
134th FA—Ohio.  
135th FA—Ohio.  
138th FA—Kentucky.  
143d FA—California.  
145th FA—Utah.  
146th FA—Washington.  
148th FA—Washington.  
151st FA—Minnesota.  
152d FA—Maine.  
156th FA—New York.  
158th FA—Oklahoma.  
161st FA—Kansas.  
172d FA—New Hampshire.  
185th FA—Iowa.  
192d FA—Connecticut.  
218th FA—Oregon.  
222d FA—Utah.  
258th FA—New York.  
310th FA—Pennsylvania.  
312th FA—Pennsylvania.  
319th FA—  
346th FA—California.  
355th FA—Iowa.  
389th FA—Massachusetts.  
497th FA—Illinois.

### III. FIELD ARTILLERY BRIGADES

52d FAB—New York.  
57th FAB—Wisconsin.  
69th FAB—New Jersey.  
70th FAB—Oklahoma.

### IV. DIVISIONS HAVING FA UNITS

40th Division.  
76th Division.  
78th Division.  
81st Division.  
89th Division.  
94th Division.  
97th Division.  
98th Division.

### Music Department

To the Editor—

Hitherto I have led a reasonably blameless life, and the commission of the

verses which follow was justifiably — I believe — inspired by reading a quotation from "The Infantry Experiment"\* by Major General Rowan-Robinson, to wit: "It will be remembered that, on November 1, 1918, the artillery supporting the attack of the 10th Canadian Infantry Brigade consisted of 296 guns, which fired 2,140 rounds of ammunition, or 1½ tons per foot-soldier. They stood nearly wheel to wheel and required for the carriage of their shell 1500 30-cwt. lorries."

### SONG FOR MIXED VOICES

See the PBI of the PID,  
And all their specialists, PFC,  
They've MG's, AR's, and LM's, too,  
Wherewith to drill some holes through  
you.

They've QM Dets, and some new SC  
(All for the price of one BG);  
On their 4 by 2-dt's they ride  
From hellangone to the Great Divide.

Not now so P; not yet so B—  
At least until the day called "D"—  
Let's hope, for H-hour on that day,  
They've a hell of a lot more Div FA.

### Glossary

PBI—Poor Bloody Infantry.  
PID—Proposed Infantry Division.  
PFC—Privates First Class.  
MG, AR, LM—Machine guns, automatic rifles, and light mortars.  
QM Dets—Quartermaster Detachments.  
SC—Signal Corps.  
BG—Brigadier General.  
4 by 2-dt—Four-wheel drive, with dual tires.  
D Day—Day operations begin.  
H-hour—Time of attack.  
Div FA—Division field artillery.

—R. G. M.

\*Wm. Clowes and Sons, London, 1934.

## LETTERS

### Jumbo Is Gone

IT is with sadness that I report the death on January 28th of "Jumbo," the grand old war horse who was the hero of "Mud and Morale" (November-December, 1935, issue of the FIELD ARTILLERY JOURNAL). Jumbo apparently died from the infirmities of old age. His official age was 34 years, but reliable reports indicate that his actual age was nearer 40. (It is believed that his birthday was retarded on more than one occasion by his admiring friends in order to forestall action by unsympathetic inspectors.)

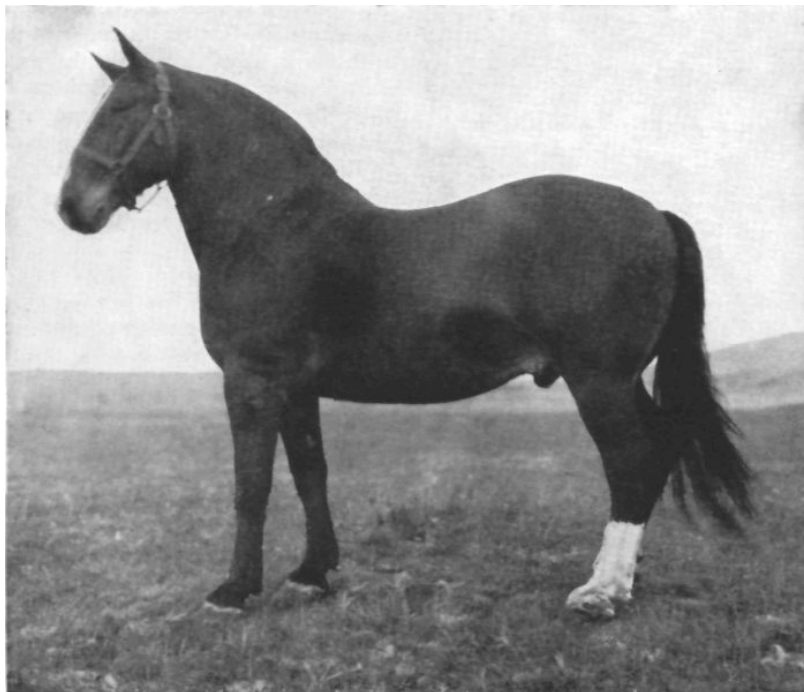
During his years in retirement he was the "private mount" of Battery D, 18th FA, and was allowed to roam at will, grazing where he chose, sometimes to the great consternation of housewives who would see his great hulk (1,865 lbs.) in their yards. The men brought him apples

from the breakfast table and generally spoiled him—so much so that he became quite a problem during the annual ringworm scare. During this period he had to be shut in the corral with the other horses and was obviously displeased. It was a dangerous operation to open the corral gate. Old Jumbo would watch for this opportunity and rush the hapless soldier with alarming determination.

He appeared to be in fine health and spirits until shortly before his death. Only a few days ago I saw him thundering about the corral with his head and tail high and his ears pointed, acting very coltish for one of his years.

We are sure that he is grazing in fenceless pastures that are always green.

JOHN H. HINDS.  
*Captain, 18th FA,  
Comdg. Btry B.*



*Can any reader inform Btry B 18th FA where it can obtain a copy of the original photo of which this reproduction was made? An enlargement is wanted for the dayroom.*

# Notes and Comments

By J. S. W.

## General Rohne

**D**URING October, 1937, German military periodicals joined in signalling the 95th birthday of General Rohne, who has been known to artillerymen everywhere for nearly three-quarters of a century. As a young lieutenant in 1860, he published a noteworthy article on the improvement of conduct of fire. Today, seventy-seven years later, he is still contributing masterly articles on artillery to the military press.

His efforts were instrumental in bringing about the introduction of the recoil system, the provision of shields, and the use of modern sights and indirect laying in the German artillery. For many years, as editor of the *Artilleristische Monatshefte*, and as an outstanding authority on ballistics, he has influenced artillery thought throughout the world. He is best known to our own artillerymen as a proponent of shrapnel in the shell-shrapnel controversy.

## Visual Signalling

Our system of flag waving and wigwagging for visual signalling is slow, cumbersome, and difficult to teach quickly to recruits. German ingenuity has produced two systems which could be used profitably in our artillery: One, of long use, employs sign writing in the air; the other, more recent, employs a single long marker which can be waved from a trench or tank or while prone behind any cover.

Sign writing is simply the writing of large letters in the air as if on a blackboard. The signallers work in teams

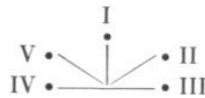


of two, one man with field glasses receiving, the other facing about and writing the letters with the hand or a suitable pointer. All that is needed is four men (or two only, if need be) who can read and write legibly. Soldiers comprehend the system

immediately but require some practice in the selection of backgrounds and the manner of forming the letters. ROTC students in our camps, with five minutes' instruction, have sent and received fire-control messages in this way at distances as great as a thousand yards.

The second system divides the alphabet into groups of five letters each and gives the first ten letters a numerical value:



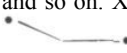
- I. A(1), B(2), C(3), D(4), E(5).
- II. F(6), (G7), H(8), I(J, 9), K(0).
- III. L. M. N. O. P.
- IV. Q. R. S. T. U.
- V. V. W. X. Y. Z.



(Looking from behind the sender)

Obviously, A is represented by two appearances of the pointer in the vertical position, as  $\begin{matrix} | \\ | \end{matrix}$ ; B is sent

## FIELD ARTILLERY NOTES

as (  ), C as  ; and so on. X, for instance, would be sent  . The positions are numbered counterclockwise as viewed by the receiver. In other words, the sender sends to the right around and the receiver reads to the left around.

As a variation, a second, simple arrangement of the alphabet, viewed as before, would be:

X  
Q  
L  
F(6)  
A(1)

The possibilities of the systems are

Z U X K(0) E(5)  B(2) G(7) M R W  
X P O I(J) D(4)  C(3) H(8) N S X

immediately apparent.

### Maneuver of Fire by Italian Artillery

The present Italian doctrine contemplates war of movement by divisions acting rapidly in well-chosen and decisive directions. The division artillery (one regiment of three 75-mm. battalions and one battalion of 100-mm.) preclude the use of accurate fire-direct-must prepare for rapid maneuver of fire under conditions which normally tion maps and extensive survey. Generally, therefore, each battalion must be furnished a known location and direction without the possibility of having at hand a system of geographically exact control points.

Colonel Mario Balotti discusses a rapid method of survey in two recent articles published in the *Rivista di Artiglieria e Genio* (August and November, 1937). Briefly, the method consists of arbitrarily choosing a division orienting line well placed with regard to the battalion positions and the field of fire, of rapidly measuring the length between two stations on this line (1000-

1500 meters apart), of assigning an arbitrary elevation to one station, and of then making the necessary intersections and measurements by means of a simple plotting board. The orienting line is chosen, if possible, normal to the general direction of fire. All measurements of sites and angles are referred to its base stations.

A firing chart is now constructed with its grid lines parallel and normal to the orienting line. On it are located the base pieces, observation posts, reference points, check points, and targets in their relative positions and elevations. No exact geographic positions are needed and the various squares of the chart are given names (say of well-known cities or historic persons) for rapid and clear designation over the telephone or radio.

The plotting board is a simple affair having a conveniently graduated base line (scale 1/2500), with one fixed and one movable point of attachment for two alidades. These are wires or metal arms which are set by moving them along graduated arcs drawn at a suitable distance from each station. A chart giving elevations in terms of site and range is provided at the base of the board.

The measurement of the base by taping or calculation may take considerable time (as much as 2 hours) and may require the use of an auxiliary base in broken country. However, with one accurate angle-measuring instrument and stadia, it is a matter of minutes; and the total time for the whole preparation for the division artillery may be reduced to about an hour.

Practically, the method has operated satisfactorily. Preparation of fire and the resulting fire for effect by all the division artillery were completed within an hour after the regimental commander ordered the motorized observation groups to their stations. Nothing was known of the area in advance,

## THE FIELD ARTILLERY JOURNAL

and no special corrections were required for the six or seven concentrations of two or more battalions which followed.

The problem contemplated a night occupation of position, with only an hour of daylight for the survey and preparation. An observation group with motor transport and radio was sent to each base station. The principal station at one end of the base was manned by an officer with the special instrument (*Salmoraghi* theodolite, least reading about 1/100 of a degree), three specialists with the usual observing instruments and range finder, and a meteorological correction computer. The secondary station at the other end of the base comprised an officer, two stadia operators, and an observer with the ordinary observing instrument. A third post, consisting of two specialists with the plotting board, was located near the principal station.

The stadia used consisted of a steel wire suspended between two uprights. On it were fixed two white discs whose centers, exactly 20 meters apart, were marked by black crosses, the horizontal lines of the crosses prolonging the line of the wire. The wire was stretched normal to the line of collimation of the theodolite and the angle between the discs was measured, the resulting distance being read from a conversion table and corrected to the horizontal. Measurements by this method were found to be accurate within 5/10 to 6/100 percent of error.

Battalion disc markers of a distinct color combination for each battalion were displayed at the battalion positions and located immediately by readings from the base stations, all observations being sent to the computing post by radio. Similarly, readings on reference and check points and targets in the forward area were made and plotted. The 1/25,000 firing charts were then prepared at the principal station and sent

to the battalions by motorcycle messenger. Once the charts were received, concentrations of one or more battalions were placed on targets of opportunity within 2 to 2½ minutes.

\* \* \*

War of movement requires rapid preparation and delivery of fire by division artillery. The Italians, like ourselves, evidently do not, in their regimental echelon, possess an angle-measuring instrument of sufficient exactness for the rapid determination of the necessary short bases. Colonel Balotti considers one such instrument indispensable for the division artillery regiment.

The French and Germans are better organized in this regard. The French regimental S. O. M. observation sections, equipped with the very accurate observation telescopes manufactured by the *Société d'Optique et Mécanique* of Paris, are extremely useful, not only in rapid survey work but in combined observation of fire and high-burst ranging. For similar missions, the German organization provides one survey battery with special instruments, as part of the division observation battalion. Some organization of this sort should be an organic part of our own division artillery, whatever its final form may be.

### **The New Italian Regulation for Artillery in Combat**

The recently published Italian regulations for the employment of large units and for the division in combat have been followed by a supplementary volume. *Artillery in Combat*. This contains nothing particularly new or startling, but the following provisions are of timely interest:



## FIELD ARTILLERY NOTES

Types of fire—The different types of fire action are redefined, reduced in number, and simplified as to execution. Accompanying fire is supplied by the infantry regimental battery (4 65-mm. guns, manned by artillerymen). Supporting fire is supplied by both the artillery in direct support of the infantry and that in general support of the division maneuver. It is less rigid and more easily adapted to any situation than formerly, since the artillery is freed from minor missions by the accompanying battery and the improved infantry accompanying weapons.

Cooperation — The regulations prescribe that infantry and artillery commanders remain together, "if possible," at the same observation post, in order to have the same vision of the zone of action. This means that each of the two commanders must be ready to sacrifice some individual advantage to his own arm in order to secure better conduct of the whole operation. The regulations insist on artillery acting on its own initiative, whenever it can thus aid the infantry action, but this requires a complete understanding of the situation by the artillery commander.

Timeliness of artillery action is stressed. This implies both an understanding of artillery time limitations by the tactical commander and a determination by the artillery to reduce its time requirements to a minimum. These requirements can be reduced by proper training and the employment of improved methods and instruments. The proper use of radio, aerial photography, and the supply of more accurate angle-measuring instruments offer the possibility of considerable reduction in the time of preparation.

Long-range artillery—Motorized long-range artillery (105-mm. guns) should be placed well forward in march columns or in advanced positions on the defense in

order to attack the enemy as soon as possible and delay his dispositions. In an advance, such batteries march by bounds between the tail of the advance guard and the head of the main body.

Reenforcing artillery—The use of the artillery of second-line divisions to reinforce divisions of the first echelon is contemplated. Corps commanders fix the conditions of such employment and the incoming units pass under the command of the artillery already in action, without regard to seniority of commanders. This was done formerly, but not until now definitely prescribed in the regulations.

Counterbattery—The corps is normally charged with this mission. Counterbattery may be organized by the army, but the execution is almost always left to the corps. The division artillery may be required to execute counterbattery in the approach march and in reinforcement of the corps action in the attack.

The corps artillery commander organizes and directs counterbattery, but he can not, in general, deal with its execution. He must remain in direct contact with the corps commander, following the details of combat and being ready to modify the artillery action accordingly, and he can not enter into the details of the action of counterbattery groups.

This task is entrusted to a counterbattery commander who commands the groupments and subgroupments assigned to counterbattery missions. He keeps in hand a certain number of long-range battalions to act over the entire front and assigns normal zones to the subgroupments within which they, in turn, control the counterbattery action in accordance with his general directions. These normal zones conform in general to the zones of action of first-line divisions, and the subgroupments

maintain liaison with the corresponding division artillery commander. An artillery intelligence center is organized and maintained by the counterbattery commander to collect and interpret counterbattery information.

Artillery and tanks—A chapter of the regulations is devoted to the action of artillery with and against mechanized elements. The mechanized attack is based on surprise, mass, and speed and must be supported by all available artillery. The closest coordination of tanks, aviation, infantry, and artillery is required.

Boldness is demanded in the artillery action. Certain batteries, preferably those belonging to the mechanized unit or to the assaulting infantry, are pushed forward to fire directly on antitank weapons as they reveal themselves. The rapid forward displacement of other batteries or of single pieces is planned.

Communication between artillery and tanks will be by radio from the tank commander's vehicle, that between the infantry commanders and the artillery by artillery liaison detachments. Since contact with the tanks will be very much a matter of chance, the artillery must exert every effort to obtain terrestrial observation of the tank zone of action.

An artillery preparation will be fired whenever the positions of antitank weapons, mines, enemy batteries, and prepared obstacles are known. However, if these are unknown or scattered and if surprise is sought, the preparation is dispensed with and the artillery holds itself ready to fire as soon as the assault begins. During the attack, antitank weapons should be covered with shell fire or smoke as soon as they reveal themselves, but these localized fire actions will often be difficult owing to the concealment afforded by the terrain and by dust from the tanks themselves. In this case, successive concentrations must be

placed by signal on suspected localities ahead of the tanks, in such a manner as not to impede their action.

In the defensive, the artillery acts mainly by direct fire at short range. Naturally, if the tanks reveal themselves at longer ranges, concentrations are fired on them as soon as discovered.

### **THE SPANISH WAR (An Analysis of Foreign Reports)**

Reports on the war in Spain for the past year have been so conflicting that the true facts are difficult to determine and any generalizations from them must be accepted with caution. The general belief that Spain is being used by several nations as a proving ground for new weapons and for their tactical employment is probably correct. It must be remembered, however, that the nations concerned are not likely to reveal the true results of the tests; and also that the numbers of new weapons used in Spain are, necessarily, strictly limited, thus giving no true tactical picture of their mass employment in large-scale international warfare.

The world-wide development of air and mechanized forces since the World War has led to the belief in many quarters that the action of these arms will be decisive in future conflicts. Their possibilities for the destruction of means and morale and for rapid maneuver have been stressed by such writers as Douhet, Fuller, von Eimannsberger, and Liddell Hart, and proposals have been made for basing entire systems of national defense on one or the other of the new forces. To date, however, in Spain, neither arm has demonstrated an ability to produce decisive results by independent action. Events have indicated, on the contrary, that tactical successes can be achieved only

## FIELD ARTILLERY NOTES

by the closest cooperation of airplanes and tanks with infantry and artillery. The small number of air and mechanized units available has allowed no test of their strategic value as independent forces.

The bombing of Madrid has shown that the destruction of a large city is a very difficult affair and that the morale of its population or its defenders does not appear to be greatly lowered. As in the case of the bombardment of Paris, the anger and hatred engendered by seemingly wanton destruction may have tended, rather, to raise morale.

The only tactical success of any importance gained by the air forces was the bombing and machine-gunning of the immobilized Nationalist motor columns during the battle of Guadalajara in March, 1937. Reports of the losses sustained here are very conflicting. The actual cause of the Nationalist retreat seems to have been the inability to move their motors in the mud and the pressure of a counterattack by Government reserves of infantry and light Vickers-Armstrong tanks.

General Miaja's surprise night attack by three Government corps on the Brunete salient on October 5-6, 1937, was supported by about 100 planes at dawn on the following morning, after a 17-kilometer advance by infantry and tanks. The whole day of the 6th was spent in futile air attacks against small defending localities rather than in seeking an immediate enlargement of the pocket. In consequence, the Nationalists were able to bring up sufficient reserves to hold their ground and later to counterattack with two corps on October 18th. The counterattack was preceded by a preparation of about an hour and a half by artillery (65 batteries) and bombing planes. The ensuing series of combats

lasted for a week or ten days and ended in a stalemate. About 200 planes in all are reported to have been engaged in this battle.

Antiaircraft fire on both sides has not come up to expectations. About one-fifth of the air losses on the Nationalist side are reported to have resulted from such fire. On the whole, the German 88-mm. antiaircraft gun appears to have been the most effective.

The tanks used in Spain have been mainly of Russian and Italian or German manufacture. The Government forces have employed the Russian types ranging from 9 to 18 tons in weight, while the Nationalists have used the light Italian type (2-5 tons) and the German medium tank (6-8 tons). The numbers available on both sides have been limited and nothing of any value has been learned regarding the mass employment of mechanized forces. The Nationalists used about 50 tanks in the advance at Guadalajara and the Government employed about 40 in their counterattack. In the Brunete battle, the Government forces are said to have had 140 tanks available. The largest number used in a single attack was fifty.

In general, the tanks employed in Spain have not had much success. Their armor has been readily perforated by the antitank weapons of both armies (25-mm. French and Oerlikon guns for the Government, and 37-mm. German guns for the Nationalists) and they have suffered many losses from this fire, even though the number of such weapons is small (not more than 1 antitank gun to 2 kilometers of front). The use of mines against tanks has been rare. Natural and artificial obstacles have proved successful in the defense, and claims are made that many tanks have been destroyed by hand grenades and benzine in the hands of bold individuals. No panic seems to

have been produced by the tanks. The general opinion is that ground troops need not fear tanks if they remain cool. Air attacks against tanks have been generally unsuccessful. Speed of maneuver has not been effective in avoiding antitank fire. The tank, whatever may be its possible speed across country, can move only as fast as the driver can see, hence the actual maneuver speed is low. Increase of armor, therefore, appears to offer greater possibilities of protection than increased speed.

In conclusion, it may be said that neither air nor mechanized forces in Spain have given any indication that they are capable of compelling a decision by independent action. On the contrary, the evidence indicates that there must be the closest sort of cooperation between infantry, artillery, tanks, and air forces in order to achieve success.

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### ACCOMPANYING FIRE

It is generally conceded throughout the world that infantry cannot maneuver in the face of automatic weapons without the immediate aid of powerful fire directed on the zones occupied by such weapons. The development of the high-velocity bullet has driven the defender to

seek more effective cover, which in turn means that higher angles of fire and greater power are demanded for his neutralization by fire. Failing this, the neutralization must be accomplished by the direct action of accompanying tanks. In any case, the straight-trajectory fire of either rifles or machine guns in the hands of advancing infantry has little offensive or protective value.

Artillery undoubtedly has the power to neutralize localities and to enable infantry to approach them without paralyzing losses. However, no certain means has yet been found of so linking the maneuver of artillery fire with the infantry maneuver as to insure "the simultaneous arrival of the last round of the artilleryman with the first grenade of the infantryman"\* at any given point.

The so-called "blue zone" of three or four hundred yards in front of a defender's machine guns still remains blue indeed for the attacking infantryman, unless he has some powerful high-angle weapon at his own immediate disposal. For this reason, the infantry mortar has been improved and augmented in practically all armies. Two types are in use generally: the 81-mm. Stokes-Brandt type, within the battalion or regiment, with maximum ranges of 1,000 to 4,000 yards; and smaller weapons of 45 to 65-mm., within the battalion or company, with ranges from 500 to 1,500 yards. In no army, except our own, has there been any idea that these mortars are anything but infantry weapons or that their fire can be handled effectively in immediate support by any other than infantry troops.

The present tendency is to include the longer-range 81-mm. mortars in the regimental echelon in an effort to render the rifle battalions more maneuverable. The necessity for curved

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\*General Faugeton, French Army, on Effects of Fire.

## FIELD ARTILLERY NOTES

fire at the immediate disposal of battalions and companies remains, however, and it is significant that a smaller mortar is demanded by them as soon as the larger one is withdrawn. The consequent complication of calibers and ammunition supply is not without its critics.

General Rouquerol of the French Army considers ranges beyond 2,000 meters of no particular use for an infantry auxiliary weapon. He believes that the 81-mm. mortar development does not correspond to war experience in that it is not sufficiently powerful rapidly to neutralize protected targets with the few rounds available. Many French authorities concur with Generals Rouquerol and Buchalet in their desire for a return to the 150-mm. trench mortar in the division artillery.

The search for immediate accompanying fire has led certain armies to the use of an organic or permanently attached four or six light gun or howitzer battery within the infantry regiment. The six-piece German and Japanese 75-mm. howitzer batteries are a part of the infantry. The Italian four-piece battery of 65-mm. howitzers is manned by artillerymen permanently attached to the infantry regiment, as is the Russian two-battery 76-mm. battalion of six pieces. The new British division artillery organization appears to include a three-battery battalion of eighteen 96-mm. howitzers which are designated as accompanying artillery. Our idea of making artillery accompanying batteries out of the 81-mm. mortars seems to be unique.

The question as to whether accompanying batteries should be an organic part of the infantry regiment has produced many arguments. The Italians, in changing their old regimental three-piece infantry battery to a four-piece artillery battery permanently attached, claim the following advantages:

—closer cooperation and mutual understanding between the two arms—a real fusion of infantry and artillery;

—continuity of effort between the division artillery action and the infantry mortar action, leaving no gap in the accompanying fire at the most critical moment of the assault:

—immediate artillery response to infantry demands;

—release of a large part of the direct-support artillery for more important centralized mass actions and maneuver of fire in the hands of the division commander;

—advanced reconnaissance and liaison by an artillery element which lives in intimate contact with the infantry.

On the other hand, General Lugand of the French Army probably expresses the opinion of many infantrymen in the following statement from his article, *Infantry and Artillery*, in the *Revue d'Artillerie* of October, 1936:

"... the accompanying weapon must be manned by infantrymen. Unity of effort in any organization depends largely on the homogeneity of its composition. Tactical control within the infantry regiment has already become extremely difficult, and the introduction of another element of a different arm within its ranks cannot fail to further complicate command, in spite of the best efforts of all concerned. Experience proves that one must live with and be a part of the infantry in order to know its needs."

All authorities agree on the necessity for closer and timelier accompanying fire in the assault. They disagree as to the means and manner of delivery. The main controversy appears to be one of name—hence, interminable.

### **RUSSIAN FIELD SERVICE REGULATIONS 1936**

A German translation of the new Russian Field Service Regulations has

## THE FIELD ARTILLERY JOURNAL

been published recently in Berlin. The 1936 Regulations replace those of 1929 which were more or less in the same form but whose needless repetitions and obscurities have been eliminated and clarified in the new edition.

The controlling principles stressed are the offensive, the necessity for carrying the war into enemy territory, the need for close cooperation of the various arms, the importance of a main effort in a decisive direction—all in order to attain as a final objective the destruction of the enemy forces. The spirit implied by these principles permeates the entire volume.

Close cooperation of the different arms is constantly demanded, particularly in the combined action of tank units with infantry, artillery, and air forces. "Before all else, the tanks attack enemy machine guns. . . . The basic action of mechanized units, tank assault, must be supported by carefully planned artillery fire. . . . Maneuver and shock action of mechanized units require close support by aircraft."

Each rifle division contains one organic tank battalion for immediate support of infantry. Reenforcing tanks, when attached, are used either to strengthen the accompanying tank support or as maneuver tanks for action deep in the enemy lines against reserves, artillery, headquarters, and supply

establishments. Mass action is demanded, coupled with the action of artillery and air forces, throughout the depth of the enemy defenses. Enveloping action by tank units must be reinforced by motorized infantry battalions and must act in combination with large cavalry units. Distant independent missions are visualized for mechanized units comprising tanks, self-propelled artillery, and infantry in cross-country transport.

The close association of air and ground forces is emphasized particularly. Targets which cannot be attacked by the fire of other forces are assigned to airplanes.

The role of the commissars, or political officers, of the Russian army is defined by the regulations. In a large sense, the political bureau of the army is charged with securing an effective output from the industrial and supply organizations of the country and with maintaining the morale and spirit of the workers. Political officers with combat units are responsible for "careful organization of the supply services and for daily and tireless effort in meeting the needs of the combat troops." In battle, they are enjoined "to be present wherever a personal example of self-sacrifice and heroism is demanded"—a considerable task in any army.

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*"In the final analysis, infantry and artillery, with their feet in the mud, will win the battle."—Major General Hugh A. Drum, to the Indiana National Guard Association.*

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*Kansas City and Independence men who went to war with 129th FA hail new Chief of Field Artillery, Major General Robert M. Danford, as old friend and former commander.*

# Analytical Studies

BY COLONEL NED B. REHKOPF, FA

**I**F we only knew what our individual roles in a future emergency are to be, how many things there are that we would want to look up, and how diligently would we study them—the qualities that made some commanders so successful, the character of special types of operations, a myriad other things.

Much has been written on the qualities that a successful commander should possess. In those discussions few, if any, virtues have been omitted, for there is no good quality in any man that does not help to make him a better commander than he would be if he lacked that quality. Because those qualities necessary in a commander are so exalted and so many. I have to remind myself that it is not a god that we are discussing; that geniuses such as Napoleon are rare; that not all successful commanders have been artists in their profession. But all have been men of flesh and blood, even as you and I. And it may be YOU.

But the commander does not conduct war all by himself. Behind him is the civilian head of the nation, directing the conduct of the war, determining policies and national objectives, supporting the forces in the field with the means for combat, dealing with allied and neutral nations and conducting war by methods other than military. Therefore, in addition to all of those high personal qualities of which I have spoken, and a thorough knowledge of military science, the commander needs a full and sympathetic understanding of the organization of the government and the problems that confront it.

Imagine yourself in the place of Sir Ian Hamilton; without prior intimation

summoned to the War Office on March 12, 1915. He opened the door and said "Good morning," walking across the room to the desk where Lord Kitchener "sat writing like a graven image." After a while Kitchener looked up and said, in a matter-of-fact tone, "We are sending a military force to support the Fleet now at the Dardenelles and you are to have command." At 5:00 PM the next day Hamilton left London, taking with him a small general staff, no administrative staff; no plans, only some rough notes made at the War Office; a text book on the Turkish Army and two small guide books, with incomplete and inaccurate maps. In the four days that elapsed before he reached Tenedos, what numerous questions must have entered his mind! He mentioned some of them when he wrote during that period:

"None of the drafts (of instructions) help us with facts about the enemy, the country, our allies the Russians."

As to his French allies, all that Hamilton knew was that France had agreed to send a contingent. He was faced at once with the prospect of participating in both joint Army and Navy operations and in allied operations, a combination which he later described as "like skating on thin ice, arm in arm with two friends, each of whom wants to go in his own direction." (*Sir Ian Hamilton, Gallipoli Diary.*)

I have sometimes wondered what are the innermost thoughts and feelings of a man appointed to high command in war, the results of whose actions may be of such vital concern not only to us, but even to future generations of our country—perhaps of the world.

The first intimation that General Pershing had that he was being considered for command in France came in a telegram from his father-in-law, Senator Warren, saying that Secretary Baker had asked Senator Warren if General Pershing could speak French. General Pershing says his reply omitted no possible favorable comment on his ability in that direction. (*Gen. John J. Pershing, My Experiences in the World War. Vol. I, p. 1.*) When the bill to create the grade of Lieutenant General was before Congress in 1863, although it was understood that General U. S. Grant would be appointed if the bill passed, Grant made no effort to further the passage of the bill nor to secure the appointment, but expressed himself as indifferent as to whether he remained in the West in command of that theater or went east to command all the Union armies. (*Adam Badeau, Military History of General Ulysses S. Grant, Vol. II, p. 570.*) When General Lee was made head of the Confederate armies, he wrote his daughter:

"I wish that his [Johnston's] mantle had fallen upon an abler man or that I were able to drive our enemies back to their homes. I have no ambition and no desire but the attainment of that object and therefore only wish for its accomplishment by him who can do it most speedily and thoroughly." (*Douglas E. Freeman—R. E. Lee, Vol. III, pp. 76-77.*)

The apparent differences in the feelings with which those three great American commanders received their new responsibilities are due to a number of causes. One is the different conditions surrounding the task to be undertaken; another is the different temperaments of the men and their different tendencies to express their feelings in writing. But no matter how great the exterior calm. I think there must be some interior qualm.

Surely no man could walk with himself through thirty or fifty years of life without realizing that he does not possess all those qualities, all that knowledge, desirable in an commander—at least not to a uniformly high degree; that there is some subject on which he wishes he were better informed; some feeling of "To what dizzy heights have my feet led me." But like a man climbing near the top rung of a ladder, he must not look down. Neither can he go back for any tools he may have neglected to bring with him.

How can we gain the knowledge which will enable us to answer the myriad questions which arise for solution by a commander? Some writers give "a wide experience" as one of the essential qualities of a commander. But that really includes all the other qualities; for any commander who remains such long enough to acquire a wide experience in war must have possessed most, if not all, of the many essential qualities. Wars are not provided for training purposes and few commanders have a second chance.

Patrick Henry said, "I know of no way of judging the future except by the past." Professor Abbott of Harvard says, "[Most men] read history not merely for a knowledge of the past—but for an interpretation of the present and guide to the future; and the commonest demand upon historians is for judgment and for prophesy." It is to history then that we must turn to instruct us in those things that we lack for want of a wide personal experience. Before Napoleon's campaigns in Italy, he had held no command of large units. Bouvier says:

"What he knew he had gained from study. Even when he was Emperor, he remained inferior to many of his lieutenants in the actual practical formation and evolutions necessary for executing his designs. Where he surpassed



## ANALYTICAL STUDIES

all others was in his vast and profound conceptions. History, geography, science, philosophy, political economy had all been studied in his long hours of poverty, solitude and imprisonment. Plutarch, Corneille, Rousseau, Machiavelli had been read and reread and retained in his prodigious memory; and he had coordinated all these writings, digested them, and created within himself an arsenal of varied knowledge which was ever at his service for the discovery of the best means for achieving his designs."—(*Bouvier, Bonaparte en Italie, pp. 51-52. Quoted by Sir Herbert W. Richmond, Command and Discipline, p. 77.*)

Now, humbly acknowledging our shortcomings in the knowledge, experience and qualities needed by a commander; realizing that it is to history that we must turn for instruction; and having selected the particular topics that we shall study at this time (for the pursuit of such knowledge is unending), there remains the question: How should these studies be reported and presented?

It is not rules that we are seeking, nor is it the immutable principles of war, which, as Mahan says:

"however excellent by themselves [are] too abstract to sustain convinced allegiance; the reasons for them as manifested in concrete cases, are an imperative part of the process through which they enter the mind and possess the will" (*Mahan, Armaments and Arbitration, p. 206.*)

Rather it is, as Bouvier wrote, "that varied knowledge which was ever at his service for the *discovery* of the best means for achieving his designs."

We cannot expect history to give us a direct and ready-made answer to the problems that may confront us. Circumstances will never be identical and our particular problem may never have

been discussed in all the books that we are able to read in a lifetime. But the mind enriched by such study will more readily *discover* the best means for achieving its designs.

In your studies you should examine more than one historical period in order to get away from special circumstances and find those things which are applicable under changed and changing conditions of war. And in your research, you should bear in mind that all accounts are not of equal value; that historians are judges and prophets of varying honor. Weigh the evidence, form your own conclusions and make your own applications. And you should bear in mind that it is not "interesting narrative nor facetious stories" that are desired; not a "mere knowledge of the past," with your added statement that "this is a good example of a well-conducted operation." In what ways and for what reasons, that we might some day apply, was it successful?

The easiest way, perhaps, and one which lessens the value of many of our studies, is to recite a lot of history and then say, "we have arrived at the following conclusions." ("Reached the following conclusions" would be much more accurate in those cases, for they have literally reached out and dragged them in). Keep your subject always in mind and cling to it. For example, suppose you were required to examine and report upon "The Influence on Operations of Physical Courage in a Commander" and you are referred, among other campaigns, to the operation of Stuart's Cavalry Corps in the Civil War. Your subject is The Influence of Physical Courage; not a history of Stuart's operations. Read the history of those operations, making notes of examples of physical courage and their effect on the operations. Then lay your histories and your notes aside,

## THE FIELD ARTILLERY JOURNAL

sit down and analyze the abstract subject of Physical Courage and its effect on operations and when you have thought it through, make an outline of how you purpose to discuss it. Then, when you write it out, support, adorn, and emphasize your different points by appropriate and concise examples from history. And finally, summarize your conclusions—those truths which will help to overcome our lack of a wide personal experience.

By means of these studies we expand our experience, our possibilities for discovering a satisfactory answer, by taking unto ourselves the experience

of the great commanders of history. Have you not so admired some senior officer under whom you have served, that when special problems arise you ask yourselves "What would Colonel So-and-so do under these circumstances?" Pericles has said in his Funeral Oration:

"The whole earth is the sepulchre of famous men and their story is not graven only on the stone over their native earth, but lives on, far away, without visible symbol, woven into the stuff of other men's lives."

Give us something that we can *weave into the stuff of our lives*.

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## MILITARY BOOKS

Following is a list of books on military subjects which are recommended for their professional value as well as interesting content:

	<i>Price</i>
<i>(Domestic postage included)</i>	
FIELD ARTILLERY: The King of Battles— <i>Maj. Gen. H. G. Bishop</i> .....	\$1.00
THE AMERICAN ARMY IN FRANCE— <i>Maj. Gen. James G. Harbord</i> .....	5.00
WITH NAPOLEON IN RUSSIA— <i>Gen. de Caulaincourt</i> .....	4.00
THE WAR IN ABYSSINIA— <i>Marshal Badoglio</i> .....	6.00
CARBINE AND LANCE, A HISTORY OF FORT SILL— <i>Nye</i> .....	3.00
NO PEACE WITH NAPOLEON— <i>Gen. de Caulaincourt</i> .....	3.00
R. E. LEE— <i>Freeman</i> (4 vols., each) .....	3.75
A MODERN MILITARY DICTIONARY— <i>Col. Max B. Garber</i> —Cloth .....	2.50
—Leather .....	2.75
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THE INFANTRY BATTALION IN WAR— <i>Lt. Col. Walter R. Wheeler</i> .....	3.00
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THE FIELD ARTILLERY JOURNAL

**NEW MEMBERS SINCE LAST ISSUE**

(The number is that of the regiment to which assigned)

- |                              |                                  |                                 |
|------------------------------|----------------------------------|---------------------------------|
| Lt. Col. J. H. Ahrens—157    | Col. R. P. Hartdegen—157         | Lt. G. V. Orth—124              |
| Capt. Wm. T. Babcock—192     | Lt. R. H. Hoffman—107            | Lt. C. E. Perry—185             |
| Capt. L. H. Belke—185        | Lt. C. P. Ismon—119              | Capt. J. J. Phillips—142        |
| Lt. H. J. Bluhm—124          | Lt. F. C. James—107              | Lt. P. E. Pfeiffer, 6th FA-Res. |
| Lt. J. W. Brandt—124         | Lt. B. H. Jennings—386           | Lt. L. J. Pachtl—124            |
| Lt. J. C. Brogan—124         | Lt. W. M. Kendrick, 12th FA-Res. | Lt. E. A. Peach—124             |
| Lt. N. C. Burns—124          | Lt. E. B. Kennedy, FA            | Capt. J. M. Pon—124             |
| Capt. E. Burt—168            | Capt. J. H. Kohnen—185           | Lt. R. J. Rasmussen—124         |
| Capt. L. B. Callahan—124     | Lt. M. C. Lanmon—124             | Lt. A. M. Reinhart—346          |
| Maj. J. P. Campbell—124      | Lt. K. Larkey—403                | Capt. A. L. Ring—123            |
| Lt. A. L. Caney—176          | Maj. A. L. Latham—101            | Lt. D. J. Rice—124              |
| Lt. H. O. Carlson—124        | Lt. L. Levine—124                | Lt. M. R. Rhine—124             |
| Lt. R. W. Carlson—185        | Mr. L. M. Marks                  | Capt. J. M. Rogers—112          |
| Capt. R. P. Carlson—124      | Maj. R. MacDonald—124            | Lt. J. E. Robb—124              |
| Capt. R. C. Conder, FA       | Lt. H. W. E. Madden—91           | Maj. A. J. Salmon—112           |
| Lt. H. D. Dodge, 6th FA-Res. | Capt. L. J. Mansager—124         | Lt. I. R. Schimmelpfennig, FA   |
| Lt. J. J. Duffy, FA          | Lt. E. C. Mattick—124            | Lt. R. S. Secor, FA-Res.        |
| Lt. B. H. Doherty—124        | Capt. J. W. Mayo—142             | Lt. Col. F. B. Skeates—124      |
| Lt. R. W. Douglas—124        | Lt. J. C. McClone—124            | Capt. C. U. Smith—124           |
| Lt. K. E. Ellison—185        | Capt. Wm. McCraw, FA-Res.        | Lt. A. C. Stafford—142          |
| Capt. W. S. Everett—124      | Brig. Gen. R. S. McLain—70       | Lt. A. J. Strak—124             |
| Lt. E. A. Fandell—124        | FA Brig.                         | Capt. M. D. Taylor, FA          |
| Lt. W. D. Fergus—124         | Maj. M. J. McLaughlin—101        | Lt. G. J. Toman—185             |
| Capt. H. C. Fisher—124       | Maj. G. S. Middleton—124         | Lt. J. E. Vincent, FA-Res.      |
| Lt. D. J. Fortier—124        | Lt. D. T. Miller—124             | Capt. V. Vroman—124             |
| Lt. B. J. Fox—102            | Lt. H. W. Mintz—124              | Lt. A. J. Walsh—124             |
| Lt. L. E. Freidheim—124      | Capt. R. E. Moffet—124           | Lt. T. H. Wason—124             |
| Lt. E. C. Gemmer—124         | Capt. R. E. Mura—124             | Lt. P. M. Watrous—124           |
| Capt. C. A. Goldspinner—371  | Lt. F. E. Murphy—185             | Capt. R. C. Whitney—124         |
| Lt. A. E. Govig—185          | Capt. J. P. Murphy—124           | Lt. W. E. Willard—124           |
| Lt. C. Hagel—122             | Lt. C. A. Neely—124              | Lt. E. S. Wilson, Res.          |
| Maj. P. M. Hansen—185        |                                  |                                 |

**New Subscribers Since Last Issue**

- |   |                         |  |
|---|-------------------------|--|
| Illinois Military Area                    | Btry F 112th FA         | Btry D 157th FA                          |
| Hq 3d Section, OR                         | Serv Btry 112th FA      | Hq Btry 2d Bn 157th FA (2)               |
| Xavier University Library                 | Btry B 112th FA         | Serv Btry 157th FA                       |
| Band, 6th FA                              | Btry E 112th FA         | Btry B 157th FA                          |
| CO 11th FA                                | Hq 1st Bn 112th FA      | Btry A 157th FA                          |
| Hq 44th Div                               | Hq Btry 1st Bn 112th FA | Hq Btry 157th FA                         |
| Hq Btry 66th FA Brig                      | Btry A 112th FA         | Lt. N. Jemil, Artillery School, Baghdad. |
| Btry C 68th FA                            | Btry C 112th FA         | Commission of Military Study, Mexico.    |
| Hq Btry 69th FA Brig                      | Hq 123d FA              | Glavnij Pochtamt (8) Moscow              |
| Hq 69th FA Brig                           | Hq 1st Bn 123d FA       | Artillery School, Rumania                |
| Officers' Mess 75th Field Battery, Canada | Hq 3d Bn 123d FA        | Polytechnic School, Rumania              |
| Btry E 83d FA                             | Hq 151st FA             | Btry D 146th FA                          |
| CO Btry E 108th FA                        | Btry F 157th FA         | Officers' Club, Ft. Ethan Allen          |
| Hq 2d Bn 112th FA                         | Btry E 157th FA         |  |
| Hq Btry 2d Bn 112th FA                    | Hq 2d Bn 157th FA (2)   |  |
| Btry D 112th FA                           | Hq 3d Bn 157th FA       |  |
|   | Btry E 157th FA         |  |

## THE FIELD ARTILLERY JOURNAL

THE membership list is climbing at so rapid a rate that by the middle of last month it was necessary to halt all subscriptions beginning January 1st. Although two hundred extra copies of the January-February number had been printed, they were soon exhausted, and memberships received after March 14 had to begin with the current number. In great measure this was due to National Guard interest, aroused by our new members of the Executive Council, Col. W. H. Sands of Virginia, and Col. C. C. Haffner, Jr., of Illinois.



### **On the Way**

Other units with a flying start toward 100 percent membership are the 176th Field Artillery of Pennsylvania (Colonel W. R. Dunlap), with 32 members; the 119th Field Artillery of Michigan (Colonel J. H. Lewis) with 27, and the 116th Field Artillery, Florida (Colonel H. W. Hesterly), and the 135th Field Artillery, Ohio (Colonel R. D. Schmidt), running neck and neck with 19 and 17, respectively. Oklahoma's Headquarters 70th Field Artillery Brigade, is way in the lead for units of its character with 12.



### **Reserve Regiments**

Of the assigned Reserve officers, the 316th Field Artillery leads with 10.

Among the Reserves, the feat of Captain C. A. Kaiser in establishing and *maintaining* 100 per cent standing among the officers of his CCC district, with 15 members, remains one of 1937's high points in activity. Nor did he stop with his own service association, but did the same thing with the officers of the other arms.

The JOURNAL has several hundred cards in its files, with, after the names of the members, only "FA-Res." If officers whose JOURNALS reach them addressed this way will let us know to what regiments they are assigned we will be glad to place their cards in the appropriate regimental file.



New Jersey's brigade, the 112th and 157th Regiments, are 100 percent in unit subscriptions, every organization having signed up. To Lt. Col. D. W. McGowan, Deputy Adjutant General of the State, the Association owes thanks for his activity in interesting the units. Noting that the JOURNAL was of professional benefit to all artillerymen, Colonel McGowan promptly brought the matter to the attention of the brigade officers. In addition to the organizations, brigade and regimental commanders are members, and it is hoped that the State will soon be 100 percent in field-officer memberships.

# Reviews

CARBINE AND LANCE. The Story of Old Fort Sill. By Captain Wilbur S. Nye, FA. University of Oklahoma Press. \$3.00.

He is no true Field Artilleryman who would be without this book. It was begun as a history of the post on which The Field Artillery School now stands. But who could isolate that history from the tangled and gory web of the whole Indian country of which it had been, for years, the dramatic center? The author was quartered in Old Post, stone buildings put up in 1870, before the time of the Little Big Horn. Within recent years, under adjacent quarters, perhaps under his own, had been found pathetic scraps and remnants of the Indian-fighting days, old buttons, battered bugles, scraps of penned orders, bits of Victorian dolls. When he visited the nearby town of Lawton he passed aged Kiowa and Comanche braves, possessors of many secrets, which, until his time, no one had tapped. From a front window, the peaks of the Medicine Bluffs could be seen, part of the Wichita Mountains, most ancient range, from whose summits red warriors had peered—and indeed, the cell where Apache Geronimo had often been juggled for drunkenness was not much more than a mashie pitch from his living room.

A few years before, the Post had attended the funeral of I-See-O, last of the Indian Scouts, for years a familiar figure as, bareback, he rode to the Commissary to draw his rations as sole member, if you please, of the Detachment of Indian Scouts—but senior duty sergeant of the United States Army! I-See-O had not always been a member of the Army. In his youth, so it was said, he had run with "hostiles."

There were too many characters—too many "so-it-was-saids." General

Hugh L. Scott, General Phil Sheridan, Geronimo, Satanta, Sitting Bear, General W. T. Sherman, Kicking Bird—a host of other names, familiar to us all from childhood—clamored for the recognition their parts had played in the development of Fort Sill. There were too many good stories, yet untold, or lying forgotten in the files of the garrison, or the top shelves of the Indian Bureau. Thus the book could not be but a slim pamphlet recording only the daily journal of the School; to be truly representative of the scenes it portrayed, it must be a 440-page account of battle, murder, and sudden death—and it is.

Captain Nye's weekends for several years were devoted to trips—to nearby Saddle Mountain; to somewhat distant northern Texas. He found Hunting Horse, Kiowa chieftain, now in his middle 80's; still able to mount a pony by leapfrogging his rump—an old sidekick of I-See-O when both were young bucks, in the realest sense of the word. He found many another, with the aid of the Kiowa interpreter, George Hunt, and he learned amazing stories from their lips. Some of them had participated in scalping raids in the time of Custer, and met blue-breeched Cavalrymen on stricken fields; and the tales had been written, but no one had ever before come around to get *their* side of the story.

The author, with a patience that must have exhausted even his Indian helpers, worried out the facts like a dog with a bone. He used up leave to consult the famous Huntington Library in California, and to visit Washington archives in the interests of his book. And, of course, he spent many hours with the local files. Some of these were far from dull: "One day in the eighties the post commander, who will be called Joe Tuttle

## THE FIELD ARTILLERY JOURNAL

because, as Alexander Woolcott would say, that happens not to be his name, strode into the trader's store.

"The Fort Sill Hotel is filled with a boisterous crowd of girls. I am convinced they are prostitutes,' he told Mr. Quinette. 'I want you to put them off the reservation.'

"But Major,' protested Quinette. 'That is not my affair. Why don't you have your adjutant order them away?'

"I have done so. They won't go.'

"Then you ought to write to the United States Marshal.'

"A good idea. I will do it.'

"As the major left the store, one of the women, who was standing on the porch of the hotel, called, 'Hi, there, Joe! Come on over.'

"Joe marched toward headquarters, looking neither to right nor left. His neck and ears were the color of an artillery guidon. He wrote a hot letter to the marshal, but the 'girls' remained for several weeks."

Oh, yes, the story of the Field Artillery School is there, with all the famous names and incidents. And a glossary of Post place names, which by itself shows how indistinguishable is the story of its parts from the whole—Beef Tank, where Apache prisoners slaughtered their cattle; Cache Creek, where early French traders found the corn troves of the Wichitas; Pratt Hill, named after the lieutenant of Cavalry who founded Carlisle Indian School; Wrattan Creek, after the Apache interpreter; Rumbough Hill, for Colonel David Rumbough, who presided at the board of officers who selected the site for the School; Snow Ridge for the first Chief of Field Artillery; Quinette Crossing, for the post trader, long time good friend of the guidons.

In its thoroughness, its accuracy, and its command of reader-attention, this is an outstanding book. The history of the Southwest has no more notable recent addition, and the shelves of adventure libraries little to compare with it.

Particularly should it appeal to any who have ever visited the Post, or wished to do so. And it was a happy combination that permitted the author to work with Master Sergeant Morris Swett, long the School librarian, and assiduous researcher and recorder of its history.

One thing more—several years ago, when the author was still working to correlate the mass of facts he had acquired, he pointed out to this reviewer a steamroller cruising slowly on the gravel base of the road in front of the new Administration building.

"The driver," he said, "is Geronimo's nephew."

Geronimo's nephew, servant of a new day, was mashing flat the campfires of red forebears.

Which recalls Captain Nye's preface, beginning: "Living today within a few miles of Fort Sill are human beings who, in a single life-span, have passed from the Stone Age to the era . . . of the low-wing monoplane." And continuing, with reference to Kiowas and Comanches: "The United States Government never was able to ignore the Indians of the Southwest plains, numerically insignificant though they were and are. On account of them Fort Sill was established."

THE WAR IN ABYSSINIA, by Pietro Badoglio, with a Foreword by Mussolini. G. P. Putnam's Sons. \$6.00.

One may expect the world will some day accord Marshal Pietro Badoglio the respectful recognition that now hangs about the name of another colonial soldier and administrator, Kitchener of Khartoum. The latter knew his opponents. So did Badoglio. His success in Ethiopia may be said to be a G-2 victory, and either he was himself the possessor of that remarkable perception which discerns and counters the enemy intentions, or he was that even more unusual figure, the man whose well-selected

## REVIEWS

staff is almost a part of his own thinking.

Strangely reminiscent of the scene between K. of K. and Sir Ian Hamilton when the latter was given the Dardanelles mission, are the first two paragraphs of the marshal's book:

"On November 15th, 1935, His Excellency the Head of the Government summoned me to his office in the Palazzo Venezia and communicated to me his decision that I should assume the office of High Commissioner in Eastern Africa and Commander-in-Chief of the armed forces there, and that I should sail in the *Sannio*, leaving Naples for Massawa on November 18th.

"So, having received my orders from the Duce, and having his assurance that, within the limitations of the instructions assigned to me, and in full enjoyment of his confidence, I might act with all the liberty, authority, and initiative essential to a commander of high rank who bears the responsibility of a war waged at so great a distance from home, I took my leave and made arrangements, in the short time at my disposal, for my departure, which was to coincide with that of my two sons—flying officers of the reserve."

The book is a soldierly report of great value. Few, indeed, are the military histories which permit one to work out the war game side by side with the commander, while he takes the readers into his confidence during the evaluation of intelligence, the estimate of the situation, as this one does. The tale brings out again that there is nothing certain in war; with whatever resources available, one decides upon the most logical course, "playing the percentages." Sometimes one is not quite so successful as was hoped, despite great advantages; often, in the face of odds, unexpectedly inexpensive victory is achieved.

Signor Mussolini, who contributes an interesting foreword to the volume,

writes: "We must be grateful to Badoglio for having been daring almost to rashness."

The book is illustrated with several excellent panoramic photographs of the scene of the engagements, some of these illustrations being nearly four feet long. A pocket in the back cover contains 9 large maps, beautifully colored, with clear legends in English. Many appendixes contain the directives, issued from the marshal's headquarters, for battle, some of them including such unusual—to our eyes—phrases as: "I have a feeling that the enemy, as a consequence of the heavy blow that he has suffered, is vacillating, and I therefore intend to strike at him again as quickly as possible, in the Scire-Adi Abo sector, to hasten his downfall."

This is part and parcel of what the jacket blurb calls Marshal Badoglio's ". . . intuition filtered and tempered with experience . . ." Even so refined, it remains strong drink, and the difference between it and wishful thinking would seem to be the difference between pleasant exhilaration and downright intoxication. One man's meat, we may remember, is another man's poison. But it is a rare privilege to find a book in which the "intuitions" of the commander are so clearly and logically tempered. And the illustrations of the terrain over which the operations proceeded add much to a proper estimate of the difficulties overcome. The Ethiopian campaign would remain a major military feat had the Italians encountered no enemy.

THE CAISSONS ROLL. A Military Survey of Europe. By Hanson W. Baldwin. Alfred A. Knopf. \$2.50.

The author is the military and naval correspondent of the *New York Times*. His book opens with a clear and excellent map of Europe, showing fortified

## THE FIELD ARTILLERY JOURNAL

lines and possible routes of invasions. This is a good map to which to refer when scanning the daily headlines. Mr. Baldwin's book is an interpretation of those headlines, and one not unlike an article by Grantland Rice or Herbert Reed on trends in play during the current season by the leading teams.

In somewhat similar fashion to that employed by Majors Dupuy and Eliot in "If War Comes," Mr. Baldwin turns in a comprehensive scouting report, but whereas the former analyzed the equipment from the vantage point of some expertness in capabilities of these equipments, Mr. Baldwin contents himself with saying, in effect: "Here is what they have, and this is the they plan to use it." His is a very complete summary of strengths, beginning with "The Balance Wheel—Great Britain" in the west, and extending across Europe to "The Great Unknown—Russia." Nor does he overlook the "Little States." Poland,

Czechoslovakia, and Yugoslavia. Together, these are of great power, and one is impressed by the fact that Poland maintains 40 regiments of horse cavalry. One would like, also, to have a ringside seat to view the cavalry support—"four sections of heavy guns, horsedrawn (like light artillery) and mounted on little carts, from which the crew can fire the guns at full gallop, after the Russian practice"!

The military, naval, economic, and political estimates of the various countries, supplemented by considerable tabular data, well serve a purpose announced by the author in his preface: "To what drab or horrible climax this race for military power may lead, an answer, necessarily abbreviated, guarded, and inconclusive, is attempted in this book."

Mr. Baldwin's inclusion of much of the characteristics of foreign weapons, vessels, planes, vehicles, and equipments, makes his a valuable work of reference.



—Courtesy "The Reserve Officer"  
**BRITISH ARTILLERY PRIME MOVER, DRAGON TYPE**



# Some Forward Observations



THE WINNER of the 1938 Prize Essay Contest, 1st Lt. John F. Greco, pulls a bushel basket over himself in the following: "As to my PCS, I am afraid there is little to it. I was born in Eveleth, Minn., in 1907, and began my military career in 1926 with entrance to the Military Academy, from which I graduated in 1930, with a commission in the Field Artillery. Since then I have served with the arm at Fort Sam Houston, Texas; Fort Sill, Oklahoma, and here—Fort Riley, Kansas. On graduation from the Regular Course of the Field Artillery School in June, 1937, I was sent here to organize the Meteorological Section of the 13th FA Brigade, which is detached from its own station (Fort Bragg, N. C.)."



1ST LT. JOHN F. GRECO

A JUDGMENT has come upon us for referring to "careless proofreading" in the last issue, which also contained one article in which three lines had been dropped (one from the first sentence), and another had been doubled. Upon our locking the stable door after the horse was stolen, it became evident that the entire article had escaped the proofreading eye. That the great god Chance, to whom, as Dispersionists and Probabilarians, we wagonsoldiers pay homage, should deal so cruel a blow to a devotee has in it all the aspects of the tragedies of which the Greeks were so fond. Frantic search for a scapegoat finds only the editor, sack in hand. Is his face artillery scarlet!

Inquiring Reporter—"Any comments today on careless proofreading?"

Editor—"NO."

THE JOURNAL has no copies of January-February and September-October, 1933. We have several requests for these issues. Will those who have copies they would release please notify us?

THE WORKERS in the vineyard are still on the job. Among those particularly helpful in enlisting membership interest have been Lt. Col. F. B. Inglis; Lt. Col. John J. Daub, 371st FA; 1st Lt. T. L. Crystal, and Major Percy M. Hansen, 185th FA, Editor of the Jamestown (N. D.) *Daily Sun*.

TWO OF the biggest names in fiction have been associated with field artillery backgrounds. We refer to Mr. Peter B. Kyne and Mr. William Hazlett Upson. Sheafs of thousand-dollar bills have been thrust upon them by editors whose myriads of readers could not wait

## THE FIELD ARTILLERY JOURNAL

for the next published appearance of their favorites.

This JOURNAL measures its circulation by quarter-myriads (one). Who were we to attempt a frontal assault on these authors? We enveloped them by detail (CGSS please note). Mr. Kyne's story in this issue was written especially for THE FIELD ARTILLERY JOURNAL.

Mr. Upson's, which will appear in an early number, was also aimed at our readers. It inquires, "Are Private Soldiers Necessary?" Those of us who had considered that the private soldier was indispensable, no matter what other grades were taken away by the Air Corps, will view Mr. Upson's impressive array of statistics with amazement.

●

AT THIS writing, our First Soldier, General of the Armies John Joseph Pershing, having resisted successfully the assault of serious illness, is consolidating his victory. His fellow members of the Field Artillery Association join all Americans in rejoicing. May he ever rout his attackers. Suggestion to the bacteria who have designs on Black Jack: Go out and get a reputation.

●

IT WILL be some time, of course, before the statements sent out for 1938 dues become yellowed with age and frayed around the edges. But they're growing older. This number is 16 pages larger than usual, and contains 40 percent more reading matter and twice as many illustrations as 1936 issues. Whether this can be maintained depends upon taking up the slack in the traces. No attempt is being made to show a profit, and the income is being put back into the magazine. But it takes the cooperation of all hands to keep 'em rolling.

●

NOW IT CAN BE TOLD—The President of our Association, Major General Upton

Birmie, Jr., fourth Chief of Field Artillery, turned over his official duties to his successor, the fifth Chief, Major General Robert M. Danford, on March 26th. *Perhaps* it now is safe to relate an incident that happened 19 years ago.

A reporter from the Louisville *Courier-Journal* visited the 2d Field Artillery at Camp Zachary Taylor, Kentucky, to write a feature story about the Vocational and Educational Training then being given in the regimental motor school. A few months before, the reporter had been an officer of the regiment. He was intent on giving his former outfit a round of applause. He was introduced to the newly arrived regimental commander, Colonel Upton Birmie, Jr., just back from the AEF. The newspaperman was impressed by Colonel Birmie's decorations, his soldierly appearance, his courteous and considerate manner. The colonel was most obliging in his replies to questions until it became evident that the reporter was more interested in the commander than in the motor school. With difficulty the colonel concealed his distaste when the newspaperman asked for his photograph. "No picture," he said. "No story, nothing about me, young man. You came out here to write up this school. Stick to your mission."

Reporters are an elastic lot. They never hesitate to switch missions. This one went back to his office and wrote about 2,000 words on his hero. He dug up a photo and printed it in not-too-small a size. His final paragraph said something like this: "Colonel Birmie particularly requested that nothing be said about him, his service, his D. S. M., Legion of Honor, and other decorations. So we won't mention those."

Not until now did the Secretary of the Association consider it expedient that the President of the Association should be made acquainted with these details.

Because that reporter was this reporter.

**The United States Field Artillery Association**  
**ORGANIZED JUNE 7, 1910**

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