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AN ARTILLERYMAN'S LOVE

I left a love in the land of France,
A love that I cherish yet—
Graceful and trim and smart and slim,
The kind that men can't forget.
She was one of the modest sort
That avoids all vain display;
Wearing a gown, buff, green and brown,
In an unassuming way.
Supple was she as a tiger's spring,
Swift as the osprey's dive.
Some are keen for a "Sweet Sixteen."
Give me the "75."

Talk? She could chatter so doggone fast,
That brave men must hold their breath.
Her voice meant woe to the bitter foe,
For many she talked to death.
There was no service she would not do
For her friends in her tireless zeal.
Their lives she'd shield in a hard-fought field
And build them a wall of steel.
France can boast of her ladies fair,
Of her Renées and her Suzannes.
But my old flame will remain the same—
The beautiful Soixante-Quinze!

—Fairfax Downey

PROBLEM OF THE NEW ARMY

BY MAJOR CHARLES DOBBS, F.A.-RES.

NO MATHEMATICAL demonstration of the proposition is of course possible, but the United States Army in its glorious history, has been more largely molded by its unwritten rather than by its written laws. In other words, "customs of the service" have exercised a greater influence in cultivating morale than all the printed directions of Army Regulations, manuals and rules of drill.

In this, the Army only reflects the experience of all other human activities. For one man whose conduct is shaped by statute law there are probably ninety who lead orderly lives in response to customs which have never been reduced to written form.

Obviously, any method of conduct entitled to be classed as a "custom" must have behind it the force of long and general acceptance, but in a world of change not even the "customs of the service" of the United States Army can be safely cast into a rigid mold lacking the elasticity of all living and vital things. While there is danger in too ready acceptance of innovation, there is equal danger in unalterable conservatism. Customs which will not bend to the pressure of new circumstances must inevitably break. Pope in his "Criticism" has given us a sound rule in

"Be not the first by whom the new are tried,
Nor yet the last to lay the old aside."

These general considerations prompt the inquiry whether there is not need for a revision of "customs of service," which have been found so useful in governing the army in the generations of its isolation from the general body of the public. It can hardly be denied that there has been such isolation—an isolation both physical and intellectual. For the most part the life of the army has been lived in detached posts. The members of the regular military establishment have of necessity been compelled to live apart and to preserve in the wilderness and on the frontier the amenities of social intercourse and the traditions of culture proved by all experience to be vital to harmony and happiness. In this isolation there has been bred, too, a noble professional pride which has flowered in innumerable heroisms gallantly but modestly achieved; but isn't it a fact that in some instances this pride has tended to become arrogance? It would be singular if this were not true. It is too much to expect of human nature that a class of men like those who have for generations composed the officers personnel of the Regular Army, should not resent the neglect of the people to whose service the army has

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brought unflinching courage and high professional proficiency. Spending freely of their strength of mind and body to maintain fitness, and serving long periods of privation with beggarly pay to attain rank and modest comfort, it is not at all strange that there should have been among regular army officers, resentment of conditions which have given that same hard won rank and comfort to others who have not borne "the heat and burden of the day." Instinct and justice alike protest when rewards are given those who have not earned them.

But this spirit of resentment has not been a purely individual matter. It has other roots running down into the foundations of national safety. A neglected loose bolt may easily cause a breakdown which would prevent a gun reaching the field of battle and performing a designated mission, possibly entailing the needless sacrifice of many useful lives. In like manner an officer who in time of peace does not prepare for war by keeping himself technically proficient, will be a liability and not an asset in time of crisis. The humiliation of 1812 and innumerable other instances in our national history, have demonstrated that shame and needless waste of blood and treasure follow the attempt to engage in war with incompetent leadership and undisciplined men. Hence it is that our professional soldiers, patriotic and efficient, have sensed the danger and resented the assumption of rank and command by those blissfully ignorant of the toil and devotion that are expended in the making of the capable warrior.

Under our political traditions it long ago became manifest that the ideal conditions of national defense could never be attained; that our wars must be fought with improvised armies; that we must simply make the best of it. That was the condition up to the time of the World War, the cataclysm which so profoundly altered many things. Not the least of these alterations of thought and practice found concrete expression in the discerning statesmanship of the National Defense Act of 1920. It marked the end of regular army isolation. In other national crises the Regular Army, after emerging for a season of intimate public contact, has retired into the physical and intellectual environment from whence it came. But now it can never go back. It is compelled to assume a new rôle involving a sustained intimacy of relation, not only with what is loosely called the public, but in a peculiar degree with what we now call the "civilian components" of the army—the National Guard and the Organized Reserves.

To an extent without precedent in our history the professional and civilian soldiers got to know each other better during the World War. There is no comradeship on earth to be compared with that of men who have with fortitude fought a common enemy. Given

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the opportunity, men from civil life revealed a capacity to master the essentials of the "fighting game," earning the respect of their professional comrades. On the other hand the soldier from civil life learned to appreciate, as never before, the human quality of the professional soldiers. The healthy result of this *rapprochement* is obvious in the marked contrast in the efficiency of the National Guard of pre-war and the present day. In the Reserve also are thousands of officers of World War experience who are able to meet their comrades of the regular service on a plane of approximate equality, making due allowance for the fact that an officer chiefly concerned with activities of civil life, quickly gets "rusty" in the facile practice of the profession of arms.

In dealing with officers of the National Guard and Organized Reserve who have World War experience, a problem of comparative simplicity confronts the regular officers on duty involving contact with civilian soldiers. These officers in civil life, as a rule, appreciate the absolute necessity for adhering to the highest standard of professional efficiency. At the same time they know that they cannot, in the same degree as the regular officers, be masters of military technique. This obviously involves the relation of teacher and pupil. The pupil, if he has the modesty of the true gentleman, frankly admits his own shortcomings as a soldier. The teacher, on the other hand, recognizes the quality of the material with which he has to deal and employs the tact demanded among people of good breeding. The "hard boiled" type of professional soldier whose chief concern, apparently, is to make the pupil feel that he is a mere worm of the dust, can wreck at the outset the whole fair fabric of cordial coöperation essential in the relations of the professional and civilian components of the army. The same wreck will result if, on his part, the civilian soldier does not know that "a little learning is a dangerous thing" and in the pride of fragmentary military knowledge seeks rank or consideration to which he is not entitled.

Fortunately, these extreme types—the one arrogant in his knowledge and the other arrogant in his ignorance—are sufficiently rare to be disregarded in consideration of the wider problem. It is upon the men of good sense among the professional and civilian elements of the army, that the responsibility is laid of establishing the customs of the new service upon which the honor and safety of the nation in the future must depend.

This responsibility consists, in the first place, in the regular officers so keeping themselves abreast of the developments of their profession that they may speak with indubitable authority. Secondly, it is wise to remember that while "it is excellent to have a giant's strength, it is tyrannous to use it like a giant." Furthermore, the teacher must recognize that his pupils, in their civil life vocations,

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may possess qualities quite as admirable and useful as those of the professional soldiers. In this way is established a basis of mutual respect without which coöperation is impossible.

As between the officers in civil life and the regular army officers this basis of mutual respect may be considered as already fairly well established, but it must be so fostered that it will assume the enduring quality of a genuine custom. An atmosphere must be created into which the civilian officers of the future will come with becoming modesty and an instant recognition that there is virtue in a thirst for information. The professional officer, on his part, must recognize that while he is a teacher of the military science and art, there may be in other fields of knowledge things which he may learn from his pupils. No man, soldier or civilian, wounded in his *amour propre*, can do his best work. The continuing greatness of our country must depend on laying deep and sure the foundations of tactful consideration and genuine mutual respect among those who, when need arises, will be proud to make their bodies a rampart to protect and preserve all the interests and institutions of order and civilization.

THE PLACE OF THE LIGHT FIELD HOWITZER IN DIVISION ARTILLERY

BY MAJOR MAXWELL MURRAY, F. A.

FOR a number of years, the question of the place of the light field howitzer in our division artillery service was a live topic of discussion, but little is heard regarding this weapon at the present time. Our field artillery units as at present organized are completely lacking in light howitzer equipment, and many field artillery officers have no clear idea as to what the light howitzer is, its power, the characteristics of its fire, or its adaptability to the missions of division artillery.

This type of artillery, the light howitzer of approximately four-inch calibre, with a mobility and range comparable to that of the division field gun, is considered by many field artillerymen throughout the world to be one of the most efficient and practical weapons ever used by the field artillery arm.

Not only is the light howitzer lacking in our existing units, but so far as is evident to the casual student of our artillery organization and matériel, we have apparently abandoned the progress in matériel development, and the organization of batteries armed with these weapons, which was accomplished in this country prior to the World War.

This apparent lack of consideration given the light howitzer in our organization tables, war plans, and our tactical studies, is perhaps even more important than the absence of these weapons from our active batteries. The inevitable result of the apparent abandonment of the division howitzer problem, is the failure to keep all officers cognizant of the combat rôle of this weapon and its efficiency and power as a complement to the 75-mm. gun in artillery support of infantry.

A limited number of officers,—principally those field artillery and ordnance officers in touch with the experimental work conducted to date, the characteristics of existing types of light howitzers, and the work done by such weapons in past wars, are already convinced of the importance of giving careful consideration to the light field howitzer in our plans and as to the advisability of teaching all officers the use of this companion to the light field gun.

At the close of the World War, a sentiment was evident in the Field Artillery, strongly favoring the adoption of a light field howitzer in our division field artillery organization, and the Chief of Staff, in approving the plans for the reorganization of the army

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in 1920, indicated the desirability of including a third regiment in each division brigade, this regiment to be organized and equipped with light howitzers when the necessary matériel was available. The experience with the present division, however, makes it extremely unlikely that a third regiment will be added to the division field artillery brigade, and in the press of routine work and studies of other questions, the light howitzer seems to have gradually slipped out of the consideration of the majority of officers working on organization or mobilization plans.

During the war, the 155-mm. Schneider howitzer was utilized as our division howitzer, and no one who had any experience with this wonderful weapon can but admire its performance under the conditions incident to its use in France. The adoption of this weapon was originally a sort of compromise, the following extract from Artillery Note No. 4 (1917) indicating what may have been a deciding factor: "The American Army cannot have guns of large calibre for a long time. Under these conditions, it is very important to have howitzers of sufficient power and range to take the place of heavy guns."

Certainly, in the early stages of our participation in the war, before the corps artillery units were functioning, the 155-mm. howitzer met the requirements of the situation in these characteristics of range and power. In the minds of many officers, however, the feeling grew that this weapon was unnecessarily heavy for many of the missions which fell to the division howitzer, and that its mobility, especially the mobility of its ammunition supply, was not equal to that desirable in a weapon to accompany a division operating in any country not favored with the French road system.

The so-called "Calibre Board" after its thorough analysis of the ideal cannon development, made shortly after the war, recommended the adoption of a 105-mm. howitzer for the division, and the use of the 155-mm. howitzer as a "Medium" calibre in the corps artillery brigade.

In accordance with these recommendations, the corps artillery units are now armed with the 155-mm. howitzer, and much experimental work has been done to develop a 105-mm. howitzer to meet the requirement of the Calibre Board. Unquestioned progress has been made toward production of a remarkably efficient and powerful 105-mm. howitzer, with a mobility which compares favorably with that of the latest type of division field gun. At the same time, experiments have been carried on to ascertain the practicability of utilizing the 105-mm. German howitzers, Model 1916, in arming our field artillery. A considerable number of these German howitzers and carriages are on hand, and the German howitzer, rechambered for American ammunition, has given most satisfactory results.

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After a thorough test, the Field Artillery Board has strongly recommended the adoption of the German 105-mm. howitzer as a standard for issue to the service until newer types are available, and the immediate organization of division field artillery units to include light howitzer battalions armed with the German 105.

There seems to be little question in the minds of most officers that some sort of a howitzer is needed to round out our matériel and attack targets not vulnerable to the field gun. The teachings of our service schools, however, even including our own Field Artillery School, generally contemplate the use of the 155-mm. howitzer as the howitzer type to reinforce the division field gun, and practically every problem involving howitzers with the division, indicates the attachment of, or support by, the tractor-drawn 155 howitzers. This arrangement, however, brings us no nearer the solution of the division howitzer problem, and further complicates the situation by the introduction of the corps weapon, with motor traction and mobility not in any sense comparable with that of the rest of the division brigade. The most serious objection to such teaching, however, is that it tends to increase the danger of our losing sight of the 105-mm. howitzer type. This is especially true regarding officers of branches other than the Field Artillery, who are daily accepting the doctrines of the service schools as the guide for their future reliance on the artillery. However, the natural tendency to accept existing organization as final, and the absorbing demands of peace-time routine, makes this probability of neglecting the consideration of the light field howitzer extend to field artillery circles as well as to those of other branches.

In view of the fact that our own experience with the modern, light field howitzer has been extremely limited, and that, even while the need for some type of howitzer is generally recognized, there is apparently a gradually decreasing interest in the light howitzer as a special type and in the problem of reorganization to include howitzers in our infantry divisions, the writer desires to present certain data which has been selected as bearing on the problem, after such limited research as has been possible in the time available.

So far as organization is concerned, it is believed best to consider the history of the field howitzer, its use by other nations in past wars, and the forms of organization in which it has appeared as a division artillery weapon. Certain comments which stress the necessity for the light howitzer as a special type are quoted, not only to strengthen the case of the light howitzer as compared to the heavier calibres, but to assist in deciding the proper organization to insure the best utilization of the howitzer in the infantry division.

The field howitzer began to get general recognition as an important type of artillery about the time of the Napoleonic wars, having

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been introduced into France about 1749 and accepted in general use throughout Europe by 1826. General Lallemand, General of the Artillery of the Imperial Guard of France, makes the following comments on howitzers in a most interesting study published about 1820. "The howitzer is a species of mortar, but is longer than it. Its form is that of a short gun and it is manœuvred the same way. It serves to throw a hollow projectile called a 'howitz,' which acts as a ricochet ball and afterward bursts like a shell. It is a most formidable weapon and ought to be extensively employed in war. The howitzer is borrowed from the Dutch, who invented it in the 17th Century and called it the 'Haubitz.' The howitz, or projectile, is a hollow ball with a 'culot,' a reinforcement of metal on the inside of the shell opposite to the eye, intended to make it fall on the side opposite to the fuze." * * * *

"The howitzer is a valuable weapon particularly when it has a long range. Some military men pretend that those with a range of 2400 yards are of no real value; that when fired at objects so far distant ammunition is thrown away and that this advantage, if any, may safely be abandoned to an enemy. But I am not of this opinion. With long-range howitzers, the rear of an army drawn up in order of battle, the reserve that is usually 1000 yards distant, the communications, with the parks, defiles, etc., may be disturbed, and the arrival of ammunition retarded or wholly prevented."

The above quotations are possibly somewhat verbose, but it shows the early conception of the howitzer, and the uses cited might, with a little modification, be written into a much more modern dissertation on harassing or interdiction fires. The use made of these howitzers determined the organization of the artillery units in the armies of the period, and, taking the French as an example, we find further in General Lallemand's book, that their corps, of 26,000 men, had 56 guns, of which 28 were six-pounder guns, 8 were twelve-pounder guns, and 18 were twelve-pounder field howitzers, with two light three-pounder guns for defense of the artillery parks. The batteries were mixed, four six-pounder guns and two twelve-pounder howitzers; or with the heavy batteries of the reserve, four twelve-pounder guns and two twelve-pounder howitzers.

This arrangement, of course, at once brought up the question of a mixed ammunition supply, then, as well as now, a vital one. We find it was squarely faced, and met by a mixed ammunition section for each battery, the light batteries having eight six-pounder caissons and six twelve-pounder howitzer caissons. This arrangement provided in the batteries the surprising quantity of 150 rounds per howitzer, and 175 rounds per six-pounder gun. In the corps park or "dump," half of the above was provided, and as a second

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reserve a similar "half allowance" in the "grand park of the army," the reserve ammunition being partly boxed and partly in caissons.

The much discussed subject of "concentrations" had already been started about 100 years ago and we read, "The howitzers were sometimes united into batteries to attack redoubts, or fire upon masses of cavalry." The battle of Moscowa is cited as an example of the howitzer concentration of massed howitzer batteries, "which marched at the beginning of the action against the Russian redoubts, overwhelmed them with projectiles and facilitated their capture. These batteries then proceeded to the left and destroyed the enemy who was advancing in mass." The habitual use of the howitzers, however, was in the mixed batteries described above.

The British, early in the 19th Century, adopted the howitzer. At Waterloo nine out of seventy-eight guns were howitzers. They organized their batteries with five field guns and one field howitzer per battery, but, about 1850, they changed the organization to one similar to the French, and used four guns and two howitzers in each battery, this being used during the Crimean War.

The United States followed the general trend of artillery organization abroad, and we find General Gibbon, in his text-book used at West Point for many years prior to the Civil War, recommending the use of four six-pounder guns and two howitzers, either twelve-pounder or twenty-four-pounder, in each light battery. He goes even further and states that four-piece batteries should have at least one howitzer, and preferably two howitzers in their organization. The ammunition supply provided about 200 rounds per gun or howitzer in the battery, 100 rounds in division reserve and 100 rounds in a general park, very much the same arrangement as the French train organization of fifty years before.

Just about the time of the Civil War the development of a new type of light twelve-pounder, to fire both shell and case shot, was hailed as offering a possible weapon to replace both the six-pounder guns and the twelve-pounder howitzers, thus simplifying the whole scheme of armament.

During the Civil War, however, there seems to have been no fixed organization for the light batteries. Many regular batteries had the three-inch rifled muzzle loaders; other units had "Parrot" rifles of the same general character; some had light smooth-bore howitzers; and other batteries had four rifled guns and two twelve-pounder Napoleons, which apparently had some of the same characteristics as the howitzers. No definite statements regarding the relative merits of the howitzers and light guns, or recommendations as to their "post-war" organization, were found in any of the texts consulted in study of this problem.

In the European wars, which slowly followed our Civil War,

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however, we begin to find opinions expressed most positively. During the Franco-Prussian War, the intrenching tools had been generally used on both sides, and in the Russo-Turkish War of 1877, particularly around Plevna, the difficulty of destroying troops in any sort of field works by fire of flat trajectory guns was obvious to all observers. The Russians had a great deal of artillery of the "flat fire" type, but were very disappointed with the results of their fire. One of the German artillerymen present, General Richter, states, "With the flat trajectory of light guns it was impossible to annihilate troops behind cover or destroy the cover itself."

As a result, the Russians brought out a 10.7-cm. gun and a 15-cm. mortar but the gun, especially, was not satisfactory and later they brought out the 120-mm. "short gun" for trial.

The Germans, in the meantime, were seriously considering the proper type of artillery to attack troops under cover of field works. Violent opposition was raised to the introduction of a new gun for special work, and the first efforts to solve the problem of attacking troops behind breast works was with field guns, using *shrapnel* with *reduced charges*. This method was not satisfactory, however, and during the 80's the German 120-mm. "short gun" appeared, using time-fuzed shell. The experiments with this type showed that the time-fuzed shell, with properly located burst, gave an angle of fall of 60° to 70° with the fragments, and gave as many hits as the curved shrapnel fire previously tried. As a result the time-fuzed shell was adopted for field guns, in the hope of avoiding the introduction of a new calibre, but in the hands of troops the new time-fuzed shell proved very unsatisfactory.

At this time the Germans already had on hand a 15-cm. mortar, on wheels, apparently somewhat similar to the Russian field mortar, but the ammunition weight was considered excessive for a field piece.

The difficulty experienced with the time-fuzed shell adjustment, and the ineffectiveness of the fragments against troops under "splinter proof" overhead cover, resulted in the demand for, and development of, the rifled, light, field howitzer. It was decided, however, that the light howitzer must not be a special purpose weapon, but that it must be able to carry out all field artillery missions. This point is stressed in German comment and also in the reports of foreign officers on this German development. The new howitzer was given a shrapnel which was considered effective with a fairly flat trajectory, and a heavier shell, with time, non-delay, and delay fuzes, the proportions issued being 35 per cent. shrapnel, 40 per cent. delay-fuzed shell, and 25 per cent. time and non-delay-fuzed shell. The howitzer time shell was believed to be four times as effective as the time shell from the field gun; and the 105-mm.

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howitzer shrapnel, at a range of 2000 yards, was stated as 40 per cent. more efficient than the field gun shrapnel.

For some time Germany was the only nation to give the howitzer a time-fuzed shell, but both the Germans and the Austrians, who were working along similar lines, intended to use shrapnel, with the maximum charge only, in the field howitzer.

In adopting the light field howitzer, the Germans accepted that it was better adapted than the field gun to attack artillery equipped with the shields, which were coming into general use, but the real task of this new weapon was *the immediate preparation for the infantry attack*, especially when the enemy had dug in.

About the time the Germans had definitely decided upon a type of field howitzer as part of their division armament, the British found themselves engaged in the Boer War without any modern type of light howitzer at their disposal. They used, however, 144 rather heavy five-inch howitzers in South Africa, these representing about 10 per cent. of the total number of guns they had engaged.

Shortly afterward, the Russo-Japanese War broke out (1904), and involved more artillery than had been engaged during the past twenty years. The Russians had lagged in their howitzer programs, commenced after the Russo-Turkish War of 1877, and neither belligerent was equipped with a light and mobile howitzer, though the Russians had an excellent and powerful field gun. The Russians hastily organized some six-inch howitzer regiments, and the Japanese, at the outset, had a few 4.7-inch howitzers, of a heavy, short-range type. In their attack at the Yalu, the Japanese used 108 field pieces, of which 24 were howitzers. General Ian Hamilton, who was an observer, commented most favorably on the effect of these howitzers, and General Kouropatkin, who was on the "receiving end," thus states his observations: "The powerful effect of the Japanese field howitzer is noteworthy." "Artillery fire (referring to field guns) against villages, earthworks, etc., had very little result, even on those quickly thrown up." "There should be modern light howitzers, twenty-four attached to the corps, as corps artillery."

After the attack at the Yalu, the Japanese put a second howitzer regiment into the field, which was engaged at Mukden and afterward formed a third and fourth regiment. It is stated in reports that the Japanese felt the lack of howitzers very seriously, and the constant increase of their howitzer organizations was cited as proof of their esteem for high-angle fire. The Japanese 4.7 howitzers, however, had great difficulty in following the troops on account of bad road conditions, difficult terrain, and poor draft training. According to Japanese opinion expressed in the reports referred to above, lighter howitzers should have been on hand "in great numbers."

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After the war both countries increased the proportion of their high-angle fire artillery.

By the end of 1905, the observations in several countries had resulted in much experimental work with light field howitzers and some of the recommendations, shown below, indicate the progress that had been made at that date.

Austria.—Contemplated three six-piece light howitzer batteries in each division. Had adopted a type, and as a temporary organization for trial, had two such batteries in each corps.

England.—Was experimenting with several makes of rapid fire, 4.5-inch field howitzers, and was favorably considering adoption of a type.

France.—Was seriously considering the 120-mm. howitzer and recommendations were under study regarding organization of a four-battalion corps regiment, made up of one battalion 120-mm. howitzers, one battalion 75-mm. horse artillery, and two battalions of 75-mm. light artillery. Whether this organization was actually tried out is not clear, but it was given much thought.

Incidentally, it is interesting to note that at this time France was the only major European power to have four-gun batteries, all the others except Russia, which had eight-gun batteries, having six-gun batteries as the standard organization.

Germany.—Had declared herself in favor of three 105-mm. howitzer batteries in each infantry division, but sufficient armament to equip all divisions was not available at the time.

All countries were closely observing progress of German development and organization, and during the five years from 1905 to 1910, military nations had reached conclusions as follows: Austria, England, Germany, Russia, Italy, Switzerland, Sweden, Holland, and the Balkan states had all definitely adopted a light field howitzer.

France was still experimenting with several types, and Belgium had not definitely adopted a light field howitzer, although Belgium contemplated using howitzers in the division. As a matter of fact, the Belgian pre-war division had as its artillery, twelve field gun batteries and six howitzer batteries, these howitzers being of mixed types, breech-loading, but not rapid-fire designs.

Japan had adopted the Krupp 120-cm. howitzer, and had organized a considerable number of battalions as corps units, each comprising one 105-gun battery and two 120-howitzer batteries.

Russia, while approving the light howitzer, had on hand a large number of 120-cm. howitzers of both French and German make.

In our own service, the experimental units of 3.8-inch and 4.7-inch howitzers, were under test, and making a very favorable impression. The report and recommendation based on these tests

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(1913) accepted both types as desirable. The organization recommended was that the 1st and 2nd Divisions each include a field artillery brigade of two regiments,—one of two battalions of three-inch guns; the other of two battalions, one battalion to be equipped with three-inch guns, the other with 3.8-inch howitzers. This gave thirty-six three-inch guns and twelve 3.8-inch howitzers to each of our first two infantry divisions. The third division was to have a similar organization, but the howitzer battalion was to have the 4.7-inch howitzer instead of the 3.8-inch.

The Balkan wars of 1911 had probably had something to do with demonstrating the advisability of including field howitzers in the division armament. The Turks had 75-mm. guns, and some 120-mm. howitzers which were used, as expressed in one report, "in front-line batteries." It is presumed that these types were in the Turkish division artillery units. The Servians also had some 120-mm. howitzers. As to the effectiveness of these weapons, one may quote Colonel Nickoloff, of the Bulgarian Army, who states, "We saw during two wars, especially the latter (1911), what could be accomplished with howitzers. Although the effects of their fire were not greater than those of the field guns, they far surpassed the expected results. They reduced our infantry to inactivity and disheartened, puzzled, exhausted and terrified it. They displayed their power at great ranges and when the fighting was severe or long continued, *they were the deciding factor*. Many times we felt their need. The future infantry division, if it is to be independent, should have a minimum of at least one battalion of three batteries of field howitzers."

The French in the manœuvres of 1912 attached a battery of 105 howitzers to one of their division units for field test. The report of this test states that they were used "practically the same as 75's, but, without exposing themselves, were able to get close to infantry front lines and afford the matériel and moral support to be expected from accompanying batteries. The episodes of the manœuvres seem to demonstrate beyond question the utility of the light howitzer, whether to support infantry attack, or engage light artillery. They show that howitzers can get into action immediately where, with guns, considerable time would be consumed in finding a suitable position."

At the outbreak of the World War, the British and the Germans were probably the most enthusiastic supporters of the light field howitzer. It should be noted, however, that we had come out strongly in favor of the howitzer, too, and our adopted proportion of field howitzers per 1000 rifles in the division was practically identical with the proportion approved by the Germans, being 1.35 for us, and 1.37 howitzers per 1000 rifles, for the Germans. Our actual experience

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with the howitzers in service was, of course, very limited as compared to that of the Germans, whose tremendous military organization, gave them a wide field for observation which was not open to us.

The British infantry division in 1914 had three infantry brigades, supported by four artillery "brigades," three of the artillery brigades being armed with eighteen-pounder field guns, and one with 4.5-inch field howitzers. Each British artillery brigade, which tactical unit practically corresponds to our battalion, was made up of three six-gun batteries. The 4.5-inch howitzer was the calibre adopted by the British as their standard light howitzer, and they, like the Germans, contemplated its use at times as a shrapnel weapon. A special shrapnel was designed for it to give the shrapnel balls an increased velocity from the case, and the scale in yards on the howitzer range drum was for use with the "top charge" only. Each artillery brigade had its own ammunition column, which separated the howitzer ammunition from the eighteen-pounder ammunition. A first reserve was in the division ammunition column, with a second reserve in the "Motor Ammunition Park."

The German Army, at the outset, had a very different organization, being grouped into corps of two divisions, each division with its artillery brigade of two regiments of six six-gun batteries. As stated above in the general discussion, the Germans had decided to have three howitzer batteries in each division, but, presumably from lack of matériel, they started the war with only three howitzer batteries in each corps, these being organized as one of the battalions in the second division in the corps. It should be stated that a number of reports on German organization made in 1914 and 1915 vary somewhat on the details of the artillery organization, but it is believed that this can be explained as probably due to constant changes in equipment of different units, made as matériel became available.

The French had no light howitzers available and were apparently insistent that their field howitzer would be more powerful than the German light field howitzer. Their 155-mm. Rimmel howitzer was used as the next calibre above the 75, and they relied upon the 75, with reduced charges or the recently developed "plaquet" or disk, to increase the angle of fall and the effectiveness of the 75-mm. gun in attack of intrenched troops. Their production for new howitzers was confined entirely to the 155 howitzers of several types.

During the World War, as the howitzers in the crucial test of active service made their place in the divisions, we find both Germany and England changing their organizations to bring the howitzers closer to their supported infantry.

Taking first the Germans, one of their studies on reorganization

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is of interest in bringing out the necessity, as they saw it, for the change. "In the rapid increase of the army it soon became necessary to accept the four-gun battery, which was done without causing any of the difficulties feared before the war. Next, the infantry division having been reorganized on the three-regiment basis, each division was given six light gun and three light howitzer batteries." * * *

"In position warfare, it proved impracticable to keep battalions together (referring to howitzer battalions). It was found more satisfactory to mix guns and howitzers according to the nature of the targets, and the plan of employment. A report made in the spring of 1917 will be of interest here—"The light howitzer battalions have seldom been used as units, either in position or manœuvre. Certain tasks can be handled only by the howitzers, on account of their curved trajectory and heavy projectile. These tasks demand the assignment of single howitzer batteries at widely separated places. This breaks up the organization and deprives the battalion commander of influence over the use of his battalion and the discipline and care of his men. In position warfare it has become the rule to organize mixed groups, each having both types of gun, and being charged with barrage and other duties within the boundaries of an infantry regiment. This gives better connection between the arms and simplifies the transmission of orders by the artillery commander, since it is not necessary to make special assignment of howitzers for every special task.

"The problem of connection between the arms comes up even more conspicuously in manœuvre fighting. It is facilitated by assigning an artillery battalion to an infantry regiment, but this works well only if the battalion has both guns and howitzers, for the requirements cannot be foreseen.

"All these considerations point to the definite organization of mixed battalions. There are serious objections, as in the matter of exchange of men and matériel to replace losses, and in ammunition supply. The ammunition columns and trains would require corresponding reorganization. But these objections must give way before the decided advantages. No serious difficulties have been found in handling the mixed units due to difference in mobility.

"Organization of such battalions would make it easier to hold normal units together. It would also counteract the tendency to treat howitzers as a specialty.'

"One more point is to be made. Troops soon learn to construct cover against gun fire very rapidly. Hence, it would be well to give the mixed battalions two howitzer batteries and one gun battery, as soon as a howitzer with sufficient range can be developed."

(Note: It is probable that the above was written before the Model 1916 German howitzer, with a range of 10,900 metres, had been

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placed in the hands of troops in any considerable number. The Model '09, 105 howitzer, with which the Germans started the war, was a short-range howitzer.)

The Germans made the change during the war, and the majority of the division artillery battalions were organized with two gun and one howitzer battery at the close of the war.

The British came to very much the same conclusions as the Germans. As early as August 26, 1914, they found it necessary to break up their howitzer brigades in the battle of Le Cateau, and attach separate batteries to field gun brigades, to give howitzer support on the flanks and provide for howitzer fire where it was needed. In 1917 they completely reorganized their division artillery organizations into a form quite similar to the German. The infantry division was changed to include two infantry brigades, and the artillery to support this infantry consisted of two mixed brigades (battalions), each with three six-gun eighteen-pounder batteries and one battery of six 4.5-inch howitzers. A number of brigades (battalions) of army artillery, for reinforcements, were made up with the same organization.

The brigade ammunition columns were abolished, and the division train was made up in two echelons; the first, or "A" echelon, in two equal sections, providing in each section one caisson, or ammunition wagon, for each gun and howitzer in the division. The "B" echelon was in only one section, made up of "general service" wagons, loaded with both gun and howitzer ammunition. The "A" echelon usually marched as a sort of combat train, in rear of the batteries. The arrangement cut down the total amount of ammunition in the division itself, but gave a considerable pool of ammunition in "B" echelon immediately available on call to any unit.

Many instances can be cited as indicating the reliance the British placed on their light howitzer, and giving their ideas as to the necessity for having them in the same brigade with the guns.

General Bethell says, "In mobile warfare there are many occasions when the fire of field guns requires to be supplemented by that of field howitzers, and few, if any, when the field howitzer brigade would be used alone."

The comments on the field howitzer come not only from the western front, but even from the scene of the mobile warfare carried on by the British cavalry forces in Mesopotamia.

Early in the Gallipoli campaign the necessity for light howitzers was evident. In some cases, eighteen-pounder guns had to be placed in infantry front trenches to be able to fire on their targets, and urgent requests for more howitzers were made after two batteries, landed at Anzac, had shown their usefulness.

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In Palestine at the battle of Gaza, the British had thirty-six light howitzers in action with 108 guns, the usual division proportion after the reorganization of 1917. An interesting example of the wide demand for the light howitzers is shown by the following from Colonel Preston's book, *The Desert Mounted Corps*. As a horse artilleryman, with troops throughout the cavalry campaign of General Allenby, he had an unusual opportunity to study the action of artillery with cavalry in very open country. He says in part, "Most officers of the Royal Horse Artillery and Cavalry agreed as to the desirability of having a few light howitzers attached to each cavalry division. Had a few been available during the attack on Beersheba, the stone black houses and rocky 'sangars' of Tel el Saba would have been rendered untenable by the enemy and would not have delayed our advance as they did. As to whether two guns in each six-gun battery should be replaced by howitzers or a separate battery of four howitzers provided for each division, opinion varied amongst gunners on the spot."

Accustomed as we are to the demand for the lightest practicable gun for use with horse artillery, this statement of the need for light howitzers, though born of actual war experience, appears an unusual one.

The French did not use the light howitzer during the war. One British critic thus states his view of their failure to adopt this weapon prior to the war: "The French were never able to correct their initial error of judgment under the stress of production of the heavier natures of ordnance, and remained hampered to the end through the lack of a suitable light field howitzer." There were many supporters of light howitzer development in France at the end of the war and one well-known authority, Colonel Maitre, recommended as the organization of the "post war" division brigade: four battalions of 75's, one battalion of 105 howitzers, and one battalion of 105 guns, thus doing away with the 155 howitzers in the division.

Now to go back to our own position on the division howitzer question. The Chief of Field Artillery in forwarding the report of test of the German 105 howitzers in 1924, states his opinion as follows:

"The Chief of Field Artillery wishes to emphasize the importance of this weapon, and his conviction that the efficiency of the light field artillery brigade would be markedly increased by the inclusion of the 105-mm. howitzer in its armament."

An earlier paragraph in the same indorsement recommended the issue of four rechambered German howitzers to each of several selected 75-mm. battalions as additional equipment, and by actual

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field work determine the proper organization of units to be later armed with this weapon.

We now stand, therefore, as having approved the 105-mm howitzer as a type, but being undecided as to the organization of division artillery units to include this weapon.

Let us go over the various forms of organization that have been recommended for our service and then make our conclusion.

The Field Artillery Board was directed to consider the following brigade organizations, which were originally suggested as worthy of study, and to recommend what they believed to be the desirable organization of the division brigades, after their test of the rechambered German 105 howitzers:

(1) Two 75-mm. gun regiments and one 105-mm. howitzer regiment.

(2) Two mixed regiments, each of three battalions; two battalions having three 75-mm. gun batteries, and one, three 105-mm. howitzer batteries.

(3) Two mixed regiments, each of two battalions, each battalion with three 75-mm. gun and one 105 howitzer battery.

(4) Two mixed regiments, each of two battalions, but with only two 75-mm. gun and one 105 howitzer battery per battalion.

The Board in addition to the above considered two other forms of brigade organization, namely,

(1) A mixed brigade of three regiments, each with two battalions of two batteries each; two regiments to be armed with guns, the third with howitzers.

(2) A brigade of two mixed regiments, each of three battalions, with two batteries in each; two battalions in each regiment to be armed with 75-mm. guns, and the third with 105-mm. howitzers.

The last organization was strongly recommended by the Board, and the following is a résumé of their stated reasons for favoring this organization of the brigade.

This organization provides thirty-two guns and sixteen howitzers to support the division, and,

(a) Gives one gun battery to support each infantry battalion, in assault with two battalions abreast,

(b) Gives one howitzer battery to support each infantry regiment,

(c) Facilitates concentrations by howitzers on the regimental front needing them most,

(d) Simplifies ammunition supply,

(e) Makes for better technical handling, as the battalion commander becomes a specialist with his particular weapon,

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(f) The two-battery battalion is the maximum the emergency major can handle efficiently,

(g) Makes the difference between the mobility of guns and howitzers less noticeable.

The writer fully appreciates the weight which should be given the recommendations of the Field Artillery Board, and is fully cognizant of the careful consideration which the Board has given these weapons. Nevertheless, after study of recorded opinions to which access was had in preparing this paper, it is felt that past experience of other users of howitzers points to another organization.

Taking certain of the important reasons upon which the Board based its decision, it is believed the following comments may apply:

(1) Regarding the support of infantry, attacking with two battalions abreast, our present three-battery battalion, provides one battery for each assault battalion, with a third for general support of the regimental front.

(2) While grouping howitzers into battalions facilitates special concentrations by these weapons, it appears that British and Germans both were led by their experience, to accept the fact that concentrations by division howitzers were the exception, and that close support of infantry by individual batteries was the desired rôle of the light howitzer.

(3) So far as the simplification of units, training and ammunition supply is concerned, it is believed that the statements of the two most enthusiastic supporters of the light howitzer, to the effect that the advantage of using the howitzers in mixed battalions far outweighed the disadvantages due to difficulties incident to supply and training the mixed unit, should be convincing. The history of light howitzers shows us that these questions have been squarely faced and have had practical solutions for the past hundred years. In the details of technique of fire, the burden rests more on the battery commander than the battalion commander. The fact that the end of the war found single howitzer batteries in the mixed battalions of both the British and Germans, seems proof positive that such an organization is a practical one under the acid test of war.

(4) It is accepted that a two-battery battalion is easier to handle than a battalion with three batteries, but the writer cannot but feel that, except for complication of supply, the use of howitzers instead of guns as the third battery of a battalion, lightens the burden of the battalion commander. The howitzer's adaptability to positions impossible for flat trajectory guns, its facility for attacking areas defiladed from such guns, and the fact that it is present as an immediately available counter-battery

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weapon, offer the battalion commander more opportunity for his ingenuity and ability in its employment.

(5) The mobility of the German 105 howitzer is rated by the Field Artillery Board as 80 per cent. of that of the French 75. This difference should not determine the organization, and, except under unusual conditions, should not be noticeable on the road.

The writer is convinced that the 105-mm. howitzer should be present as a unit of every battalion of light artillery organic with the infantry division. The present battalion of three light field-gun batteries, perhaps has its place in our service in the units of reinforcing artillery; but the capabilities and the power of the light howitzer, and the increased flexibility of the tactical unit following its addition to the battalion, demand its place in that organization, even though it be necessary to reduce the number of light gun batteries to use the howitzers.

Its primary mission is to increase our fire power in support of infantry, and to accomplish this these light howitzers must be tied into the supported infantry by the closest possible liaison. This is only possible through the light artillery battalion.

Every war has shown us the necessity for the light howitzer in close support of infantry; and this urgency is only stressed in war. The 75-mm. gun meets every demand made on the division field gun in time of peace; but every major war during the past fifty years has emphasized the inability of light, flat trajectory guns to meet the demands made on the division field gun in war. We must supplement its characteristics by those of a companion weapon of the light howitzer type, if the light artillery is to render the full measure of service which should be expected of it in the division.

The howitzer must slip into the position the gun cannot occupy; it must fire on areas dead to the guns; it must attack hostile personnel under shelter not vulnerable to 75-mm. guns; and we must take advantage of its long life, its accuracy, and its powerful effect, to harass and break down enemy morale. It must be immediately available for neutralization of protected machine guns, infantry auxiliary weapons, or located artillery; and we have the experience of the British and the Germans to help us in deciding the place of the howitzer to best carry out these missions.

Let us accept their conclusions that concentrations by more than one howitzer battery are the exception, not the rule, and that the rôle of the howitzer is to extend the functions of the division artillery beyond the capabilities of a single weapon. The division guns and howitzers have one common primary mission, and the howitzer must, with its special characteristics, supplement the light gun

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when the conditions make successful accomplishment by the later weapon doubtful.

From the fighting against the Boer trenches in South Africa, from the open fighting in Manchuria, from the stabilized western front, and from Allenby's cavalry in Palestine, we get the same conclusions. There must be a light, mobile, and powerful howitzer present to complete the armament of the light artillery battalion. Ammunition questions, replacement questions, questions of control of mixed battalions, all have risen, but have died away in the face of results accomplished.

Can we ignore the progress made through experience of others? Should we start with an untried organization, or with one abandoned in the stress of war by those who have made the light field howitzer what it has proven itself to be?

The requirements for the mobility of the entire infantry division, and the resultant limitation in road space allotted to the division artillery, probably preclude, at any rate in the near future, any increase in the number of guns per division. But we can, with a simple change of equipment, markedly increase the power and flexibility of the division artillery and its consequent efficiency in support of the infantry.

Let us initiate at once the replacement of one battery of four 75-mm. guns in each light battalion, by a battery of four 105 howitzer, and provide for their ammunition service by one platoon of the combat train. If the rechambered German howitzers can be issued at once, as recommended by the Field Artillery Board, so much the better. If the necessity for restricting the size of the infantry division, limits us to the number of guns now in the division artillery brigade, it should not restrict us to a single type. The two-regiment brigade should include four battalions, each with two 75-mm. gun batteries and one 105 howitzer battery. If a third regiment is added, its battalions should have the same organization.

This rearmament will necessarily take some time. Modification of equipment or organization proceeds slowly in time of peace. But, above all, we must not ignore the progress made in the past or the lessons of history, and let the light field howitzer gradually drop out of our consideration. We must keep ourselves, and the other branches, aware of the existence of this fine weapon,—alive to its possibilities, and insistent upon its use when the occasion arises.

TIME FIRE

A Comparison of American and Foreign Methods

BY CAPTAIN LEO L. PARTLOW, F.A.

THERE can be no doubt in the mind of artillery officers that well-adjusted shrapnel is a most effective weapon against animated targets in the open. Against objectives only slightly protected, shrapnel is still highly effective, and against objectives of an inflammable nature, it is superior to shell in its incendiary effect.

Notwithstanding these characteristics, the use of shrapnel, except in the United States and in Great Britain, seems to have fallen into disfavor. Germany has apparently abandoned the use of shrapnel entirely. France endorses it in principle, and considerable effort is being made to promote its use, but shell is still the more popular. Great Britain still insists on the instruction of her officers in the use of shrapnel, though how much relative importance is attached to this instruction is not known to the writer.

Immediately one wonders why there is this difference among the various powers. No one questions the professional skill and proficiency of the French or the German artillerists. Nor, on the other hand, can we believe that our own basic principles are out-of-date.

Do we have principles of fire that are unknown to the rest of the world? Or does Anglo-Saxon shrapnel function better than other varieties? Or is the explanation to be found in some trait of racial psychology? To the man who thinks of war in terms of the World War, an animated target in the open means, generally, hostile infantry advancing to the attack. Does the preponderance of shrapnel in our caissons argue, therefore, that we accept the rôle of the defensive as our doctrine of war?

By no means.

The principles of fire are practically uniform in all modern armies. Division artillery, the world over, is of approximately the same calibre, mobility and power. The same laws of probability govern all firing. Finally, the United States is firmly committed to the doctrine of the offensive in battle.

It seems to the writer that the explanation is two-fold.

First, to the American and to his British cousin, war means, primarily, movement. Neither America nor Great Britain is threatened by a sudden invasion of her shores by a foe numbered in millions. The countries of continental Europe, however, have always, except for brief periods, been subject to just such a menace. The launching of a powerful blow against the vital spot of a neighboring state may

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be only a matter of hours. A very slight difference in degree of preparedness, or a little time differential in mobilization, may determine to whom the initiative shall belong. These countries are compelled, therefore, to consider the possibility of the defensive being thrust upon them at the outset of the war.

This is not meant to imply that the continental powers do not endorse the "war of movement." They recognize as well as anyone the fact that wars are won only in the open. They, too, teach the doctrine of the offense, but that does not cause them to neglect the fact that they may have a powerful and hostile neighbor.

Now, shrapnel is preeminently the weapon of the "war of movement" where targets are relatively numerous, cover is slight and the maps are poor. Shell is more generally useful in more stable conditions, where more fire for destruction is required, and where the possession of good maps permit effective use of unobserved fire. Nor is shell to be regarded as a make-shift weapon against personnel. Its effectiveness, both physical and moral, against such targets is well known. It is an effective projectile against many different kinds of objectives.

The second consideration which operates to discourage the more general use of shrapnel, lies in the fact that the use of this projectile in war presents certain practical difficulties. There are grave difficulties in the actual instruction of officers to the point of proficiency in the handling of time fire within the limited time available in a training period, especially in view of the fact that this subject must be only one of a number of subjects in which a modern artillery officer must be proficient. There are also grave difficulties involved in the manufacture of this complicated type of ammunition in large quantities under war time conditions.

These difficulties, for the present at least, do not appear to be sufficiently formidable to cause our army to abandon the use of shrapnel. As for the training of our officers, while it is conceivable that a war of such magnitude and violence might arise that it would be impracticable to assure to each battery a commanding officer skilled in the use of time fire, still the immediate probability of such an event cannot be readily granted. In any case, if the abandonment of the use of shrapnel should for any reason become advisable, there will certainly be no lowering of efficiency resulting from the present training of officers in handling this type of fire. Meanwhile we can use to good advantage our surplus stocks of shrapnel, which would otherwise become unservicable for any purpose within a few more years.

As for the industrial difficulties involved, there is no country in the world, not even Germany, that is better equipped and organized

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to supply any kind of manufactured product in large quantities, than the United States.

Concerning the actual principles of ranging there is not a wide variation among the various armies of the world, (with one exception, to be noted later).

The accuracy of the initial data dictates the size of the range changes during adjustment; the mobility and visibility of the objective govern the size of the bracket sought; the range and the slope of the objective plane determine the proper height of burst for a given projectile; the number of rounds required to establish a bracket is based uniformly on the laws of probability, and subjected alike to the exigencies of the tactical situation.

The French apparently concern themselves to a greater extent than we do with the technical refinements of time fire. Not only do they customarily take into account the ordinary corrections of the moment, the angle of site, and the complementary correction for the site, but they frequently make correction in the fuze length to compensate for the fact that the projectile will actually require a longer time to traverse the trajectory to a target having a plus site than it would to traverse the trajectory to a target at the same range but having a site of zero.

These are questions of more or less academic interest to the average American officer conducting a problem in time fire. Our shrapnel fire is ordinarily adjusted on a target, with conditions as they may be—the necessary corrections being made on the basis of observed rounds. We are taught that "three mils is about the best height of burst for most targets—a little less at short ranges, and a little more at long ranges." (light artillery matériel).

In view of the fact that it is difficult to adjust all the elements of time fire simultaneously, the French, in certain cases, recommend that the range bracket be first obtained by percussion fire, and the height of burst taken up after the ranging is complete, or nearly so. This would seem to be a rather slow method; yet, due to absence of "high doubtful" bursts, practically all rounds fired are sensible for range. Thus the time required for ranging is expedited, and it may be that the whole procedure will compare favorably, in point of time, with the ordinary method of simultaneous adjustment of all the elements.

To obtain the earliest effect on targets of opportunity, the French officer is probably more inclined to use a transfer of fire, based on a very accurate adjustment on an auxiliary target, and a carefully prepared series of topographic operations and corrections of the moment.

Doubtless the most striking variation from the American procedure is the method developed by the British, called "ladder fire" or "echeloned fire." The principle of this method is as follows:

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The battery commander estimates the range to the target as, for example, 3200 yards. He gives the command . . .

"Ladder Fire, No. 1, 3100."

At this command No. 1 is laid at 3100 for range, No. 2 at 3200, No. 3 at 3300 and No. 4 at 3400. If the target is of such a nature that a bracket of 200 yards or more is appropriate, and if the initial data is at all accurate, there is an extremely good probability that the first salvo will yield sufficient information to justify immediate fire for effect.

In case all four rounds of the first salvo are, say, short, the next command would be, "No. 1, 3800." Thus in two salvos the battery commander would have information concerning 1000 yards of range, instead of only 400 yards, according to our procedure.

The ladder method of adjustment apparently has great merit for targets possessing certain characteristics of front and visibility. It should also prove valuable in lateral time bracket adjustment, in that the battery commander thus has a "yard stick" 300 yards long laid out for him on the terrain in the vicinity (it is to be hoped) of the target.

In conclusion it may be stated that all armies recognize the fact that, usually, when a target, against which shrapnel fire is appropriate, appears, the artilleryman's opportunity is fleeting. Time becomes a most important factor. And so, whether the various schools train their officers to deliver immediate zone fire for effect by a transfer of fire, or to use the "ladder" system of ranging, or to compete with the time interval recorder at the firing point, the common object of all this instruction is to enable the student to deliver effective fire upon the objective at the earliest possible instant.

THE BATTLE OF BUD BAGSAK AND THE PART PLAYED BY THE MOUNTAIN GUNS THEREIN

BY MAJOR JAMES L. COLLINS, F.A.

BEFORE entering into the details of the Battle of Bud Bagsak, it is believed advisable to give a brief account of the principal events leading up to this action.

Prior to 1911, no concerted effort had been made to disarm the Moros of the Sulu Archipelago, Philippine Islands. It became evident to those in authority at this time that if law and order were to be established on a firm foundation, the Moros must be disarmed. Many friendly Moros questioned the wisdom of this step, contending that it would be an unwarranted interference with an ancient and honored custom and could not be accomplished without a general uprising. This conclusion having been reached, however, the Civil Government of the Moro Province issued an Executive Order prohibiting the possession of firearms and the carrying of cutting or thrusting weapons after December 1, 1911, but stipulating that the government would pay for all firearms surrendered prior to that date.

By December, 1912, disarmament had been quite generally completed, except in certain parts of the island of Jolo. It had been regarded as highly improbable from the beginning that the Moros of the Bud Bagsak section of the island would surrender their arms without a fight. Subsequent events proved this view to be correct. Under the leadership of Amil, a force variously estimated at from five to eight thousand gathered on Bud Bagsak and defied the authorities to enforce the disarmament order. To have attacked at this time would have meant the unavoidable killing of hundreds and perhaps thousands of women and children, so a waiting game had to be played. After many conferences, an agreement was reached in February, 1913, by the terms of which we agreed to withdraw the troops which were occupying part of the Bagsak district, provided the Moros of Bagsak peaceably returned to their homes and turned in their arms. Our troops were withdrawn and many of the men and most of the women and children did return to their homes and comply with the government's demands. It became increasingly evident as time went on, however, that the old piratical element not only had no intention of abandoning their stronghold, but had arranged for the return of their followers and families to Bagsak at the slightest indication of a troop movement on our part.

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Towards the end of May, convinced we had no intention of attacking, and doubtless believing their stronghold impregnable, the outlaws openly declared they would never surrender their arms. Their attitude of defiance, if allowed to pass unchallenged, endangered the whole disarmament question. Under the circumstances there was no alternative but to act and that quickly.

The Governor of the Moro Province, then Brigadier-General John J. Pershing, took very few people into his confidence regarding his plans for the Bagsak fight. It was obvious to everyone, however, that to prevent the reassembling of non-combatants on Bagsak, it was essential that its defenders be completely surprised. To accomplish this the greatest secrecy and a certain amount of dissimulation was necessary. About June 5th, a telegram was sent to the Commanding Officer of the Jolo troops, calling off all field operations and reconnaissances. On June 9th, telegrams were sent to all concerned that the Commanding General would visit his family then summering at Camp Keithly, Mindanao. That same evening General Pershing, with whom I went as aide, left Zamboanga, on the transport *Wright*, ostensibly bound for Camp Overtion, Mindanao.

When out of sight of Zamboanga, the *Wright* changed her course and headed for Isabela Basilan, where Captain Charlton and his 51st Company of Moro scouts were taken aboard. The next stop was Siasi, at the southern end of the Sulu group, where the brilliant Captain Nichols and his 52nd Company of Moro scouts embarked. With all lights out, the *Wright* crept into Jolo at 8 o'clock the night of June 10th.

So well had our secrecy plans succeeded, that when I arrived at the commanding officer's house with orders for the attack, practically all of the officers on the post were in white, calling with their families on their newly arrived commanding officer. Our fake telegrams accomplished their purpose, but there were complications which we had not anticipated. For instance, excepting Captain Nichols, there was only one officer who had accurate knowledge of the Bagsak terrain and the trails leading thereto. This officer was one of the few who knew that an attack was contemplated. He had not been let in on the fake telegram and so concluded that the calling off of all field operations meant a return to the conference method of settling disputes. Accordingly, he celebrated, and in such a thorough manner that innumerable plunges into the cold water of the *Wright's* bath tub barely rounded him into shape to be of service in the attack on the morrow. It is only fair to add, however, that the officer in question not only conducted himself with great gallantry during the fight, but was killed in action during the World War. But to get back to our story. All the officers who were to



A MORO WARRIOR



MORO TYPES

THE BATTLE OF BUD BAGSAK

participate in the attack were assembled at the quarters of the District Governor, Lieutenant W. W. Gordon, A.D.C. to General Pershing, where the following field order and instructions were issued:

U. S. Army Transport *Wright*,
At Sea, June 10, 1913.

From: The Adjutant, Jolo Field Forces.

To: The Commanding Officer of Columns.

Subject: Instructions Regarding Field Operations.

I am directed by the Commanding General, Jolo Field Forces, to furnish you with the following information and instructions for your guidance in connection with the operations of the troops under your command:

General Instructions—

(1) The object of this movement is to disarm, with as little loss of life as possible, those hostile Moros who have refused to give up their arms.

(2) The wanton destruction of life or property will be severely punished.

(3) Coöperation of the different columns will be absolutely necessary to insure success.

(4) Great care must be exercised to prevent troops firing into each other.

(5) The expenditure of ammunition, especially of the mountain guns, must be carefully watched and controlled.

(6) All cottas captured should be destroyed, if time permits.

(7) The general plan of attack, as previously explained, will be carried out unless circumstances fully warrant modification.

Special Instructions—

Ammunition.—Each man will carry 270 rounds.

Rations.—One day's rations, to include breakfast, June 12th, will be carried in the haversack.

Equipment.—Axes, lanterns, shovels, bolos, or machetes will be carried by each organization.

Signalling.—Each column should have at least four men with it who can signal.

Field message blanks will be carried.

Such orders will be issued by column commanders as will insure the carrying out of the above instructions.

(Sgd.) JAMES L. COLLINS,
2nd Lieut., 8th Cavalry, A.D.C., Adjutant.

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HEADQUARTERS JOLO FIELD FORCES,
Bun Bun, Jolo, P.I.

11 June 1913, 1:00 A.M.

FIELD ORDERS,

NO. 1.

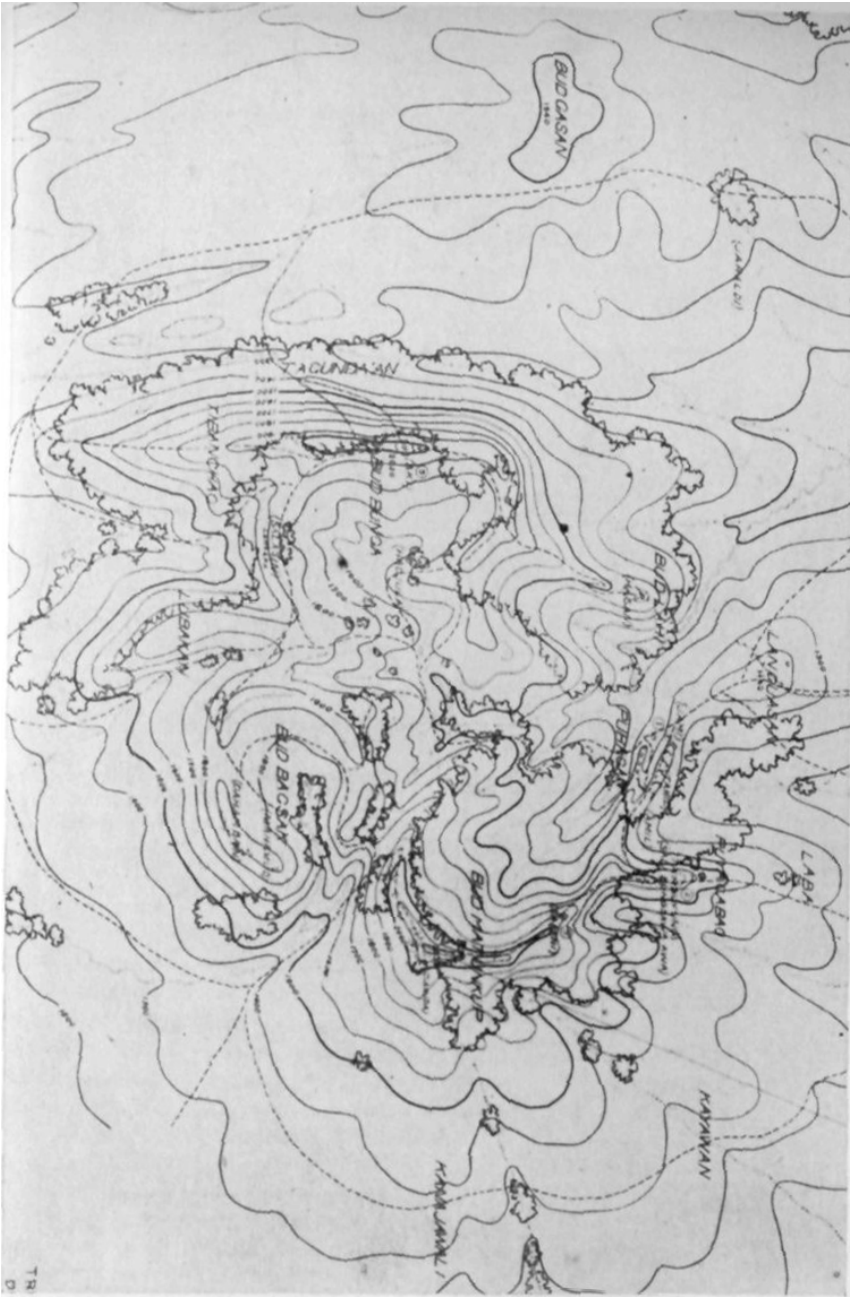
1. The enemy occupy BAGSAK RIDGE.
 2. This force will attack at daybreak.
 3. (a) Column No. 1, consisting of Company M, 8th Infantry, 40th Company, Philippine Scouts, and Mountain Gun Detachment, will attack LANGUASAN.
 - (b) Column No. 2, consisting of the 29th, 51st and 52nd companies, Philippine Scouts, and Mountain Gun Detachment, will attack PUYACABAO and MATUNKUP.
 - (c) Column No. 3, consisting of the 24th and 31st companies, Philippine Scouts, will hold south slope of BAGSAK.
 - (d) The reserve, consisting of the 21st Company, Philippine Scouts, and fifty men of Troop H, 8th Cavalry, will be at Bun Bun.
 4. The pack train will remain at Bun Bun.
 5. Messages will reach Commander at Bun Bun.
- By order of Brigadier-General Pershing:

(Sgd.) JAMES L. COLLINS,
2nd Lieut., 8th Cavalry, A.D.C., Adjutant.

Copies to Column Commanders and Officers in charge of Mountain guns.

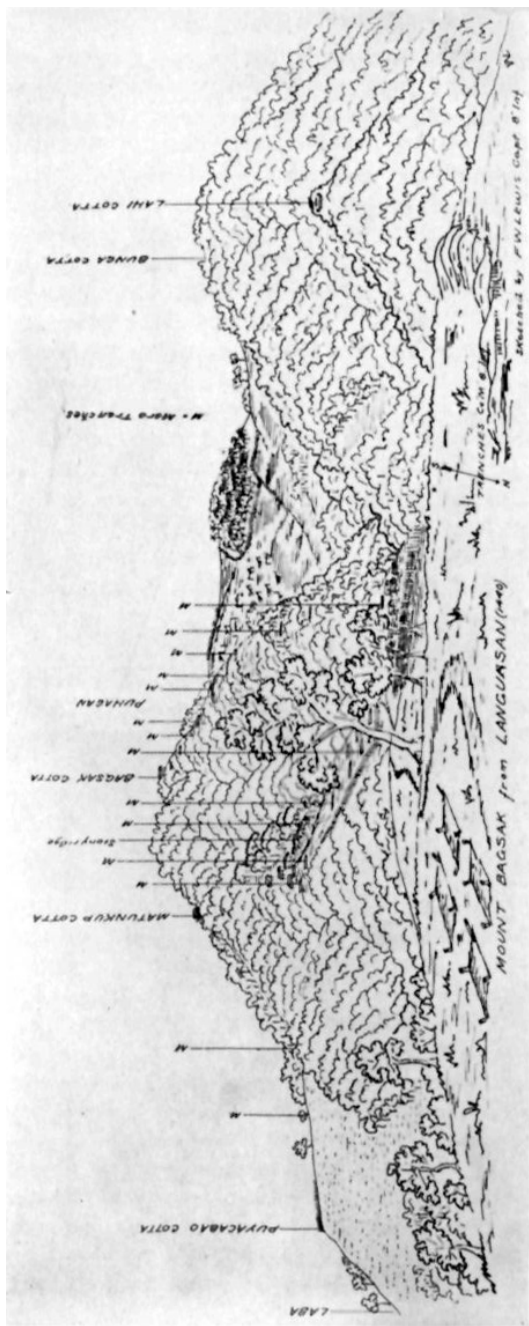
The above Field Order was merely a confirmatory order, the information it contained having been given verbally in a fragmentary form, as was true of the orders issued for the movement of the troops from Jolo to Bun Bun. What worried us most was getting the troops embarked secretly at night and landing them at Bun Bun, a distance of twenty-five miles from Jolo by water, in time to attack the enemy at daybreak. Practically all the launches, sampans, and barges in the Southern Islands had been concentrated at Jolo to transport this force of approximately 1200 officers and men. Although no previous warning had been given the troops, when the *Wright* and the other vessels pulled out at 1:00 A.M., June 11th, so quietly had this movement been conducted that it is doubtful if anyone outside the walls of Jolo knew of it.

The two mountain guns and their ammunition were towed in sampans behind the launches carrying their respective detachments. The 24th and 31st companies, Philippine Scouts, were ordered to march overland to the south slope of Bagsak, and a detachment of fifty men, Troop H, 8th Cavalry, with pack train and mountain-gun



MAP OF MOUNT BAGSAK

Bun Bun is East of North of Bud Matunkup. The Attacking Troops Came in from the North on the Trails Shown Near Languasan. The Positions of Moro Leaders are Shown by the Names of the Latter in Parenthesis: Matunkup, Cota and Bagsak Cota are Near the North and South Ends. Respectively, of Bud Matunkup. The Contour Interval is 100 FEET. The Area Shown Here is About 2500 Yards by 1600 Yards.



MOUNT BAGSAK. A GENERAL VIEW OF THE HORSE-SHOE SHAPED STRONGHOLD

From a Sketch by Captain F. W. Lewis.

THE BATTLE OF BUD BAGSAK

equipment, under Lieutenant J. T. Sayles, 8th Cavalry, were also to proceed overland to Bun Bun. The troops going by water reached Bun Bun at about 3:30 A.M., while those marching were approximately in position by daybreak. The landing at Bun Bun, which we had thought would be opposed, was accomplished without incident and so complete was the surprise that no resistance was encountered until 1200 yards from the Moro position, although Bud Bagsak is three and a half miles from the beach at Bun Bun.

For an understanding of the action that followed a description of Bud Bagsak is necessary. Imagine a huge warped horseshoe with an elevation slightly greater than 2000 feet. Puyacabao is one heel and Bunga, at a distance of about 800 yards and approximately the same elevation is the other. The Cotta, known as the Bagsak Cotta, is the toe and about 200 feet higher than either heel. From toe to heel is approximately 1000 yards. Mantunkup is on the north or warped side of the horseshoe and about midway between Puyacabao and Bagsak Cotta. Languasan is a bald knoll and Puhagan, at about the same elevation, a strong cotta,—corresponding to the frog and the apex of the frog, respectively. The sides of the mountain are very precipitous and for the most part heavily wooded. (See map and sketches.)

Shortly after 7:00 A.M., the enemy opened fire on our columns at a range of about 1200 yards. Lieutenant McKinney's mountain gun attached to the right column, directed its fire on Puhagan and Bunga while Lieutenant Van Natta's gun attached to the left column, began shelling Puyacabao. In as much as I especially desire to bring out how the mountain guns were handled in this fight, I will here quote from a letter written me by the now Major, Carl F. McKinney, Infantry, regarding same. "When our column arrived within about 1500 yards of the Moro stronghold, we were within view of them and could see some activity therein and could hear the shouts and the beating of tom-toms. There was also an occasional shot from them. The infantry deployed and advanced on the stronghold, which was entrenched with a sort of breastwork and had very effective bamboo entanglements (this we found out later). My mountain gun fired a few shells immediately (direct fire which seemed quite accurate). This might be considered, by a great stretch of imagination, a preparation of five minutes' duration. It set fire to some shacks and caused great yelling and beating of tom-toms. As the infantry advanced and began to receive fire from the Moros, we opened fire with shrapnel, firing overhead fire, still with direct laying, and thus supporting the attack.

"We continued to fire (occasionally only) until the assault echelons stopped on a knoll about 200 yards from the Moro cotta and entrenchments. I learned later that we did not have the then

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required safety angle above the infantry, because we were firing from the foot of the slope and the infantry were ascending until they were nearly on the level with the target. The infantry made no further advance, because it was considered there would be needless loss of life in making a frontal assault against the Moro position, and that we could better try first to shoot them out while the other columns were manœuvring to get at the Moros from a more advantageous direction. The mountain gun was then moved by hand to a position in the centre of the infantry line, from which position it fired shell and some shrapnel on the Moro position for several days. During the night, the gun was loaded with shrapnel with fuse set at zero, so that we could fire a sort of canister fire in case of assault by the Moros. There were several rushes by a few of the more fanatical Moros during the time we were there, but they were all brought down by rifle fire."

The above account has to do with the capture and holding of the bald knoll, Languasan. Two men were killed and five wounded in taking Languasan. The location and elevation of Matunkup, Puyacabao, and Languasan, with reference to each other, made it essential that all three should be taken as nearly simultaneously as possible, if severe losses were to be avoided. Having been sent forward by General Pershing to keep in touch with the situation, in accordance with his instructions, I fixed a time for each column to move to the attack after the first preliminary skirmishes. The execution of these orders far surpassed our expectations. Languasan was taken by the right column at 12 noon and the left column captured Matunkup and Puyacabao at 12:20 P.M.

These last two positions commanded the inside of the crater and were regarded as impregnable by the Moros. In taking Mantunkup, Captain Charlton with his 51st company of Moro Scouts, had to scale the sheer side of the mountain by climbing hand over hand on bejunco vines for a hundred feet or more. Three scouts were killed and Lieutenant Rackley and five scouts were wounded in the undertaking. Captain Nichols took Puyacabao without the loss of a man by a very pretty manœuvre. Leaving Van Natta's mountain gun with half of the 29th company to keep up a steady fire on Puyacabao, he with the remainder of his command, by crawling and climbing through the heavy timber and dense underbrush, reached a commanding position inside the crater without being seen by the enemy. Fire was opened at close range and the cotta captured after a hand-to-hand fight. But five men were wounded in the capture of Puyacabao, due to Captain Nichol's brilliant work.

Amil was in Puyacabao when Van Natta's mountain gun first began shelling. He was reported wounded by a flying splinter and retreated to Puhagan where he was killed the next day.

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The capture of Puyacabao and Matunkup made untenable several strong cottas in the interior of the crater, while the possession of Languasan closed the mouth of the crater and prevented the entrance of families or other adherents coming to the assistance of the defenders. Fortunately for us, the Moros did not fully realize the great importance of Languasan until after its capture, because the fire which they later concentrated upon it from Bunga, Puhagan and Bagsak Cotta in an effort to dislodge our troops entrenched upon its bald top, would have caused us very heavy casualties indeed.

The afternoon of June 11th was spent in strengthening the positions already taken and in reconnoitering the ground in the vicinity of the remaining cottas. The 24th and 31st Companies, Philippines Scouts, which, under the command of Captain Moylan, had been used as a containing force on the south slope of Bagsak, were ordered to report to Major Shaw on Languasan at daybreak June 12th. Van Natta's mountain gun, which had supported Nichol's column so effectively, was attached to Major Shaw's command on Languasan. A desultory fire was kept up all the night of the 11th by the hostile Moros, under cover of which there is little doubt that some of the faint-hearted defenders escaped through the brush. The surviving Moros from the three cottas captured retreated to Puhagan, Bunga and the Bagsak Cotta. The fire of the mountain guns from Languasan and rifle fire from Matunkup, Languasan, and Puyacabao soon rendered the Moros' position at Puhagan and vicinity intolerable. Unable to stand the strain, the Moros on the morning of the 12th began a series of rushes on our line. The fanatics would rush out of the Puhagan Cotta in groups of from twelve to twenty and charge across the intervening 300 yards. The topography of the country between Puhagan and Languasan made it impossible for our troops to see them after they left Puhagan until they were within twenty-five yards of our position. None of the charging Moros reached our lines alive. Amil's son led one of these rushes and Datu Jami, one of Amil's principal lieutenants, another. Jami was the most notorious cattle thief in the Sulu Archipelago.

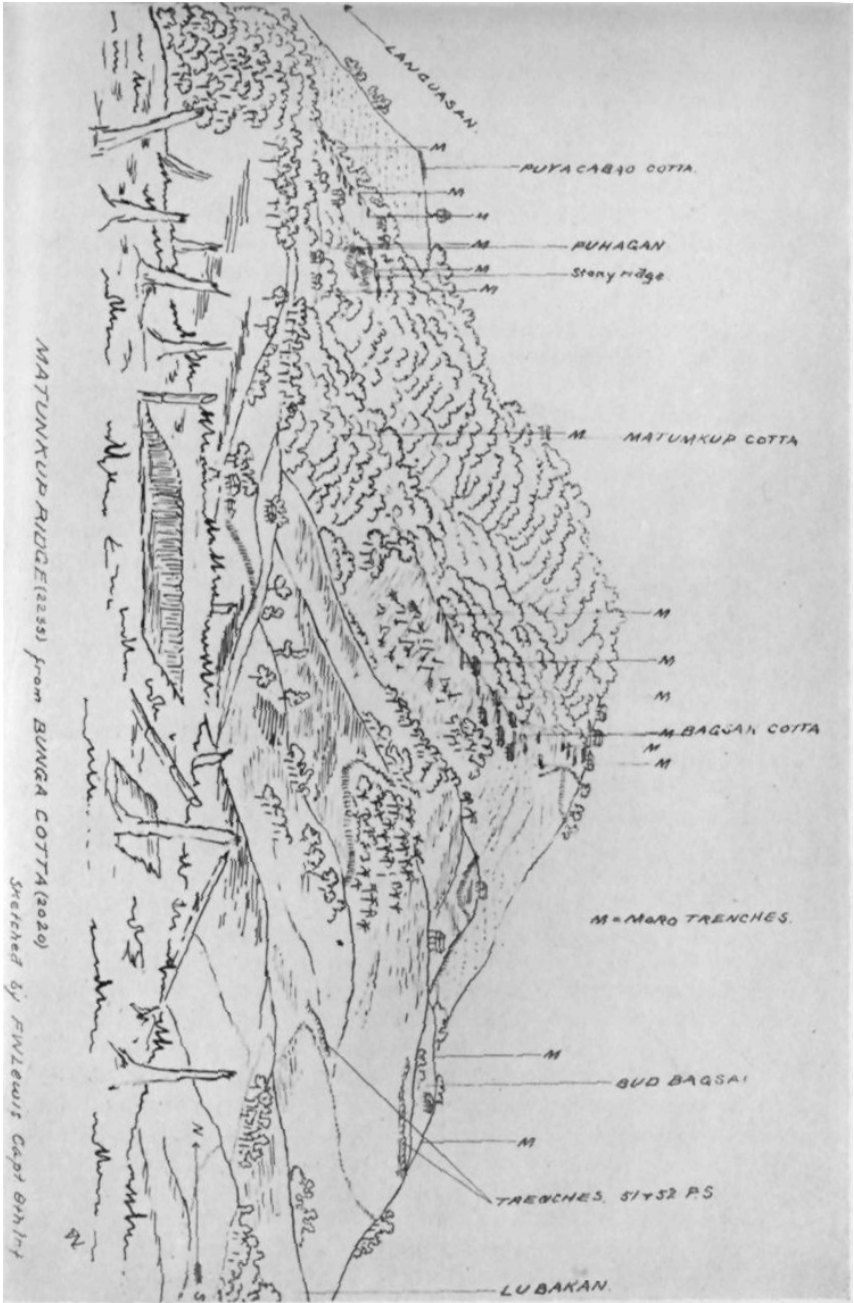
It was after one of these charges that Captain Nichols was killed. He was one of a group of officers on Languasan who thoughtlessly stood up to see how near the gallantly charging Moros had come to reaching their goal. A bullet from a high-powered rifle hit him just below the eye, killing him instantly.

After a careful reconnaissance by Lieutenant W. W. Gordon, A.D.C., it was decided that Bud Bunga offered the best position for Van Natta's mountain gun in the final attack. It was also determined that to reach the Bagsak Cotta from Matunkup by way of the narrow rim of the crater would be impossible without very severe losses. Captain Moylan was, therefore, sent around to our right

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on the morning of June 13th, with the 24th and 31st Companies, Philippine Scouts, and Van Natta's mountain gun, to occupy a position on Bunga from which the Bagsak Cotta could be shelled. Bud Bunga was very difficult to reach as it was only accessible by two hog backs with sheer precipitous sides. Moylan, acting most energetically, captured the cotta on Bunga at about 1:30 P.M., losing but one killed and one wounded. General Pershing with a detachment, had taken advantage of the fight on Bunga to make a reconnaissance from Matunkup to determine the best method of attacking Bagsak Cotta—the key to the Moro position. We crawled along the edge of the crater to within less than seventy-five yards of the Bagsak Cotta and could see the occupants watching the fight on Bunga and hear them excitedly conversing. It was an extremely dangerous reconnaissance and I have often thought since, that a single volley from the Moros on Bagsak that day might have changed considerably America's part in the World War. On the way down, we intercepted a wig-wag signal from Moylan, telling of the capture of Bunga and the losses incurred, and stating that the approach to Bunga was so steep that the mountain gun would not be up before ten the next morning.

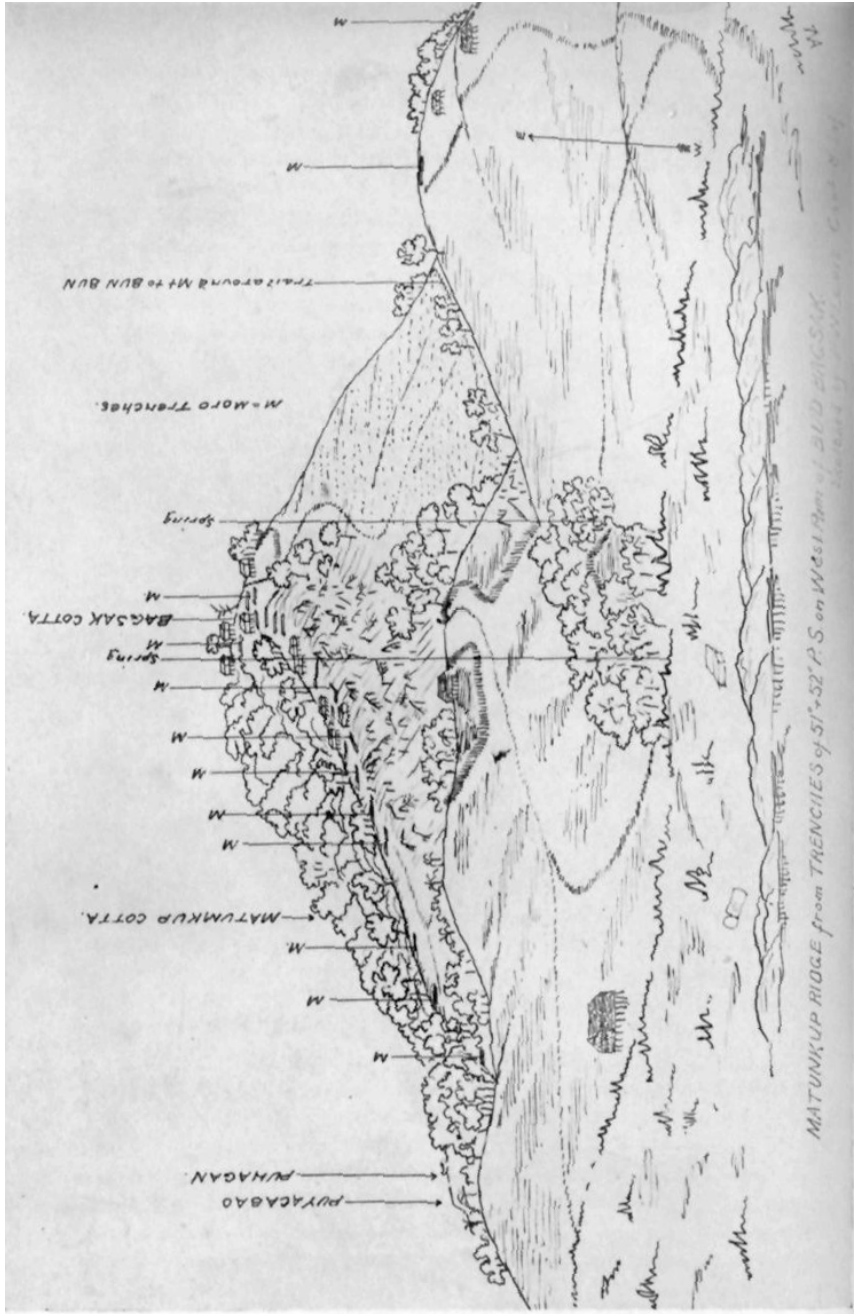
On the morning of the 14th, I was sent with a cavalry detachment to accompany the 51st and 52nd Companies, Moro Scouts, with a view to effecting a lodgment between Bunga and Bagsak from which the final attack could be made. By taking advantage of a deep ravine, Captain Charlton was able to reach, without any casualties, a favorable position on a knoll on the flank and about 600 yards from the Bagsak Cotta. Again with the idea of bringing out all points in connection with the use of the mountain guns in this fight, I will mention some of the difficulties Van Natta had in getting his gun up to the top of Bunga. Proceeding ahead of Charlton's column, I struck a trail which led to the base of the ridge where Van Natta was trying to haul up his gun. Just as we arrived, the rope, by which the men were hauling the gun up the precipitous slope, broke, and the gun came rolling several hundred feet down the hill. It was suggested that the gun be taken apart and carried up the hill, and it was so decided. This was about 7:00 A.M. Having watched Charlton's men on the 11th climbing Puyacabao, cut toe holds with their machetes, I suggested to the men as I passed up the hill, that they do likewise. When I reached the top of Bunga with my Boer orderly about 8:00 A.M., I had Captain Moylan detail half of his men with bolos to clear a trail through the brush for Van Natta's men. The entire gun was up about noon and the first shot at range 850 was fired at 12:20 P.M. The next shot at range 950 was sensed over. The third shot was at range 840 and the next at 830, which seemed the exact range to the cotta. Lest I be suspected of



MATUNKUP RIDGE (2335) from BUNGA COTTA (2020)

Sketched by FW Lewis Capt 8th Inf

THE SCENE OF THE FINAL FIGHT
From a Sketch by Captain F. W. Lewis.



A CLOSER VIEW OF THE SCENE OF THE FINAL ASSAULT

From a Sketch by Captain F. W. Lewis.

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marvelous memory or a vivid imagination, I hasten to remark that I have always found it advisable to keep an accurate diary when in the field. During the remainder of the day, forty rounds, in the proportion 75 per cent. double shot and 25 per cent. shrapnel, were fired at the cotta and the houses and trenches on the ridge leading thereto. As the Moros were driven from one trench to the other, Charlton's infantry holding the hill on their flank was able to fire upon them with considerable effect.

Day broke on June 15th with Bud Bagsak hidden by a heavy mist, and for a while we feared it would be impossible to wind up the fight that day. The plan of attack was as follows: (I quote from my diary as written that night). "Van Natta would open with his mountain gun and fire shell at cotta and trenches, doing as much damage as the ammunition on hand would permit; then he would change to shrapnel, firing a few rounds at top cotta, and then beginning on houses on ridge leading to cotta, would shell all the way to the top. While this firing was going on, I was to be on Bunga with a signal man and at my signal, one to the right and one to the left, Charlton would move with the 51st and 52nd Companies to a grove near foot of draw. When I signalled again, it would be for Charlton to start his advance up the draw and would also be a signal for Craven, with the 24th and half the 31st Company, to start firing slowly at will. The artillery would meanwhile be firing shrapnel as fast as they could load, in advance of Charlton up the hill. When about two-thirds of the way up the hill, I would signal and it would mean Craven should change from fire at will to volley fire. This volley firing was to continue until Craven saw Charlton's men near top of hill. The remaining distance, Charlton would have to go alone. In case a sudden mist came up, Craven's men were to continue firing at will and Charlton's men would lie down in draw. Should Charlton decide that mist would make a favorable time to advance, he would sound 'Attention' on trumpet and all firing except his own would cease."

At the expense of some repetition, but in order that a clear idea may be had of the final attack, I will give the situation as it appeared to us on Bunga. The grove from which Charlton was to launch his attack, was at the foot of the ridge about 450 yards from, and several hundred feet below, Bagsak Cotta. The ridge was quite steep, one side being heavily wooded but the other, up which the attack was to be made, had been cleared, and contained from eight to ten bamboo houses, with standing trenches under and around them, from a point about 100 yards from the base of the ridge to within 100 yards of the cotta. Between the last house and the cotta proper the Moros had constructed three standing trenches with bamboo revetments. The ridge was narrow and wound up to the top in a

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fairly uniform curve until the standing trenches were reached, when it took a rather sharp turn to the left. Craven's infantry was entrenched on a knoll on the flank about 600 yards from Charlton's line of advance. Van Natta's mountain gun was at a point on Bunga about 850 yards from the cotta and approximately 200 feet below it. From Bunga practically all the ground over which the attack was to be made was visible.

At about 8:30 A.M., when the mist which had been hiding Bud Bagsak had entirely cleared, the mountain gun began to fire. At 8:50 A.M., Charlton began to move his troops into the grove, and at 9:00 A.M. began his advance up the ridge. Craven had instructions to increase the intensity of his fire as Charlton advanced up the hill, but by 9:15 his men were firing so rapidly that I was afraid they would be out of ammunition when the critical stage of the attack was reached, so sent him a message to that effect. Charlton was able to advance almost to the first trench—approximately 100 yards from the cotta—under the protection of the fire from the mountain gun and Craven's infantry, without the loss of a man. As soon as the mountain gun ceased firing, I moved from Bunga to the knoll, where Craven's men were entrenched and watched the fight from there. When Charlton reached the first trench about 10:00 A.M., it was apparent he had met with stiff resistance. In perhaps three-quarters of an hour, Charlton signalled for more ammunition, so Lieutenant Cody was sent over with twenty men with all the ammunition they could carry, and shortly thereafter I joined Charlton with twenty men and more ammunition.

Things at this time looked rather precarious. The Moros occupied considerably higher ground; their standing trenches extended completely across the narrow ridge and were held in force, while bamboo fences cleverly constructed on either side, made it practically impossible to outflank them. As a result of my estimate of this situation after joining Charlton, I sent General Pershing a message, stating that our casualties up to that time were three killed and seven wounded; that the enemy's losses had been heavy; that I had sent for Craven's company to extend Charlton's right; that we were running low in ammunition, but that I had sent for more. What I did not tell General Pershing in my message, but did about an hour later when he joined us on Bagsak, was that even Moro Scouts, brave as they unquestionably are, make very little, if any, headway against determined resistance without white leadership. Many white officers had lost their lives in Sulu during the year preceding Bagsak. After the death of Captain Nichols, perhaps the most brilliant Scout officer then in the Philippines, and the wounding of Lieutenant Rackley, General Pershing decided that, if possible, in the final attack it would be Moro against Moro, and instructions were issued to that effect.

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Accordingly the officers did not appear on the firing line, but directed the fighting up to this stage, through their noncommissioned officers, from a position in rear of the lines. Grasping the situation and with our commander's approval, the white officers were soon directing the fighting from the front line. The effect was electric. Our line, encouraged, extended its right flank and soon began to tear down the bamboo fence which hitherto had prevented any advance in that direction. More ammunition had come up and fire of such intensity was kept up that it was fatal for a Moro to show his head. Barongs, crises and spears were hurled, and several times our line was temporarily forced back by these missiles. I saw one soldier, struck full in the chest by a long spear, fall backwards into a trench, the spear quivering in his flesh until a comrade, pressing one foot against the wounded man's chest, pulled it out. Finally, our line, after tearing down the bamboo fences, got a position on the right flank from which the trenches and cotta could be enfiladed. Our front line was less than twenty-five yards from the enemy at this time and the few Moros still alive jumped out of their trenches and hurled themselves at our line. They were game to the last, and while at the time our feeling was rather one of exultation that the battle was over, I doubt if there was a man on Bagsak at the finish who had not the greatest admiration for the enemy and the courageous stand he had made. The pity was that centuries of Moro traditions, prejudices, and superstitions made affairs of this sort not only necessary but inevitable.

Our losses in taking Bagsak Cotta were six killed and eight wounded, making our total losses in the fight fifteen killed and twenty-five wounded. The Moro losses, while not accurately known, were considerable.

* * * * *

I am indebted to Majors Thomas A. Van Natta, Cavalry, and Carl F. McKinney, Infantry, for the following information regarding the mountain-gun detachments that played such an important part in the Bagsak fight.

According to Major Van Natta, a series of tactical problems on Moro warfare were run in the post-graduate school at Jolo in 1912. While solving some of these problems, Van Natta became convinced of the value of guns with the infantry, that would act as accompanying guns and furnish very much the same support as is now furnished by the 37-mm. and the Stokes Mortar. He was rapped in the critiques but finally got permission from Colonel Eben Swift, who was in command at Jolo, to organize a mountain-gun detachment. Men from the 8th Infantry and the 8th Cavalry at Jolo made up the detachment which consisted of the gun squad,

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drivers and the necessary noncommissioned officers—thirteen men in all. Their training was in accordance with the Mountain-gun Regulations then in force. The first detachment organized was used so successfully in field operations at Jolo, prior to Bagsak, that Van Natta was directed to organize three more detachments. In the Bagsak fight he commanded one detachment, McKinney the other, while the third detachment, under Lieutenant Dillman, was used in an attack at Sahipa Cottas while the Bagsak fight was on. This latter fight was really part of the Bagsak operations, although in another part of the island. The three detachments were trained to function as an accompanying gun detachment and were never organized or used as a battery. When they went into the field they were attached to the infantry columns. Practically all their firing was direct fire. The eighteen pound, double-column shell and shrapnel were used. Van Natta states he has no record of the number of rounds fired in the Bagsak fight. I need hardly add that there was no artillery in the southern islands at the time of this fight, and even if the artillery in Luzon had been available, it would not have fitted in with General Pershing's plan to surprise the Moros in Bagsak, to have ordered it to Jolo.

WHAT IS THE NATIONAL GUARD INSTRUCTOR'S JOB?

BY MAJOR H. C. VANDERVEER, F.A.

I HAVE not undertaken to write on this subject, because I think I have more knowledge of it than have others. Some of you—perhaps many of you—know as much about it as I do. But I have had a reasonably wide experience along these lines, and so many officers have asked me, "What is a national guard detail like?" that it has seemed to me that perhaps a few suggestions based on experience may be of use.

This paper is not intended to be anything more than a set of suggestions. They are the result of some two years' service in the National Guard, duty as a regular army lieutenant at two national guard summer training camps prior to the enactment of the National Defense Act, and about forty months' duty as a detailed national guard instructor, including more or less intimate contact with some nine or ten different regiments of national guard field artillery.

When, some of these bright mornings, you awake to find yourself ordered to duty as a national guard instructor, almost the first thing to do is to realize that you no longer travel on a mileage status. For your own interest, acquaint yourself a once, either by inquiry, or by securing a copy of the regulations on the subject, with the system on which the travel expenses of national guard instructors are settled. If you do not, you will probably arrive at your new station without the various requisite records and receipts for your expenses en route. In that case, your traveling expenses will be repaid to you seldom or never, and, believe me, you must watch the pennies while you live in a civilian community.

Your circumstances of living, while on national guard duty, will vary very widely with the locality. In a large city (Philadelphia, for instance), you may live about as you please and where you please, for you will be lost in the crowd, anyhow. In a city of ten or fifteen thousand, I think probably you will have a similar independence of choice. It is in the city of from fifty to one hundred thousand that you must watch your step. Such a community is large enough to set a lot of store upon outward appearances; small enough to take very careful note of you and how you live; and frequently narrow enough to seize every opportunity to criticize you.

So—in the first place: be careful in what part of town you live. In a city of moderate size, you, and the army you represent, will be judged very largely by this, particularly at first, and first impressions

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are important. In particular, if you are going to rent a house, be careful not to be too hasty in signing a lease from which you may later wish yourself free. I have seen one regular officer make such a mistake—it had a very unfortunate effect on his standing in the community, and on his value there, as well as on his opportunity for pleasant associations. Better live at a hotel or club for a month or so, until you know the community, or ask advice from some one in a position to know, before you sign a lease.

In many cases, if you are reasonably fortunate, national guard officers will offer to put you up for good clubs, and often at very little expense to you. Such an opportunity to broaden your acquaintance in the community should certainly not be overlooked.

An enormous amount of your value will depend on your standing in the community. And I want to remind you that, except in the largest cities, many American civilians are very ready to criticize and condemn regular officers. Not all of them are so, of course—you will meet very many people who will take much pains to be kind to you. But there are always a certain number of civilians convinced in advance that all officers are dissolute characters. Such people will be quick to criticize on any ground, or no ground, and they are the people who will talk most about you behind your back. This is far from a jest.

I do not mean to offer any advice about the actual propriety of your conduct. Rather, I am suggesting that you remember that all that you do will be noted, and that you take pains to give no opportunity for even unjust criticism of your bearing. You may be sure that such criticism will be made, if you present even the shadow of an excuse.

Now, while I am talking about first impressions, it seems appropriate to say something of your first contact with the national guard personnel whom you are to instruct. I will have more to say later of your relations with them in general, but I want now to touch on one point in connection with your first contact with them.

Some of them, perhaps, are going to be prejudiced against you in advance—I have seen such cases. But the great majority of them are going to be in a receptive and inquiring state of mind—wondering "what will this instructor be like?"

Under the circumstances, it may well be worth your while to look about for some one way in which you can perhaps be of prompt and unmistakable assistance to them as soon as you arrive. In such a matter I was very fortunate—I arrived to find a national guard regiment which had submitted countless requisitions, and, for many different reasons, had received practically no equipment—with the result that every one was both discouraged and disgusted. By writing

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countless letters, I was able to get them their property, actually in freight car loads—many freight car loads. They were surprised and grateful, and I am sure the incident did a great deal to reassure them that I was there for some purpose other than to find fault. And, later, it helped to discount the painful impressions resulting from some other activities of mine which they did not like so well.

Along these same lines—I have known an instructor who managed to get a very friendly and cordial start with his national guard regiment, by a very small trifle. As soon as he arrived in their armory, he asked at once for some of the division insignia to put on his uniforms. Now, this is not in strict accordance with uniform regulations, and I know that to you it will perhaps sound childish. But—it had the desired effect—those national guard officers and men decided that that instructor was "one of the gang," right then.

And now, let us assume that you are settled down in your new station, have become acquainted, and are ready to go. What shall you do, and how are you to do it?

In the first place, let us consider your situation:

First: You are not in command of national guard troops—never forget it.

Second: Strictly speaking, you have none of the responsibilities of command.

Third: You are on your present detail to be a helpful critic—to set a good example—to offer advice, and help in putting your advice into effect.

So—do not ever try to take command. You surely will ruin your own usefulness if you do. On the contrary, while displaying every interest in the national guard unit, you must take occasion to make it very clear that you never dream of it as "your" unit. I know of only one small exception to this—at times you may profitably take command, of a battery, for instance, for just a few minutes, to demonstrate to its officers how to drill it or handle it. But such occasions should always be brief, and should occur at all only when you cannot explain your point, but must demonstrate it.

Above all, never have anything to do with the discipline or administration of a national guard unit except to offer advice—and be sure you do that tactfully.

I have said that you have none of the responsibilities of command. This is true, yet you have certain responsibilities, more or less clearly laid down in National Guard Regulations. For instance: the national guard unit has a large amount of Federal property. If this is misused or being injured through neglect or abuse, you are responsible that the condition is corrected—either as a result of local suggestion or of report to higher authority. I need scarcely say that in nineteen cases out of twenty, such a condition can be corrected

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by tactful and patient suggestion, and that is what you are there to do. I may add that my experience has shown that report of such matters to higher authority always results in much bitter enmity and much hard feeling—and practically never has any corrective effect. It is of value only as a last resort and not of much value then.

Similar to your responsibility regarding Federal property, is your responsibility as regards Federal payrolls. Are all the officers and men who draw Federal pay actually present for drill? And are those present actually performing the required ninety minutes' actual drill and instruction, or its regulation equivalent? If not, you are responsible that if the condition is not corrected, pay is not drawn. Shortenings along these lines are not rare—and they can almost always be corrected by firmness. And if you are tactful, they can usually be corrected without too much hard feeling.

And now—you are to be a good example—a helpful critic, etc. How is this to be done? It is beyond the scope of this paper to tell you how to be a good example. But perhaps I can offer some suggestions of value to you in making yourself a helpful critic.

In the first place, I am sure that you will get the best results in the way of organization, discipline and training, if you expect a good deal—ask a good deal—demand a good deal. If you do not, you will get very little. If you do expect a lot, and keep on expecting it, with endless patience, after awhile you will see the good results.

For an example—National Guard Regulations require that to qualify for Federal pay, national guard personnel must be in uniform at drill. Generally speaking, you may well require then, that they do be in uniform, and all in the same uniform, at drill. The importance of this seems obvious, if only for reasons of discipline and morale—yet, if you do not insist on it, the national guard units which will do it throughout, are few and far between.

Of course, what you expect must be based on common sense. You cannot insist that the men all be in uniform if the Federal Government has failed to fill uniform requisitions; but you can expect that the unit commander will follow up his requisitions. You cannot expect that a unit which has just received its harness, will do a drill in the battery mounted; but you can expect it to do some work immediately in "harness by detail."

I think the foregoing applies to all your relations with the National Guard. You cannot expect regular army standards; you cannot expect any set standard; but you can expect progress. I do not know anything more definite that can be said about it.

I need not say that you must look out for opportunities to be of help. But—do not help in the wrong way. For instance—take every opportunity to show national guard personnel how paper work

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should be done; but do not do it for them. Many a national guard unit will be only too glad to have you do all its paper work; but the Federal government did not send you there to be a clerk.

As regards the instruction you can offer: in general, it is of two classes—that given to the units at drill, and that given to officers and noncommissioned officers, both at drill and in schools. In either class, the importance of demonstration and practice must never be forgotten. An instructor who will get out in his O. D. shirt and show how to hook traces and adjust breechings, is worth a dozen who deliver lectures on harness and draft.

And in either case you will never get anything across except by endless repetition. You must go over the same essentials time after time, month after month—yet you must keep up the interest. The matter of what you shall present and how you shall present it, will take more than a little thought. You must repeat your instruction and you must keep it simple. If men are to learn enough of field artillery to be of value, in ninety minutes per week, what they learn must be confined to essentials, and must be presented in simple form. So avoid formulæ and high-sounding technical phrases—don't make simplicity difficult just to sound wise; the national guard personnel will admit that field artillery is a large subject without your taking any trouble to impress the fact upon them. So—when you want to accent a principle, try to think up some simple catch phrase—and don't "talk technical."

Except in matters of administration and some discipline, don't hope for too much progress from the organizations. The turn over of enlisted personnel from year to year is very high indeed, and the time for training pitifully short. I do not think that from year to year you can hope to do much more than repeat the elementary work of the battery mounted and the firing battery.

About the same is true of the noncommissioned officers. You cannot hope for more than elementary progress.

The officer's instruction is a different matter. The officers spend much more time on the work than do the men, they are usually more interested, and, above all, they generally stick for several years. I am sure that it will pay you to put most of your attention on the officers—you will get most value for your effort.

When war is declared, all the batteries will have a vast number—far more than half their war strength—of recruits, anyhow. Instruction of the men must then begin again from the bottom. But the men will be splendid material, and training will come very fast if the officers are trained. Hence my suggestion that you put your effort on the officers. Make your officers' school a really good one, and at drills devote your attention to teaching the officers to handle their men.

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To teach the officers to handle their men—that is the really important thing—that is what you are there to teach. The theory of Field Artillery may perhaps be learned from a book; the practice of it may be learned through hard knocks in campaign; but the art of command—the realization of the responsibility of command—the willingness to command aggressively—can be learned only from some one who has exercised command.

And the national guard officers who have it to learn, can learn it only from you. Outside of World War officers, few of them have experience in handling men—fewer still in commanding men. Very many of the national guard officers feel that the men are "good fellows" and want to be "good fellows," too, and as a result they do not exercise command aggressively. Considering their civilian experience, this is scarcely to be wondered at.

The responsibility of command, and how to exercise command, is what you must teach them—your one greatest task. Progress along this line is entirely possible, and you must further it in every way—by precept, by example, and by endless reiteration. And I need scarcely remind you that it is a rather delicate subject; you can easily make it offensive if you are not careful.

It is easy to give offense to civilian officers in any instruction and you must be on your guard against this lest your enthusiasm run away with you. Remember your national guard officers are there only voluntarily; it will do you small good to "pep up" your instruction this week, if, as a result, you next week have no one there to instruct.

And that brings up the same old question, "How about the national guard officers—can I get along with them?" Let me reassure you—you can easily get along with most of them, if you are careful not to let them feel that you are with them only as an inspector and to find fault. Probably you will meet a few—I have known only three or four—who will openly resent your presence. These you can cheerfully ignore. A few others will perhaps be resentful, but will conceal it, more or less. These, too, need not cause you loss of any sleep. The vast majority of the national guard officers will be friendly and open minded. Of course they will not like your criticisms, but they will be grateful for your help. What more can you expect?

And the other old question: "What must I do to get along with the national guard officers?" Why, go out and soldier with them, of course. Be friendly with them; with some of them you will naturally become intimate, and the more you do this, the better. Help them in any way you can; try not to nag them; and when you have to criticize one of them, do it frankly, face to face. Try to accompany each criticism with a corrective suggestion, and you will

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not have to make too many criticisms to higher authority. If you do find some fault that you cannot get corrected verbally, then make your report to higher authority; but do it frankly and openly, and do not try to conceal it. In such a case you will have the respect of the man you have "skinned," if not his liking. Having taken such a line of conduct, it is scarcely likely that you will be unpopular with the majority of national guard officers. But if you are, why, all right—it can't be helped. I have said a good deal, above, about the necessity for tact, and it is all true. But—don't be tactful at the cost of your own self-respect—there is no need.

And when you have a report to submit on a national guard unit—write the truth. If the unit is deficient, the War Department needs to know about it. Do not flatter them. The National Guard has very many shortcomings at present, but if their progress during the five years just past be considered, the truth about them is plenty flattering enough for any purpose. Be just as fair as you can, but write the truth as you see it, just as you would about a regular unit.

It would be possible to write almost endlessly on duty with the National Guard, but it seems to me that it may all be summed up in this: You are going on a detail where, to a considerable extent, you will be charged with training. You will lack authority; you will lack facilities; the personnel will lack time to train. Almost everything generally considered essential to training, will be lacking in whole or in part. But—it can be done. You have only to see the difference between a good national guard unit and a poor one, in summer training camp, to be very sure that it can be done.

Briefly, you are going to make bricks without straw. That is nothing new. The United States Army has been making brick without straw for almost a century and a half—and some of them have been very good bricks.

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BY CAPTAIN JAMES C. HUGHES, F.A.

MEMORANDUM number eight from the office of the Chief of Field Artillery, dated November 16, 1923 says: "There are three essentials to field artillery efficiency; namely, Mobility, Fire Power, and Signal Communications. *They are of equal importance.*" Again, commenting on the results of the 1923 annual inspection, he says, "Signal communications generally are unsatisfactory."

The principal reason for unsatisfactory signal communications is without question, lack of proper training. It takes four things to make a communications net function properly; personnel, matériel, knowledge, and cooperation. All of these are important. The personnel must be highly trained and competent; the matériel of the proper sort for the work in hand; we must know how to use the means at our disposal in the most efficient manner; and we must have not only the intelligent assistance of every man in the organization under us, but also the hearty cooperation of every organization with which we may have occasion to establish communication.

Considering personnel from the two viewpoints of quantity and quality, we find in the Regular establishment of today, much to be desired; and the shortage of men seems to strike particularly hard the headquarters batteries with their extra heavy proportion of special duty absentees. When working with reduced personnel, a gun battery can function by dropping out one or two gun sections; but *every* man in a headquarters unit has a specific job that fits into the whole plan, and when he is absent there is an essential cog gone from the machinery.

The communications end of field artillery is like the electric lighting system in a big, dark factory. It would be poor policy indeed, with a shortage of coal, to shut down the lighting dynamos in order to keep the other machinery going, when by cutting out a few of the manufacturing units the whole factory, fully lighted, can work efficiently and rapidly. Two guns whose fire is conducted from a good observation post with efficient communication, will create far more havoc than four guns without observation, or with unsatisfactory communications to the observation post. The difference in time between telephoning a request for fire from the front line infantry assault battalion back to the artillery, and getting that message back by runner, may mean the loss of the battle. The communications units must be kept filled up.

From the viewpoint of general intelligence, the quality of the men who make up the communications units is usually above that

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of the average enlisted man. This is probably as often by accident as design. In general, men get into communications who are too light for the heavier work of manhandling guns and ammunition. These youngsters are the high school type of recruit, and make up the bulk of the dependable privates in communication work. The noncommissioned officers are also a little above the average and are men who like the work and who have begun to see the interesting possibilities in it. The boy with a home radio set is a very important factor in our supply of radio operators and will make an extremely valuable asset in the next war, as he did in the last one.

Given men of the right quality, they must be properly trained. The proper training of personnel does not mean the few hours a week or few days a year that are so often devoted to running a short line, or installing a small board and having the telephone operators lie around on the ground for an hour or so, either handling one message every half hour or indulging in casual personal conversation with another operator. It involves in its final stages, not only the establishment of the normal telephone net within the net of the next higher unit, but the working out on varied terrain of real communication problems requiring displacements and unusual situations.

The scope of a course of training for field artillery signal details must of course be modified by the time available. It may vary from a half hours instruction of a dozen men temporarily attached to the detail, in how to splice a wire and how to tie it in, up to a comprehensive plan covering four to six hours a day for the entire training period of nine months or more for all communications personnel. In general too much of the theory of electricity will either bore or confuse the average enlisted man and can only be given to a very few of above average mentality or education. It is better to confine the general instruction to repeated demonstrations of how to splice a wire; of the various tests in locating line and instrument trouble, using only the instruments with which you are equipped; proper telephonic language; and the actual laying of lines. Each piece of apparatus should be indicated and its use or function pointed out. Take every member of the class along and demonstrate with the equipment, how it should be used and why a thing is best done in a certain manner.

It goes without saying that the officer conducting instruction must be thoroughly familiar with his subject. Here is one of the present difficulties. Most officers know what a normal net should be, and how to operate a telephone. Many are thoroughly familiar with the theory of alternating currents from a purely academic viewpoint; but the officer who can, on the spur of the moment, visualize the situation, plan the very best layout possible in the minimum

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time, and get that plan into execution smoothly and quickly is, unfortunately, rare. The officers themselves have not had the training. Even in the Field Artillery School only 90 hours out of 1500 are devoted to the subject of signal communications.

Disregarding the elementary principles of electricity, which can be found in dozens of good civilian textbooks, there is an unfortunate lack of available written information on military communications. The various training regulations devote some 400 pages to the technique of firing, but until the publication of Training Regulation 430-105 in September, 1924, there was practically nothing in print that covered the situation confronting the officer who must train a wire detail. Training Regulation 160-5 covers the subject in only the most general way, and Training Regulation 165-5, while going into more detail, disposes of the artillery fire control net in half a dozen lines. In Training Regulation 430-155, paragraph 16 gives the general consideration that should be given to artillery lines, and paragraph 76, in connection with liaison, notes that "good telephonic communications are essential." This lack of textbooks is probably one reason why field artillery officers have difficulty in improving themselves and in instructing the communications personnel under them.

There are a few fundamental principles that are often lost sight of, that should be thoroughly impressed upon all individuals. The principle of wire axis installation is well brought out in Training Regulation 165-5, but looking deeper into that pamphlet we find that it adopts the trunking principle as so well established that it does not require emphasis. Yet in spite of paragraph 30, Training Regulation, 160-5, we often run across the artillery commander who insists that the artillery-infantry liaison line be run direct into the instrument of the liaison officer with the infantry, instead of into the infantry switchboard; or the artillery battery commander who objects to running his observation post line through the battalion switching central, even for an initial temporary installation.

Then we have the officer who uses a basic principle and does not apply the fundamental rule of common sense along with it. He drives home to his men, "Keep the wire up off the ground"; and as a result his lines may be stretched anywhere from eight inches to eight feet above the ground, and everything that moves runs into them, damaging wire, men, and animals. With the single occasional exception of short runs of underground, there are only two places for wire; up in the air, high enough to clear a mounted man or a loaded truck, or down on the ground. This means not only high enough, but secured so firmly that it cannot possibly get loose or slack off and sag down, if it is in the air; and if it is on the ground, it *must be*

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slack and on the ground and not three or six inches above the ground, where men and animals can entangle their feet in it.

Now as to telephone nets. A wire net may be defined as two or more telephones or switchboards connected by a telephone line. The simplest form of net is in a battery acting alone, with a single line and a phone on each end. On the other hand, there is practically no limit to the complexity of the net that can be constructed and operated in a stabilized situation with a large body of troops. Nets are sometimes distinguished by the use to which they are applied, as, for example, the artillery control net, the artillery intelligence service net, or the infantry command net. They are also often referred to by the name of the unit, as, for example, the battalion net, which includes the battery lines within that battalion, as well as the lines from the battalion to the batteries.

The normal net will seldom if ever be used down to the smallest detail. In fact, the usual net will be abnormal. The normal net calls for a line from artillery brigade headquarters direct to each of the light regiments. But, for example, take the diagram in Training Regulation 160-5, appendix 4, page 65. We find here that the line to the distant light regiment goes *through* the switchboard of the near light regiment. If the situation will permit the running of more than one trunk between brigade and the near regiment, it will often be advisable to keep the far regimental line normally plugged through on one of the brigade trunks, where it will be available, if necessity arises, to the near regiment, but where usually the far regiment will ring brigade direct.

The subject of nets in general can be covered in this discussion by referring to Training Regulation 160-5 and the general statement that the normal net calls for a direct trunk line from each unit to each subordinate unit, down to, and including, the battery, with such additional local lines as are necessary and a line into the infantry net from regimental or battalion headquarters. As time and opportunity permit, however, the above simple net should be greatly expanded. Lateral lines between adjacent similar units, additional trunks to take care of heavy traffic, additional emergency lines to parallel certain portions that are difficult to maintain, should all be installed as soon as possible. No opportunity should be overlooked to tie in to some nearby unit. I remember a case at the front where one of the batteries in my battalion was tied in to an infantry brigade command post situated a few hundred yards away, and this line was used in emergencies for important messages, both by the infantry and the artillery.

While we might dispose of nets by the simple statement to "tie into everything within reach," there is a corollary to that. Let your operators know of the telephone net layout, and teach them to use it properly. It appears to be the rule, rather than the exception,

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that when an operator finds his direct trunk busy or out of order, he either reports the line as busy, or continues trying on the bad line, when he may have at least two other alternate routings. This brings up the importance of having a wire chart or diagram, showing the switchboards in the net, or a routing chart similar to that used by the Bell Telephone Company. The wire diagram is the better method of indicating routings, but whichever method is used, it must be up to date and in front of your operator all of the time, and he must understand thoroughly how to use it.

Coming to the actual installation of the wire. Before a foot of wire is laid, the unit communications officers must be familiar with the general situation and approximate location of at least some of the subdivisions within his command. Then, in planning the route for the wire cart to follow in laying the wire, there are several things to bear in mind. Short lines are always preferable, but while the line laid along a road is easy to install and maintain, especially at night, it is more liable to interference by traffic and troops, and roads are always subject to enemy shell fire, particularly cross roads, which should be avoided by at least 200 yards. Visibility from the enemy lines is a very important factor, both in installation and maintenance. On long or important lines that are difficult to maintain, it will often be necessary to install a test station and sometimes keep an instrument on the line at this point at all times, with one or two lineguards. In a war of movement, the rapid and efficient establishment of communications not only calls for a thorough understanding of the disposition of all the units directly under and over the communications officer, but a very clear visualization of the situation, prompt action, and the coordination of subordinate and adjacent units.

Assuming the communications officer knows exactly what he wants to do, let us see in detail how it is going to be done. There is an old principle of field artillery reconnaissance to this effect, "In going into position from a marching column on the road, never let your gun wheels stop turning." Apply this rule to your wire cart. Make up your mind quickly what is to be done, and as soon as that decision is made—never let your cart wheels stop turning till the last line is in, or the last foot of wire gone. In problem after problem, more time is wasted, frittered away unnecessarily, than is spent in actually moving with the cart. To accomplish this, every man must understand what is required of him, and do it. The switchboard operator, or his assistant, takes the end of the wire and pulls slack while the cart is moving off; one man should hold the line while another ties it in to the tree, rock, or bush that is to anchor it. The man holding the line continues to do so, pulling additional slack to take care of a sudden jerk when the reel cart goes into a ditch or over a bump. He should continue to hold it until the cart is no

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longer "felt" on the line. Sufficient line guards must accompany the cart. If wire is to go in promptly and smoothly, not less than four individually mounted men, in addition to the reel cart corporal, should accompany every cart when it starts out; and this number should be increased to six or eight if the line is long or the laying difficult. Every member of the communications detail, of course, must be provided with knife, pliers and, if possible, friction tape.

Paragraph 163, b, Training Regulation 430-105 is so important that although the subject has been covered earlier in this article, it will bear repetition. It is the rule that is almost invariably not carried out properly or violated altogether, and is responsible for nine-tenths of the line failures in peace time manœuvres. In war time there is enough trouble with enemy shell fire without adding troubles from improperly laid lines. Here it is:

"Artillery telephone lines are usually laid along the ground or suspended on existing poles, hedges, or branches of trees. Wire laid on the ground should be raised as soon as practicable. Traffic continually passing over wire at the same point will break the insulation so that where telephone lines cross roads or other traffic routes they should be buried, or suspended *not less than twelve feet* from the ground.

"Wire laid on the ground should not be taut, but it will be so if the linemen are not careful to pull out plenty of slack while the wire is being unreeled. In order to prevent displacement, wire laid on the ground should be secured to a tree, bush, or other object *every few hundred feet*, and particularly at corners. Wire laid loosely so that it hugs the ground, will not be broken by hostile artillery fire, except by a direct hit; neither is it so easily snapped when a horse gets his foot caught in it."

Practically all there is to a good installation, is summed up in the above two paragraphs from artillery training regulations. They may be expanded in a little more detail. The very best line, of course, is one in armored cable at least five feet under ground; the next best is two single insulated wires, the two sides of the line spaced at least eighteen inches apart on poles that keep it twenty-five feet or more above the ground. Neither of the above are practicable for field lines. The next best construction is a twisted pair line, suspended securely more than twelve feet above ground; and the nearer we can approach this condition, the longer our lines will stay in service. The wire should not be raised unless you can get it at least twelve feet high and secure.

In laying wire across roads, the nature of the road surface governs the length of time it will stay in service. On a rocky, or macadam road, steel tired vehicles, or even a steel shod horse, will smash through the insulation and create a potential short if not an

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actual one. On the other hand, a line will stand up across a soft dirt road for several hours under fairly heavy traffic conditions without serious injury. It is better to cross a road overhead or at a culvert, if possible, so that the wire can be inspected; but if this is not practicable, a trench at least four inches deep should be dug, and the wire buried. Wire thus buried will only stand up from a few days to a few weeks, depending on the weather and soil. In choosing between overhead and buried crossings, however, do not overlook the possibility of balloon trucks towing captive balloons through your overhead lines.

It is at the first road crossing, if not before, that you will find the need for the extra linemen. They should, if possible, work in pairs and leapfrog by pairs. Assume the first road crossing to be gravel and within 300 yards of the switchboard, and that an overhead must be put in immediately. The first two linemen dismount and, standing on the side of the road toward the cart, they pull about sixty to seventy-five feet of slack, one of them holding this while the other one ties in to the base of the tree on that side. The reel cart moves forward steadily, without halting. The two linemen who have dismounted, carry the wire up the tree or pole; tie it; carry it up the tree or pole on the other side; tie it; and again tie it at the base of the tree or pole on the switchboard side of the road, leaving five to twenty-five feet of slack in the line toward the switchboard. They then ride at a gallop to overtake the cart.

In the meantime the horses on the cart have tried to rush a ditch and have broken the wire a few feet from the cart. The third lineman, alone, dismounts and running back with the broken end from the cart past the other broken end about ten feet, while holding the reel cart end, lays the broken ends together and ties a single knot in the lines about four or five feet from the ends. He can then drop his line, and the knot will hold the strain of the line for him while he splices the proper wires together. The fourth lineman is still with the cart, to tie in frequently so as to provide slack. When the third lineman has completed his splice, he unties the single knot and this throws desired slack into his line at this point. He gallops on to overtake the reel cart. Whenever a wire is tied in to an anchor of some sort, pole, tree or bush, from five to twenty-five feet of extra slack should be provided on the end away from the reel. Every precaution should be exercised by the reel cart drivers to maintain an even speed and avoid very carefully any sudden jerks which may break the wire; or abrupt stops which leave the reel spinning and tangle the wire; although the latter trouble may be largely prevented by an alert lineguard, number two, by means of his brake or clutch. The reel cart corporal, scouting ahead, has warned the next station, (telephone or switchboard) of the proximity of the cart, and

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they, in turn, have a man ready to meet the cart, and pull off plenty of slack to tie in and connect up. Lineguard number two has his pliers out and cuts the wire. The cart itself, during this entire time, need never have halted. From a battalion or regimental cart equipped with two reels, two lines can be paid out at once; but it is seldom practicable to try to take up more than one line at a time.

As to splices, the most important rule is: Stagger them. A bare splice, that is one without tape, but staggered at least twenty-four inches, is better than a well taped splice that is not staggered. Lineguards cutting in on a line, should always stagger their taps even though using Williams or Frankel test clips. This can be easily done by pulling a little slack, or cutting in at some point where the line has been tied.

The approved splice for field wire is a square knot with the stranded ends doubled back; then about ten inches of the copper core is run through the centre of the square knot and the two ends of the copper wire wrapped around the stranded wires, each way from the knot for a little more than an inch. Cut off all ends down short. Do not trim any more insulation from the wire than necessary.

The best splice in outpost wire, which has no copper core, is to start a square knot but give it an extra turn over; then double back and finish as for a square knot. The extra tension that the strain side of the knot receives, will pull it up to about the same length as the free side of the knot.

In taping the splice do not use rubber tape; it does more harm than good. It is not the quantity of tape that guarantees its insulation, but the way it is applied. A large amount of tape simply means a large bulge in the line that may catch under a rock or in some bush and strip the insulation or break the wire. A small amount, once across and back again, laid on *very* smoothly and tightly makes the best joint.

While discussing wire there is one more important point. Before cutting off stranded wire for use in binding posts, twist the strands together very tightly and then cut where they are twisted the tightest. This extra tight twist prevents the strand "fraying out." Twist in the same way, ends that are to go *under* binding posts; but in this case skin off only enough insulation to go under the post and leave two or three inches of insulation on the ends. This not only prevents fraying but protects the fingers from the sharp stranded ends, and facilitates connecting and disconnecting. The stranded wire used by the army is very springy and if not secured in some positive manner, when connected to binding posts that are close together, it will spring out in all directions and will touch the other binding post or wire and cause a short circuit.

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As soon as the lines are all in, and the lineguards are no longer needed with the reel cart, they should be sent back over the lines to improve them. The wire can be buried under dirt roads, slack pulled at a dip in the ground, the wire moved further off the road, and possibly staked along the side of a ditch, or tied up to a long fence. Every opportunity should be seized to improve the position of the lines.

Under the head of improving the insulation, extra trunks should be run by an alternate route to all important and distant stations, if wire is available.

While the division signal company will usually monopolize all available civilian lines, artillery details will occasionally have opportunity to utilize these lines and therefore should be familiar with civilian methods of construction and arrangement of circuits. This is especially true where troops are situated in a town with cable insulation.

It will often be impossible, on account of exposure to enemy shell fire, to move the wire cart itself to the point where the end of the line is to be located. If this distance where the cart cannot travel, is not greater than 400 yards, the quickest way to cover it, is to get the cart as close to the desired point as possible and then pulling slack from the reel, carry a loop of the wire a little more than half way of the distance. Let lineguard number two cut the wire at the reel and the loop can be continued to its destination. If the distance from the cart to the projected wire head, be greater than 400 yards and if this distance must be covered by hand, it will be necessary to cut the wire at the reel and resort to a single wire instead of a loop, and relays of men, spaced from fifty to two hundred and fifty yards apart, depending on the nature of the country, who drag the wire forward from the reel. Then when the distance station has been reached, the wire is cut again and the end spliced to that portion of the line that was laid by the cart. This method will be necessary on many lines to the infantry in time of war; but it can be obviated by the use of the infantry wire cart drawn by two men on foot.

In stabilized situations where time permits, a special type of construction that stands up under rather severe shell fire, is known as a "ladder." This requires that every splice be carefully checked to see that the "tracer" side of the line (the one with some marking, such as a raised thread in the braid, different color in the braid, etc.) be spliced to "tracer" at each end of every transverse section of the line. To install a "ladder," run two separate lines about seventy-five to one hundred yards apart and then connect these lines together every hundred yards by transverse parallel lines; being very careful

WIRE INSTALLATION AND MAINTENANCE

about joining the tracer to the tracer at the splices, as one incorrect splice will throw a solid short circuit on the line.

The subject of keeping a line moving forward for your liaison detail with the infantry assault battalion, is not a special situation if you have sufficient wire and the horse or motor drawn cart can move that far forward. If this cannot be done, as will be true in ninety-five per cent, of the cases, the task is almost impossible with our present wire and equipment. What is needed for this sort of work is a cart of the RL 16 type, with wire measuring about .09 inch, over the braid, for each wire. (Seven strand outpost wire of this type was issued in the Hawaiian Department in 1921 and was found to be very satisfactory. The usual outpost wire measures .162 inches and field wire .182 inches.) This type of wire is also excellently adapted for use on breast reels.

The only use for breast reels with our present type of wire, is for the short lines around the command post. The reels should be thrown off the cart when the switchboard is unloaded and should contain sufficient wire to reach the message centre, radio station, commanding officer, etc.

The subject of operating is beyond the scope of this paper, and the testing and locating of line and instrument trouble is a matter that can only be touched on hastily and sketchily in an article of this length.

In peace time, ninety per cent, of the failures in lines and instruments can be prevented by a little foresight. Wire should be carefully spliced and taped when put on the reel; tested throughout its entire length while on the reel; and properly laid when it is taken off. Instruments should be tested just before they are taken out into the field, and given reasonable care when in use. Nine-tenths of the instrument failures in the field can be repaired with a screwdriver, a pair of pliers, and a short piece of insulated wire. But the man who makes the repairs must know what he is doing; the telephone is too delicate an instrument to allow every ignorant, inquisitive private to take it apart to see the nature of its insides.

No article that touches on telephone troubles in the army would be complete unless it mentioned the transmitter. In the handset, in 999 cases of trouble out of every 1000, there is nothing wrong with the transmitter button (carbon granule chamber); and there are only two places in the United States Army where they are equipped properly to care for that thousandth case. One of these is Fort Monmouth and the other is the Signal Corps Laboratory in Washington. So many telephones have been rendered worthless because some experimenter tried to take the transmitter apart, that the rule should be repeated once again, "Leave the inside of the transmitter strictly alone."

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Probably the biggest factor in clearing line trouble, is the reliability of your lineguard. He works usually alone, and must be a man who can be depended upon to cover his line to the end. His work will be expedited and made easier, if he is equipped with a telephone. Our present tables of allowances do not provide for it, but every battery should have at least two telephones, and the battalion and regiment four, each, for the purpose of testing.

The telephone operator should test every line on his switchboard every 15 to 30 minutes. The instant a line is discovered "out," the nature of the trouble should be ascertained, whether "short," "open," or "grounded," and a man should be started out on the line to locate and remedy the trouble. It does not matter who installed the line, it is the responsibility of the unit at *each* end of the line to start a man out on it; and they should keep going until they meet, or until one of them gets a clear test both ways.

In making line repairs, the same rule holds as for installation; get the line working somehow as speedily as possible and then take your time to place the repair in as good, or better, condition than it was originally. A grounded line was mentioned just above, as a case of trouble. A ground on only one side of a line will not cause serious trouble. It may occasion a little cross talk; it will probably be a little easier for the enemy "listening in" service to pick up; but it can still be used, and will usually carry almost as well as a well insulated line. It is only when both sides of the line are grounded that the line becomes inoperative, and then only if the line is very long and the "grounds" are quite heavy; it then becomes a special case of short circuit.

All cases of line failure can be carried under two heads; "opens" or breaks, and "shorts" or short circuits. A line that is open on one side only, or a line that is short with no ground on it, can always be made to work just as clearly as a metallic circuit if both sides of the line be considered as a single wire, and the two wires placed together under one line binding post. A ground must then be placed on the other line binding post. This, of course, will have to be done at both ends of the line, but it should be the invariable connection by the operator as soon as a line goes out. In this way emergency service is obtained until the trouble is located and cleared. As soon as the trouble has been cleared, both operators are notified and the line is restored to a metallic circuit.

The question of the suitability and sufficiency of the matériel is too long to be covered at this time.

The main requisites to the establishment and maintenance of efficient wire communications, are training, experience, courage, and common sense.

STATION P-O-K-E-R

BY MARTIN GALE

BATTERY A needed a radio set. Every other organization on the post had one, and enjoyed nightly concerts, but A's fund was low, and although the captain prayed for an outfit of mahogany, nickel, and crystal, unless the angels brought it their case seemed hopeless.

At retreat on pay day the battery commander made his usual announcement on gambling. "There will be no card playing or any other kind of gambling on the reservation," he ended. "Any man I catch will regret it."

As they went into the mess hall the supply sergeant nudged the mess sergeant. "Bring the chips down to the old wash house. He'll never look there. I'll tell the gang." And for a week things went well in the battery. The battery commander made nightly inspections,—found nothing; the money as usual gravitated into the hands of the few and everyone was happy—except the losers.

Behold the cats that ate the canaries—the five winners of most of Battery A's pay—gathered in the mess sergeant's room after supper. There were present the mess sergeant, the supply sergeant, the signal sergeant, Corporal Winous, and Corporal Botkin, the battery clerk. They waited for dark to go to the battery "little Monte Carlo," and while they waited their fingers tingled and the money burned in their pockets.

"Look here," said the signal sergeant. "What's the use of going down to the wash house tonight? It's cold an' the Skipper's stopped inspecting. He ain't been around for two nights. Let's play here."

The cautious mess sergeant demurred. "Y' can't tell, an' there's the O.D., too. He'd see in. Let's go, I say."

But the crowd overruled him. "Put a blanket over the window," suggested Corporal Winous. "The O.D. won't see through that, an' if the Captain does come, we'll hear him in the hall."

"Yes, an' we can all listen," added Botkin, and they agreed to that.

When an O.D. blanket had been draped over the window, chairs were drawn up, the chips removed from their hiding place, and the game began. At first they hid cards and chips at every footstep, but as the game became warmer they forgot all but the play. The cards fell evenly, with just enough favor to promise each man luck later. Bets increased until a dollar raise was piking. The battery went to bed upstairs and in the silence that followed the only sounds were the low voices of the players. Chips were discarded.

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One light swung over the table, shaded so that it threw a circle of illumination on the five tense faces above the tightly held cards. All else in the room was dark and shadowy.

Finally the mess sergeant caught 'em. He opened for five dollars on three queens. All stayed and the battery clerk boosted the ante. The mess sergeant boosted again. Then they drew cards. To the mess sergeant came two jacks, and on the strength of that he bet twenty dollars. Up went the bet by fifty at the signal sergeant's turn. The mess sergeant came back with a raise of ten, and still the five put in. The battery clerk raised again, but on the next round he and Corporal Winous dropped out with only a few dollars left.

"I got a hundred an' fifty left," said the mess sergeant, "an' it says I own this pot." Both the signal sergeant and the supply sergeant pulled out diminished rolls and each tossed bills on the pile.

"I got you beat!" cried the supply sergeant exultantly, and one by one he put four kings on the table. He reached for the pot but the signal sergeant laid a restraining hand on his arm. He showed his hand, five spades from deuce to six.

"All blue an' all in a row. Nothin' here beats that. The pot's mine."

"Wrong." said a voice from behind him. "The pot is mine." Like one man the five jumped up and stood at attention. They knew that voice. In the doorway stood the battery commander. Coolly he looked them over, then walked to the table and counted the bills. "There's eight hundred and twenty-five dollars here. Enough for a good—," but he broke off and directly addressed the guilty five who still stood speechless. "You men have violated post and battery orders, to say nothing of Army Regulations. Your offense is serious, and if you went before a court you'd get the limit. However, because you are all men of long service, I'm going to give you an alternative." He smiled. "You can all have a trial and I'll turn this money in as evidence, or you can present it to the battery fund to buy a radio set and we'll forget all about this. Which'll it be?"

Together the five answered, "Give it to the battery fund, Sir," although the signal sergeant groaned as he spoke.

Battery A now has the finest receiving set in five counties. It has a mahogany case, nickel dials, crystal knobs, and a loud speaker that can be heard through the barracks. The self-appointed guardian and operator is the signal sergeant. He is forever polishing, adjusting, or tuning in on far-off concerts. He never misses an evening, and has been heard to say that "he had to get his money's worth."

INSTRUCTION IN FIELD ARTILLERY TACTICS FOR OFFICERS OF INFANTRY

BY CAPTAIN DAVID LORING, JR., F.A.

THAT officers of infantry and artillery should have a clear understanding of the tactics of each arm may be considered as almost axiomatic. The instruction in infantry tactics given at the Field Artillery School indicates that the fact is appreciated by the Artillery. The Infantry School also gives a certain amount of instruction in artillery tactics. However, my experience as an officer of infantry during the World War and since then up to the present year, has led me to believe that the average officer of infantry is completely lacking in an understanding of artillery. The instruction given at the Infantry School reaches a large number of infantry officers, but the National Guard and Reserve are practically untouched, as well as a large number of junior officers of the Regular Army. Since it is these officers who will command the platoons, companies, and to a certain extent the battalions and regiments of infantry in the next war, it is these officers who must know what they can expect, and, what is perhaps more important, what they cannot expect from the artillery.

So much will doubtless be granted without argument, but it is a question in my mind whether the enormous importance of such knowledge being given the infantry officer, is realized by those officers in whose hands the spreading of such knowledge lies. The efficient employment of the artillery depends very largely upon close liaison with the infantry. Without it, the much talked of infantry-artillery team does not exist. The important link in this team is the artillery liaison officer. During the war he was often the lieutenant who could be most easily spared. Today we say he must be one of the best lieutenants we have. But will any lieutenant be highly trained in time of war? Even granted that he is, what can he do if he is sent to report to an infantry regiment or battalion whose commanding officer does not understand his use, or the use of the artillery he represents? He will, in spite of all the training we give him and in spite of all the methods of communication we place at his disposal, be little more than a means of getting back to the artillery such requests for fire as the infantry commander sees fit to make. We teach that he should act as an advisor to the infantry commander. But first we must educate the latter to accept the advice. What experience I had in the war taught me that unfortunately a large number of infantry officers when advised, no matter how tactfully,

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by artillery officers of subordinate rank, only showed irritation and decided that the artillery either could not or did not want to help them. One solution would be to have the artillery send out liaison officers of rank equal or superior to that of the infantry officers whose units they are to support. This is obviously impossible. The other solution is, as above suggested, to educate the infantry. This must not be taken as a presumptuous effort to educate the infantryman in his own work; the Infantry is as able as the Artillery. On the other hand, it is an effort to point out specialized information useful to the infantryman, but which he cannot be expected to procure unassisted.

I saw innumerable incidents overseas where opportunities to use the artillery were thrown away, where wrong use was made of it, and where impossible missions were given. The total loss in efficiency was staggering. One incident out of many equally bad, should, I think, illustrate the case. One night about a week before the armistice my regiment, along with the other infantry regiment of the brigade, was ordered to make a night advance over ground which we had reason to believe had been vacated by the enemy, or which was held at the most by one or two isolated posts. The regiment advanced in a narrow column in advance guard formation, and took up a position about 3000 yards ahead, which in the order was merely designated as "the heights north of Fossé."

About midnight orders were received that at dawn the regiment would attack in column of battalions. The order stated that there would be no barrage but that fire would be delivered on certain areas on call from the infantry. The roads were very heavy. The advance of the last few days had been rapid, the artillery had had difficulty keeping up, and the supply of ammunition was low. The assault battalion of my regiment was commanded by a captain. He practically refused to attack without a barrage. When told he could not have one, he replied, "Well, the order says I can call for fire, doesn't it? Then I call for fire over my entire front from H-15 to H Hour." The fire was delivered, and owing to the impossibility of telling just where on the "heights north of Fossé" his battalion was, the fire all landed in his battalion as it was forming for the attack. However, it was so light that it caused no casualties, but only a reduction in morale. In spite of this, the battalion advanced without meeting much resistance for nearly 1500 yards, when it was held up from the right front by heavy machine-gun fire from the corner of an easily designated wood. Artillery fire was called for, but the ammunition supply had been exhausted in the "barrage." As a result the advance was stopped for several hours, severe casualties were sustained, and Captain ——, the battalion commander in question, was himself killed.

INSTRUCTION IN FIELD ARTILLERY TACTICS

This is only one incident, of many, where a little knowledge of the limitations of artillery would have made the difference between success and failure. If the artillery commanders cannot command their batteries from the front line, the next best thing is to have infantry officers with sufficient knowledge to act as their eyes.

With this in view I have prepared a program of instruction, which, I believe, could be carried out by any graduate of the Field Artillery School, and for that matter, by almost any artillery officer of average intelligence, after a little study. It could be given as a series of lectures at summer camps to infantry O.R.C. and national guard officers. In addition to this an artillery officer could be detailed to visit infantry posts and give the course at the regular garrison school. Last spring at Fort Crook a lieutenant from the Chemical Warfare was detailed to come and give a series of ten lectures to all officers and noncommissioned officers, which was intensely interesting and instructive. I see no reason why the same could not be done in the matter of artillery instruction. At many posts there are units of both artillery and infantry. In such cases the instruction would be very easy, and could be supplemented by demonstrations by the artillery units. Even more could be done during the summer camps if infantry officers could visit artillery regiments during the firing, but this probably would be impractical, owing to the fact that both arms are busy during the summer with the instruction of the citizen soldiery. The course might also be embodied in the correspondence courses. In any case, should the opportunity present itself, it is the purpose of this article to suggest to the artilleryman to whom the request may come, some of the information that may profitably be offered.

The following program is intended merely as a suggestion and guide, the idea being to eliminate such subjects as might be unnecessary to the infantry officer although important to the artilleryman, and to indicate the relative importance of other subjects. The actual form of the instruction given would necessarily depend upon the instructor, the time at his disposal, terrain available, and the cooperation given him in the matter of personnel for demonstrations. The program gives suggestions of what might be done under different circumstances, and his own initiative must suggest the means, and any possibilities of elaboration. The numbers in front of each subject are merely indications of the relative importance of the subjects and of the proportionate amount of time which should be spent thereon. In some cases conditions might be such that more time could be spent on one subject to advantage, and again limited time might necessitate the complete elimination of another. However, I believe that all of the matters mentioned should be touched on to some extent.

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PROGRAM OF INSTRUCTION

1. ORGANIZATION.

Organization of division, corps, and army artillery, very brief. Stress chiefly division artillery; eliminate any detailed discussion of parties, details, and specialists; give merely the number of batteries, officers, etc.

1. METHODS OF SUPPORT.

Typical assignment of artillery units to the support of infantry. Use of 155 regiments. Relation between infantry commanders and the commanders of supporting artillery.

1. LIAISON.

The Liaison Officer and his detail; methods at his disposal for sending back messages. His duties. Brief,—should be covered in more detail later after discussion of other subjects.

1. COMMUNICATION.

Means of communication between infantry and artillery and within the artillery regiment; telephone, radio, pyrotechnics, runners. Limitations of each. Time required for transmission of messages. Should be brief. The artillery method is practically the same as within the infantry regiment.

1. OBSERVATION OF FIRE.

Brief. Merely a discussion of some of the difficulties involved and the time required, especially in lateral observation. Could be left out entirely if necessary. Unnecessary to go into any discussion of methods or rules, unless time is available and the audience is interested. Touch airplane adjustment enough to show the time required.

12. POSSIBILITIES AND LIMITATIONS OF FIRE.

This subject should be covered both for 75 and 155, with a few brief remarks concerning higher calibres.

Ranges, trajectories, and a brief discussion of dead spaces for different calibres.

Rates of fire; maximum rates; continuous fire; effect of rate on guns.

Dispersion; probabilities of direct hits on different types of targets. Depth and width of zone of dispersion at different ranges.

Danger area of different types of shells; effect of shell, long and short fuse; shrapnel (general discussion of advantages of shrapnel and difficulties incident to its use); smoke; gas.

Appropriate targets and method of attack of same; number of rounds required to destroy or neutralize.

The barrage, defensive and rolling. Its advantages and disadvantages. Its use and misuse. Areas effectively covered by a battery. Rate of fire and ammunition expenditure required for barrages.

Results to be expected; accuracy to be expected from observed and unobserved fire. Map data and its accuracy; corrections of the moment (brief discussion sufficient only to show its difficulty and the time required).

Summary of possibilities and limitations of fire. Considering accuracy to be expected, number of rounds required to accomplish mission and permissible rate of fire, show what could be expected against various types of targets under different circumstances.

Demonstrations in connection where possible.

6. POSSIBILITIES AND LIMITATIONS OF MOVEMENT.

Positions. General position of artillery in relation to infantry; reasons for. Requirements of good positions for individual batteries; for battalion areas,—(defilade, cover, accessibility, communication, observation posts).

INSTRUCTION IN FIELD ARTILLERY TACTICS

Rates of march of Artillery (75, 155, horse, tractor). Effect of size of units marching. Effect of condition of roads. Movements across country. Serious obstacles. Difficulties of movements and occupation of position at night. Difficulties under shell fire.

Displacement,—by battery, battalion or regiment. Difficulties involved in each. Probable distances displaced. Time required (reconnaissance, selection of positions and observation posts, movement of batteries, installation of communication).

3. AMMUNITION SUPPLY.

Weight of ammunition. Capacity of caissons. Amount carried in various sections of ammunition train. Time required to replenish supply under different conditions.

Expenditure of ammunition. Point out that considering the rounds necessary to accomplish missions, and the rates of fire, certain missions, particularly barrages, will expend the ammunition in a very short time. Give examples.

1. THE ACCOMPANYING GUN.

Its tactics, movement, employment, appropriate targets; its misuse; duties of infantry battalion commanders regarding it.

3. THE LIAISON OFFICER AND INFANTRY COMMANDER.

Summary of the lessons learned from the course. The relations between the infantry officer and the liaison officer. How to get the most from the latter. Designation of targets with and without maps. Appropriate fires to call for. Length of time before fire can be delivered. Discussion of the path a message will take from the infantry to a supporting battery. Assignment of missions to batteries by battalion and regiment. What *not* to expect. Things *not* to ask for.

AIRPLANE FIRING

BY CAPTAIN PHILIP T. QUINN, 12TH F.A.

IN ARTILLERY firing with airplane observation the primary need is for good communication. Even a mediocre battery can fire with good communication; the best battery is neutralized without it. And this requires proper radio sets on the ground and in the air, and competent operators and panel-men. The present sets, while capable of improvement, meet the requirements, giving good results when properly handled. Operators can be trained and panel-men instructed in their duties, until the proper degree of training is reached. This for radio men should include usage in terms used in airplane firing, and for the whole of the detail, practice in several simulated problems before actual operations. Accuracy must be stressed in radio receiving as well as sending for a lost sound may mean the loss of a symbol. It is equally important that the panels be set out exactly; a slight displacement of one panel changes "Improvement fire" into "No further need of you."

There are several means of communication. They are telegraph-panel, telephone-panel, and two-way telegraph and telephone. For the heavy field artillery, firing at long ranges, two-way communication is a necessity, but for light field artillery, firing at medium ranges, all of these systems may be used. Which is best is a matter of opinion, but the telephone side of our present, available sets is not so far developed as the telegraph; in the air it has a disconcerting way of going out in the middle of a problem; noise from the plane gets into the ground receivers and one lost sound may mean a word lost where with the telegraph it is only one character or letter. For these reasons, for plane to ground communication, telegraph has been found more reliable; and since the roar of the motors drowns out sounds in the receivers in the plane, for ground to air communication, panels are better. These reasons are in addition to the fundamental consideration that the number of radio sets operating at the front, must be kept at a minimum, to avoid "interference"; and radio telephones are vastly more subject to "interference" with each other than radio telegraph sets are.

As great as the need for good communication, is the need for close liaison between the artillery and the air service. The battery commander and the communication officer should know the observer and his ways; the observer must know considerable about artillery methods. He should know at least the proper adjustment for each type of target, brackets required, and something of dispersion. There should be a direct line to the landing field so that the two principals

AIRPLANE FIRING

can talk before and after the shoot, and, more important, there should be an officer of the observation squadron at the battalion C.P. to present the observer's point of view and to settle the many difficulties that arise during firing. If this officer be changed frequently—it is a job for an observer—all of the air officers on duty will soon learn artillery methods and the personal peculiarities of the men with whom they work. The battery commander, too, should be at the C.P. He can fire his battery as well as from the battery O.P., and it makes for close liaison if he, the communication officer and the air officer are together at the centre of operations. Also the data may be given as it comes and passes through one less channel; this speeds up the firing.

Before the flight begins the battery commander and the observer must have a definite understanding of the mission. If the shoot is prearranged, the guns should be laid near to the target (except during instruction practice when they are laid off to train the observer), the kind of adjustment decided, and agreement made as to additional panel signals. All that can be foreseen must be arranged before the observer takes to the air. If the shoot be not prearranged, the guns must be ready to lay on the plane or on reported coördinates, and extra signals planned. The panel code is an arbitrary means of communication and it cannot cover all contingencies met in the air. For that reason there must be agreement as to procedure not covered by panel signals. In precision shoots, after a round is lost in improvement fire, the observer should know that the battery will fire an extra round in the next series for that gun. Or if, as sometimes happens, the observer loses the number of the gun when firing by piece, the number of the piece, followed by "Ready to fire," indicates the gun next to fire.

Eliminating panel signals is one means of speeding up shoots. It is all important that the observer be in the air for only a few minutes. Panels must be cut to a minimum. Even when the shoot is not prearranged, it is possible to do away with the panels indicating willingness to fire and designation of the adjustment, if the observer knows artillery. He can send much faster than the panel station can put out panels; he may send down the type of adjustment with the target designation; if the battery commander disagrees, he may signal "Change target" or the adjustment wanted. Rarely will there be occasion for this. After the first "Ready to fire" panel is displayed, the observer flies out to the target and remains there until the shoot is ended. He signals the command to fire when in position to observe, repeating the call every fifteen seconds if the call is not answered by fire on the target. If, after several calls, the battery does not fire, the observer flies back to look for an explanatory panel. Only in this case are the panels opened. When

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the shoot goes on without interruption they are kept rolled up, since an exposed panel is an excellent target and usually indicates a C.P. During an instruction shoot with a new observer it may be necessary to keep out the identification panel to show the line battery-target. The greatest aid to speed is constant practice. When we can fire daily with the air service the difficulties that arise will be ironed out and a usage developed that will make for haste.

Some observers think to hurry the shoot by sending more than ten or twelve words per minute. The unwieldy knob and the motion of the plane then jumbles dots and dashes. Others send on steep banks and are lost altogether. Some do not tune up completely with the variometer. But all of these are minor errors and can be eliminated by practice and experience. The observer is surrounded by difficulties; while he is sent up to assist the battery commander, it should never be forgotten that his task is for the time being the harder of the two. The ground men must give the air service all possible help. Then if communication be good and liason close, the shoots will be successful.

PACK ARTILLERY IN THE TROPICS

BY CAPTAIN RALPH HIRSCH, P.A.

WARFARE in the tropics has constantly presented a somewhat different and more difficult problem in the employment of artillery than operations in more temperate countries. A cursory survey of the wars waged in the tropics indicates two factors which influence to a large degree the type of matériel and the tactics of the employment of this matériel. These governing factors may be stated as the irregular nature of the opposing forces and the difficulties of terrain. This statement may be said to apply with equal force to warfare wherever it be waged, but nowhere does it operate within such narrow limits as in the tropics.

Such campaigns have, with but few exceptions, been struggles of an inferiorly armed and organized force with colonial armies or expeditionary forces of more powerful countries. While it does not follow that success has always been attained with a minimum of effort on the part of the well-equipped and stronger forces, it does indicate that the opponent is of necessity forced to adopt tactics of guerilla warfare. Rarely can the enemy be led into an open engagement on terrain and under conditions usually encountered in the wars between first-class powers. He must be sought out and engaged under conditions with which he is most familiar and consequently which are most favorable to him. Seldom will he have artillery of adequate design and in sufficient quantities. Thus the artillery is forced into a departure from the tactics generally employed. If, on the other hand, the enemy is well organized and equipped with artillery, the tropics become the theatre of a war into which the victor must put artillery to top that of his opponent for efficiency and quantity, with certain modifications forced upon him by the nature of the country.

The exploitation of tropical countries by more progressive countries has resulted in the opening up of the wilder and hither-to-fore inaccessible regions and the construction of excellent roads. But this work progresses slowly, and the combination of climate and the nature of the agriculture militates against a tropical country ever presenting the same picture of broad roads and open fields that is found in North America and Europe. The road system for the most part is laid out in the valleys, threading in and out of extensive rice fields which for at least half of the year form a most effective obstacle for man and beast alike; through cane fields that offer no particular difficulty, except during the rains, and through dense forests which seriously retard the movements of large bodies of

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men and carriages. The secondary system of communication, which forms the greater part of the whole, consists of narrow trails that follow the valleys of the rivers, toil up and down the steep slopes of the hills and wind through tunnels in the thick, luxuriant tropical growth where any movement other than along the beaten paths requires cutting, step by step. Even in those tropical countries where the vegetation does not abound in this thick, dense growth, there usually exists large expanses of sandy deserts which present extremely unfavorable conditions for the travel of horse-drawn artillery.

It has been under such conditions, which have precluded the use of horse or light artillery, that pack artillery has become the artillery weapon of the tropics. The history of the subjugation and colonization of tropical countries is the story of the employment of the pack, or to use the generic term, portable artillery.

The typical pack gun is a small, ruggedly constructed piece of approximately 75-mm. calibre, whose total weight is capable of being broken up into four or five loads, each of which can be carried by one pack animal. Tools, ammunition and supplies are carried in the same manner. The gun should be capable of a range of 9000 yards and should be stable in firing to permit of a rapid rate. Its construction should be strong enough to withstand a fall from the side of a mountain and function under all circumstances. It should be fitted with a pair of shafts, quickly put on and taken off, to allow the gun to be drawn by animals in tandem when the road permits.

The usual and most satisfactory pack animal for transporting the pack artillery is the American mule about 14-2" in height and specially selected as to conformation. It is particularly fortunate that the choice of animal for this work rests on the mule, as he is better fitted for the tropics than the horse. The mule is capable of great endurance, tolerates thirst well, withstands well the extreme heat and is not fastidious as to the quality of his food. He can be taught to graze quietly in herd all night and never over-indulges in food or water. The shape of the mule's back lends itself to the fitting of the pack saddle and the toughness of his hide helps to preserve it free from galls. The gait of the pack artillery is the walk; the mule walks with short, quick steps which tend to displace the pack saddle but little. A pack battery with animals and men in good trim can walk four miles an hour and can cover from 15 to 25 miles a day, depending on the country traversed. Trotting is only resorted to in an emergency and then only for short distances.

While packing on mules is the usual mode of transporting portable artillery, the possibilities of other means must not be lost sight of. Carabaos, camels, bullock carts and men can be used when the mule is not available. In one tropical country the parts of

PACK ARTILLERY IN THE TROPICS

the gun are slung from poles and carried on the shoulders of native porters.

The pack battery as organized in the United States Army comprises four gun sections, the detail and the maintenance section. The officers, all noncommissioned officers, except the four gunners, and the guidon are mounted. Each mule in the firing battery is led by a dismounted driver, and the cannoneers and gunners march on each side of the animals. The maintenance section, which includes cooks, horse-shoers, saddlers and packers, are mounted on horses or mules. The battalion and regimental details are mounted and, with the exception of a number of escort wagons in the service battery, all equipment, rations, supplies and ammunition are transported on the backs of mules.

A regiment of artillery so organized is prepared to cope with all difficulties of terrain. As supporting artillery it would be especially valuable during periods of movement; since it is independent of roads, it can avoid traffic jams and surmount obstacles and torn-up places on the route by the simple expedient of going around them. The pack gun does not possess the fire power or weight-throwing capabilities of its larger brother, the 75-mm. field gun, but in operations in wild and broken country where the field gun would become immobilized, it will not be left far behind. The pack gun can negotiate any country that the infantry can traverse without the use of its hands. It is true that changes of position over good terrain cannot be made by the pack artillery as quickly as by the horse or light artillery, but if the enemy has no artillery support, the pack gun can be placed well forward and obviate to a great extent the loss of time in being out of action while on the move.

In discussing hill warfare in his book on *Small Wars*, Colonel C. E. Callwell, R.A., has the following to say: "Mountain guns can travel over very awkward country and in the disposition of mixed forces for attacks on hill-men this fact is not perhaps always quite sufficiently kept in view. The killing effect of artillery, firing up at sangars from much lower ground, is insignificant, although it may clear the enemy out of his defenses. If the guns are told off to remain down in the valley or on the lower spurs and to stick to theoretically good 'artillery positions,' their real value is often thrown away. They should, if possible, get on to high ground so as to be able to play on the retreating enemy—of their mobility their own officers are the best judges; and as long as the force is advancing, their escort need rarely to give grounds for any anxiety. . . . The desirability of very forward tactics on the part of this arm in small wars is insisted upon; this principle is of paramount importance in hill warfare, because portable cannot move rapidly like horse or

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field artillery to make up for having been originally left too far back in the line of battle."

The principal mode of employment of pack artillery in the tropics will be by battalion, by battery, by platoon and, at times, by gun. In the quelling of uprisings, rebellions and disorders by the population, which are not general but confined to a small and distinct section of the country, single batteries will be detached and sent as support to the infantry. The fire of these batteries or guns will be invaluable in demolishing stockades or other defenses that could not otherwise be taken without considerable losses. There is hardly any position where the infantry will be called upon to engage in combat, that the pack guns cannot be present. The guns can follow the infantry along the narrow trails of the jungles when it is only possible to proceed in single file, up the steepest slopes and through streams of any width or depth. In crossing streams deep enough to require the animals to swim, the loads are removed and floated across on light rafts improvised on the ground, otherwise the top-heavy loads would overbalance and drown the animals.

The approach to the position can be made with the greatest degree of secrecy and thus furnish the desired element of surprise. When the cover no longer furnishes defilade for the animals, the gun is unpacked and pulled forward with drag ropes by the men crawling on the hands and knees. This ease of manœuvre suggests its successful use as an accompanying gun.

The greatest attribute of the pack gun is its ability to get to the desired position in the face of all difficulties. As a concrete example, let us imagine the predicament of a light battery in the advance guard of a column on the road during the rice-planting season. It is ordered to take up a position several hundred yards off the road. The carabaos are struggling in the shoulder-deep muck of the paddie and the only visible solid ground is the criss-cross system of dykes which form levees perhaps two feet wide. What is the result? Who can tell unless he sees it tried? But all one needs is the knowledge of such a rice field and a good imagination. Consider the pack battery in the same situation. Upon command, the mules quietly and sure-footedly pick their way along on the top of the dykes to the position indicated. To officers who have served with the pack artillery in the tropics an occurrence of this nature is so common as to excite no comment. However, when one considers that the rice fields are only passable during the period following harvest time, which is from three to five months, this is not to be lightly dismissed.

Pack artillery requires less road space than horse or light artillery and routes of approach which have cover or concealment are more often secured for batteries marching in columns of single mules or pairs—as along thin lines of trees or stream beds. The unit is the

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single mule and not the carriage and three pairs as in the case of the light artillery, and consequently the organization is more flexible and more easily manœuvred. The pack battery can be disposed of in a clump of foliage or a fold in the terrain where two sections of light artillery could scarcely find cover. Space required for camps and bivouac is much less than for light artillery, a quite important item in a country where level places and clearings are not common.

A pack gun of excellent design, combining as it does the elements of sturdiness, extreme portability and smallness of size with considerable fire power, lends itself to a variety of uses perhaps not considered within its sphere but which may be demanded of it at times. As a landing gun it should be wholly satisfactory, as it will be quite transportable in the motor sailor or other light craft and can be quickly set ashore to give aid to landing forces. In operations on rivers and inland waters it could be transported and used from launches. It can be readily adapted to the narrow gauge railway cars and fired from them when conditions permit such use. Most any sort of a motor truck, such as is employed in commercial hauling, will carry the pack gun, and a fleet of such commandeered trucks and the matériel of a pack battery would constitute portée artillery possessing extreme mobility and effectiveness on good roads.

The setting down of the foregoing remarks requires some justification, as it would seem that a weapon possessing so many virtues needed no defense. Nevertheless, the pack gun in past years in the service has not received the attention commensurate with its importance and usefulness; it appears to be the step-daughter of the field artillery. This neglect, in part, is the natural consequence of the European war where the need was for heavier matériel, but now more attention should be given the pack gun.

The pack artillery of the United States Army consists of two regiments: a native regiment in the Philippine Islands and a white regiment which is divided between the United States and the Panama Canal Zone. These units are armed with the 2.95" Vickers Maxim, a gun now long since obsolete and discarded by other nations. It was an entirely satisfactory gun for its period and remains an excellent substitute with which to train. It is understood that a modern and efficient gun has been designed and manufactured for experimental purposes, but due to the lack of funds there can be no production and the chances of the pack artillery being modernized are but slight.

The pack saddle as now issued is an adaptation of the aparejo which has not been materially altered in design for many years. In the hands of skilled personnel it has no equal, but its proper manipulation requires the knowledge of experienced packers. It has been said that packmasters are born and not made, but this is not true.

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A good pack-master can be trained in about ten years. Experiments have been conducted with several types with a view to replacing this aparejo with a simpler device which would not require so much skill to set up and to keep in adjustment. The results of these tests are not common knowledge to the Service, but as nothing has come of them, it can be assumed that they were not revolutionizing at least. The requirements for the top loads of the pack gun are such that a pack saddle must be of sufficiently rigid construction to withstand the strain put on them and satisfactory results are not to be obtained without some pains in adjusting it to the animal's back.

Failing then to secure a pack saddle that can be adjusted as easily as the McClellan saddle, the mobility of the pack artillery depends upon two things: the skill of the personnel in fitting and adjusting the aparejo and the condition of the animals. By condition is meant the ability to carry the loads over difficult terrain, day after day, without sustaining injuries to the back. These things can only be secured through persistent and continual training; the animals must constantly be worked under loads of sufficient weight to keep the backs of the animals in a tough condition. This is generally appreciated by the officers in immediate command of the pack units, but oftentimes it is not sufficiently impressed upon the minds of those who are responsible for the programs of training. A battery of pack mules that are packed out under load once or twice during the week, is not capable of rendering any real service, if an emergency arises, and is useful to the Service as would be a herd of goats. This point cannot be too strongly stressed. Even the reduction of personnel is not an excuse for failure to condition the animals, as a few men can pack out all the animals under dummy loads, and herd them.

In planning the expansion of existing units or the creation of entirely new ones, one is apt to fall into error in assuming that this is as easily done with the pack artillery as with the light. The adjustment of the breast strap harness of the light artillery and the training of horses and drivers does not present the same problem as the slow and tedious process of rigging up an aparejo, fitting it carefully to the contours of the mule's back, hardening the soft back of the green mule and all the while continuing the process of removing hay from one spot in the padding and adding to it at another. Because well-trained pack artillery units, ready to carry on under the rigors of campaigns, cannot be placed in the field in a short time, these units should be maintained, in peace-time, as nearly as possible at the strength contemplated for use in an emergency. Even considering the matter in the light of reduced funds, three regiments should be the minimum at this time; one for the

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Philippine Islands, one for the Panama Canal and one for the United States.

When the need arises for the use of pack artillery, it alone can meet the requirements and it goes without saying that it should be ready in every respect. The subject of matériel has been touched upon and a word should be added concerning the men and animals.

Most countries have pack or mountain artillery for which the men are specially recruited from mountainous districts, thus insuring from the start hardy mountaineers from which to train the cannoneers and drivers. This requirement of environment, or pre-military training, is in addition to that of physique. The result is a hardy, vigorous group of men who are capable of much marching in broken country. Nothing less than this should suffice for our pack regiments.

Even of more importance than the men are the animals, for upon them depends the transportation of the guns. Great care should be exercised in purchasing mules for the pack service. They are of a distinct type and none other will meet the requirements. A draft mule cannot be transformed into a pack mule by the simple method of changing the designation on the descriptive card, as was done by order in one Department. The demand for the pack type of mule is not as great as formerly, consequently the breeding has fallen off and will continue to do so unless held strictly to certain specifications.

In short, nothing should be left undone to increase the efficiency of the existing pack artillery units and maintain them at the highest point. Not the least of these efforts will be to revive the interest of the Service in pack artillery and to increase the appreciation of its potentialities.

REGIMENTAL NOTES

FIRST FIELD ARTILLERY

FORT SILL, OKLAHOMA

Colonel Charles D. Herron, *Commanding*

Roster of Officers

Lieutenant-Colonel Edward T. Donnelly
Major Robert H. Lewis
Major George M. Peek
Major Jesse B. Hunt

CAPTAINS

William J. Schaal, Jr.
Robert W. Yates
Harry B. Berry
Harold Kernan
Francis M. Crist
Frank C. Mellon
Alston P. Rhett
Chauncey A. Bennett
Harry B. Allen
Marion L. Young
Leo L. Partlow
Armand S. Miller

FIRST LIEUTENANTS

John E. Ray
Maylon E. Scott
Hugh J. Gaffey
Richard C. Mallonee
Jesse B. Matlack

Ranald T. Adams
Hiram W. Tarkington
James P. Boland
Thomas R. Willson
Arthur P. Moore
Edward M. Taylor

SECOND LIEUTENANTS

Thomas E. Moore
Lee R. Woods, Jr.
George A. A. Jones
DuPre R. Dance
Mark McClure
Robert S. McCleneghan
Walter R. Hensey, Jr.
Harold T. Molloy
John L. Graves
Lester Vocke
Robert P. Hollis
James H. Leusley
Harold D. Kehm
Einar B. Gjelsteen
James H. Workman
Paul P. Hanson
Robert A. Ellsworth

December 31, 1925, the First Field Artillery will have completed eight years' service as the school regiment of the Field Artillery School, Fort Sill, Oklahoma. Equipped with the American Three-inch Gun, the regiment arrived at Fort Sill, Oklahoma, in December, 1917. In order to meet the requirements of the Academic Division of the Field Artillery School, many changes have been made in matériel, and at the present time the regiment functions with the following equipment:

Three batteries, French 75 mm., horsedrawn
Three batteries, American Three-inch, motorized
One battery, American 75 mm., motorized
Each of the motorized batteries has in addition to the
above equipment two 155-mm. howitzers.

REGIMENTAL NOTES

Further, there are two 9.2 howitzers, two 155-mm. G.P.F's., four 4.7 guns and one 240-mm. howitzer, all of which is employed for demonstration purposes, the equipment being assigned to the motorized batteries by roster.

The Headquarters Battery is so organized that it can furnish one regimental detail, war strength, and two battalion details, war strength.

The Service Battery is organized with one animal-drawn service section and one motorized service section.

During the school year 1924–25 the regiment fired 66,347 rounds of ammunition and participated in problems and field exercises which involved the use of 551 firing batteries.

The greatest demands are made on the regiment in the spring of each year when the Department of Tactics is staging field exercises. It then becomes necessary to make two regiments out of one; to do this every man in the regiment is turned out, some of them in dual capacities. It frequently happens that the battery cooks are members of a gun crew, and when there is a lull in the firing, these men make a hasty retreat to the cook tent and prepare the next meal. Although the work is hard, the advantages of being a school regiment are many, and as the work is intensely interesting, the morale of the regiment is always high.

There have been many changes in the officer personnel during the past year. The regiment has had four commanding officers and some of the batteries have had as high as three. Most of this turnover of officer personnel follows from the efforts to save money; officers relieved from foreign service or other duty, during the year, are ordered to the school regiments, so that they may enter the school the ensuing September without further change of station. Lieutenant-Colonel Edward T. Donnelly has been absent on sick leave for over five months and his absence has been keenly felt.

The climatic conditions at Fort Sill are well suited for all kinds of sport and members of the regiment have time to devote to tennis, golf, baseball, football, basketball, polo, horse shows, track and field meets, and swimming. The organization has always been well represented in all of the above-mentioned sports and teams and individuals have won numerous cups and ribbons, which are displayed in the office of the regimental commander.

The regiment has twice won the Knox Trophy, which is awarded annually for the best firing battery in the Field Artillery, and we expect to win it again this year, pinning our hopes on Battery D, commanded by Lieutenant Hugh J. Gaffey.

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SECOND FIELD ARTILLERY

FORT BRAGG, NORTH CAROLINA

Major John C. Wyeth, *Commanding*

Roster of Officers

CAPTAINS

Frank E. Royse
John S. Winslow
Calvin S. Richards
Clifford B. Cole

FIRST LIEUTENANTS

Edwin S. Brewster
Walter A. Metts, Jr.
Royal L. Gervais
John W. Beck
Herschel D. Baker
Kenneth H. Sanford

SECOND LIEUTENANTS

Raymond T. Beurket
George W. Vaughn
James W. Clyburn
Charles L. Booth
Edwin H. Auerbach
Andral Bratton
James Regan, Jr.
Ernest V. Holmes
Littleton A. Roberts
John F. Powell
Thomas B. Whitted
Raymond K. Quekemeyer

The work of the Second Field Artillery during the year 1925 has been very instructive as well as interesting, especially the work connected with the Field Artillery Board, including shell and shrapnel tests; 75-mm. matériel, new model; experimental harness; and new type tripod for the Browning Machine Gun.

During January, February and March the usual garrison duties were performed. On April 1st the entire battalion marched to Pinehurst, North Carolina, to participate in the Eighth Annual Pinehurst Horse Show. We returned to the post heavily laden with trophies. Each battery entering a show section, it proved to be a puzzling task for the judges to decide which battery should carry off first place. Battery B was finally awarded the blue ribbon, due to their driving and draft.

During the first part of May, the Battalion held its tactical inspection. Due to pressing work for the Field Artillery Board and other post duties, each battery was inspected on a separate day, carrying out their part of the tactical problem of a battalion in the advance guard of a division. The latter part of May was devoted to the training of the 316th and 317th Field Artillery, Organized Reserves.

May 31st, our organization day falling on Sunday, June 1st was declared a holiday. During the afternoon a field meet and gymkhana was held, followed by a picnic lunch served by each battery on the field.

During June, July and August, the battalion was kept busy with summer training. The R.O.T.C. from Alabama Polytechnic Institute, Auburn, Alabama, was with Battery B from June 12th to July 24th. During June and July, Headquarters Battery and Combat

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Train was converted into a gun battery and used in conjunction with the C.M.T.C., which kept Batteries A, C and Headquarters busy between July 1st and 31st.

The Field Artillery National Guard from Florida, Georgia, South Carolina, Tennessee, Louisiana, Alabama and Mississippi were with us during the entire month of August. This year each national guard regiment brought their own horses, harness, matériel and equipment with them; our horses and stripped carriages were turned over to them on memorandum receipt. This plan worked very satisfactorily, as evidenced by the lack of surveys on property lost by the National Guard, during their two weeks' training.

Recent changes in commissioned personnel are the loss of Captains Claud G. Benham and William McB. Garrison, and 1st Lieutenant William M. Wright, Jr., and the gain of Captain Clifford B. Cole, 1st Lieutenant Kenneth H. Sanford, 2nd Lieutenants Ernest V. Holmes, Thomas B. Whitted, John F. Powell, Raymond K. Quekemeyer and Littleton A. Roberts.

This write-up would not be complete without mentioning the retirement of Master Sergeant Robert C. Lindsay, on February 24th, and Master Sergeant Walter J. Colvin, on May 18th. After a review of the Battalion they were each presented with a beautiful watch and chain as a gift from the enlisted men of the battalion.

THIRD FIELD ARTILLERY

FORT BENJAMIN HARRISON, INDIANA

Lieutenant-Colonel Morris E. Locke, *Commanding*

Roster of Officers

CAPTAINS

Arthur C. Fitzhugh
Mark A. Dawson
Everett M. Graves
Melvin L. McCreary

Leonard M. Johnson
Harold M. Manderbach
George L. Holsinger
George A. Zeller
Charles P. Nicholas

FIRST LIEUTENANTS

Horace Harding
Harvey J. Thornton
Marcus H. Meeks, Jr.
Roy A. Carter
Hugh F. Conrey

Robert P. Clay
James A. Channon
Richard T. Clark
Hayden Y. Grubbs
Claude F. Burback
James T. Dawson

SECOND LIEUTENANTS

Everett C. Meriwether
Amel T. Leonard

Glenn O. Barcus
Percy W. Thompson

Lieutenant-Colonel Morris E. Locke assumed command of the battalion on October 20, 1924. His arrival found us building a road through the stable area and surfacing the area around the gun sheds and stables, with hopes of being out of the mud for the winter.

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This was carried to a successful conclusion before the weather broke, and in addition, a complete drainage system for the stables was put in by battalion effort. The stables had been turned over to the battalion with blind drains.

A progressive training schedule was carried out through the fall and winter, special attention being given to driver's instruction. This included a special school for newly joined, field artillery officers.

An early spring enabled us to make good progress with our tactical training and road marching, in preparation for our march to Camp Knox. Inspections by the Corps Area Commander, the Inspector General, and the Corps Area Inspector in April, were passed with generally favorable comment. Smoke bomb and miniature range put our hands in for service practice, which has to be held at Knox.

Our annual trek to Camp Knox was made in eight marching days, from May 1st to 9th, inclusive. Our animals arrived in excellent condition. Our service practice started on the 12th and was completed on June 5th. In this practice the battalion fired 200 problems. This was intensive shooting, but was necessary to make room for brigade and corps area tactical inspections, which were held on June 8th and 12th.

The remainder of June and July was taken up with meeting requirements for horses and matériel for R.O.T.C. units and with training the C.M.T.C. The two requirements were simultaneous for the most part. This year the artillery C.M.T.C. (all three courses) was super-imposed on the regular batteries, about eighty candidates per battery, and, with the help of some attached regular and reserve officers, trained entirely by the Third. It is interesting to note that only seven candidates failed to complete the course—only two for disciplinary reasons. During May, June, and July, 44 reserve officers were attached to the battalion for active duty.

The return march to Fort Harrison was made in exhausting heat and considerable rain. The march of 167 miles was made in good shape. We are now preparing for gunners' examination and are painting and overhauling matériel. A post horse show will take place October 2nd, 3rd and 4th, in which we shall, of course, participate.

Our return to Fort Harrison is usually marred by heavy demands for post special duty and fatigue, due to the absence of a large part of the infantry at Camp Perry. As this is about the only time we have available for pistol practice and gunners' examination, those activities are greatly hampered. Since August 16th of this year we have had three successive groups of reserve officers attached to us for

REGIMENTAL NOTES

active duty, fifty-one in all. These are given a special course of instruction, as the normal activities of the battalion are not suited to their training.

Sixty-one remounts helped to replace some of the horses that had grown aged and infirm in the service. More are needed. One hundred and sixty-one recruits have been received and trained since January.

Battery A was our entry for the Knox Trophy Competition, which was held on June 2nd, 3rd, and 4th.

Polo is still handicapped by lack of experienced players, but the team is improving rapidly and managed to win some games in the summer's play at Camp Knox. A few remounts have turned out well and others are being trained. An organized polo stable has been of great assistance.

FOURTH FIELD ARTILLERY

FORT MCINTOSH, TEXAS

Colonel Pierce A. Murphy, *Commanding*

Roster of Officers

Major Joseph A. Rogers
Major Fred H. Gallup

Phil Cass
Ernest A. Elwood

CAPTAINS

Emile G. DeCoen
John C. Adams
John H. Keatinge
Claude G. Benham
John R. Young
W. Stuart Zimmerman

SECOND LIEUTENANTS

Roy D. Reynolds
David G. Erskine
Albert N. Stubblebine, Jr.
William T. Sexton
Carroll R. Griffin
Charles E. Hart
Stephen S. Koszewski
Felix Marcinski
Leighton M. Clark

FIRST LIEUTENANTS

Versalious L. Knadler
Marion M. Pharr

The Second Battalion, Fourth Field Artillery, with Regimental Headquarters, Headquarters Battery and Service Battery, left Fort Sam Houston, Texas, October 16, 1924, and proceeded to its new station, Fort McIntosh, Texas. Due to the comparatively unseasoned condition of the animals, the march, a distance of 160 miles, was made in easy stages (*Editor's Note: Light artillery, please take notice!*); the organization arrived at Fort McIntosh, October 23rd. However, it afforded considerable experience for the officers, the majority of whom had only recently joined the pack artillery.

Upon arrival at the new station the battalion continued its training of gunners and the completion of gunners' examination, interrupted by the sudden orders for departure from Fort Sam Houston. Considerable fatigue was also necessary in order to convert a post

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originally intended for cavalry and infantry, into one suitable for artillery habitation. While in the midst of our improvement program, the post was visited by Major-General Charles P. Summerall, then corps area commander, who expressed satisfaction with the progress made.

Fort McIntosh, by many, is regarded as the best post on the border. The climate, with exception of the extremely torrid summer months, is ideal for training, as there are no protracted winter periods such as one experiences in a northern post. An intensive training program, supplemented by schools, the training of recruits and preliminary pistol instruction, occupied the greater part of our time during the so-called winter months.

For target practice a tract of land about seven and one-half miles from the post, formerly used by the cavalry and infantry for small arms practice, was converted into an artillery range. The firing batteries went to the range individually and remained for a period of sixteen days. While one of the batteries was on the range, a visit was received from Major-General Wm. J. Snow, Chief of Field Artillery. Being a former pack artilleryman, the General was enthusiastic over the firing of the small guns. Commenting on the possibilities of the guns, he humorously remarked, "A mountain gun can be held together with bailing wire and still shoot like a breeze."

At present the Pack Artillery Board, composed of officers of the Fourth Field Artillery, is conducting a series of tests with the new 75-mm. pack howitzer. The gun, which can be packed or transported in draft, has a range in excess of the French 75. Furthermore, it can be fired with the same rapidity.

The Fourth has continued its usual activities in sports at the new station. Despite a scarcity of competing teams, interest was maintained in football during the fall and winter. The baseball team, however, has experienced no lack of worthy opponents. A series of games with local civilian teams has established a firm respect for the Fourth's ability to "bring home the bacon." Victory was also wrested from the Second Division Team which visited the post in September.

Polo is exceedingly popular with a large number of the officers, but so far we have only obtained a series of three games with one other organization—the Twelfth Cavalry. The games were staged at Fort McIntosh and resulted in a decisive victory for the home team.

Master Sergeant John T. Little, regimental sergeant-major, was retired April 23, 1925.

REGIMENTAL NOTES

FIRST BATTALION, FOURTH FIELD ARTILLERY

GATUN, CANAL ZONE

Major William A. Pendleton, *Commanding*

Roster of Officers

Major John M. Eager

CAPTAINS

Hamilton E. Maguire

Clifford H. Tate

John D. Key

Stuart McLeod

Chalmers Dale

John M. Reynolds

FIRST LIEUTENANTS

Paul G. Bell

Jonathan Hunt

Charles H. Day

Clinton S. Berrien

William D. McNair

Hugh G. Elliott, Jr.

SECOND LIEUTENANTS

Lawrence W. Kinney

Francis W. Crary

Louis W. Prentiss

James B. Clearwater

Robert C. Hendley

George S. Mitchell, Jr.

Daniel P. Poteet

Since December of 1924, the following officers have left this battalion: Captain Myron J. Rockwell, William S. Evans and Harold W. Blakely, all of whom have gone to Fort Sill, Oklahoma; 1st Lieutenants Daniel B. Floyd and Henry Sowell, who have reported for duty at Fort Bragg, N. C.

The battalion started its field training in January, with marches in the Atlantic area and firing problems on the local target range. The firing problems included a number with aeroplane observation, which gave very satisfactory results when shrapnel was used. With shell it was very difficult for the air observers to locate the bursts when the point of impact was in the jungle. One-way radio telegraph and panels, two-way radio telegraph and two-way radio telephone were all tried out and some of the artillery officers acted as observers in order to get a better idea as to the difficulties which the man in the plane must overcome.

Combined training with the Infantry and Coast Artillery was taken up during February and March and Battery B fired a concentration in support of a battalion of the 14th Infantry during an inspection by the division commander, with excellent results, practically every one of the silhouette targets used to represent the enemy, showing a hit from a shrapnel bullet. Details from the battalion participated with the Coast Artillery, in day and night drills in contemplation of the use of the Field Artillery to supplement the Coast Artillery in preventing landing by enemy boats. Some 75-mm. guns were issued to the battalion, in addition to its pack equipment, and gun crews were trained to man these guns and use them in firing on small boats.

On April sixth, the battalion entrained at Gatun for the Pacific side. Two ramps were available for loading the animals and the loading was completed in one hour and five minutes. The battalion

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detained at Corozal and occupied the positions prescribed by the war plans. The battalion was engaged in manœuvres until April 12th, when it went into camp at Fort Clayton, remaining there until April 17th, when it returned by rail to Gatun. While at Fort Clayton a battalion firing problem was held for the department commander, Major-General William Lassiter, and a section firing contest was held for a trophy presented by the department commander. The third section of Battery C, under its chief of section, Sergeant James F. Pearl, won the contest and will retain possession of the trophy until the next annual contest. Upon its return from the Pacific side, the battalion engaged in further manœuvres, map problems, and combined training with the other arms, until May 1st, when the period devotedly primarily to individual training commenced.

Although we have to compete with teams representing regiments and other commands larger than this one, the athletic teams representing this battalion have usually made an excellent showing. In 1924, however, we lost practically the entire baseball team and the new one which was built up around two old players, had rather rough sledding, coming out third from the bottom. This year our prospects are much brighter, and we expect to give the doughboys and Navy a run for their money. In the departmental boxing tournament last fall we had three entries in the finals and two winners (bantam and middleweight) out of seven classes. Since the policy of requiring all recruits to take swimming lessons has been adopted, swimming has become much more popular and the swimming float at Gatun is occupied by soldiers almost every afternoon.

FIFTH FIELD ARTILLERY

FORT BRAGG, NORTH CAROLINA

Lieutenant-Colonel James H. Bryson, *Commanding*

Roster of Officers

Lieutenant-Colonel George P. Hawes, Jr.	James Y. LeGette
Major James H. Van Horn	Otto Ellis
Major Arthur A. White	John Gross

CAPTAINS

Joseph A. Sheridan
James G. Coxetter
Warren D. Davis
Alfred M. Goldman
William F. Kernan
David Loring, Jr.
Howard C. Brenizer

FIRST LIEUTENANTS

Henry C. Harrison, Jr.
Willis S. Bryant
Joseph A. Shea
Charles K. McAllister

SECOND LIEUTENANTS

Edward C. Englehardt
Robert H. James
Frederick V. Armistead
William H. Drummond
Gerson K. Heiss (Ord.)
Charles W. Cowles
Stuart L. Cowles
William D. Paschall
Leslie L. Hittle
Leonard J. Greeley
George P. Privett
Edwin H. Auerbach (Ord.)

REGIMENTAL NOTES

For the past year, the Fifth Field Artillery has had work of great variety. After the training of the summer camps of 1924, we settled down to garrison work again. During the past year all organizations took the range, first as batteries, then as battalions, and finally in regimental and brigade manœuvres. The armament of the regiment being 155-mm. G.P.F. and 240-mm. howitzers, the experience gained has been of incalculable value.

In addition to our regular manœuvres and marches, this regiment has functioned with the Field Artillery Board in experimenting with the new types of tractors, as well as in firing and otherwise testing the new 155-mm. howitzer, M-1920-E; the 4.7 rifle, M-1922-E; the 155-mm. G.P.F.; and the 8-inch howitzer M-1920-E. Thus, any monotony has been lacking and the personnel has been enabled to keep abreast of prospective changes in the arm. In order to "brush up" on time fire, one battery of 3-inch guns has been assigned to us for service practice.

As in previous years, the Fifth has been in the fore in athletics, having more than their share of qualified boxers. Before the end of the current baseball season, all regimental teams were disbanded in order to provide for a post team. Polo at Fort Bragg is a post and not a regimental activity and, though motorized, this regiment is represented on the four post teams by four officers in addition to Lieutenant-Colonel Hawes, post polo representative.

For the 1925 season, we qualified as gunners, sixty-nine experts, sixty-six first class and sixty-four second class. In pistol, there were qualified, thirty experts, ninety-three sharpshooters and one hundred and fifty-three marksmen, with a supplementary season yet to be fired.

The relations with the National Guard and Reserves during the past summer has been such as to promote the One Army idea, for the contact was most harmonious and was the source of commendation to the regiment.

The strength of the regiment is now 774, or 90.2 per cent. of the authorized peace strength. The most pleasing feature of the enlisted personnel strength is the fact that the majority are three-year men.

The regiment regrets the loss of its commanding officer, Colonel H. W. Butner, who was transferred to the Philippines in August. Lieutenant-Colonel G. P. Hawes, Jr., then commanded until the middle of September. The new regimental commander, Lieutenant-Colonel James H. Bryson, joined the regiment on September 19th from duty in the office of the Deputy Chief of Staff, War Department General Staff, at Washington, D. C. Colonel Bryson, as brigadier general, commanded the 155th Field Artillery Brigade

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on service in the A.E.F. The regiment welcomes him as a highly esteemed commander.

During the past year Master Sergeant Chauncy L. Davis was retired, the event being the occasion for a regimental parade and the usual presentation of a watch.

In September, Fort Bragg was host to the State Convention of the American Legion. They were entertained with firing on the range with each type of armament, polo, retreat parade by the Fifth, supper from the rolling kitchens and finally a boxing exhibition. Fort Bragg succeeded in "sellin' the Army" to the Legion and they were very enthusiastic in their praise of our efforts.

Now the fall training is in full swing. The soil and climatic advantages of Fort Bragg lend themselves to out-of-doors work for a full twelve months, so a consecutive scheme of training is possible at this post.

SIXTH FIELD ARTILLERY

FORT HOYLE, MARYLAND

Lieutenant-Colonel Augustine McIntyre, *Commanding*

Roster of Officers

Lieutenant-Colonel Thomas P. Bernard

Major Newton N. Polk

Major Jonathan W. Anderson

CAPTAINS

William R. Woodward

Charles Porterfield, Jr.

William J. Jones

Richard T. Guthrie

Herman Feldman

William Michener

Francis S. Conaty

John W. Faulconer, Jr.

Samuel White

George H. Stuts

Richard B. Willis

FIRST LIEUTENANTS

Hanford N. Lockwood

Lawrence McC. Jones

Francis A. March, 3rd

Arthur E. King

William J. Daw

Hugh Cort

Hobart D. Reed

John F. Sturman

SECOND LIEUTENANTS

James H. Dickie

Paul L. Martin

Robert C. Oliver

Victor Noyes

Floyd C. Devenbeck

Raymond H. Coombs

Wellington A. Samouce

Leslie S. Fletcher

Marcus B. Stokes, Jr.

Bernard F. Luebberrmann

Russell L. Mabie

Vonna F. Burger

James A. Davidson

Edward L. Andrews

Oliver M. Barton

Charles P. Summerall, Jr.

Howard J. John

Henry F. Gracia

Winfield W. Scott

Arthur Willink

Willard L. Wright

James J. Deery

John L. Chamberlain

Arthur A. Ruppert

William L. Kost

Until recently it has been considered necessary, whenever Fort Hoyle was mentioned, to give a detailed account of its location. But it is now felt that the map coordinates may be safely left out without causing too much wonderment. In the first place it is a

REGIMENTAL NOTES

field artillery post, comprising the 1st Field Artillery Brigade, less one regiment, the 7th Field Artillery—both the Brigade Headquarters Battery and the 1st Ammunition Train being stationed at Fort Hoyle.

As a post, Fort Hoyle has many desirable features. The quarters for married officers are excellent, combining modern equipment with pleasant surroundings and at present there seems to be enough room for all. Centrally located with respect to the married officers' quarters, and practically on the banks of the Gun Powder River, is the Officers' Club, home of the bachelors. Here are combined, living quarters, mess, and dancing floor, and it is here that hops, bridge clubs, and other social activities are held. Tennis, swimming, boating and polo are enjoyed by all as the facilities are excellent. Polo, especially, is a live proposition at Fort Hoyle.

The Polo Club has friendly relations with the Maryland Polo Club and the Third Corps Area Polo Club. Every month of the playing season sees these three clubs engaged in matches. The competition is very keen and the teams are well matched. During August the team went to Washington and played games with various War Department Teams; at the time of writing this article the ponies are enroute to Washington for the fall tournament.

Major Dawley, Captain Woodward, Captain Willis, Lieutenant Cort and Lieutenant Reed have been doing most of the playing for the post this season, with Lieutenants March, Oliver and Dodd substituting in several games. Also a large number of younger officers have turned out for practice during the last season.

The regiment has made several marches this year under varied conditions, giving the men the experience of marching and making and breaking of camp in the dead of winter as well as in the hottest days of summer. In February, under the command of Lieutenant Colonel T. P. Bernard, the regiment marched to Washington to participate in the Inaugural Parade. Pyramidal tents and Sibley stoves at the two single night camps as well as during the week at Fort Myer, were used, and were very successful. The distance back to Fort Hoyle was made in two marches—thirty miles the first day; a day's rest; and then about fifty miles the last. The weather was just right and the regiment came through without a man or a horse falling out of the column.

On March 2nd, Brigadier-General Edgar T. Collins assumed command of the post and on April 21st, Lieutenant-Colonel A. McIntyre became commander of the regiment.

On June 3rd, the Sixth left Fort Hoyle for the period of summer training at Camp Meade, stopping on the way to participate in the Military Carnival and Horse Show held yearly at Timonium, Maryland.

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The two months at Camp Meade were spent in coöperating with the training of C.M.T.C., R.O.T.C., and O.R.C. units. Reserve officers of the 313th and 314th, 310th and 311th, 370th and 371st Field Artillery Regiments, spent fifteen-day periods with the Sixth and the association of the reserve units with the regulars was a pleasure that was felt by all.

SEVENTH FIELD ARTILLERY

FORT ETHAN ALLEN, VERMONT

Colonel Alfred A. Starbird, *Commanding*

Roster of Officers

Lieutenant-Colonel Upton Birnie, Jr.
Major Ralph Talbot, Jr.

Chester E. Sargent
Milo C. Calhoun
Edward H. Metzger
Philip W. Allison
E. A. Hammond

CAPTAINS

Douglas J. Page
C. S. Ferrin
Wesley C. Brigham
Richard E. Dupuy
William Mayer
Henry B. Dawson

SECOND LIEUTENANTS

Randall J. Hogan
John F. Williams
James T. Loome
Charles L. Dasher
Robert C. Lawes
Eleazar Parmly, 3rd
William R. Forbes
Conrad G. Follansbee

FIRST LIEUTENANTS

Frank Camm
John H. Corridon

It has always been the fashion to congratulate the Seventh on its station. "That part of New England has the most glorious summers," our envious friends would say. And we who left our skis in our vestibules when we hiked to Camp Devens, so we could grab them as soon as we came back, used to remark, "perhaps, we don't know." However, it is different now and for the first time since the regiment has been at Fort Ethan Allen we have had a summer at home.

Last spring, after much hard work and with the aid of the Burlington Chamber of Commerce and some other public-spirited citizens, who realized what it would mean to the community as well as to the troops, a terrain sufficiently large for an artillery target range was acquired by the War Department, the ground being leased from the owner, with options for renewing leases and possible purchase in the future. This land lies in the heart of the Green Mountains sixteen miles from the post, and is an ideal area for instruction purposes with ranges up to 4000 yards. The range has been christened "Feigl Range," in memory of Lieutenant Jeff Feigl of the Seventh, the first field artillery officer to lay down his life in the Great War.

With the acquisition of the range, all necessity for the regiment to go to Camp Devens was removed and Fort Ethan Allen became a

REGIMENTAL NOTES

training centre itself. Headquarters Battery moved out to the range and stayed there under canvas for three months of the training season, installing and operating the range telephone net and providing for guards and the general supervision of the range. During June the First Battalion completed its own firing and then took up the training of the civilian components. The Regiment's share of the training work included 80 R.O.T.C. students, 200 C.M.T.C. students, and the unit training of four reserve field artillery regiments, and a cavalry machine-gun squadron. The Headquarters Battery and Combat Train of the First Battalion had the unique experience of being parent unit to a reserve cavalry unit, the 158th Machine-gun Squadron, whose unit training came just in the midst of the C.M.T.C., when the 3rd Cavalry had three troops of C.M.T.C., totalling 375 men, on its hands.

The regiment has had a very successful polo season, although it is difficult to separate the regimental polo from that of the post, since the post has one squadron of the 3rd Cavalry in addition to the 7th Field Artillery. The Post Polo Association is composed of about forty officers. The training and conditioning of old ponies commenced in the riding hall early in March. The actual playing season opened on the 2nd of May, with sixteen playing members. Round robin games, largely instructive, were started, and later the cavalry and artillery were playing. Fort Ethan Allen, Vermont, was invited to enter the Eastern Circuit Tournament at Myopia, and a post team was gradually worked up for this play, but due to expenses withdrew.

With the arrival of the 51st Cavalry Brigade, New York National Guard, came the best polo the Post has seen. General Bryant donated a cup for a tournament to be competed for by three teams from the Brigade and one from the Post. The Fort Ethan Allen team, composed of Lieutenant Sargent, Lieutenant Corridon, and Captain Page, 7th Field Artillery, and Lieutenant Alexander, 3rd Cavalry, won all tournament games, defeating the famous Squadron A team of New York in the final game for the championship. All the games were close, one going an extra period. This fall a small cavalry-artillery series will be played, and early in October it is contemplated that the post team will journey to St. Johns, P.Q., and play a series with a team composed of officers of the Royal Canadian Dragoons.

Polo is improving rapidly, due to the acquiring of new ponies, a new field which will be ready for play this fall, the enthusiasm of the younger officers, and the cordial support given by all.

In August, Colonel Fred Feigl, father of Jeff Feigl, donated a medal to be presented to the best field artillery soldier in that part of the 7th Field Artillery stationed at Fort Ethan Allen. A board

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awarded the medal to First Sergeant William H. Languard, Headquarters Battery and Combat Train, First Battalion, 7th Field Artillery, and the medal was presented to Sergeant Languard by General Summerall on August 25th before the assembled personnel of the 7th Field Artillery and the 600 C.M.T.C. students.

Colonel Feigl has now offered to donate a medal annually to the best field artillery soldier of the regiment, and the conditions under which this medal shall be awarded are now being worked out by a board of officers from the regiment.

SECOND BATTALION, SEVENTH FIELD ARTILLERY

MADISON BARRACKS, NEW YORK

Major John N. Greely, *Commanding*

Roster of Officers

CAPTAINS

James A. Pickering
Rex B. Shaw
Arthur M. Sheets
Victor A. Dash

FIRST LIEUTENANTS

Bryan G. Conrad
Frederick H. Black
George McK. Williamson, Jr.
Stephen E. Bullock

SECOND LIEUTENANTS

John G. Wilson
Francis P. Kreidel
Joris B. Rasbach
George J. Deutermann
Glenn B. McConnell
Lindsay P. Caywood
Alfred B. Devereaux
Harry C. Larter, Jr.
John Meade

The preceding year in this battalion was noted as principally devoted to training. The current year has been the same—and a lot more of it.

The battalion dug out of the snow in March and had gunners' examination in April—followed by nine inches of snow in one day. In May it was at full strength and in good shape—ran off a horse show and marched to Pine Camp for its service practice. Battery D, last year's winner of the Knox Trophy, took this year's test during this period.

On the last of May, citizens components began to arrive and the battalion was completely submerged from that time until the middle of September. It trained six reserve regiments, the field artillery R.O.T.C. units of Cornell and Princeton, and three full batteries of C.M.T.C. students, including basics—in short, all the field artillery in the 2nd Corps Area, except the National Guard. The response from these units was excellent; Colonels Wilder, Haas, Mount, Wanvig and Verbeck, and Major Day, all commanding reserve regiments, and Majors Van Deusen, of Princeton, and Anderson, of Cornell, all expressed their appreciation of the work done.

REGIMENTAL NOTES

The battalion as a unit disappeared, Headquarters Battery carrying a very large share of post and camp overhead. The gun batteries maintained their organization, although with reduced strength.

The necessary frame work of the organization was maintained, however, and the battalion successfully reconstituted. Four days after the last reserve regiment left, the battalion successfully passed the supreme test of a tactical inspection by Major-General C. P. Summerall, commanding the 2nd Corps Area. Following routine post ceremonies and inspections the battalion left the post at 12:45 P.M., September 17th. It returned at 1:30 P.M., September 18th. In less than twenty-five hours it had marched sixty odd miles, gone into position and bivouac at night, fired a concentration support of infantry at dawn, adjusted fire on an artillery target with airplane observation, and began a displacement forward. General Summerall then terminated the inspection, stating that he could ask no more of a battalion.

The training schedule was too heavy to permit of much relaxation during the summer. There was no opportunity for even the customary post baseball. However, by great effort the battalion Polo Team was enabled to participate in the Thousand Islands Polo Tournament in August. Its mounts were entirely outclassed, particularly by the international ponies of the winning Smithtown team, but the players performed creditably.

Battery E won the fall track meet, nearly doubling the score of its nearest competitor, Battery D. The fall horse show will be held October 23rd to 24th. After this is over the whole battalion will prepare to be snowed in for another winter.

EIGHTH FIELD ARTILLERY

SCHOFIELD BARRACKS, HAWAII

Colonel Henry L. Newbold, *Commanding*

Roster of Officers

Lieutenant-Colonel Williams S. Wood
Major John E. McMahon, Jr.

CAPTAINS

Daniel A. Connor
Preston T. Vance
John G. Cook
Ralph L. Joyner
Carlos W. Bonham
John C. Butner, Jr.
Marion I. Voorhes
Lawrence A. Kurtz
John McDowall
James E. DeWeese
Andrew R. Reeves

FIRST LIEUTENANTS

William W. Dixon
Edward F. James
John G. Brackinridge
Emil F. Kollmer
Ralph D. Sproull
Stephen E. Stancisko
Alexander S. Reynolds
Seward L. Mains, Jr.
Michall V. Gannon
Nicoll F. Galbraith
Ernest A. Bixby
Maurice P. Chadwick
Leslie R. Jacoby
John B. Murphy

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Roster of Officers—Continued

Michael G. Smith
George D. Vanture
Carl E. Berg
Cornelius Garrison
Edward C. Gillette
Freeman G. Cross
Donald R. Van Sickler

SECOND LIEUTENANTS

Martimer F. Wakefield
James P. Barney, Jr.

NINTH FIELD ARTILLERY

William H. Obernour
George R. Scithers
Creswell G. Blakeney
Alfred Vepsala
Burton L. Pearce
George E. Burritt
Alfred E. Kastner
Stephen C. Lombard
Alfred L. Price

FORT DES MOINES, IOWA
FORT SNELLING, MINNESOTA
FORT LEAVENWORTH, KANSAS

Lieutenant-Colonel George A. Taylor, *Commanding*

Roster of Officers

CAPTAINS

Guy H. Doshier
John D. White
Dana C. Schmahl
Duncan T. Boisseau

FIRST LIEUTENANTS

Paul C. Boylan
Lloyd M. Hanna

William N. White
Hyman J. Crigger
Leslie B. Downing

SECOND LIEUTENANTS

Harry C. Dayton
Hugh P. Adams
Joseph P. Wardlaw

TENTH FIELD ARTILLERY

CAMP LEWIS, WASHINGTON

Lieutenant-Colonel Francis W. Clark, *Commanding*

Roster of Officers

Major Joseph Andrews

CAPTAINS

Henry B. Parker
Lawrence V. Houston
Louis W. Hasslock
Albert C. Searle
George P. Seneff
Myron W. Tupper
Francis H. Boucher
William H. Brady
Zenas N. Estes
Martin C. Walton, Jr.
Walter J. Donoghue (Chaplain)

FIRST LIEUTENANTS

Stewart F. Miller
Ivan D. Yeaton

Francis H. Vanderwerker
George F. Wooley, Jr.
Henry B. P. Boody
Robert T. Strode
David D. Caldwell
Edward O. Hopkins
Charles D. Calley
Edward A. Routheau

SECOND LIEUTENANTS

Herbert W. Kruger
Thomas E. Myer
Robert K. Haskell
Cater B. Magruder
Kenneth S. Sweany
Paul D. Michelet
Roy P. Turner
Dalies J. Oyster
Herbert M. Cole

REGIMENTAL NOTES

The year 1925 has been a most busy one for the Tenth Field Artillery. As spring opens up early in the Puget Sound Country, the regiment had an excellent start in preparing itself for its part of the task of training the citizen army that came to Camp Lewis for the summer work. Owing to the fact that a number of recruits were received, the regiment expanded from four to ten active batteries.

On April 4th, Lieutenants Edward A. Routheau and Roy P. Turner were detailed on special duty as recruiting officers for the C.M.T.C. During the forty-five days preceding the opening of the camp, they enrolled the quota of applicants assigned to the six southwestern counties of Washington. Approximately three thousand miles were covered in a government Dodge.

D Battery, commanded by Captain Zenas N. Estes, was designated as the parent organization which trained the C.M.T.C. field artillery students. Eight enlisted men of the Tenth who took the C.M.T.C. course received commissions in the Reserve Corps. They are:

First Sergeant Francis J. Cunningham, Battery D (2nd Lieutenant, F.A.)

First Sergeant Marston H. Toms, Battery B (2nd Lieutenant, F.A.).

Sergeant Harold H. Hunt, 2nd Battalion Headquarters (2nd Lieutenant, Inf.).

Sergeant Henry C. Brug, 2nd Battalion Headquarters (2nd Lieutenant, Cav.).

Corporal Patrick J. Stephenson, Headquarters Battery (2nd Lieutenant, F.A.).

Corporal John R. Harvey, Battery F (2nd Lieutenant, F.A.).

Corporal John J. Pickett, 2nd Battalion Headquarters (2nd Lieutenant, F.A.).

Corporal Casimir J. Garbowicz, 1st Battalion Headquarters (2nd Lieutenant, F.A.).

The training of the R.O.T.C. artillery fell to the lot of A Battery, commanded by Captain Louis W. Hasslock. The associate unit idea was carried out this year for the first time. The schedule of the five weeks covered practically all the phases of field artillery training. Two weeks were spent under canvas on the range and an extensive program of service firing, reconnaissance and occupation of position and pistol marksmanship was carried out.

The Tenth furnished the personnel and matériel for training the national guard regiments of Washington, California and Oregon. While each regiment was in Camp Lewis, the officers of the Tenth entertained the national guard officers with a dinner at the Club.

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As the various field artillery regiments of the Organized Reserves came to the camp, the officers were assigned to duty with the Tenth, and at three of the garrison parades held on Tuesday afternoons, the Regulars were commanded entirely by the Organized Reserves.

The Tenth Field Artillery again has had an unusually successful baseball season, its team winning both the Camp Lewis Championship and the Pacific Northwest Military Championship for the third consecutive year. On June 18th the Tenth became camp champions by virtue of having won eighteen consecutive games from the best teams the permanent garrison could produce. A handsome championship cup was presented by Major General William H. Johnston, camp commander, to the team at a review of all the troops. After defeating teams from the 11th Cavalry, 4th Infantry, 6th Engineers and Miscellaneous Units, during the short summer schedule, the Tenth dropped a brace of close, heartbreaking games at the peak of summer training—one game to the R.O.T.C. and another to the 7th Infantry. However, when the league to decide the Pacific Northwest Military Championship was started, on July 22nd, the Tenth avenged itself by winning every one of its games. In the decisive game of the series against the 7th Infantry Challengers, the artillery won a thrilling contest before a large audience of frenzied rooters by a score of six to three. Colonel William M. Cruikshank, the popular artillery commander, led the march of his victorious ball team and happy regiment around the baseball park at the conclusion of the game to the rollicking tune of the "Rolling Caissons." General Johnston had the honor of again publicly presenting a championship cup to the Tenth team for the second time in one season, a most remarkable athletic record.

The regiment was very highly honored when the commanding officer, Colonel William M. Cruikshank, was appointed a brigadier general on September 1st. A regimental dinner and dance was tendered the Colonel and his family by the officers and ladies. At 12:05 midnight, the adjutant administered the oath of office and Mrs. Albert C. Searle, wife of the adjutant, removed the eagles from the Colonel's shoulders and pinned on the new stars.

FOREIGN MILITARY JOURNALS

ENGLAND

"The Journal of the Royal Artillery," July-September, 1925

"XLI, R.F.A., Wednesday, 11th November, 1914" is the title of an historical narrative of the conduct of the three batteries of the XLI Brigade, Royal Field Artillery, in the battle near Ypres. Digressing somewhat before describing this article, it may be remarked that there used to be a sort of unofficial slogan in certain American field artillery regiments, "When our ammunition's gone, we limber up and charge." In the field exercise recently published in *Information Bulletin No. 78*, there is pictured, also, a not too exceptional situation, in which field artillery may directly combat infantry fire. This leading article in the *Journal of the Royal Artillery* gives an account of a situation in which the Germans launched an attack; the British front line was overwhelmed by the onslaught and, there being no available reserves left, the German advance was only opposed by the stubborn resistance of the artillery batteries. Between about 9:30 A.M., when the break-through was accomplished, and about 3:00 P.M., when infantry reserves again advanced, the XLI Brigade, R.F.A., alone held up the German efforts. A German officer, being led as a prisoner through the artillery position, asked where the British reserves were. "Major Clark's reply was to point to the guns. Obviously unbelieving, the German officer then asked what troops stood behind. The curt answer was, 'Divisional headquarters!' This convinced him and from the depth of his heart was wrung the exclamation—'God Almighty!'"

In an article entitled "Pack or Single Draught," Colonel De Sausmarez advocates pack artillery as the close support and antitank weapon. To reduce the objectionable number of animals, now necessary with pack artillery formations near the front line, he proposes putting some (not all) of the present pack loads on a light, limbered vehicle, drawn by a single mule or a pair in tandem.

According to the anonymous author of the article "Close Support Artillery," England, after the close of the World War, adopted 3.7 inch pack howitzers, organized into brigades (correspond to our battalions) as their close support artillery. As time has gone on, this use has fallen into disrepute and may in another year be discarded. The author contends that, to exist near the front line, a

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curved-fire weapon that can fire over crests is necessary, and for this and other reasons the 3.7 inch howitzer should be retained. He advocates the replacing of pack transportation by draft transportation, and a change in organization from brigades to separate batteries, the latter to be an organic part of the division artillery. In this latter role, the 3.7 inch pack howitzer can function as the close support artillery, and, when required, may also join in other division artillery missions within their range.

Major Pownall contributes an article commenting on certain points in the British Field Service Regulations, 11, 1924. The author points out the stress laid by the new regulations on the importance of fire power. This importance is so great that the author can see, in certain cases, logical reason for basing the "infantry plan" on the "artillery plan"—at least on the artillery resources.

The author brings up an interesting point concerning coöperation. He says, "It has always been agreed, in principle, that to be effective, coöperation must be mutual. In practice it has not always been so, and it can be said without offense that failures in coöperation are not, in the majority of cases, due to lack of effort on the part of the artillery. The increased emphasis (in the new regulations) with which the infantry are charged with their share of coöperations can therefore be welcomed. They are reminded, too, that they have to 'bear the brunt of any failure in coöperation!' It is *information* that other arms chiefly require from the infantry, of their doings and of the enemy, and the infantry are charged not merely with procuring this information, but also (and this is new), of communicating it to the other arms."

The author discusses, also, the difficulty of modern ammunition supply; forms of artillery support for the other arms; and also points out that the holding of any artillery in reserve, in the usual sense, has quite completely passed out of use.

"The Problem of the Tank" is an article by Lieutenant-Colonel Pile of the Royal Tank Corps. The author sees the offensive possibilities of tanks, dependent on their speed and mobility. In his review of anti-tank means he discovers no single, entirely effective measures. The best anti-tank weapon in his opinion, is a machine gun firing one half inch bullets; such a gun comes nearest to having the speed and mobility necessary to checkmate the tank.

"The Rôle of Forward Troops in the Collection of Intelligence in the Field," by Major-General Sir William Thwaites, is an interesting article which shows how forward troops get intelligence data and how very important this source is.

FOREIGN MILITARY JOURNALS

In "Artillery Tactics" Lieutenant-Colonel Goschen contends that the low velocity weapon (howitzers), now that the instantaneous fuze has transformed its shell into an effective man killer, should be the main weapon for division artillery; while the gun (flat trajectory) should be kept for army artillery allotted to divisions taking part in attacks against organized defenses, and requiring the support of a mass of artillery.

Studying the relation of infantry and artillery and the difficulty of their inter-communication, the author concludes that it should be the rôle of the infantry to occupy ground made good by the artillery, thus subordinating infantry movement to artillery fire. This system would obviate the inter-communication system which now fails. The commander would concentrate his artillery on the localities which were successively considered to have tactical importance and the infantry would, in turn, occupy these localities, as they were neutralized by the artillery.

The author also stresses the importance of counter-battery practice in peace time—this vital battle function tends to stagnate in peace.

Other articles are: "Tanks in Rear Guard Operations," "Mount Everest, 1924," "Early Days in Rajputana" and "The Kadir Cup Meeting, 1925."

FRANCE

"Revue Militaire Francaise," July and August, 1925

In this number Colonel Alléhaut concludes "Concerning a German Judgment of French Military Principles," a résumé of General Von Taysen's "matériel *versus* morale." The German author believes that the French have overemphasized the importance of matériel and that in the next war their army will be an unwieldy military machine, burdened with too large a proportion of tanks, artillery, and planes. Their infantry will be too weak in numerical strength and in morale, even to protect this matériel against a rapidly moving army composed mostly of infantry.

According to Von Taysen the reasons which lead France to sacrifice her infantry to matériel are: (1) an erroneous interpretation of the cause of her victory in 1918. This victory France attributes to her tanks and artillery; (2) in a future war, France cannot hope to have the support of so many allies; (3) judging England by her attitude on the Ruhr question, France can expect only her neutrality; (4) France will not even have the support of her colonies in case Germany gains the supremacy of the seas; (5) France, outnumbered in population by Germany, is attempting to offset this disadvantage by multiplying her matériel even beyond reasonable limits.

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The German author presents this argument probably to inspire confidence in the German Army deprived by the Versailles treaty, of its artillery, tanks and planes. Nevertheless Colonel Alléhaut feels that there is much truth in Von Taysen's criticism; an organized enemy position cannot be penetrated without matériel, but after the rupture of this position, the infantry with its power of manœuvre is again supreme. France must remember that war is not an industry controlled by engineers, but is primarily a battle between men.

The article by Lieutenant-Colonel Velpry, "The Tank, Economical Means of Warfare" is an attempt to prove that the employment of the tank saves both men and matériel. The tank, being able to attack an enemy not previously crushed by artillery fire, makes possible a saving in artillery ammunition. An effective artillery preparation consumes from 1500 to 3000 tons of projectiles for each kilometer of front attacked, at a resultant cost of from twelve to twenty-four million francs (in 1918). To attack with light tanks on this same front, 20 tanks costing 1,400,000 francs would be necessary. Estimating the loss, during the battle, at ten per cent., the cost in tanks destroyed would be only 140,000 francs. If the nature of the terrain required the use of 30 ton tanks, which usually suffer a 40 per cent. loss during an engagement, the resultant cost would be 3,000,000 francs. Mathematically this shows that the use of the light tank would be 100 times and the use of the heavy tank seven times more economical than the artillery preparation.

The economy in human life is more difficult to estimate. The author thinks it is evident, however, that by permitting the suspension or reduction of the artillery preparation, the use of the tank avoids all the losses resulting from the inevitable reaction of the enemy artillery, reactions so costly for the infantry massed at the "jumping off" position. In holding the artillery fire until H hour, the attack is launched with the infantry intact and the artillery fresh.

The invulnerability of the tank is its most evident value. However, this invulnerability is only relative. Toward the end of the late war the anti-tank guns began to appear and they will, of course, be the chief obstacle of the tank in the next war. It will be necessary to increase the thickness of the shields and we shall see another example of the classic battle between guns and armor. However, the author thinks the tank will win against the anti-tank gun. Today special machine guns firing 200 rounds per minute, or artillery pieces firing as many as 20 rounds per minute, can easily destroy the light tank but conditions will change before the next war. To demolish a tank carrying twenty-five cm. armor, for example, it will be necessary to use a motor drawn anti-tank weapon, very heavy and unwieldy, capable of firing only 1 or 2 rounds per minute. Being,

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of course, forced to use direct fire on its moving target this huge mass cannot be concealed and would be an easy prey, not only for all artillery, but also for the tank itself.

Lieutenant-Colonel Daille in "A Second Lesson of the War of Secession" makes a study of Grant's operations from March, 1864, to the end of the Civil War. The author looks upon this campaign as a good example of the tactics that should be employed by a stronger nation, using all its available resources, in exhausting a weaker opponent.

Lieutenant-Colonel Paquet continues "The Attrition of German Strength in 1918." Ludendorf has stated as his reasons for the July 15th drive on Reims: the necessity of forcing the allies to declare peace before the German reserves were exhausted; the possibility of improving the communications of his 7th Army, engulfed in the Chateau-Thierry salient; to save his reserves by straightening out this salient; and the hope of drawing the allied reserves to the Champagne sector, thus weakening the allies in Flanders. The British front and a break through between the British and French armies, was still the main objective of the German command.

Preceding the March 21st offensive the German command had 850,000 available replacement troops in their depots; for the May 27th drive, 512,000; and for this, their third and last great drive, only 413,000 men remained in their replacement depots. In contrast with this continual decrease in the supply of German replacements, the Allies' strength was being increased each month by 250,000 American troops. A quick victory was necessary in this drive, which the German command knew was to be their last.

Colonel Picot in "Concerning Plans of Artillery Employment" makes a study, first, of the evolution of plans, charts, and orders during the war in the French and German armies, and later discusses how these plans should be conceived.

The war has taught both the Germans and the French that preliminary maps, charts, and orders, must be prepared before an engagement and followed during the engagement, in case more precise information for better conduct of fire is unattainable, by observation. Very frequently terrestrial observation is impossible and little information is received from the aviation. In these cases, preliminary plans are the guaranty that the artillery will act in a logical and coördinated manner. The war has proved that during the course of an engagement, undertaken without a plan of employment, the artillery fires very little.

Commander Larcher discusses "The German and Turkish Commands

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during the War." The Germans were drawn into the Orient by their ambition to gain control of the road to Bagdad, pretending to be the protector of Turkey against Russia and England, by means of a very active propaganda. This was fostered by numerous voyagers, scholars, missionaries and journalists, and finally by the introduction of German officers in the Turkish army.

The Turks had had a very great admiration for the German army since its victory in 1870, and the young Turk party chose Germany as the ideal ally. German instructors first appeared in the Turkish army in 1880. In 1913 the Lemans-von Sanders mission was formed. The officers, 72 in number, exercised command in the Turkish army. The chief of the mission was given command of the 1st army corps and was appointed inspector general of the army, being subordinate only to the Sultan. This gave General Lemans political as well as military power and helped to make possible the German-Turkish alliance in 1914.

Germany centralized the supreme direction of the war by the convention of September, 1916, which specified that the Emperor of Germany assumed direction of all the armies of the entente. This permitted Germany to move seven Turkish divisions from Thrace to Galacia, weakening Turkey but strengthening the German forces in that sector. In 1917, however, fearing that Turkey after some reverses might make a separate peace, Germany sent several thousand troops to Turkey, intermingled the two armies, and gave the command to General Falkenhayn. To all the German generals was given political and economic as well as military authority, thus ignoring Turkish sovereignty and incurring the displeasure of the Turkish military leaders.

In 1917, the decisive defeats of Palestine and Irak intensified this ill feeling. In the Caucasus, German and Turkish interests conflicted. Soon after, the German command withdrew their troops from Turkey without awaiting the conclusion of the armistice of Moudros.

Other articles appearing in the July and August issues are "Was the Battle of the Marne begun Twenty-four Hours too Soon?" by Robert Duché; "Concerning a German Controversy," by Commandant Martin; and "The Battle of Courcelles-Méry," by Colonel de Repert D'Alanzier.

"Revue d'Artillerie," March, 1925

"Massed Heavy Artillery at Verdun, February, 1916," by General Dedieu-Anglade. General von Falkenhayn's "The High Command of the German Army, 1914-1916," states: "On 25th February the 24th Brandenburg Infantry assaulted the north-east

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pillar of the Verdun system—Fort Daumont, which was considered impregnable. . . . As a result, the enemy emplaced with surprising rapidity strong groups of artillery on the west bank of the river, behind the Marre Ridge. . . . Their partially-flanking fire was very annoying. . . . It was necessary to push the German front on the west side of the river, far enough south to bring heavy artillery in range of these groups."

General Dedieu-Anglade tells of the organization of these groups, by the Twentieth Army Corps, and the methods by which the heavy artillery fire was brought to bear on the proper points in the shortest time. Counter offensive preparations or holding fires were assigned to the heavy battalions, and these were answered like normal barrages of the seventy-fives. The heavy artillery did little counter-battery in these days of stress, for the enemy batteries were not accurately located and observation was poor. Every effort was bent to neutralize the attacking infantry. The author pays tribute to the heroic endurance of the French infantry, which stood, without flinching, the most terrible bombardment that he had ever seen.

"Standardization in Germany," by Major L. Graux, is an examination of the work and results of the National Standardization Commission (Normenausschuss der deutschen Industrie, abbreviated N.D.I.). The results of their labors are indicated by the fact that up to March 1, 1924, over 1200 different sets of standards, covering the greatest variety of technical subjects, had been published. Under general standardization, the work is grouped in five general parts: specifications of paper, screw threads, assemblies and tolerances, gears, and drawings and sketches. Under a general heading are considered such broad matters as temperatures at which measurements should be taken, and corrections to bring them to standard. Specifications are gone into in the minutest detail, and every endeavor is made to eliminate, as much as possible, all non-standard work of any sort.

"Technical Attachment of Battalions of Artillery," by General Challeat, is an explanation of the method which he describes briefly in his report appearing in the January number. The technical attachment consists in locating accurately the directing pieces of the two battalions which work together, so that the distance and direction between them is known. The assisted battalion adjusts on a target, and the data of the directing piece are sent to the "attached" battalion. The directing piece of this latter battalion, by a method which the General calls an "inverse transfer of fire," computes its data for the target, and from it the whole battalion may be laid on the target. In transfer of fire, the difference in range and deflection between two

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targets are known, and the fire of a unit may be shifted with varying accuracy from one to the other. In "inverse transfer of fire," the difference in range and deflection of two units for the same target may be determined, with the same limitations as in a transfer of fire.

"High Burst Ranging," by Major Ch. Dufrenois, is a study of the regulation methods, bringing out certain limitations and showing the error to be expected therefrom.

"Revue d'Artillerie," April, 1925

"Literary Instruction in Scientific Schools," is another broadside, by Colonel P. Tournaire, in a discussion as to the relative merits of a literary education or a scientific one for an army officer. Scientific instruction is vindicated.

"Standardization in Germany" is the conclusion of Major L. Graux's study of the National Standardization Commission's work. Under the heading "Basic Materials," standards are given for different metals, both in composition and form, and methods of test. The author finds that the work of the N.D.I. has not progressed as far in this field as in that of technical standards. This is explained by the fact that manufacturing standards result in lower costs for both the manufacturer and the consumer. Standards of testing metals and materials, however, while assuring to the consumer a standard article, increase the cost of manufacture, in that the manufacturer might be able to eliminate some tests, etc., and still produce an article which is not so inferior as to be noticeable. In other words, it prevents the manufacturer cutting costs by skimping material.

The Commission has issued standards for a number of different industries, coöperating with existing industrial technical associations, and coördinating the standards of all. The standardization has been applied particularly to the automotive industry, with the result that practically all cars use standard parts and assemblies, and many of the parts of different makes are interchangeable.

The conditions of Germany and France are compared in conclusion. Germany is essentially an industrial country, dependent on foreign markets for the disposal of her manufactures and the importation of her raw materials and foodstuffs. France is essentially an agricultural country, and can absorb most of her manufactures at home. For Germany, distributing her goods to all parts of the world, standardization is essential, for the replacement of parts, etc. For France, where the manufacturer is within a short distance of his customer, standardization is not so essential, as replacements may be obtained without much delay.

The author points out that if standardization is not adopted in

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France, eventually the cheaper manufactures of Germany will ruin French industries. He advocates the adoption of German standards, to take advantage of the existing distribution of German standardized parts in the foreign market, and shows the advantages to be gained both from an industrial and a military viewpoint.

This issue of the *Revue d'Artillerie* is completed by a number of technical notes on location of points, high burst ranging and bilateral observation.

"Revue d'Artillerie," May, 1925

"A Survey of Motor Fuels" describes the general types of petroleum, some of the uses of petroleum products, and the resources of the world in this commodity. Different methods for increasing the amount of motor fuels produced from the crude oils, are described, as well as methods of producing gasoline synthetically. The more common substitutes for gasoline are examined in some detail, showing the defects, both from a power viewpoint and that of supply.

The author concludes that efforts should not be directed to developing a national fuel, but that automobiles should be adapted to use the substitute which is most easily available in the locality. In time of war, gasoline would be used only in the forward areas; in the rear areas substitutes would be used as in peace time. He recommends that efforts be made to effect treaties with oil producing countries for the advantageous importation of oil, particularly in the crude state.

"The Development of War Manufactures in Germany, 1914–1918," is the first part of a study by Colonel A. Gavard, which covers manufacture of matériel and munitions. The tremendous expansion of German industries may be illustrated by the manufacture of field guns. In time of peace, there were only four plants manufacturing field guns—Krupp, Ehrhardt, and the two government arsenals, Spandau and Ingolstadt. At the height of the war, there were twenty-five plants manufacturing complete tubes, and forty-eight making parts of them. The monthly manufacture of 77-mm. tubes were as follows:

Mobilization plan	15
End of 1914	100
End of 1915	480
End of 1916	1500
May and June, 1918	2400

The development of manufacturing facilities and the construction of artillery matériel was complicated by improvements which

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were being constantly made. Between 1914 and 1918 the length of the 77-mm. tube was increased from 27 to 35 calibres, the range increased from 8,000 to 11,000 metres, and the weight increased 40 per cent. Each change meant a change in machinery and manufacturing methods, causing delay and lessening production.

The repair of the tremendous amounts of artillery used on the western front absorbed many plants. At the beginning of operations, five mobile repair units were provided to take care of all artillery repairs. At the peak, there were 91 commercial plants devoted to repair work, and at the time when operations were most active, repairs were made at the rate of 3000 pieces a month.

The manufacture of trench mortars, small arms and machine guns, carriages, automotive equipment and tanks are also examined, all of which necessitated tremendous expansions of the peace time manufacturing facilities.

"The Search for Artillery Positions and Observations Posts," by Major J. Heriard-Dubreuil, gives several methods of studying a map systematically to determine the best localities to reconnoitre for positions and observation posts. Two diagrams are given, by means of which visible areas and dead spaces may be determined very quickly from a contoured map.

"The Artillery and the Automobile in Germany." by Major E. Laurent, examines the German plans for motorizing the artillery, and the automotive resources of that country. The motorized elements of the present German army are described, but as the matériel consists of old anti-aircraft guns, equipped with panoramic sights, mounted on very cumbersome wheeled tractor chassis, the author concludes that the units are retained as a motorized nucleus, and for training purposes. The author shows that there is a decided leaning toward motorization in the German army, as in the ideal division described in the late German regulations, all artillery, except that whose mission is the close support of the infantry, is motorized.

In comparing the automotive resources of Germany and France, the gain of Germany in the recent years, particularly in cargo carrying vehicles, is noted. Major Laurent concludes that the supply of motor vehicles in Germany is still inadequate, but that every effort is being made to increase production, particularly of trucks and tractors, and of motors which can use crudes, or low distillates and gasoline substitutes.

CURRENT FIELD ARTILLERY NOTES

Battle Streamers for the 150th Field Artillery (Indiana National Guard)

ON AUGUST 12 at Camp Knox, Kentucky, at a regimental review, the colors of the 150th Field Artillery were decorated with their authorized battle streamers. Governor Ed. Jackson of Indiana, Major General R. H. Tyndall, present commander of the 38th Division, and one time commander of Battery A and later the 150th F.A., Brigadier General W. H. Kershner and Colonel W. H. Unversaw, the present regimental commander, were present at the ceremony. The men of the 150th may well be proud of these streamers, representing as they do, participation in Champaign-Marne, Aisne-Marne, St. Mihiel, Meuse-Argonne, Lorraine, Champaign and Champaign-Lorraine.

Not only has this regiment served with distinction in the World War; old Battery A of Indianapolis took part in the Spanish-American war; when the Mexican trouble occurred, the regiment went to the border in July, 1916, returning in January, 1917. Shortly after our entry into the World War, it was honored by being selected as one of the units, taken from all over the country, to form the famous Rainbow (42nd) Division. The 150th served throughout the war in the Rainbows, but in addition thereto, at different times, fired in support of the First, Second, Third, Fourth, and Thirty-second American Division and the Sixth, Seventh and Eighth French Armies.

A National Guardsman's Views on Military Training

The *Louisville Courier-Journal* quotes Colonel W. H. Unversaw of Kokomo, Indiana, the commander of the 150th Field Artillery as follows:—

"The average American citizen concerns himself but very little about certain departments of his Government. Those departments with which he comes least in contact in his everyday business receives the least of his attention and interest. For information, he relies upon that which seems plausible and never takes the time to investigate as to its reliability. We have but recently passed through a great war, yet it is sad to note how very few of our people really know anything about the real history of our army, in war and in peace. It is still more deplorable to know how few of our people are sufficiently concerned to take the time to investigate and learn from sources that are really dependable.

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"The idea prevails that the soldier wants war because it is his profession. Consequently, the pacifist propaganda is accepted as correct. The 'no more war' prophecy is an imported article for our consumption. It is natural that other nations should want to see us supremely indifferent to our own safety because of our wealth, our resources, and the commanding position which we now hold in the world affairs. Is it not logical that those who know most about the terrible horrors of war, should want to make it possible that we do not have another war?

"The average man does not enjoy suffering, and after he has had the experience, he is loathe to have it repeated. In fact, after such experience, he usually seeks measures to prevent its recurrence. So, when the American soldier prepares, he prepares not for war, but for peace. It is a fact, which history verifies, the American soldier has never started a war. All of the six major wars, in which we have engaged, as well as minor ones, have been brought about by international complications in which the soldier had no part, until he was called in to carry out the desires of the people themselves, and uphold the honor and dignity of the nation.

"This, the American soldier has always been able to do, though in every instance he has been handicapped by the policy which has prevailed due to the opposition of the people to an adequate and well organized military policy. Such indifference of the people has cost billions in treasure, and thousands of the flower of our manhood. The pacifist and well-meaning say to disband our army and navy and we will have no wars. If such a course is logical then why not do away with our police to stop crime? If the same effort were exerted to stop the needless loss of life by accident and murder more good would be accomplished.

"It is a known fact that more people meet death each year by automobile accidents, railway accidents, murders and accidents in industrial life than the actual battle deaths of our armies in the World War. The American soldier in peace has done much of which our people take no count. In early days he assisted in winning the West for civilization. He was always the one who stood shoulder to shoulder with the pioneers who opened up that great empire to the westward. He built railroads, assisted in building the Panama Canal, established a stable civil government in the Philippines and Panama. In times of great disaster the American soldier has stepped in when civil authority was powerless to function, and brought order out of chaos. As examples there are the great Chicago fire, the San Francisco earthquake and the Dayton flood. The past spring, the National Guard of Illinois and Indiana had to take charge of those areas which were devastated by the tornado and handled affairs until civil authority was able to function.

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"Today, in the National Guard, as well as in the C.M.T.C., the R.O.T.C. and Regular Army, we train to build character, develop leadership, and a clean, strong manhood. A young man who has had military training as given under our present military system, is better able to meet the problems of civil life. He is stronger physically, has more poise, is more courteous, has greater initiative and leadership.

"If our people would only take the time to investigate for themselves, learn more about our military policy, and the manner in which that policy is now being carried out, they would undoubtedly support it to the very limit."

Fifteenth Field Artillery Champion Baseball Team

The Second Division boast of some athletic teams which rival those of the war time divisions. Especially has the quality of the baseball teams reached a high calibre. Of late the two artillery regiments have been monopolizing the championship of the Fort Sam Houston Post League and each year the battle between these two regiments attracts wide attention. The Fifteenth Field Artillery won the championship in 1923; last year the Twelfth Field Artillery won, and for this year the Fifteenth has recaptured the honors.

To quote from a San Antonio report of the recent series: "Lieutenant Brammel, manager of the Fifteenth Artillery, took over the club three days before the first game, which was lost to the First Infantry. He rounded out his team in fair condition for the next game and since then the team won eleven straight games. The Twelfth Artillery jumped off to a big lead and for three weeks was fighting to subdue several teams that were maintaining perfect percentages. After aiding the Twelfth in sending these to lower berths, the Fifteenth began to master the Twelfth and knocked it from the top perch. Both games were easy victories for the Fifteenth when it buckled against the Twelfth."

The final standing of the League follows:

	Won	Lost	Percentage
15th Field Artillery	11	1	916
12th Field Artillery	10	2	833
1st Infantry	7	5	583
23rd Infantry	6	6	500
9th Infantry	4	8	333
2nd Engineers	2	10	166
8th Corps Area Detachment	2	10	166

The 319th Field Artillery and Its Summer Training

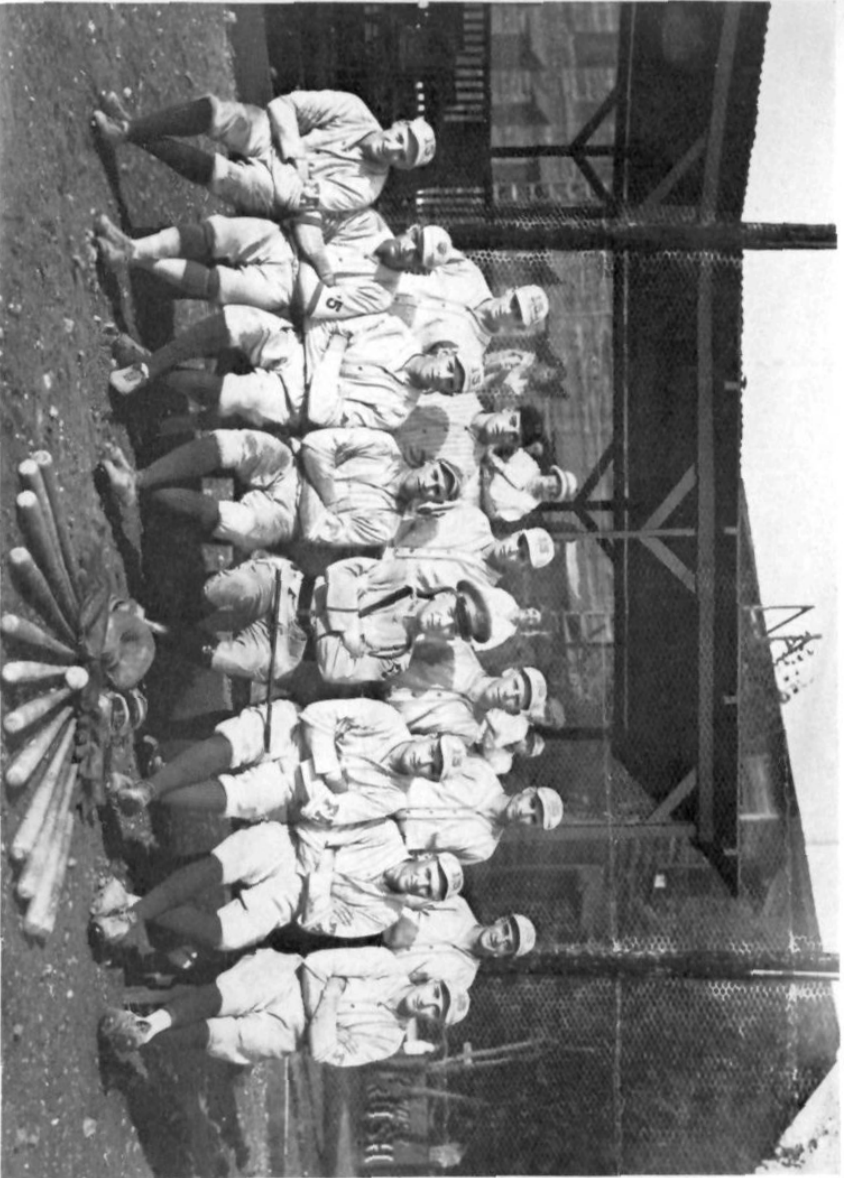
The largest group of reserve officers who assembled for fifteen days training during the present summer at Fort Bragg, N. C., were the officers of the 319th Field Artillery. The esprit de corps, the

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interest, and enthusiasm of these officers was noted and commented upon by all regular officers who came in contact with them at Bragg. This was the first year that this regiment had been ordered to camp as a unit, and the training period was therefore devoted to mobilization training. In spite of the fact that the officers were not given technical field artillery training, which they all expected with service practice as the goal and reward, interest in the training never lagged, and class room work in gunnery, field artillery firing, and tactics, was carried on by regular officers during the evening and other spare time. The 319th Field Artillery has an enviable record and many of the officers who served with the regiment during the war, are still assigned to it.

The regiment was formerly organized at Camp Gordon, Georgia, on August 29, 1917. The original enlisted personnel was drawn from the states of Georgia, Alabama and Tennessee. The regiment trained at Camp Gordon from the date of organization to May 8, 1918, when it entrained for Camp Mills, Long Island. On May 19, 1918, the regiment sailed for overseas on the transport Lapland and landed at Liverpool, England, on May 31, 1918. The regiment then entrained for Winchester and after spending two days at the Winnal Downs Rest Camp, crossed the channel from Southampton to Le Havre; here it again entrained for La Courtine, France where it arrived June 6, 1918. Intensive training was had at La Courtine until August 6th, when the regiment moved by train to the front. After several unimportant moves a forward gun of Battery A, 319th F.A., fired the first shot of the Field Artillery Brigade of the 82nd Division at Manonville, France, at 3:10 P.M., August 20th, 1918. The regiment took part in the battles of Lorraine, St. Mihiel and Meuse-Argonne and on November 11, 1918, was in rest area at Les Islettes, France, when the Armistice was signed. The regiment remained in the Tenth Training Area from the Armistice until April, when they moved by train to the vicinity of Bordeaux from where they sailed the latter part of April to the U. S., landing at New York and going from there to Camp Merritt, N. J., where the personnel was discharged and transferred to other units.

Following the World War the regiment was reorganized and allocated to Georgia, and constitutes one of the regiments of the 157th F.A. Brigade, 82nd Division. Major Paul D. Carlisle, F.A. was assigned to the regiment as executive in December, 1923, with headquarters at Augusta, Georgia; prior to this time the Headquarters had been in Atlanta, Georgia, with Lieutenant-Colonel William H. Peek, F.A. as executive. The group of officers of the regiment shown in the picture, are those who were present at Fort Bragg, N. C., for fifteen days training June 25-July 9th, 1925. This



FIFTEENTH FIELD ARTILLERY BASE BALL TEAM

Rear Row, Left to Right: Pickford Piazza Cunningham, Devault Stonebecker.

Front Row, Left to Right: Cuniff, Dunlap, Holmes, Michaels, Col. H. G. Bishop (Regimental Commander), Lieut. Brannell (Team Manager), Daynes, Staricha.



THE OFFICERS OF THE 319TH FIELD ARTILLERY ASSEMBLED FOR SUMMER TRAINING AT FORT BRAGG

Left to Right Seated: Capt. A. L. Crowe, Capt. R. G. Booker, Capt. H. P. Lyon (M.C.), Maj. T. J. Holton (M.C.), Maj. P. D. Carlisle, Col. F. B. Willingham, Capt. H. C. Bowman, Capt. L. H. Bixby, Maj. S. F. Mitchell, Capt. J. W. Fror, Capt. J. A. Smith.

Standing: Lt. J. R. Strickland, Lt. H. B. Fraser, Lt. L. N. Smith, Lt. F. T. Parker, Lt. M. B. Sikes, Lt. S. Grunck, Lt. G. C. Davis, Lt. R. E. Lewis, Lt. G. F. Hill, Lt. H. A. Robinson, Lt. G. Davidson, Jr., Lt. C. H. Piver, Lt. J. W. Jefferies.

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training period was devoted to mobilization training, most of the officers devoting their spare time to class room work in gunnery, matériel etc., under their regular officers.

Mortality of Horses in the World War

The Veterinary Bulletin, through the courtesy of the British War Office, publishes some statistics of the British veterinary service, covering the first and last years of the war, 1914 and 1918, respectively. The statistics include all theatres of operations (France, Italy, Saloniki, Egypt, Palestine, and Mesopotamia) as well as the commands in the British Empire. The statistics for the United States for the July-December, 1918, period and of the A.E.F. in France for the October-December, 1918, period are also published for comparative purposes

	British		1918	
	1914	1918	A.E.F. France Oct.- Dec.	United States July- Dec.
Average total daily sick (percent. of strength)	21.00	9.45	15.12	4.30
All admissions (per annum per cent. of strength)	120.00	70.00	305.76	85.28
Mortality from all causes (per annum per cent. of strength).....	27.00	18.00	28.08	4.05
Cured (per cent. of admission)	75.00	74.00	87.12	93.98
Died or destroyed (per cent. of admission)	18.00	4.00	9.16	4.70
Cast and sold for farm work (per cent. of admission)	7.00	4.06	3.72*	1.32*
Sold to butchers (per cent. of admission)		18.00		

* Otherwise disposed of.

To mange is attributable the great havoc wrought in animal efficiency of the Armies in western Europe. On February 15, 1919, in the United States Army, animal sickness reached its maximum, there being 48,975 cases, or about 21 per cent. of the total number of animals on hand. Of this number, 30,756 were suffering from mange.

Correspondence Courses

The Army Correspondence Courses for this year were announced by the War Department on August 20. These courses were first instituted in 1922. They are designed to provide the citizen soldier with an opportunity for systematic and practical training and instruction which will fit him to perform the active duties of his branch pertaining to his present rank and which will also prepare him for promotion to the higher grades. In this latter matter of promotion,

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satisfactory completion of any subject in the correspondence courses, exempts the officer from promotion examination in that subject for five years after the completion, so far as knowledge qualification is concerned.

The field artillery courses for this year cover the same subjects as last year and some new subjects in addition; but the old subjects have been revised and practically rewritten. Faults found by the experience so far, have been corrected and these new courses are expected to furnish interesting and practical instruction.

While designed primarily for the Reserve Corps, personnel in the National Guard may individually volunteer to take the correspondence courses in addition to their required national guard duties. Regular army officers on detached duty of a nature such as to preclude their receiving instruction through other agencies, may also take them.

The three field artillery courses, with their subcourses, are given below.

FIELD ARTILLERY—BASIC OFFICERS' COURSE

This course is designed primarily for the battery officer and, as far as can be done by theoretical study, is expected to give the student ideas upon the subject covered which will stimulate thought upon the various problems confronting the battery officer and later, when opportunity for practical work may present itself, afford a basis upon which to proceed along practical lines more rapidly and intelligently.

- Subcourse 1.—Organization of the Army.
- Subcourse 2.—Elementary Battery Training (Horse-drawn Battery).
- Subcourse 2a.—Elementary Battery Training (Motorized Battery).
- Subcourse 3.—Administration, Discipline, and Courtesies.
- Subcourse 4.—Map Reading and Sketching.
- Subcourse 5.—Artillery Movements, Mounted.
- Subcourse 6.—Military Hygiene and First Aid.
- Subcourse 7.—Field Artillery Ammunition.
- Subcourse 8.—Elementary Gunnery.
- Subcourse 9.—Care of Animals and Stable Management.
- Subcourse 9a.—Motor Transportation.
- Subcourse 10.—Military Law.

FIELD ARTILLERY—BATTERY OFFICERS' COURSE

- Subcourse 1.—Preparation of Fire.
- Subcourse 2.—Reconnaissance and Occupation of Position, Combat Orders.
- Subcourse 3.—Preparation of Fire (continuation of Subcourse 1 above).
- Subcourse 4.—Observation of Fire.
- Subcourse 5.—Field Artillery Signal Communications.
- Subcourse 6.—Conduct of Fire.
- Subcourse 7.—On the March and in Bivouac.

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FIELD ARTILLERY—ADVANCED COURSE

Subcourse 1.—Special Fire Missions.

Subcourse 2.—Combat Orders and the Solution of Problems.

Subcourse 3.—The Associated Arms.

Subcourse 4.—Tactics, I (the battalion in the advance and rear guard).

Subcourse 5.—Tactics, II (Field artillery in the offensive).

Subcourse 6.—Tactics, III (Field artillery in the defensive).

Subcourse 7.—Tactics, IV (Field artillery with a cavalry division; ammunition supply; information service).

Subcourse 8.—Methods of Training.

Subcourses 5 and 9 of the Basic Officers' Course, above, have been added since last year, as have Subcourses 2, 5 and 7 of the Battery Officers' Course. All the subcourses of the advanced course, above, are new.

Adjustment of Fire from Airplanes by the Seventy-sixth Field Artillery

The Seventy-sixth Field Artillery at Fort D. A. Russell, Wyoming reports their interesting experience in adjusting their fire from airplanes during the past summer. The sequence of instruction used by the regiment follows:

Blackboard firing, with panel and radio-telegraph practice, one hour daily—all officers of the regiment and the air service working together. The field artillery Training Regulations and air service pamphlets on the subject, were used as texts.

Cross-country observation flights for those artillery officers who had never been up, to accustom them to flying and observing from the air.

Radio-telegraph and panel practice between the artillery officers in the plane and the Headquarters Battery radio and panel detail on the ground.

Airplane adjustment of smoke-bomb practice.

Airplane adjustment of service practice, using shrapnel and H.E. shell.

Airplane observation problems were solved, using smoke-bomb and service ammunition by the following officers: On July 30, Colonel J. S. Herron, Captains M. A. Stuart and R. S. Perrin, and Lieutenant N. W. Jones; on July 31, Colonel J. S. Herron, Captain M. A. Stuart, Lieutenants E. C. Ringer and N. W. Jones, Staff Sergeant H. S. Briggs and Private F. L. Edwards; on August 21, Captain M. A. Stuart, Colonel J. S. Herron, Lieutenant-Colonel W. K. Moore, Lieutenant H. K. Palmer and Captain F. L. Thompson; on August 22, Lieutenant C. L. Boyle, Captain M. A. Stuart, Lieutenants N. J. Eckert, N. W. Jones and W. C. Stout and Staff Sergeant

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H. S. Briggs; on August 24, Colonel J. S. Herron, Lieutenant-Colonel W. K. Moore, Lieutenants N. W. Jones and H. K. Palmer and Corporal A. M. Swift; on August 25, Lieutenants W. C. Stout and C. L. Boyle and Captain F. L. Thompson; on August 26, Captain F. L. Thompson and Lieutenants C. C. Blakeney and N. J. Eckert.

The S.C.R. 63 set, which was used in the plane, was installed by Captain M. A. Stuart of Headquarters Battery. The first set was demolished when the plane was cracked up in an accident. A second set, put in another plane, was used until the plane was retired as worn out and was then reinstalled in another plane. The sets required frequent tests, readjustments and repair, due to broken bearings, slipped bearings, brushes out of alignment, loose connections, keys out of contact, etc., but when adjusted worked well and were easily tuned in with the 109 A sets on the ground. However, these adjustments were necessary so often, at critical times, and interrupted the work so much that it was thought a more dependable set should be adopted for the plane, preferably a vacuum tube set, rather than the S.C.R. 63 spark set.

The panel communication from ground to plane worked well but it was thought the panels should be larger, of heavier material, and spaced farther apart, than the text diagrams indicate; this would permit their being more readily seen from desirable altitudes and this without the loss of time incident to flying back to read each panel. It was also thought that, after each signal from the plane, the panel "14" (understood) should be displayed and immediately acknowledged by *S N* from the plane. The panel (14) should then be withdrawn until the next signal from the plane is to be acknowledged. This panel should again be acknowledged by *S N* from the plane and again withdrawn and so on, otherwise the observer does not know whether all or only part of his signals are understood.

In sending down radio-telegraph signals, it was thought each one should be repeated two or three times. A signal is liable to be blotted out by static or drowned out by interference from other radios, and unless repeated may be missed entirely. Both kinds of interference were experienced. This interference emphasized the importance of equipping the plane with a set powerful enough to penetrate all interference and of variable wave length that could be adjusted in the air.

Fort Russell's altitude is 6200. In this practice, the ranges to the targets were in the vicinity of 6000 yards and the maximum ordinates of the trajectories about 1000 feet. The plane was flown at an altitude of 9000 feet or about 3000 feet above the ground, and about 2000 feet higher than the maximum ordinate.

The regiment has expressed the greatest obligation to the Air Service, including Lieutenant-Colonel Frank P. Lahm, A.S., Ninth

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Corps Area, Captain A. F. Herold, A.S., and Lieutenant D. H. Alkire, A.S. Res., for furnishing and flying the planes, and assisting in the practice.

Calculating Lateral Displacement Errors

In the May-June JOURNAL Major J. G. Burr described a method for correcting the lateral displacement of the heavier field guns, when the firing of the guns moved them off the line of the two aiming stakes. Lieutenant A. S. Bennet, 13th F.A., has suggested another method which may be summarized as follows:

Procedure:

Upon occupation of position, always place the near aiming stake equidistant from the gun and the far aiming stake.

After firing a short time the gun moves off the line of aiming stakes.

The executive, then, commands: "Lay on the far aiming stake; report when laid."

The gunner having reported, the executive commands: "Refer your piece to the near aiming stake; report when referred."

The gunner having reported, the executive commands: "With the new deflection lay on the far aiming stake. Number five line up the near aiming stake. Report when laid and stakes are aligned."

When the gunner has reported as laid, and the number five has returned to his post, the piece (or pieces, as all four may be corrected simultaneously) is again on the target, the lateral displacement having been corrected, and fire may be resumed.

Explanation:

G_1 —First position of the gun.

G_2 —Position after displacement.

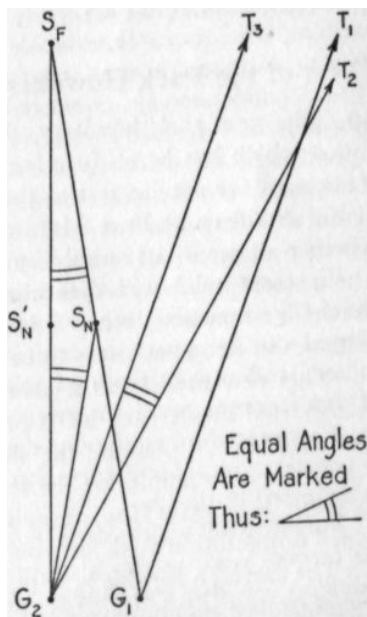
S_F —Far aiming stake.

S_N —Near aiming stake.

S'_N —Near aiming stake, second position.

$G_1 T_1$ and $G_2 T_3$ —direction of fire.

$G_2 T_2$ —Error in direction of fire caused by lateral displacement.



Lieutenant Bennet's methods, while fundamentally the same as, Major Burr's, has some obvious advantages, the principal one of which, perhaps, is that it involves no computations; the corrections

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are all made and applied mechanically, with no rules for signs to be remembered and each step is controlled by the voice of the executive.

It should be pointed out, however, that Lieutenant Bennet's method has the disadvantage that it applies only to the case where it is possible to place the near stake equidistant from the far stake and the gun. In some terrain it may be impracticable to so place the stakes, and yet have the near stake at a proper distance from the gun; the near stake cannot be so close that the blast of the gun will knock it down, and yet the nearer it is to the line of fire the fewer corrections will have to be made. Also the blast of the other three guns of the battery must be avoided.

Major Burr's method is a general application. His suggested commands are:

"Measure the angle between the aiming stakes."

"Report the distances distance between the aiming stakes."

"Lay on the near aiming stake."

"Left (or right) . . ."

"Line up the far aiming stake."

The correction, in this case, is always in the direction the gun has moved, *i.e.*, if the gun has moved left of the line of aiming stakes, the correction is, "Left . . ."

Test of the Pack Howitzer Model 1923, E

The new pack howitzer, designed to replace the old model of 1897 which has heretofore been used by our mountain artillery has been sent for service test to the Pack Artillery Board in the Fourth Field Artillery at Fort McIntosh, Texas. This new howitzer has given promise of its suitability in arsenal and proving ground tests; the present trial will determine any desirable, minor changes in methods of packing, etc. It is planned to embody any recommended changes in two new pieces to be built after the first of the year.

This new model has a maximum range of 9000 yards; will be transported in six pack loads or one draft unit; the maximum pack load will be 225 pounds; the shrapnel projectile weights 17 pounds and is fixed ammunition; the shell is provided with a short, instantaneous, bore-safe fuze of new design, weighs 15 pounds and is zoned ammunition with six zones.

The carriage for this howitzer has an axle traverse of five degrees and permits a maximum elevation of forty-five degrees. The whole piece in firing position weighs 1320 pounds. A sleigh of rather unwieldy appearance is part of the top carriage; the virtue of this latter part, however, is that, in adding to the weight of the recoiling

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parts, it increases the stability of the piece and thus facilitates a greater rapidity of fire.

Aircraft Progress

The National Air Transport, Incorporated, was formed early in the last summer, to conduct an airline for carrying express and freight between New York and Chicago by night. The published capitalization of the concern is \$10,000,000 and the list of officers and directors includes some of the wealthiest men of the country; they have financed this undertaking with their own money and their standing in the business world is such that there can be little doubt that they are moved by most commendable, public spirited motives to establish the practicability of air navigation and promote its progress. Foreign countries have subsidized similar undertakings. In our Country, where government subsidies are frowned upon, we have much to be thankful for in such a patriotic endeavor of private citizens. To those interested in national defense, this has a special significance; a well established, commercial aviation is a tremendous, military asset in an emergency, and an economical means of development in time of peace.

According to *U. S. Air Services*, National Air Transport, Inc. announced, on July 9, a publicity committee headed by Will H. Hays, at present of the motion picture industry, and including Karl A. Bickel, United Press Association; Malone Baskerville, *Atlanta Georgian*; Robert W. Bingham, *Louisville Courier-Journal*; Harry M. Bitner, *Detroit Times*; C. B. Blethen, *Seattle Times*; Arthur Brisbane, *New York Journal*; Harry Chandler, *Los Angeles Times*; George T. Cameron, *San Francisco Chronicle*; Roy W. Howard, *Scripps-Howard Newspapers*; M. Koenigsberg, *Universal Service and International News Service*; Victor F. Lawson, *Chicago Daily News*; Eugene Lorton, *Tulsa World*; Earl E. Martin, *Scripps Publishing Company*; George Fort Milton, *Chattanooga News*; Bradford Merrill, *Hearst Newspapers*; Robert R. McCormick, *Chicago Tribune*; Edward B. McLean, *Washington Post*; Harry M. Nimmo, *Detroit Saturday Night*; Lemuel F. Parton, *Current News Features*; John H. Perry, *Jacksonville Journal*; Edgar B. Piper, *Portland Oregonian*; Alfred T. Sanford, *Knoxville Journal*; James Schermerhorn, Detroit; E. D. Stair, *Detroit Free Press*; Melville E. Stone, *Associated Press*; James M. Thomson, *New Orleans Item*; and Cornelius Vanderbilt, Jr., *Vanderbilt Newspapers, Inc.*

There is need for such a publicity committee as this. Not only has National Air Transport, Inc., the task of establishing the practicability of air navigation, but in order for this promising instrument to have its correspondingly successful commercial application,

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the public, which is the ultimate user, must know and have confidence in the safety, speed, and weight-carrying capacity of ariplanes. Newspapers and motion pictures are, perhaps, the accepted means for such an educational program. There can be little question that this publicity committee covers the field. The average citizen can scarcely see a news reel in the neighborhood, moving picture theatre or pick up a newspaper that is not owned or else served by one of the agencies represented on the committee. The committee is not democratic or republican, jew or gentile, catholic or protestant. It is *everything*—except military.

Since the appointment of this committee, there has been considerable discussion of the military application of the airplane. Some have expressed doubt that the public has been impressed with both sides of the discussion of the military phase of aviation. If this is so, there is room for serious reconsideration. In a country whose governmental policies are determined ultimately by the people, it is not well in any case, to have their sources of information biased in one direction. Especially is this so, when the question is one so serious as national defense, in which a peace-time mistake may result in a war-time catastrophe. There is little doubt that National Air Transport, Inc., and its publicity committee have undertaken a most useful work and should go on; but the promotion of aviation should go hand in hand with a safe national defense policy. In no case should the promotion of aviation necessitate the sacrifice of effective war-time organization of our fighting forces, and when this latter question is presented to the public, the public should know all the facts.