

29TH YEAR OF PUBLICATION

# THE FIELD ARTILLERY JOURNAL

**SEPTEMBER-OCTOBER, 1939**

**SOME ASPECTS OF THE SUDETEN CRISIS**

—Colonel Conrad H. Lanza

**HAS THE CLOSE-SUPPORT PROBLEM BEEN SOLVED?**

—Captain C. L. Boyle

**A BATTERY OF 75s IN THE TEMPEST**

**SOME LESSONS FROM THE SPANISH WAR**



PUBLISHED BIMONTHLY BY  
THE UNITED STATES FIELD ARTILLERY ASSOCIATION

# September-October, 1939

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VOL. 29

29TH YEAR OF PUBLICATION  
SEPTEMBER-OCTOBER, 1939

NO. 5

# THE FIELD ARTILLERY JOURNAL

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The United States Field Artillery Association

**A PUBLICATION FOR THE FIELD ARTILLERY OF THE REGULAR  
ARMY, NATIONAL GUARD, AND ORGANIZED RESERVE**



Patron Saint of Artillery

**PUBLISHED BIMONTHLY FOR  
THE UNITED STATES FIELD ARTILLERY ASSOCIATION**

**BY MONUMENTAL PRINTING COMPANY  
32D STREET AND ELM AVENUE  
BALTIMORE, MD.**

Editorial Office, 1624 H Street, N. W., Washington, D. C.

W. S. Nye, Captain, Field Artillery, Editor

Entered as second-class matter August 20, 1929, at the post office at  
Baltimore, Md., under the Act of March 3, 1879

Published without expense to the government

*The Field Artillery Journal pays for original articles accepted*

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**ARTICLE II OF CONSTITUTION**

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

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## Editorial

*News of the European war looms larger on the military horizon than anything else which can be printed. The American press is giving its readers a more complete coverage of day-by-day happenings than the citizens of warring nations themselves can obtain. Military men everywhere are eager to draw conclusions which will enable them to confirm or revise their own prior estimates as to materiel and methods. But detailed information of a professional character, if we are to judge by the Spanish war, will not be available for weeks, perhaps months to come.*

*When such data is released, our readers may rest assured that THE FIELD ARTILLERY JOURNAL will be first in the field in presenting articles dealing with war lessons of particular interest to the Arm. In the meantime it is possible to indicate briefly how an artilleryman's study of war news can be so directed as to be of professional benefit.*

*For several years past, many questions have presented themselves to serious thinkers, the answers to which, it has been agreed, would be found only if and when war occurred. Here are a few of them:*

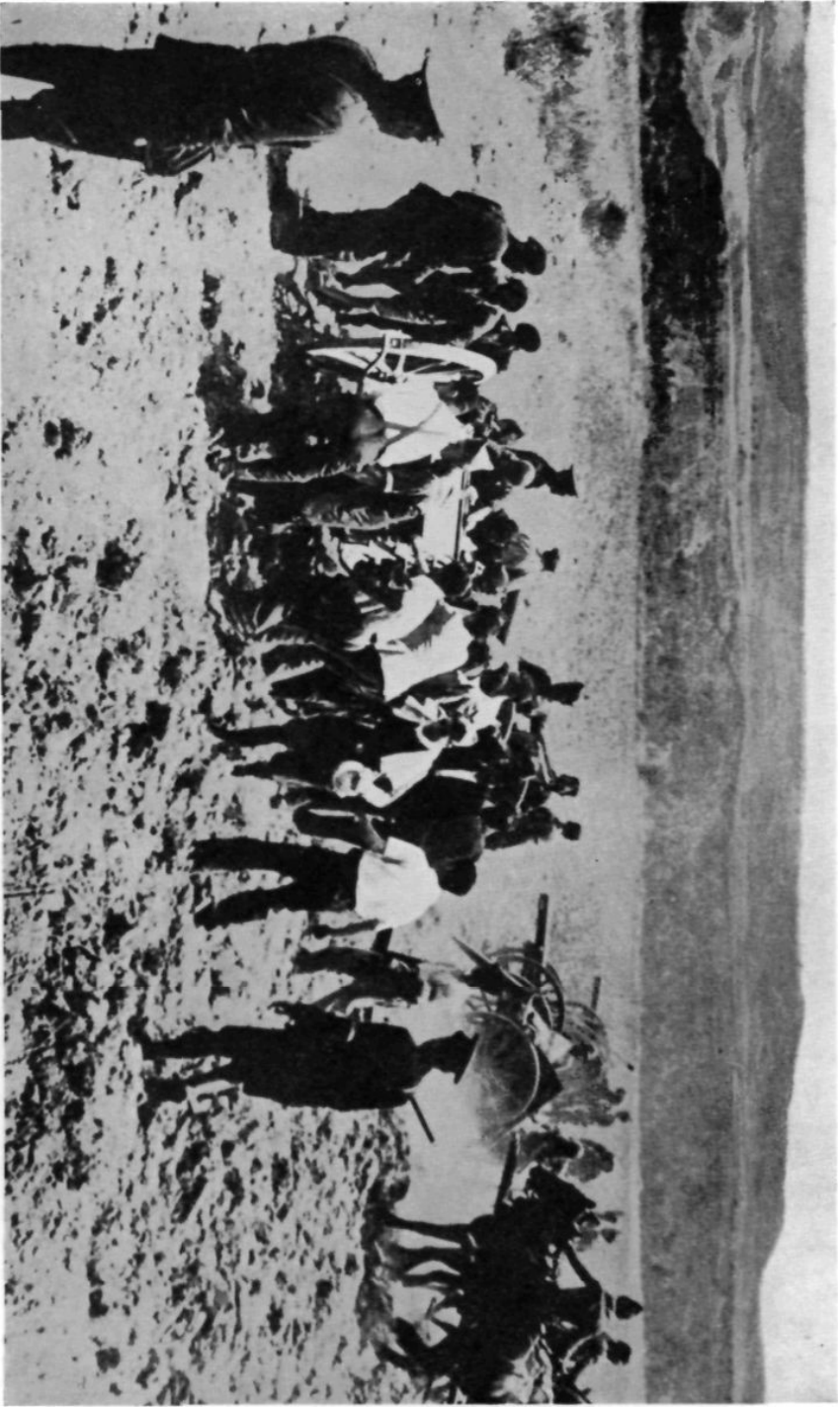
*Air power: Will it do all that its protagonists have claimed for it? Will the best doctrines be followed in its employment—attack of such vital targets as airdromes, defiles in supply arteries, industrial establishments devoted to production of war materials, large formed bodies of troops—or will combatants succumb to the temptation to use it against anything and everything that moves and lives? To what extent will "air infantry" be employed? Will defensive measures planned by the field artillery or other arms be effective? What further measures will be necessary? Will the bomb replace the artillery shell in reducing hostile resistance on the actual front?*

*Mechanized forces: Will mechanized forces find their principal role in making sweeping envelopments, or in power-drives through a prepared position, or in exploiting a breakthrough made by other arms? Will they succeed in keeping war from settling down to stabilized fronts? Will defensive doctrines be changed so that tank obstacles rather than fields of fire are the deciding factors in selection of position? What antimechanized provisions will be most effective—land mines, barriers, antitank guns, or field artillery? Will field artillery have to protect itself against mechanized attack? Will these defensive measures change our conception of what types of position we should occupy and what auxiliary weapons we should employ?*

*Field artillery: Will artillery fire continue to inflict 80 per cent of all battlefield casualties? Will infantry accompanying weapons take over much of the duty of close support? Will mobility or power of weapons gain the ascendancy? What calibers will prove most desirable? What is the answer to the gun-howitzer argument? Will recent developments in gunnery and fire direction stand the test of battle experience? Will ultra short wave radio supply the solution to the communication problem? Which type of motor traction will be most satisfactory—truck, tractor, or half-track truck? To what extent will animals be used?*

*Other artillery problems, named at random, involve field fortification, camouflage, flash-and-sound ranging, mapping and survey, organization, ammunition supply, and so on.*

*Much of the above may remain controversial even after complete reports have been received. Yet it should soon be possible, by sifting fact from conjecture and by balancing conflicting communiques, to obtain at least a partial picture of modern large-scale warfare. Field artillerymen should so study their war bulletins as to keep their thought dynamic and ready for a time when they might be called upon to substitute actuality for vicarious experience.*



Wide World Photos, Inc.

**ACTION FRONT:**  
Civilian recruits assisting in placing light battery in action on the Guadaluajara front.

# THE FIELD ARTILLERY JOURNAL

VOLUME 29

SEPTEMBER-OCTOBER, 1939

NUMBER 5

## Military Aspects of the Sudeten Crisis

BY COLONEL CONRAD H. LANZA, FA

ON 28 May, 1938, Chancellor Hitler of Germany held a conference with his advisors. It was of serious import. On its outcome depended peace or war and the lives and happiness of countless humble people who knew nothing about this conference. The subject discussed was: How and when shall the Sudeten, then an integral part of Czechoslovakia, be annexed to Germany?

It was realized that, regardless of theories and propaganda as to rights of inhabitants of the Sudeten to determine for themselves as to which country they preferred to belong, Czechoslovakia would object to loss of her territory. She might fight rather than agree to peaceful cession.

France had an alliance with Czechoslovakia effective if that country should be invaded. There was another alliance by which Russia bound herself to aid France if the latter went to war. Great Britain was friendly to France, for some time had supported her diplomatically, had intimated that she would probably join France in war. There was a strong possibility that if Czechoslovakia were attacked by Germany these three great Powers would come to her aid.

Germany could count on Italy and Hungary, probably on Japan. If all these countries started fighting, a new world war would be in progress, the ultimate result of which would be difficult to determine. Was it worthwhile to run such a risk?

The Army leaders did not favor risking a major war. They considered that the

German force was hardly one-half of what they considered as necessary to fight France and her allies on the west. Czechoslovakia on the south, possibly Poland and Russia on the east.

The west front of Germany was open. The opposing French frontier was covered by the formidable Maginot line, the strongest line of fortifications that had ever been constructed. Germany was deficient in heavy artillery, which the war in Spain had shown was necessary to attack even moderately defended positions. The same war had proved that the German tanks were too light, had small combat value, and needed to be replaced by heavier tanks.

Because of the few years which had elapsed since rearmament had begun, German organized reserves were insufficient in numbers. Owing to lack of resources in Italy and Hungary, the assistance of these nations ought not to be overvalued. Japan might aid, but, as this country was already engaged in a major war in China, her assistance would probably not be of great worth.

The situation was thoroughly discussed. It was better to prepare for all eventualities rather than risk disaster through insufficient consideration. The proposition looked dangerous. The Army was not enthusiastic.

The Chancellor was persistent. He insisted that the mission must be accomplished. He recognized that there was a shortage of materiel, that there was a lack of reserves. But he thought everything needed could be provided within a relatively short time, and that if this

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were done quickly, preparations might be completed before possible enemies became aware of what was to occur. He was of the opinion that four months would suffice to correct the conditions admitted to be unfavorable. It would require hard work, but he was sure German organization could do it.

Accordingly a plan was decided upon, and was approved by the Chancellor. This plan provided for:

1. Military action against Czechoslovakia and her allies to be ready to start on 2 October, 1938.
2. Extension of the western frontier defenses, to ward off a possible offensive from France. Defenses to be continuous from Belgium to Switzerland.
3. The army to be increased immediately to 96 divisions, with arrangements to supplement this force in a short time by an unstated number of additional divisions.
4. All preparations to be secret. No alarm, no warning. Only the heads of government of the Axis Powers—Italy, Hungary, and Japan—were to be consulted and these only secretly. Officials to be given orders, but no information as to the plan.
5. Initiation of propaganda exploiting the fact that the Sudeten was German, and desired to join Germany; and that under the principle of the self-determination of nations they were entitled to do so. At the proper time a showing was to be made that the Sudeten was grievously oppressed, and that justice required cession to Germany to end an intolerable situation.

Thus closed an historic conference, secretly held to decide the fate of millions of people. It had been dominated by Chancellor Hitler. He made the decision against warnings of able advisers. He recognized the danger of precipitating a general war, but felt confident that he could avert it. He was willing to incur necessary risks, understood

that unexpected events might occur, desired to be fully prepared. He thought he could be. He decided to go ahead swiftly.

Evidence recently uncovered indicates that the annexation by Germany of Austria and Czechoslovakia, to take effect at some future convenient date, was provided for in one or two of several protocols signed by Count Ciano, for Italy, and by Chancellor Hitler, for Germany, at Berlin and Berchtesgaden on 25/26 October, 1936. They were annexes to a treaty of alliance signed at the same time between Italy and Germany. This agreement was the price paid by Italy to secure her new ally, believed to be necessary by reason of the sanctions imposed by the democratic Powers against Italy during her war with Ethiopia. Thus it may be seen that the dismemberment of Czechoslovakia as an independent state was envisaged and planned for by Chancellor Hitler and Duce Mussolini as early as 1936.\*

The leaders of Italy and Hungary appear to have been notified of the decision reached on that fateful 28 May, 1938. Italy accepted the situation. It was part of the game agreed upon. In December, 1937. Italy had warned Czechoslovakia to settle the Sudeten question by direct negotiation, rather than chance a war through which she could gain nothing, and might lose all. This suggestion was not accepted. The date upon which Japan was notified of

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\*According to a speech by Mussolini, delivered on 1 November, 1936, the treaty of alliance which had just been signed between Germany and Italy inaugurating the famous Rome-Berlin Axis, was accompanied by "several" protocols. To this day, neither the treaty, nor the protocols, nor the number of the latter, have been revealed to the outside world. From indirect evidence, one, two, or three of the protocols arranged for final disposition, at some future convenient date, of Austria, Czechoslovakia, and Albania. This much has been accomplished. In each case, the principle of surprise has been utilized to secure a speedy victory before opposition could form.

What do the remaining protocol, or protocols, cover! Are further surprises in store for an anxious number of small nations, and some great ones!



## MILITARY ASPECTS OF THE SUDETEN CRISIS

the plan of 28 May is not known.

Germany at once took steps to provide the required additional troops and materiel. Of the 96 divisions to be ready by October, only 48 existed, including 4 mechanized and 4 motorized. Forty-eight new Landwehr divisions were ordered formed. The personnel for these was furnished from drafts from the Regular Army, semi-military organizations, and from cadres of reserve officers and men. The organization of these divisions had so far progressed as to enable the final complement of men to join during August. As this movement was noted by foreign observers, it was announced that a new form of training, involving use of reserve organizations at full war strength, had been decided upon, and would take place in selected maneuver areas, to include the month of September.

The supply departments provided the necessary batteries of heavy artillery and new heavy tanks. This issue was secret.

Work on the west defenses was pushed strenuously. Something had been done on this line as early as 1932. In the spring of 1938, more construction was undertaken. By May, 1938, there was a fair defensive system opposite Strasbourg, and at some other points where an enemy might try to cross the Rhine. Between the Rhine and Belgium there was nothing.

Early in June large numbers of workmen were assigned to this task. By September over 100,000 men were erecting long lines of continuous defensive positions extending from Belgium to Switzerland. The front line initially consisted largely of wire and trenches covering tank obstacles, which more properly might be classified as field fortification. To supplement this, permanent works in concrete and steel were added, distributed in depth to provide from two to five defensive lines. By October the first field line was nearly completed. Considerable work had been done also on the permanent lines, but as a

whole the project was less than half completed.

In spite of attempts at secrecy, by August France and Great Britain were alarmed. They believed that Germany was preparing some kind of a surprise. They were not satisfied as to the explanation as to the reserve divisions having been mobilized for training only: they suspected there was some other reason. They consulted each other and, before what seemed to be a common danger, definitely agreed to be allies in case of war. They wished to avoid a war but were quite decidedly opposed to permitting Germany a substantial increase in territory and power.

The German propaganda department by now was in full action, making much play as to the right of the inhabitants of Sudeten to exercise the principle of self-determination. The Allies had fought for this same ideal during the World War, and, although they did not believe this to be the main reason, they found it hard to deny the proposed cession of the Sudeten when it was alleged. Still, they did not like the situation. They commenced war preparations, at first on a restricted scale. Some Allied statesmen, and much of the Allied press, believed that Germany was bluffing and would not fight. It was thought that a show of determination by the Allies not to permit Germany to annex more territory, coupled with a show of force, was all that would be necessary to stop Germany.

The Allies were encouraged by reports that there were no signs that Italy was mobilizing. It seemed certain that if Germany expected war Italy would know about it, and would have taken appropriate measures to assist her ally. Very strong moral support came from the United States, and it seemed that that country could be counted upon for unlimited supplies and probably eventually for military support.

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Maybe Germany *was* bluffing. Perhaps a firm diplomatic policy, coupled with a showing of the risk that Germany incurred of becoming involved in a major war against three great democratic powers having immensely superior navies and enormous resources and wealth, would bring Germany to her senses. It was first decided to remain firm.

The general situation in Europe became tense. Germany had believed that it might be possible to commence an attack on Czechoslovakia before other nations could mobilize, but this was now no longer certain. On 22 August, a strategical estimate of the situation was made by Germany and Italy. This considered that in case of war over the Sudeten question.

- a. Great Britain and France would come to the assistance of Czechoslovakia.
- b. Poland was known to have mobilized several classes of reserves. She was prepared to act, but had not decided which side to join. Initially she might remain neutral.
- c. Rumania had had under consideration a request to allow Russian land and air forces to cross her territory into Czechoslovakia. To date she had given an evasive answer. Apparently she was, like Poland, ready to stay out of war, or join either side according to events.
- d. Yugoslavia would be definitely neutral.
- e. The United States might enter a war on the side of the Allies, but this was yet doubtful.
- f. Japan had advised that it would join the Axis. However, in view of her war with China, the assistance that Japan could give seemed to be of no great value.

It was certain that Great Britain and France would come to the aid of Czechoslovakia, and that the United States might. Notwithstanding this combination, it was decided to proceed

with the mission as planned as of the original date of 2 October.

The estimate of the situation by Great Britain and France agreed with all items of the Axis estimate. Although they considered that they could if need be defeat the Axis in war, they sought additional allies to increase their forces on land and in the air. As to resources and reserves on land and on the sea, they had all that appeared necessary.

The Allies exerted diplomatic pressure and offered economic inducements and loans of gold to the Balkan countries and to Poland. They did not succeed in obtaining guarantees from any of them. These small countries did not want to commit themselves in advance. Russia was approached; the advantages of being connected with the Allies were explained to her. Russia was not enthusiastic; on the contrary, she was suspicious. She had an idea that the Allies wanted her to fight Germany for their benefit, and not for Russia's benefit. In September Russia did state that in view of the fact that she had in 1936 signed an alliance with France, she would, in case that country became involved in war over Czechoslovakia, comply with her agreement, and would join the French. She gave no information as to what she would do if she did go to war.

The Allies knew that there was unrest in Russia; it seemed quite possible that if Russia engaged in a major war there might be a revolution at home. Many leading generals had been executed for alleged treason. The Allies thought that if they were guilty of treason, others were probably involved, and the loyalty of the army was likely questionable. If the generals had been put to death for political reasons, as was generally believed, their successors were apparently insufficiently trained to lead large units in war. New division commanders had only a year before been captains or majors. If Russia did join the Allies, it seemed nearly certain that Japan would

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join the other side. If the United States then entered the war on the side of the Allies there would be a distinct net gain in strength; but if the United States did not do so, the appearance of Russia in the war was judged to be of uncertain value. All that surely could be counted on at the outset were France, Great Britain, and Czechoslovakia.

What were the actual forces available to the Allies and to the Axis should war come? The general staffs of both sides knew closely the strength of the prospective enemy. There was one exception—the Allies apparently had not identified all the new German divisions.

In the following tables, completely equipped and trained Regular Army divisions have been noted as first class; the reserve divisions as second class.

### SEA FORCES

Without entering into a detailed analysis of forces, their relative strengths were:

- a. The British navy was greatly superior as a whole to the combined German and Italian navies. Against surface craft it could enforce a blockade of German North Sea ports, and a distant blockade of Italy by closing the Red Sea and Gibraltar entrances to

LAND FORCES		
<i>The Axis Powers</i>		
<i>1st-class divisions</i>		
Germany	48	(includes 4 mechanized and 4 motorized)
Italy	40	(excludes troops in Spain)
Hungary	15	
Total	103	
<i>2nd-class divisions</i>		
Germany	48	
Italy	20	
Hungary	5	
Total	73	
Grand total	176	
<i>The Allied Powers</i>		
<i>1st-class divisions</i>		
French	40	(includes 2 mechanized)
England	3	(all available for duty in France)
French Colonial	15	(after arrival from Africa, estimated at from 15 to 60 days)
Czechoslovakia	30	
Total	88	
<i>2nd-class divisions</i>		
France	40	
Grand total	128	

Of the 128 divisions available to the Allies, as against 176 to the Axis, 30 would be in Czechoslovakia, separated from the remaining 98 in France.

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AIR FORCES

The number of combat planes of the various powers cannot be determined exactly. Best available information indicates that the approximate figures are:

*The Axis Powers*

*Combat planes*

Germany	3,500, possibly 4,000. Excellent machines, nearly all new, using noninflammable fuel. Some pilots trained in war in Spain.
Italy	2,000. Excellent machines. Pilots with war experience in Ethiopia and Spain.
Hungary	250
Total	5,750 to 6,250 combat planes.

*Capacity for replacing planes*

Germany	Own reports stated 1,000 per month.
Italy	No figures available. It was, however, known that the Italian plane strength had been substantially unchanged for several years, in spite of special production efforts. It seemed probable that their production about balanced ordinary losses, war losses in Spain, and sales to Spain and to Japan.
Hungary	Small
Total	Uncertain, but well over 1,000 per month.

*The Allied Powers*

*Combat planes*

France	2,000	} includes old machines.
England	2,000	
Czechoslovakia	300	
Total	4,300	

*Capacity for replacing planes*

France	300, actually 100, but this was considered a temporary condition due to new social laws.
England	300, actually less, but expected shortly to be increased.
Czechoslovakia	none under war conditions.
Total	600 per month. This was expected to be increased by purchases from the United States.

- the Mediterranean. It was not sufficiently superior to form a fleet detached at the same time to the Far East, which would be comparable to that of Japan.
- b. It was agreed that the French navy would be under British direction. It was about equal in strength to the Italian navy, and was counted on to convoy troop ships from Atlantic ports in North and West Africa to France. To avoid air and submarine danger, the direct route from Algiers to south France could be discontinued at the cost of some delay in arrival of troops in France.
- c. The submarine strength of Italy exceeded that of Great Britain or France. The German submarine strength has not been ascertained, but

## MILITARY ASPECTS OF THE SUDETEN CRISIS

the Axis submarine strength was equal to or superior to that of the Allies. It was conceded that the Mediterranean could be blocked for important Allied movements. Having bases at both ends, and in the middle of that sea, the Allies believed that they too could interrupt movements of Italian ships in the Mediterranean.

- d. Submarine war in the Atlantic was possible. The Allies recognized the seriousness of this, particularly if the Axis had access to Spanish ports, which seemed to be quite possible. They believed that their antisubmarine forces could control the situation.
- e. Should Japan enter the war, the temporary control of the North Pacific and the East India regions to that country was conceded, unless the United States joined the Allies. Should this occur, it seemed probable that the United States Navy, by using Allied bases in the Far East. and with some reinforcements from the Allied fleets, could eventually overcome the Japanese.

### RESOURCES

#### *The Axis Powers*

*Germany*—Nearly self-sustaining as to food. Surplus capacity for production of munitions. Large excess stocks of all kinds.

*Italy*—Nearly self-sustaining as to food. Military supplies excellent as to quality, but scanty, because of expenditures in wars in Ethiopia and Spain. Would need extensive assistance as to munitions.

*Hungary*—Surplus food supplies, which could be sent to Germany and Italy, Scant stocks of munitions.

*Japan*—Sufficient food supplies. Deficient in certain raw materials, especially iron and oil. Stocks probably, but not certainly, sufficient for a year's warfare. With development of China might carry on longer.

The general view of the Axis resources indicated that they had food supplies sufficient for their needs. Provided that German production plants were not destroyed, they could amply supply that country, and materially assist Italy and Hungary, which countries would need extensive aid shortly after a war started.

#### *The Allied Powers*

*England and France*—Lacked many supplies, both as to food and as to munitions. With control of the sea, apparently assured, and access thereby to the British and French Empires, they would be self-sustaining both as to food and as to munitions. With access to the markets of the United States, large excess of resources was expected.

*Czechoslovakia*—Food ample, Munitions could be produced in sufficient quantities, provided mines and factories could be protected. Doubt as to this. Stocks would permit of a strong defense.

We will not follow the political plays of the Sudeten crisis. Diplomatic action was extensive; for the Allies it was not very satisfactory. They did not know by this time whether Germany would fight, or was bluffing. The Allied press published reports that in May, 1938. Germany backed away from a then-intended invasion of Czechoslovakia, when the Allies had intimated that this meant war. The Allied press argued that the strength of the Allies, especially on the sea, and as to resources, was superior to that of the Axis, that the Axis knew it, and that it would not venture a war. The United States diplomatically, and in its press, suggested that the Allies show a bold front, and make the Axis understand that further aggressions from them would not be tolerated. The peoples of the democracies, not familiar with the facts as to the relative reserves and resources of the contending parties, had no doubt as to the greater

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strength of the Allies, especially if the United States was considered as benevolently neutral, and as furnishing supplies.

By about 20 September some gradual changes in the positions of troops had occurred. None were individually alarming; and they were not inconsistent with the idea of maneuvers or of precautionary measures.

It was known that the German western defenses were far from being completed, but enough work had been done to provide a continuous position against French attack. France considered that the defenses could be smashed by strong artillery preparations. But these defenses had two to four lines in depth. Several artillery displacements forward, with as many artillery preparations, would be necessary to pierce them. This was bound to take time. It was doubtful whether the German frontier could be penetrated before Czechoslovakia was overwhelmed.

The Balkan states still showed no sign of action. Fearful and intensely interested, they preferred to remain neutral until they had reliable information as to which side would be likely to win. They refused to commit themselves at this time.

There were reports that Russia had concentrated about 30 divisions, plus two cavalry corps, near Kiev. It was understood that these troops were not entirely at war strength; and the Allies did not know what they were to do, or when they would do it. Their location was suitable for advancing through Rumania towards Czechoslovakia; but it was also suitable for a defense against invasion by Poland, or for an invasion into Poland. As no permission had yet been received from Rumania for passage of Russian forces, the only conclusion was that the Russians were concentrated in readiness for future undetermined action.

As near as could be determined, Russia had 70 other divisions, about

6,000 planes and a large tank force. There was an absence of information as to whether Russia could or would place these forces in line and be able to supply them. No one knew whether a major war might cause a revolution in Russia. Russia continued sympathetic to the Allies but was very noncommittal.

Poland at this date was alined with the Axis. She wanted her share of any spoils resulting from the disintegration of Czechoslovakia. On the frontier of that country she had about 5 divisions; 35 others were available against Russia. The Allies doubted whether Russia really intended to intervene; they thought that if she did. Poland, with German resources at her disposal, and with superior leadership, might defeat Russia. Had not Poland alone done so in 1920?

Japan quite positively announced her intention of joining the Axis. This was another reason why assistance from Russia was considered improbable.

It is curious to note the Japanese reasons for intervening in a quarrel apparently nowise connected with their own interests. In 1919, Japanese troops had formed the largest, best, and most active contingent of an Allied expeditionary force in Siberia. The alleged mission of this incursion was to save Czech troops, prisoners deep in the interior of that great land. The Czechs were rescued; they were duly sent back to their own country. Japan believed that she was entitled to some expression of gratitude from Czechoslovakia, and was unpleasantly surprised when Mr. Benes, president of that country, in 1932 took a leading part before the League of Nations in condemning Japan for her occupation of Manchukuo. Later in 1937 and 1938, Japan noted that an important part of the materiel she captured in her war with China was marked "Made in Czechoslovakia." To the Japanese this all looked like base ingratitude.

In 1935, the same Mr. Benes, in the

## MILITARY ASPECTS OF THE SUDETEN CRISIS

same League of Nations, was the leader in imposing sanctions against Italy. The Italians did not forget this. Mr. Benes was personally disliked strongly by Japan and Italy. He was equally strongly disliked by Germany for failure to provide autonomy for the Sudeten, as had been promised in 1919. This personal dislike, or hatred, for Benes, was extended to include his country. In the hour of Czechoslovakia's need, the three great Axis Powers repaid old scores.

The German preparations for the attack, originally scheduled for 2 October, were on time. About 20 September it was decided to move the divisions and artillery from the maneuver areas into battle positions close to the Czechoslovakian frontier. Germany advised Italy and Hungary of her intentions, and these two countries also commenced to concentrate their troops. The first large troop movements in Germany were on 23 September. They were made during daylight hours, and passed through large cities; the various units could be counted and identified. On the same day, Chancellor Hitler announced that his troops would enter Czechoslovakia on 1 October unless the Sudeten was surrendered before that date.

According to reports of Americans then in Germany, the troops marched with full war equipment. The newest and most modern types of heavy guns, tanks, and other materiel were visible to all. There was no enthusiasm, either among troops or people. On the other hand, the troops were imbued with a spirit to do their duty. And there was an indefinable feeling that the cards had been stacked, that war would be avoided. But the Germans believed that if war did come, the Axis Powers were much the stronger, and would overcome resistance within a short time. They hoped and expected that matters would not be allowed to go too far.

French and British intelligence operatives in Germany promptly reported

the movements of the German army; they located most of the Regular divisions, and some of the reserve divisions. Plotted on maps at London and Paris, the encirclement of Czechoslovakia by strong bodies of excellent troops was apparent on 24 September. Other reports indicated that Polish and Hungarian divisions were closing in on their sections of the Czechoslovakian front.

It being certain that the Allied powers had observed the concentration of troops, and were themselves mobilizing, on 26 September, Germany declared that she certainly did intend to seize the Sudeten, and would advance into that country at 2:00 PM, 28 September, unless a peaceful cession was arranged prior to that time.

The mobilization of Italy during these days was secret and so well conducted that the Allied operatives discovered only the movements of certain specialists. The secret mobilization of some of the German reserve divisions was successfully accomplished.

There was great excitement throughout the world. There had been doubt as to whether Germany was serious in her war threats. It now seemed that she was, that war was inevitable, and would occur in a few days. Citizens of France and Great Britain immediately foresaw bombing of their cities, bringing gas, injury, and death to their women and children.

There was a rush to evacuate London and Paris. A million people departed from the latter city. Uncounted numbers fled from London. There was hasty emergency construction of trenches and shelters. Gas masks were issued. Dugouts were built in parks and public places. But in spite of all that could be done, it was evident that it would be impossible, in the time available, to protect large centers of population from widespread catastrophe. And could Czechoslovakia be saved? How? Apparently that unfortunate country would

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be crushed by the combined forces of Germany, Poland, and Hungary, before help could possibly reach her.

France had started mobilizing on 24 September, two classes joining the colors that day. England had called out her reserves and sent her fleet to occupy their war stations. Owing to the small size of her country. Czechoslovakia was completely mobilized by 25 September. She prepared to fight to the last, stating that she expected France to come to her aid as required by treaty. Under existing treaties, it was understood that if France attacked Germany, the only thing she could do to assist Czechoslovakia, that Russia and Great Britain would automatically enter the war on the side of France. Although Great Britain and Russia, as well as France, understood this quite well, they showed no great enthusiasm for this mission which might bring ruin to their countries yet not save Czechoslovakia.

On 25 September Great Britain and France decided to confer. On the following day the heads of their governments and the chiefs of staff of the respective armies met in London. This conference was unlike the one held in Germany only three months earlier. Time now pressed. Hitler had that day announced his intention to advance into Czechoslovakia on 28 September, only two days later. The people were not, as in May, in ignorance of the situation. On the contrary, they were excited and fully aware of the impending danger. They had definite impressions as to what was going to happen.

No one in France or Great Britain wished to sacrifice Czechoslovakia. But no one desired to see civilization ended by wholesale destruction of cities or by brutal slaughter of men, women, and children. Was there any solution to this problem? What could it be? This was what the conference had to decide.

The prime ministers and their military and naval advisers discussed the

situation. Except as to the mobilization of Italy, the facts narrated above were known. It was believed that Italy had not mobilized; it was hoped that this was an indication that Italy might consider withdrawing from the Axis. It was just a hope. They realized that Italy might remain with Germany; common prudence required that her forces be counted as part of those of the Axis.

According to the latest information, the disposition of the ground forces of the Axis were approximately as follows:

Opposite Czechoslovakia—55 divisions, being 40 German, 10 Hungarian, and 5 Polish—all 1st-class, and including 4 mechanized and 4 motorized.

Opposite France (Rhine)—13 divisions, all German, 10 of which were 2nd-class. Very strong artillery.

Opposite France (Italy)—5 1st-class divisions.

In reserve—43 divisions, German, 2nd-class; 35 divisions. Italian, 1st-class; 20 divisions. Italian, 2nd-class; 10 divisions. Hungarian, 5 each class; 35 divisions, Polish. In all, 216 divisions.

The Allies only had the 128 divisions previously listed.

If Russia with her 100 divisions should join the Allies, the latter would then have a slight superiority, but there was doubt as to what Russia would do. On 20 May preceding, Stalin, in an address to the directors of the International Communist Party, had stated that the interests of Soviet Russia lay in a war *between* capitalistic states. He added that the entire efforts of Russia, and of Communists elsewhere, must be directed to promoting such a war, which would certainly lead to a revolution of the proletariat. Now the hour had come, the World War was about to break. He desired all Communists to be prepared to profit by this. In view of such an order, could the Allies depend on Russia? It seemed quite possible that the reported mobilization of Russia's huge armies might be for a very different purpose



## MILITARY ASPECTS OF THE SUDETEN CRISIS

than that of assisting Czechoslovakia.

There was doubt as to the ability of Germany to build 1,000 combat planes per month. Factories to do this had been established, but could the necessary materials be obtained? Some thought that 600 planes was nearer the limit. If that were so, and the Allies had access to the markets in the United States (as appeared certain), the Allies ultimately would have an air force superior to the Axis.

In the beginning the Axis would have about a 3 to 2 superiority in the air. This was unfortunate. Judging from experiences during the war in Spain, it could result in serious damage, some loss, and occasional tactical derangements. The general belief was, however, that if nations were prepared to support temporarily this very undesirable condition, the Axis could not force a decision in their favor in this way.

French generals considered it impossible for the Axis to invade France, either through the Maginot line opposite Germany or over the Alps from Italy. They believed that given sufficient time the highly trained and equipped French divisions could smash through the yet uncompleted German west defenses. The Czechoslovakian army was first class, and would be able to prevent German divisions being sent to the west before a large part of the penetration by French troops had been accomplished. But there could be no promise that Czechoslovakia could be reached early enough to save her.

As to resources, Germany had sufficient to last a year, possibly much longer. But if she had to supply Italy and Hungary, as seemed to be the case, she might break down at some future date now impossible to predict. The Allies had unlimited resources, especially if those of the United States were available. On resources alone the Allies in the long run should win.

The conclusions were:

- a. That because of the Axis having superior land and air forces, Czechoslovakia could not be saved from being overrun before Allied troops could penetrate through south Germany.
- b. That if war started, it would be a general world war, and might last a long time. It would finally be won by the side having the most reserves and resources, which was the Allied side.

The conference closed with an earnest desire to avoid a war if an honorable way out could be found. The peoples did not want war. The result of a world war would be uncertain, would entail enormous danger.

The result of the September conference was that rather than risk a lengthy, uncertain, and horrible war, the Allies accepted on 29/30 September a proposition of the Axis to agree to peaceful cession by Czechoslovakia of the Sudeten to Germany, based on the principle of self-determination of peoples.

This ended that crisis.

### COMMENTS

The open movement of German troops which precipitated the acute stage of the Sudeten crisis was deliberate. It was intended that the Allies should "discover" about 40 first-class German divisions, with artillery, tanks, and so on, plus numerous Hungarian and Polish divisions, lining up around Czechoslovakia. Only about 13 other German division, mostly second-class, were "discovered" opposite France. It was clear that Germany intended to crush Czechoslovakia, but had no intention of attacking France.

Why did she disclose her plan?

It was an application of the psychological principle that if fear is suddenly and unexpectedly caused, but a way to escape is open, the first impulsive instinct is not to reason, but to retreat. The opinion that Germany was bluffing

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had been widely held. The Allied press had quite generally boasted that on 21 May, 1938, Germany had abandoned an intended invasion of Czechoslovakia because France and Great Britain had announced that they would not permit this. It had been represented on numerous occasions that the dictators understood no language except force. The Allied governments were urged not to yield again. Their people believed that the totalitarian states were so hopelessly inferior that they could not dream of waging a major war; that all that was necessary to stop the proposed aggression was to make it understood that the Allies would fight.

Therefore Chancellor Hitler decided to show that Germany *was* strong enough to crush Czechoslovakia. He moved his divisions into their battle positions, creating a situation which made it highly improbable that Czechoslovakia could be rescued. Hitler knew that the French and British general staffs would correctly evaluate the Axis strength. What he desired was to impress the Allied men-of-the-street, and Allied statesmen, that to interfere with Germany meant death and destruction without possibility of saving Czechoslovakia.

Chancellor Hitler has an extraordinary knowledge of psychology, an unequalled psychic insight. He did instill fear into the Allied nations that they might become involved in a useless, disastrous war. Their first blind reaction to this sudden view was to avoid the war if some face-saving way could be found. The Axis arranged for this, insisting on immediate conference and action, before extended reflection should suggest some other solution.

Suppose the Allies had not yielded. Would the Axis have given way, or would they have fought? Had not Germany, by disclosing the deployment of its forces, violated the military principle of acting by surprise? Only two men can positively answer the first of

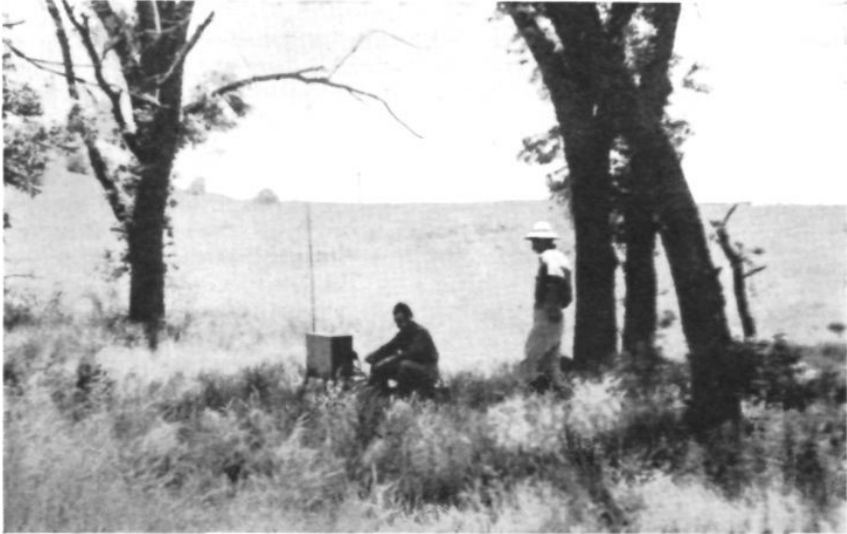
these two questions. These two are the German Führer and the Italian Duce, and they have not told us. We do not know, and may never know, what their real intentions were. The evidence available at this time indicates that the Axis was prepared for war, better so than the Allies.

While the mobilization of the German regular divisions was openly made, Italian mobilization was secret—remarkably so. Allowing for 10 divisions on the French front, and assuming that Hungary would watch Yugoslavia (expected, however, to be neutral), 30 first-class Italian divisions remained. The Germans could add 43 second-class divisions to these, the mobilization of which had been only partly observed by the Allies.

There is no information yet as to how the Axis intended to use these 73 divisions. Germany and Italy, on 26 September, arranged for a joint GHQ at Munich to open on 28 September. This is an indication that the Axis intended to operate in south Germany, possibly after the Allies had become partially exhausted through frontal attacks on the German west defenses. The presence of the strong German artillery force in rear of these defences would be consistent with this view.

Undoubtedly the Axis preferred sincerely to avoid a war, provided its mission could be accomplished. It was, nevertheless, well prepared for war.

As to the second question—whether disclosure of German troop movements violated the principle of surprise—the answer is, it did not. The Sudeten operation on the part of the Axis was an example of the change in method of application of this principle. It combined military with psychological factors. Surprise was distributed between fear, widely and suddenly disseminated, and certain military measures carefully hidden. It was a modern way, and it worked.



NEAR QUARRY HILL, GFX-8

## Has the Close-Support Problem Been Solved?

BY CAPTAIN CONRAD L. BOYLE, FA

### INTRODUCTION

**C**LOSE support of advancing troops by artillery fire was practically nonexistent during the World War, except where a rolling barrage was used and the pattern of the attack was required to conform rigidly to this support. Close support by observed fire, generally acknowledged to be the most efficient type, could not be used because of a definite lack of communication between the guns and artillerymen forward with the assault elements. No agency of communication existed at that time which would allow forward observers dependable control of the fire power available to them.

And, it would seem, none is available today with present communication equipment!

This statement is made with a full

knowledge of recent advances claimed in communication materiel, technique, and tactics. Some of these so-called advances can seriously be questioned, as they are, in reality, backward steps and will contribute little to the final solution of our close-support problem.

The problem is, first, to get ammunition to the guns in quantity; and second, to get it from the guns to the target. The first is difficult, back-breaking labor; the second a purely technical problem. Fortunately the problem is not insoluble. But it consists, not in waiting for some great discovery "to come out of the blue," but in being practical and utilizing properly developments already at hand.

The ammunition-supply feature of the problem of close support will not be discussed herein, except to point out briefly that solutions disregarding it will be

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fundamentally unsound. The other phase, that of fire direction and gunnery, depends for its solution on perfecting two items; Communication and methods of employment. Of the two, communication now presents the most vital, pressing, and perplexing features; and upon it also rests that of the methods of employment. Therefore the communication elements of our question will be discussed first.

### PART I—THE COMMUNICATION QUESTION

#### *Will Our Communication Become of Age?*

Perhaps before becoming too feelingly involved in the subject of field artillery communication we should define the term "of age." Many students of the problem visualize communication equipment, yet to be developed, which will be light and portable; such that instant and complete communication for direct-support battalions of field artillery will result in merely setting up the necessary terminal pieces of equipment. The hundred per cent functioning of this equipment will not be subject to the vagaries of terrain or weather, time-and-space element between units, mutual interference between our own radio sets, or, above all, planned interference by the enemy. In short, it will work. And will give us complete and satisfactory communication under any and all circumstances. If we wish to employ this equipment among trees, in a depression, behind a terrain feature, in rain and fog, or to operate it at twice the normal range of the equipment, we may do so. When we get such equipment we will be able to say that our communication has truly become of age.

Solution of the communication problem will allow us to devote our energies along other lines which at present are in a state of flux partly because of inadequate communication facilities. For example, in our present set-

up we have guns which will shoot 12,000 yards and more, but when observation post and guns are separated by only a fraction of that distance the guns must be moved because of the difficulty of installing and maintaining communication over long distances in the assault area.

What loss! What inefficiency! Yet with proper communication equipment there would be no need to displace the guns until they had reached their maximum range. We could control their fire power with ease up to and beyond that maximum range.

Why does this sad condition exist? Everyone realizes that our primary means of communication is wire. We have nothing better to take its place. The amount of wire which we can install and maintain in the forward combat areas is dependent partly on the training of the personnel, partly on supply, and partly on our own and hostile activity. We may be able to lay and maintain wire for a matter of from 1,000 to 3,000 yards in the forward areas. To lay and maintain it 12,000 yards or more we know we cannot do. And so we are forced to move our guns frequently.

This greatly reduces fire power. It also complicates the problem of ammunition supply almost beyond hope of solution. This problem is of equal importance with the purely technical one of controlling fire power, and is more likely to slow us up and break our backs. Give us proper communication equipment if we are to utilize the full range of our cannon so as to facilitate ammunition supply and maintain that flexibility of fire toward which we are ever striving. If this is not done, there will be a trend toward short-range weapons and communication gadgets. Then the consequent frequency of displacement will add to the burden of ammunition supply until it becomes intolerable.

## HAS THE CLOSE-SUPPORT PROBLEM BEEN SOLVED?

Long-range weapons with no dead space, together with communication equipment which would allow us to use the full range of these weapons, would eliminate also much of the ever present problem of reconnaissance, selection, and occupation of position. Practically all that we would need ask of our gun positions is that they be accessible and have cover. The batteries of a battalion would not have to be jammed into a small area for purposes of control. The hard fought "last mile" of march into position would largely disappear; which of course would ease our transport problem tremendously.

Our ideas on gunnery and methods of employment would be radically changed. With long-range weapons and reliable communication, we would have direct-support battalions worthy of the name. We would have flexible units—easily controlled and capable of sustained support of the infantry.

Now that we have a picture of what is required, how are we going to obtain such equipment? Can our old friend "wire" solve the problem? Obviously not, because the time-and-space element of laying two strands of wire between two widely separated points, one of which is constantly on the move, alone would defeat us. Not to mention the impossible task of supplying and servicing thousands of yards of wire in the assault areas. On the other hand, we have an agency of communication which requires only terminal pieces of equipment, and uses the air for the necessary connecting link. With this equipment, the time-and-space element of installing and maintaining the connecting media does not exist.

This agency is radio. It is our only hope in solving the communication phase of the close-support problem.

If we grade our electrical means of communication from front to rear in the order in which they can best be used, we find radio is the only one which can potentially fill the needs of the assault

troops; while wire becomes increasingly dependable and important as we leave the assault areas. It is a cardinal principle, however, that all possible communication agencies be kept ready and in perfect condition against possible needs. Especially is this true as we get nearer the front.

The question "Will our communication become of age?" can now be answered by expressing doubt—doubt at least that the immediate future promises a perfect solution. To the query "Has radio become of age?" the only answer is a forceful NO!

### *Can Radio Become of Age?*

To this question the answer is "Yes," but there are few who take this stand; and the ways and means of attaining the solution are not always obvious. In continuing this discussion it is hoped to bring others to this viewpoint, for it is believed that radio can, must, and eventually will solve our problem.

Our greatest asset in using radio—the use of the air as a connecting medium—is likewise our greatest weakness. This is because all sets, both friendly and hostile, use this medium also. Hence there are bound to be varying amounts of interference and intercept, either planned or unplanned. Intercept may be reduced and its ill effects nullified by the use of proper censorship, net control, the use of codes and ciphers, and (the goniometric phase) by not locating radios too near important points, and by moving them frequently. The interference problem is equally important if not more so, *and it has not been solved*. We shall deal more particularly with it.

Mutual interference and sufficient operating channels are questions of basic importance, but they can be solved by designing proper equipment. How much damage will result to our communication if the enemy should choose to sacrifice his own radio communication and

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pour interference on the air in the hope of blotting out ours? Great damage! There can be no argument about that; the briefest consideration of how closely our close-support is tied to the assumption of continuous and reliable radio communication, provides immediate answer. An alert and resourceful enemy, especially one who is on the defensive and has other means of communication, will not hesitate to resort to interference. And he will do it at the critical stages of the action, at times when we are least prepared, and when it will hurt us most.

Furthermore, our greatest danger from hostile radio interference will occur when we place our main reliance on short-wave voice radio of low power. Voice radio is the easiest type of all to blank out; and when it is very low power—well, that is just making it too simple for the enemy. In this statement there is a warning for the whole Army, and especially for the Field Artillery. There is no economy, nor scarcely common sense, even, in building plans and methods of employment based on equipment which works only in peacetime. We had best not embark on a program of constructing our whole system of close support around ultra-short-wave voice radio which operates on "flea power."

From our standpoint the answer to the problem of 100% communication rests on the following points; choice of an operating band, power, and the proper design of equipment. Needless to say there can never be 100% communication as long as the threat of enemy interference is with us. This threat must be eliminated.

### *Operating Band*

Of the three factors mentioned above perhaps the most important is the choice of an operating band. A bad choice in the direction of the longer waves of the frequency spectrum will decrease the

efficiency of our transmitters because we will be unable to carry and use efficient antennas in the assault areas. A bad choice in the direction of the very short waves of the spectrum will result in less than 100% dependability of equipment, owing to the shadow and dead-space effect of the shorter waves, which take on the properties of light.

In this discussion perhaps it would be better to use the term wave-length, instead of frequency as is the common practice, since there is a definite relation between the length of the wave and the length of antenna required for maximum efficiency. Perhaps it might be well to point out the relation between frequency and the length of the wave. The number of waves per second (frequency) times the length of the wave equals the speed of transmission of all wave action in free space (186,000 mi./sec.). It is easy to see that, since the product of the two equals a constant, as one becomes larger the other must become smaller. Suffice to say that high frequencies mean short waves and long waves mean low frequencies.

The relation between wave-length and the length of antenna necessary for efficient operation is easily shown. For our purposes the best antenna system to use is the quarter-wave because it represents the least amount of equipment. For most efficient operation the quarter-wave antenna requires that the radiating portion be one quarter of the wavelength. While the antenna can be any fraction of the wave-length and still operate, maximum efficiency, for our purposes, will be obtained only when the antenna is one-quarter of the wavelength.

A 100-meter wave, then, requires a 25-meter antenna; a 60-meter wave a 15-meter antenna; a 40-meter wave a 10 - meter antenna; a 10 - meter wave a 2½-meter antenna, and so on. Since to carry equipment by man power is always a problem, and large antenna

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arrays are hard to manage as well as dangerous to use near the front-lines, it is easy to see why we should turn to the shortest practicable waves for our operation.

Short waves mean simple antenna equipment, which should ever be our goal. However, there is a definite limit beyond which we cannot go in shortening the wave-length and still maintain reliable communication. It is essential that we continually strive for 100% communication, in solving our close-support problem.

All of us are familiar with the properties of light transmission, how buildings and terrain masses cause dead-space and prevent communication. All are also familiar with the fact that the length of the waves of the visible portion of the spectrum are very short. It would seem reasonable to expect, then, that shortening the length of radio waves would cause these waves to take on, in increasing amounts, the properties of light. This is true.

All know that light transmission as a means of communication for the field artillery is a *gadget* capable of being used only in special situations. Aside from the danger of hostile interception when using light signals, the property which causes this method to be a gadget is dead-space.

In our quest for 100% communication equipment we must stay well away from all gadgets which have dead-space. Communication must never fail because our men are unable to find high ground from which to operate their equipment. Our people with the front-line troops will, more often than not, be hunting holes instead of hills.

Present equipment very definitely proves that waves of as short as ten meters in length have too much dead-space for reliable communication. Power, of course, is a factor in the amount of dead-space a certain wave-length will have. Generally, increasing power on a

certain wave-length will reduce the dead-space. However, at present only a very limited amount of power can be used on ten-meter equipment capable of being carried in the field by man-power. Later, as the art of radio becomes more perfected the picture as to ten-meter and shorter waves may change somewhat. At the present time waves of ten meters or less in length are definitely unsatisfactory for our purpose even though highly satisfactory from the standpoint of size and efficiency of antenna.

If ten-meter waves are unsatisfactory from the standpoint of dead-space what happens when the wave-length is increased? The longer the wave the less the dead space. This fact is a fundamental law of transmission of radio waves and can be stated about as follows: Given a certain amount of power, the longer the wave-length the greater the tendency of the wave to follow the folds of the ground, or the less the dead-space.

As we increase the wave-length from ten to sixty meters we come to the frequency of that old reliable field artillery set, the SCR 161. Although an extremely low-power and (today) antiquated piece of equipment, most of us will agree that this set proves that sixty-meter waves are satisfactory for our purposes, as far as freedom from dead-space is concerned.

Ten-meter waves are unsatisfactory; sixty-meter waves are satisfactory. Ten-meter waves require an antenna  $2\frac{1}{2}$  meters in length, which is highly desirable; sixty-meter waves an antenna 15 meters in length, which is less desirable. It is easy to see that our choice of a wave band must be a compromise which will best balance the conflicting items of antenna and dead-space. A glance at Figure 1 will perhaps make the problem more clear.

Based on the experience of radio amateurs it would seem probable that our band will be between forty and sixty

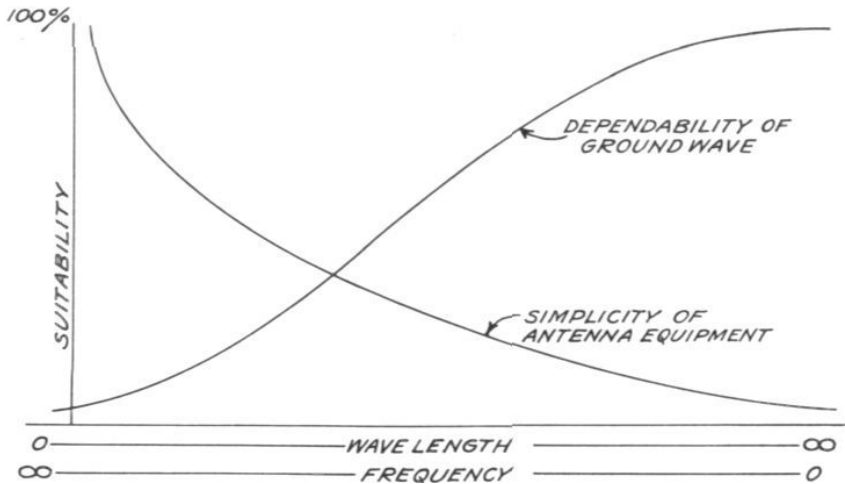


FIGURE 1

meters; probably near the present band of the SCR 161 set. Note that the 15-meter antenna of the 60-meter wave is one we have some chance of approaching in a field set.

One often hears discussions which indicate that directional or *beam* antennas will solve the dead-space problem of the shorter waves by concentrating the bulk of the power in one direction. Directional antennas, of course, do concentrate most of the power in one direction. This directional effect is obtained by building reflectors behind the transmitting antenna, and is done successfully by certain commercial stations and amateurs who can build an antenna for a certain wave-length and direction. If we were to use such a system we would be committed to using waves of one meter or less, in order to get small reflectors, since the size of the reflector is in direct proportion to the shortness of the wave. The idea would seem to be impractical because we would be committed to using one channel, or else build, issue and carry a separate antenna for each channel in use. In any event, directional antennas would not solve the inherent

disadvantages of the ultra-short waves; namely, their inability or refusal to follow the folds of the ground. The use of ultra-short waves, while more free from static interference than longer waves, probably will not hinder the enemy in his interference plans, but will help him, for he has only to hunt a hilltop and sweep the crests from which we must operate. The enemy could very well use a wide-angle directional antenna system for this purpose.

Other arguments have been advanced which indicate that directional transmission will eliminate enemy intercept and goniometric activity. Of course, waves of one meter or less in length are required for directional transmission; and they only exaggerate the ruinous dead-space effect. The action of these ultra-ultra short waves is, of course, comparable to light without the bad feature of visibility. It might be well to point out again that our equipment must be used with 100% reliability to control the fire power of our cannon up to their maximum range. The orientation of highly directional equipment beyond the visible range, with one station constantly on the



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move and with only a general direction of movement known, at night, and under all conditions of terrain and weather, will likely prove an insurmountable obstacle. It might be better to have equipment which, once set up, will guarantee communication under all conditions of terrain and weather. It may be possible to reduce the danger of enemy goniometric and intercept activity by other means.

Having arrived at a wave band short enough to allow simple, efficient antennas and still give reliable communication (which must have first consideration), it only remains to solve the question of power and equipment design.

### *Power*

The power question is simple and answers itself. If our enemy, on a given channel, can project more power into our operating area than we can ourselves, radio communication will fail. On the other hand, if we have the preponderance of power we can function. It follows at once, then, that having determined the maximum weight requirements of our sets, we should have the most efficient and powerful transmitters available under those weight requirements. Relatively high-power transmitters are the answer to our problem.

At this point it might be well to mention that at the present state of the art of radio, the maximum output to be expected of portable equipment on channels suitable for our purposes should be in the neighborhood of forty or fifty watts.

At the first mention of power, a chorus of disapproval is raised, based on the problem of mutual interference between our own sets. It is obvious, regardless of the number of channels available, that there must come a time on a single front when a channel must be duplicated, or used again by another organization. In the past, the power of our equipment has deliberately been limited in order to allow

it a working range no greater than the lateral distance between two organizations using the same channel. Based on 20-kilocycle separation, the SCR 161 set was designed to have a range of from 5 to 7 miles, since channels would not need to be repeated under that distance. It is easy to see that if channel separation could be reduced to five kilocycles, the working range could be increased four times. Today procurement of equipment which will operate on five- (or even two-) kilocycle separation is a simple matter of proper design.

The above idea or reason for limiting power is a fallacy, as can easily be proven. Let us take the case of two SCR 161 sets separated by a distance of eight miles, but operating on the same channel. The present theory is that since these two nets are separated by a distance greater than the maximum range of the set (five miles, say), signals from one net will not be received by the other. True, the low-gain receiver of the SCR 161 will not receive the weak signal of a set eight miles away, but the signal is present and a higher-gain receiver would pick it up. The power generated by the SCR 161 transmitter is sufficient to work twenty or more miles provided we used a better receiver. In short, the only reason we can work SCR 161 nets as we do at present is because of the low-gain receivers of the SCR 161. Receivers with lower gain than the SCR 161 would allow us to use higher power transmitters!

To put the question in another way: A low-power transmitter, working with a high-gain receiver, will give the same results as a high-power transmitter working with a low-gain receiver. We must, then, have lower-gain, or better yet, variable-gain receivers if we are to work high-power transmitters over short distances, without mutual interference.

The answer to our problem of mutual interference, then, is first to design

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equipment which will work on five or less kilocycles separation, in order to repeat channels at twenty miles instead of at five miles as at present. Next, since we must use high power to confound the enemy, we must also use low-gain receivers in order to prevent mutual interference. Low-gain receivers will, in effect, reject all signals below a certain signal strength level. Our transmitters must, then, place signals into our receivers sufficiently strong that the effective signal above this "rejection level" of our receivers will operate them over the desired range.

With high-power transmitters and low-gain receivers the enemy must then build an interference level up to the "rejection level" of our receivers before he can bother us. If we refer to Figure 2, the line M N represents the "rejection level" of our receivers. Each of our transmitters must, then, place a signal into the receiver with which it is working, high enough above the

"rejection level" of the receiver to operate it. Of course, the enemy must force signals up above the line M N before he can interfere with our equipment. It is easy to see that the more power our transmitters can place on the air, the higher we can push the "rejection level" of our receivers and, of course, the harder the task of interference becomes for our enemy.

Perhaps it would be well to point out that efficient transmitters are entirely dependent upon efficient antennas for effective operation. Without efficient antennas, power cannot be placed on the air. Power is useless to us, of course, unless we can place it in the air in the form of electromagnetic or radio waves which will do our work for us.

At this point it would be well to go into the difficulties and problems of an enemy in his attempts to block out the entire band of our receiver, or even to interfere with a small portion of it. The enemy can do two things: Have one very

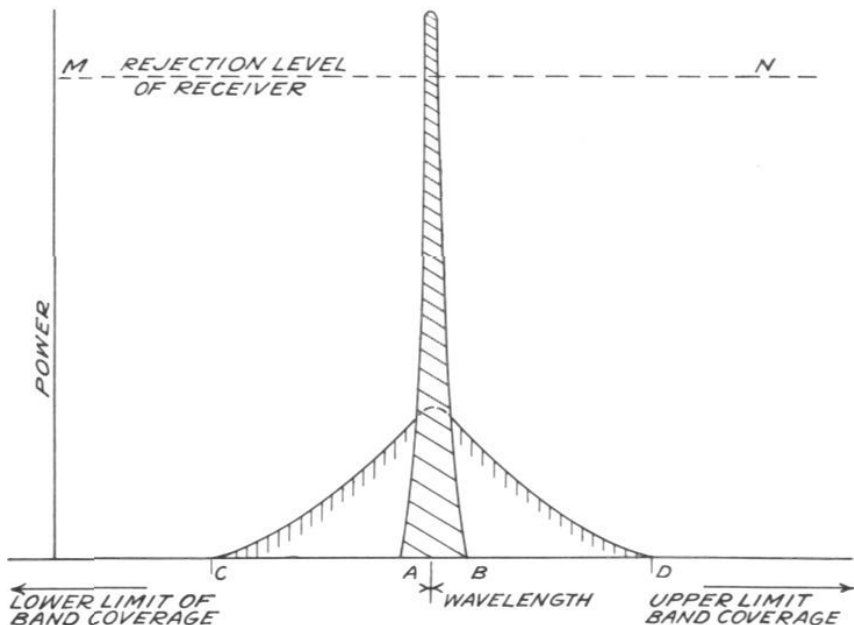


FIGURE 2

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high-power interference machine centrally located somewhere in the back areas; and with it attempt to block the entire band; or he can have several such machines of smaller power (and more portability) nearer the lines, and attempt to have each one block a portion of the band.

The idea of one central interference machine would be faulty for two reasons: First, the machine would be so far to the rear that the interference would lose too much strength by attenuation or absorption by the time it reached our receivers; second, if we glance at Figure 2 again, it will at once become apparent that in order to block the entire band, the interference level would have to be built above the line *M N over the entire band*. Since our set should have a band about 1000 kilocycles wide, it is easy to see that a tremendous amount of power would be required, even if such a versatile machine could be built, which is doubtful. It is doubtful also if the enemy could carry so much power in the field.

The second idea of using many machines would have more chance of success. As these machines would be closer to the front lines, there would be less signal loss due to attenuation; a much narrower interference signal from the standpoint of band coverage would be required. Since such a system would take practically a machine for each net of ours in operation, it at once becomes apparent that a great deal of men, equipment and organization would be required; so much that, even if sure of success, it is doubtful if it would pay the enemy to commit so many of his resources to such a task.

Some students of this question advocate the use of a spark gap, such as was used in the old spark transmitters, which would develop a shock action over the entire band. Of course lightning causes the same kind of shock action, yet code operators have worked even the SCR 161 set through electrical storms.

(However, for voice equipment, the situation is very different.)

It seems reasonable that equipment can be so built that an enemy would find the task of blocking an entire band impossible, and the interfering with even a few channels difficult. However, research should be started in this field, if only to see what may be expected and so that proper plans can be made for combating interference.

We should have many channels available. Each battalion should have its channels evenly distributed over the entire band, and each net should have an alternate channel, widely separated from its primary channel, to which it could transfer in case of trouble. The primary channels of one brigade would very well be the alternate channels of an adjacent brigade.

At this time it should be pointed out that our receivers should not be entirely low-gain, but should be variable-gain. In other words, the receiver should be capable of being made either high- or low-gain by merely turning a control. We then could vary the *rejection level* by the simple expedient of turning a knob!

Let us consider the value of this. SCR 161 operators often have wished for extra power in situations where they needed to work over greater-than-normal distances or under bad operating conditions. In the latter situation much of the signal strength is absorbed and the signal arrives at the receiving set too weak to operate the receiver. With present equipment, when sets are located in woods or other unfavorable operating positions, our normal range is cut down tremendously. However, with variable-gain receivers, we would merely have to turn a knob and utilize as much of the available power as needed, since with higher-power transmitters the signal will be present in strength. The chance of mutual interference will be very slight

because, with five or less kilocycles channel separation, the nearest net using the same channel will be twenty or more miles away, and the signals from this net will reach our receivers so weak they will still be below the lower than normal *rejection level* of our receivers.

The principle of high-power transmitters and low-gain receivers has been tried out in the commercial broadcast field, and it works perfectly. The Crosley station WLW increased its power to 500,000 watts for the same reason that we must increase our power to the maximum. Static is nature's interference level and, in order to whip static, WLW had to increase its power so that each subscriber or listener could build the rejection level of his set above the interference level of the static. Listeners did this by merely turning down the volume. Of course, those listeners near the transmitter could always pick off the cream of the signal above the static level and get good reception. However, with a weak signal, those people some distance away from the transmitter had to go down into the static level to hear the station at all, and had poor reception. By placing a whopping big signal into the set of each listener, WLW was able to drop the static level out of the picture for a great many more people. Result for WLW — more listeners, and, of course, more money.

#### *Design*

Once the operating band and the power question have been decided, it only remains to design efficient equipment which will meet our requirements. The first consideration in designing any piece of military equipment is that it accomplish our purpose; in other words, it must work. Since transportation is always a problem, weight is the next consideration. However, we should never sacrifice sturdiness and the ability to take knocks merely to gain a few ounces of weight, because flimsy equipment invites

breakdowns. Our forward details can easily carry forty or sixty pounds of equipment, provided it is broken into about four loads capable of being carried by two or three men as is the SCR 161 set. There is little doubt that a relatively high-power field set, embodying the features just discussed, can be built, which will weigh about sixty pounds. However, if it weighed as much as the SCR 161 set, no one should complain.

Our set must use continuous-wave telegraphy because that type of radio transmission allows us to build a field set which is the cheapest, simplest in design, smallest number of parts, most reliable in operation, lightest in weight, and which delivers the highest power. To use voice or tone modulation it would first be necessary to build the above basic equipment, and then add gadgets to it which would not only increase the weight by at least 50%, but cut down the power by a tremendous amount.

At once the question of voice versus telegraphy comes up, and now is the time to reach a settlement. Figure 2 gives a comparison between voice and continuous-wave telegraphy from the standpoint of power and channel separation. The curves of this figure represent the frequency coverage of a given band, and the power peak obtained from a continuous-wave signal, as compared to that of a voice signal using the same power, on a given wave length or channel which we will call *X*. It will be noticed that the base of the curve CD, representing voice radio, is much broader than the continuous-wave curve AB. This is because frequencies above and below the carrier wave length of frequency *X*, equal to the range of the human voice, must be transmitted with fidelity in order to have an intelligible voice signal. The continuous-wave signal, on the other hand, requires power on only the one wave length or frequency *X*, and of course, the base is

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narrow and the power curve on the single frequency shoots up.

If we were to integrate the two curves, we would obtain the area under each curve, representing the power generated by the transmitter. It is at once apparent, since the area under each curve must be the same for a given transmitter, that if we broaden the base of the curve the way the voice signal does, then the peak must drop. Conversely, as we narrow the base we drive the peak of the curve higher. This at once explains why it is possible with the same power to drive a continuous-wave signal a much greater distance than a voice signal. With voice we dissipate power, and all to no purpose.

Figure 2 shows also that, in order to whip hostile interference, we should use as powerful and stable transmitters as we are able to build within our weight requirements. The higher we drive the peak of the curve, the higher we can build the rejection level of our receivers, and the more difficult we make the solution of the interference problem for the enemy. With voice radio we have little chance to do this and still keep within the weight requirements, because the area under the curve increases and absorbs the additional power without driving the peak appreciably higher.

There is no merit in radio-telephone for military communication purposes in the front-line areas! We require many radio channels on a given front, as has been stated before. The horizontal line in Figure 2 represents the entire band covering possible to build into a set. Notice that the voice radio, with its broad base, occupies a good deal more space on the band than does the continuous wave of the same power. In other words, with voice radio we have fewer channels available than if we use continuous wave.

To add voice to any piece of radio equipment, working in the channels which we must use, adds much weight, reduces the number of available channels,

complicates the design and amount of equipment, and cuts power; in short, does everything which we must avoid. For some strange reason the fact that telegraphy is faster and more accurate than telephony in the transmission of messages, whether using wire or radio, has received insufficient consideration. The only real reason that can be advanced in favor of voice over telegraphy is that it is easier to train operators to use voice equipment than to teach them code.

The real truth is that voice, from a radio standpoint, is very susceptible to interference, planned or otherwise, while code in the form of continuous-wave telegraphy is not. It is easy to see why this is so, for in order to reproduce intelligible voice signals, all the tones of the voice must be reproduced exactly, else we have unintelligible "mush." On the other hand, code is merely a succession of sounds of any desired tone or frequency, so it is easy to pick code out of a hash of sounds. Operators do this with ease. For proof, we have only to listen in on any amateur band where code is used. These code bands are absolutely unregulated and are simply a mass of signals, through which thousands of amateurs work every day.

To interfere with voice transmission, we have only to garble the tones of the voice; whereas, in order to stop code transmission, the signal must be drowned out. In brief, voice can be rendered useless under conditions which would not materially affect code.

Of what value, then, to use voice, although it may be easier to train operators, if when we most need communication it is going to fail? We of the field artillery should take a sensible view about this matter of voice, and place greater emphasis on reliability of radio equipment. The training of code operators is not the fearful thing it is reputed to be. The problem is greatly simplified

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by the fact that the things we must tell each other in the front lines are relatively few, and can easily be handled by a few prearranged signals. The best example of the use of prearranged signals is a simple code for transmitting fire commands from observation post to guns.

Without becoming too technical or going into the matter in great detail, we shall discuss, finally, the general features which should be embodied in a short-wave radio set for employment with close-support artillery. In other words, here are the "caliber board" requirements:

1. *General. a.* For use with close-support artillery we should have a continuous-wave radio telegraph set operating on about sixty meters.

*b.* It should be capable of being carried by man power. Preferably it should weigh not more than 60 pounds, and be capable of being broken into not more than four loads.

*c.* The entire set should be sturdy and capable of operation in all kinds of weather. Duraluminum to be used wherever possible, for lightness with strength.

2. *Transmitter. a.* To be stable, with a channel separation of five kilocycles or less.

*b.* The power output to be as high as possible under the weight requirements. Source of power to be hand generator, this having been proved to be the most efficient method of "converting army beans into watts."

3. *Receiver. a.* To be a superheterodyne-type receiver, with stability equal to that of the transmitter.

*b.* To be a variable-gain receiver of the single-signal type.

*c.* To use a unit-type battery for power.

4. *Antenna. a.* To be of the quarter-wave, vertical type. Mast sections jointed in 3½-ft. lengths.

*b.* The antenna to tune with as few as one mast section, in order to obtain a transmitter of variable output.

## PART II—METHODS OF EMPLOYMENT

### *Too Much Centralization*

The present methods of fire control recognize the principle that the individual who identifies the target on the ground must have some control of the fire power which is to be used against the target. Unquestionably the above principle is sound, and its adoption now allows some measure of close support by observed-fire methods where little or none was available before. However, in applying this doctrine to close-support fires, we have adopted, with one sound idea, the very unsound scheme of extremely centralized control. The one valuable thing about prior methods of fire direction, so far as observed-fire or close-support purposes was concerned, was the decentralization of control. It now seems we have lost it.

In general, direct-support artillery fires two types of missions: First, *massed* fire missions within the zone of action of the supported unit, at the will of the battalion commander, as well as outside the zone of action of the supported unit at the will of the division or higher commander; and, second, *close-support* missions within the narrow zone of action of the supported infantry. The use of massed fires requires the greatest amount of control possible, since much detailed effort is required in properly coordinating and timing the fires of the individual batteries. On the other hand, for best results, observed fires in close support of advancing troops call for little or no control by the battalion commander. They do call, however, for a great amount of detailed control by the forward observers.

Our present system handles the problem of massed fire nicely, but is too

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rigid and susceptible of break-down to allow efficient close support by observed fire. What we want is a system of fire direction that will allow the battalion commander to switch from centralized to decentralized control at will, and at a moment's notice. Furthermore, the system should be such that when battalion control fails, even though momentarily, the elements of the battalion which are still intact can continue functioning on close-support missions within the narrow zones of the supported units.

Does our present system of fire direction allow such flexibility? Definitely not. The system is built on rigid control by the battalion commander, to include control of all agencies of forward observation available for close-support purposes. Under this system it is obvious that a breakdown at the battalion command post will render all batteries of the battalion useless even though they have suffered no trouble and are still intact. From a tactical standpoint our present battalion is nothing less than an immense twelve-gun battery. In the interests of economy and reduction of overhead, perhaps we ought to carry this to the bitter end in the matters of administration, supply, and messing. Is such a system desirable? We haven't come to it yet.

While it is necessary for the battalion to have control in the proper handling of massed fires, the same is not true of close-support fires. In order to render proper close support, we should place forward many observers, who should have direct control of the guns as long as they are allowed to fire on close-support missions within the narrow zones of action of the supported units. It should be noted that our present method has only two forward observers per battalion (liaison officers) who exercise only *indirect control* of the guns through the battalion fire-direction center.

Is centralized control in battle desirable? There is no doubt, even though our present

methods are somewhat complicated, that centralized control works in peace. However, from all available information, battle makes for decentralization instead of centralization, for utmost confusion instead of calm, for a decided lack of information and control, and for a minimum of communication. In short, battle emphasizes many undesirable things which are not present in peacetime maneuvering. A method of employment which, in order to operate, calls for centralized control in the face of decentralization, perfect operating conditions in the face of confusion, a perfect communication system in the face of certain breakdown, and a complicated procedure when even the simplest will fail, is a "bottle neck" which cannot be expected to function very long under battle conditions.

There is little need to amplify this theme as far as the present system of fire direction is concerned. The need of perfect communication is apparent, since a breakdown of the communication from battalion to firing battery will render that battery without the forward observation necessary for close support, while a breakdown of communication between the liaison officer and battalion will leave an entire assault battalion without artillery support. The existence of a "bottle neck" at the battalion (from a communication standpoint) is also apparent, and a breakdown of communication at the battalion can render all guns of the battalion useless for close-support purposes.

Under the present system of fire direction, the chain of communication and events from the time the assault commander asks for fire until the projectiles leave the guns is absurdly long. For example: The chain goes by voice from the assault commander to the liaison officer, by voice to the telephone operator with the liaison officer, by telephone to the telephone operator with the forward radio set, by voice to the forward radio

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operator, over the radio channel to the receiving operator, by voice to the fire-direction center where the information is converted into firing commands, by voice to the telephone operator, through two switchboards over a considerable amount of wire to the telephone operator at the guns, who gives it by voice to battery executive or to the gun crews.

General Motors in their recent small war with labor, much to their sorrow, found the difference between production under peace and battle conditions. Labor had merely to stop production on one important item which was necessary in the assembly of a particular automobile, and all production on that type of car ceased even though only a portion of the workers were affected. And so it will be with military units in battle which require highly centralized control in order to function. Especially if the central control station itself fails.

The employment of direct-support battalions on close-support missions using *only* the fire-direction center for fire control is over-emphasizing that agency. The fire-direction center should be an agency used by the battalion commander only for coordinating the fires of more than one battery on a single target or area which cannot be efficiently neutralized by a single battery.

### *A Remedy*

How can we obtain at will the control necessary for massing fire, or the decentralization of control necessary for close-support fires? The method of employment illustrated by Figure 3 will solve the problem from a communication as well as from a command standpoint. It might be well to explain this diagram, although it is practically self-explanatory, and then list the advantages of such a method of employment.

As shown by Figure 3, each firing battery would place two observing parties with each infantry assault commander. Each artillery observer would have contact

with, and fire his own battery when one battery was sufficient to neutralize a single target. When more than one battery was needed, the battalion would be called upon for additional fire in the conventional manner. Communication would be accomplished using the relatively high-power radio equipment previously described in this article, together with wire, visual, and such other means as are available. The advantages of this system would be numerous; a few might be mentioned:

1. Command would be decentralized on close-support missions, and the firing battery commander brought back to his former high estate. The battalion staff would be reduced in size, and brought into the picture only when the fire of more than one battery was required on a target. This would reduce to a minimum the activity and confusion around our present fire-direction center.

2. The control necessary for massing the battalion on targets within or without the normal sector would be available.

3. When the battalion loses control of, or contact with its batteries, they would still function on their close-support missions.

4. From a communication standpoint, the set-up would be most desirable and represent the best possible use of our radio equipment. By organizing this equipment into fire-control nets, undesirable characteristics and limitations of radio are minimized. For instance, much of the need for cryptography would cease to exist since we would be using simple, prearranged fire-control signals which, even if intercepted and understood, would have little value to the enemy. Also, radio equipment need be used only during the action of battle when, because of movement, hostile interception and radio direction-finding activity is least dangerous. However, the system, whether using radio, wire, visual or other available means of communication,



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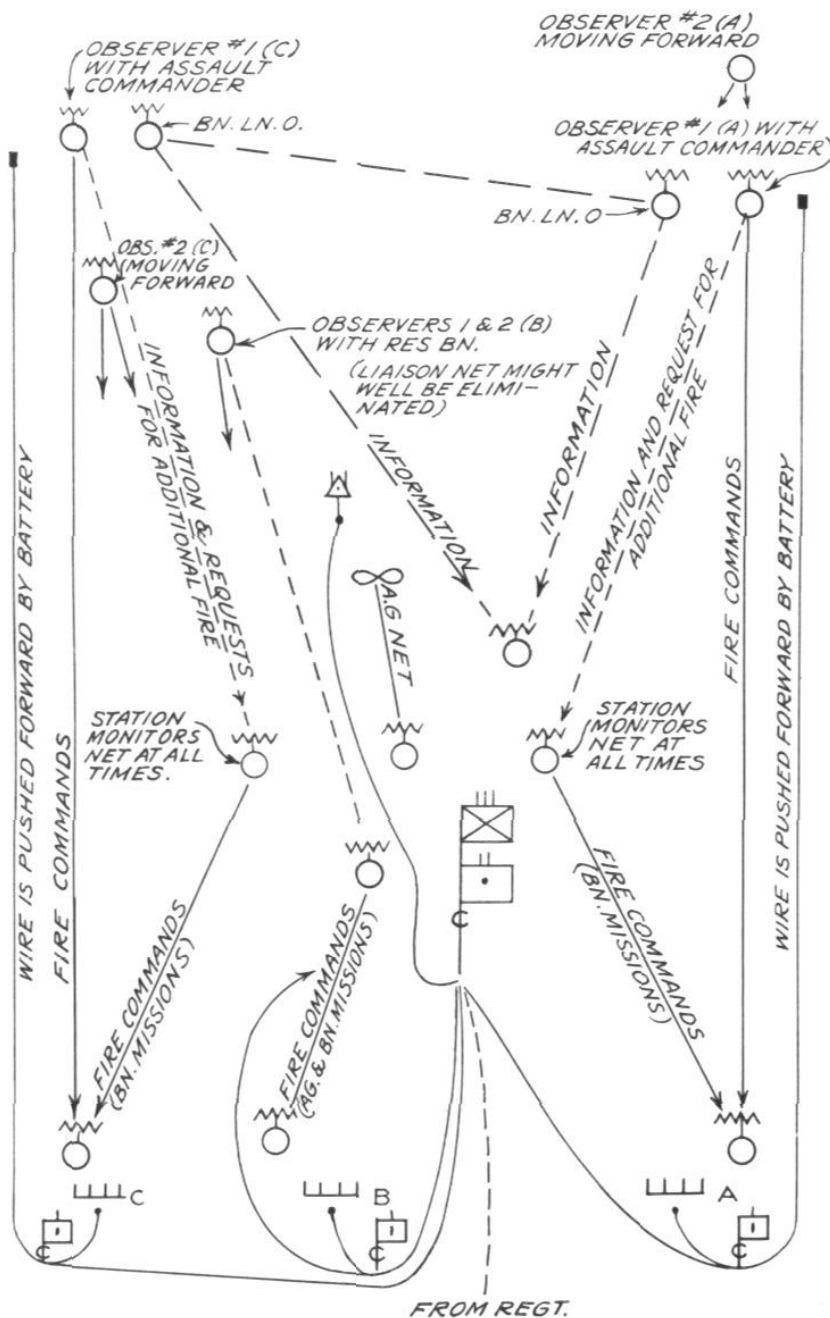


FIGURE 3

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would be less liable to disastrous breakdown than under the present arrangement, because there would be no "bottle neck."

5. The ill effect of a breakdown in communications would be confined to, or localized at, the immediate area of the breakdown. A breakdown at the battalion would prevent only the massed firing of the battalion. A breakdown of one observing party would still leave one forward unit with the assault commander. If a breakdown occurred in both forward parties, perhaps one unit might be salvaged from the remains of the two former units. In any event, a complete breakdown of communication with one assault commander would still leave the guns available to the artillery battalion commander, to be used on massed fire missions in other parts of the sector. A breakdown at a gun position would still leave the forward observers of that unit free to ask fire from the remainder of the battalion.

6. Since the reserve battalion probably would not be committed during the early stages of battle, the artillery battalion commander would have at his disposal one general-purpose battery which could be used to good advantage on air-ground missions, and to reenforce, on call from forward observers, the fire with either assault battalion. It is possible that two batteries would generally be sufficient on most calls for increased fire power. However, when the reserve battalion of infantry is committed, there would be with it the necessary artillery observers to allow it excellent close support by means of observed fire.

7. The placing of two observing parties with each assault commander would allow constant and flexible observation. One observer could stay at an observation post in the rear, and control the situation, while the other observer went forward, alone or with the assault commander, to better observation. Then the first observer could start a leap-frogging movement. Under this system

excellent results would be obtained from the firing battery while on its close-support mission. Much of the time, under the present method of employment, the liaison officer is useless for close-support purposes along with the fire power of the cannon, because he is moving across terrain from which he can see nothing.

8. The placing of communication equipment as called for by the proposed plan would find the artillery battalion ready, at all times, to function as a whole or in part, without special plans being made to "farm out" communication equipment from the battalion.

9. The firing batteries could start functioning on their close-support missions, using forward observation, as soon as they arrived in position. The massed fire missions of the battalion could be undertaken as soon as the survey work or the necessary registration is completed. If necessary, the gunnery officer could accomplish the registration using radio, by breaking into the battery fire-control nets at will. Wire could be used as it became available. However, if the time-and-space element did not justify the laying of wire to all firing batteries of the battalion or even to a single battery, then radio could continue to be the connecting link.

10. The use of radio, in the manner outlined in this method of employment, would allow the battalion to be well dispersed, both laterally and in depth if the need should arise, since dispersion of the battalion would not complicate the communication. At the present time, since wire is the connecting link between the battalion and the firing battery, the time-and-space element of installing and maintaining wire communication requires that the batteries be fairly close together.

11. The employment of our communication equipment as outlined would, if our radio equipment were one hundred percent dependable, allow us to control

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the fire power of the batteries up to and well beyond the maximum range of the cannon. The distance separating the observation post and guns could be anything from zero to the maximum range of the guns, while the battalion fire-direction center could be at any convenient location, separated from the guns or observation by any distance up to the range of the radio equipment. The battalion commander could maintain the same control of fire power through the fire-direction center as that he has at present.

12. The placing of the actual control of the guns in the hands of observers who are forward with the assault commander would allow them to make all the decisions necessary in the delivery of close-support fires.

The field of observation and fire controlled by a battery forward observer will, in most cases, be limited to the very narrow zone of action of the supported infantry battalion. The width of this zone will vary, but it seems that a safe maximum would be from 600 to 800 yards in the main effort of the assault, up to 1200 yards in a holding attack with all three companies in the line, and an average of 1400 yards in the defense. The infantry battalion commander will, then, expect the forward observer to place in close support of his front lines, fires which will be within these very narrow limits.

The infantry battalion commander and the artillery observer who is forward with him should know the location of the front-line troops much better than the artillery battalion staff, who are at a fire-direction center (or other place) well to the rear. Especially since the artillery battalion staff must obtain most of their information from the forward observers.

Possibly many close-support fires will be placed on targets so near our own troops that even after the most careful adjustment, the probable error may cause isolated rounds to fall in our own lines. Hence the decision to place the fire

control in the hands of men who are close to the front will reduce the danger of the artillery shooting short.

13. Although Figure 3 shows liaison officers in the radio net with the battalion, probably they could be eliminated from the battalion staff. The necessary information could well be conveyed to the artillery battalion commander by the battery forward observers.

As a matter of fact, we make little use of one of our most accurate sources of information; namely, our guns. They are our most accurate range finders. The plotting of adjusted data, with the time element given proper consideration, will give more valuable and accurate information of our own and the enemy situation than a great number of mere written messages.

14. The method of employment as outlined herein would reduce by a considerable number the men in the battalion detail. The battery detail under such a system would remain about as at present, while the battalion detail would be reduced by about 25 men.

### *Conclusion*

Recent developments in materiel gave us new weapons of great range, as well as improved ammunition which greatly increased the range of our old guns. At once we were faced with the problem of observing (or controlling) the fire at those increased ranges. This has been accomplished with gratifying success by the use of the new gunnery developments in the realm of the liaison system of shooting, using air-ground methods. These methods, to be effective, however, must be accomplished by pushing the observation constantly forward, displacing the guns themselves only when they have reached the limit of their range. We repeat emphatically, that to do this we must have dependable radio communication.

That our vital lack in this latter respect

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is being felt is evidenced by a growing trend toward short-range weapons. The idea behind this movement seems to be that we cannot use the range of our present weapons because we cannot control their fire from distant observation points. What a notion! What we must do, of course, is to procure communication equipment which will allow us to go back to the simple gunnery methods of the horse-and-buggy days without turning back toward cannon of those lamented times.

Finally, we must adopt a system of

fire direction which will permit a quick shift from centralized to decentralized control. Otherwise we will continue to hear it advocated that we dismember our artillery units and attach them as accompanying weapons to the assault units. This we must resist to the last ditch, for it will destroy that most effective attribute of our arm—the ability to deliver powerful and continuous fire support, and to utilize the flexibility of the weapon to intervene in the action with massed fire at the critical time and place.



### SPECIAL NOTICE

#### U. S. FIELD ARTILLERY ASSOCIATION PRIZE ESSAY, 1940

A prize of \$100 is offered by the United States Field Artillery Association for the best essay submitted by any Field Artillery officer of the Regular Army, National Guard, or Reserve Corps, on any subject of current interest pertaining to the Field Artillery.

The following rules will govern the essay competition:

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

(2) Each competitor shall send his essay to the Secretary-Treasurer of the Association in a sealed envelope marked "Prize Essay Contest." The name of the writer shall not appear on the essay, but instead thereof a motto. Accompanying the essay, a separate sealed envelope will be sent to the Secretary-Treasurer, with the motto on

the outside, and the writer's name and motto inside. This envelope will not be opened until after the decision of the Committee.

(3) Essays must be received on or before January 1, 1940. Announcement of award will be made as soon as practicable after that date.

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

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

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

## Young Field Artillerymen Honored



**PRIVATE PAUL H. CHAMBERLAIN**  
7th Field Artillery

Awarded Soldier's Medal For Heroism in Time of Peace:

"For heroism displayed on the artillery range at Underhill, Vermont, on May 26, 1938. During target practice of his organization Private Chamberlain, a cannoneer of a gun crew of Battery D, 7th Field Artillery, noticed that the fuze head of a round of 75-mm. antiaircraft shrapnel, which was being prepared in the fuze setter, was smoking. He quickly turned the fuze setter and the round to safety, and loudly called a warning to the other eight members of the gun crew, seized the shell, carried it to a heavy woods some distance away from the gun position where he deposited it, and then withdrew to a place of safety. The utter disregard of personal safety and the presence of mind and coolness in the face of great danger to himself and the other members of the gun crew displayed by Private Chamberlain prevented the possible loss of life which might have been occasioned by a premature explosion of the shell."

Private Chamberlain is stationed at Fort Devens, Massachusetts. He originally enlisted in his native city, Claremont, N. H.



**CADET WALTER T. MOREY** Field  
Artillery ROTC

Cadet Walter T. Morey, has been appointed Cadet Colonel of the University of Illinois ROTC Brigade for the school year 1939-40. He won this appointment in competition against the representatives of five other units.

Cadet Colonel Morey's military record is as follows:

Sergeant, first year basic; first sergeant, second year basic; second lieutenant, first year advanced; second in a class of 2,000 in competition for Hazleton Medal for best cadet in first year basic; winner of University Gold Medal as outstanding cadet in his second year basic class; winner of Connor Cup for best drilled freshman and sophomore in Field Artillery Unit. 1937 and 1938: expert gunner; member of Caisson Club, Scabbard and Blade, Pershing Rifles, and Field Artillery Horse Show Squad.

His nonmilitary activities include:

Member of Skull and Crescent, freshman honorary; Schem, sophomore activities; Illio Business Staff; Star Course; Student Alumni Association; Band of X; Accountancy Club; Inter-fraternity Council; Freshman swimming squad; on Intramural water polo champion team; Alpha Tau Omega Fraternity; Alpha Phi Omega; Treasurer, Student Senate.

# A Writ

## PROBLEM NO. 1

### Conduct of Fire, Lateral, Small-T

Your 75-mm. battery is on your left. You have been ordered to fire on some infantry weapons in the vicinity of a terrain feature. You estimate the following:  $T = 280$  mils;  $R = 3400$ ;  $r = 2800$ . You decide to use an  $r/R = .8$  and  $s = 10$ . The wind is from your right.



The following commands have been sent to the guns:

Compass 1520, Cv 3500. On No. 1 Op 9, Si 305,

Sh Mk I, Fuze Quick, No. 2, 1 Rd, 3400.

Commands	Range	Dev	Rn	Def	Remarks	
No. 2, 1 Rd	3400	20 R	?			
		10 L	?		Compute new $r/R$ .	
		Line	—			
		4 R	+			
		8 L	?	}		
		4 L	?			
		2 L	+			
		Line	+			+
		3 L	—			} Slightly
		1 L	—			
		1 R	+	—		
		4 R	+			

Next Command?

## PROBLEM NO. 2

### Conduct of Fire, Lateral, Small-T

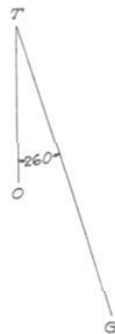
Your 75-mm. battery is in position to your right rear. Your mission is to neutralize an enemy patrol in the vicinity of a small clump of trees.

You estimate the following data:  $T = 260$ ,  $r = 2400$ .  $R = 4600$ .  $s = 5$ ,  $r/R = .5$ .

Your initial data are:

BD R 80, CV 4500, On No 1 Op 7, Si 0,

Sh Mk I, Fuze Quick.



Commands	Rn	Dev	Rn	Def	Remarks
No. 2, 1 Rd	4600	40 R	?		
		8 L	—		}
		6 R	+		
		3 R	?		
		4 L	+		
		9 L	+		
		15 L	?		
				—	

Next Command?

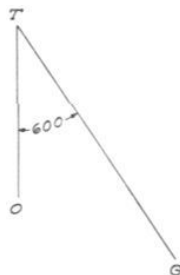
For Solutions see page 416.

A WRIT

**PROBLEM NO. 3**

**Conduct of Fire, Lateral, Large-T**

You are directed to neutralize infantry small arms fire coming from the vicinity of a terrain feature. You have a battery of 75-mm. guns, Model M-2, on your right.  $T = 600$ ;  $R = 4200$ ;  $r = 2600$ ;  $s = 16$ , use 15;  $d = 22$ , use 20. Estimated data.



The following are your commands to the battery:  
 BD R 60, Cv 4000, On No. 1 Op 7, Si 310, Sh Mk I,  
 Fuze Quick, No. 2, 1 Rd, 4200.

Commands	Rn	Dev	Rn	Def	Remarks
No. 2, 1 Rd	4200	45 L		—	Make a 4 s def. shift.
		25 R		?	
		18 R		+	
		5 L	?	—	
		12 L	?		
		23 L	?		
		25 L	?		
		8 R	+		
		3 R	—	Slightly	
		10 L	?	—	
		15 L	?	—	

Next Command?

**PROBLEM NO. 4**

**Conduct of Fire, Lateral, Large-T**

Your battery of French 75's is to your left rear. Your mission is to destroy a lightly covered OP. Your factors are:  $s$  modified = 12;  $c/d = .3$ ;  $F = 5$ . Make an initial 2-s deflection shift.



Your initial commands are:  
 No. 1 Adjust, BDR 90, Sh Mk I,  
 Fuze Delay, No. 1, 1 Rd, Q 220

Commands	Elev	Dev	Rn	Def	Remarks
	220	10 L		—	
		6 R		—	
		Line		+	
		9 R		—	
		5 L		?	
		2 L		—	
		4 L		?	
		2 L		?	
		Line		+	
		3 R		?	
		2 L		?	
		3 R		?	
		Line		+	
		5 R		?	
		1 R		+	
		2 L		—	

Next Command?

For Solutions see page 417.

# Some Lessons from the Spanish War

## I—AN INFANTRY OFFICER'S EXPERIENCES\*

THE broad technical aspects of the Spanish War have been covered too often and too well for any further elaboration. It is the lessons applicable to officers from battalion commander down with which I intend to deal here. There are valuable lessons to be drawn from this conflict — lessons which any other army forged hastily under fire will encounter. It is not improbable that our own officers would face similar difficulties if we were suddenly forced to expand our forces for a major war. The problems facing individual commanders in the field would be very much the same.

For a year and a half, I served as Captain of Spanish Loyalist Infantry, through nearly every major engagement and in every type of combat from trench warfare and street fighting to open warfare and guerrilla attacks. If my experiences and observations are of value to the officers and men of our armed services. I feel it a duty as a former officer in the U. S. Marine Corps to set down these various examples.

When I arrived in Spain early in 1937, I found a crudely organized army with only a tiny nucleus of trained officers who were trying desperately to train and instill discipline in an armed erstwhile rabble. Morale was excellent, however, and the potentialities of this army as an offensive weapon were limited only by its lack of officers and noncommissioned officers capable of directing the basic units in offensive combat.

The most serious defects came out when we took the offensive at Brunete. Here was a large scale offensive in the open requiring

the maximum of coordination and intelligent leadership. The lack of trained noncoms was painfully obvious. In our battalion, I was the only company commander who had drilled platoon and section leaders in the mechanics of liaison between units during combat. The results were startling. The three other company commanders were casualties and so was nearly every other commissioned officer in their companies. The loss of their leaders had seriously undermined the morale of the men and they lost all semblance of military organization. In contrast, my company suffered only one officer casualty and despite mistakes and enlisted casualties, we were able to continue functioning effectively.

There is no doubt that the fault for these deficiencies lay squarely on the shoulders of the officers, who had neglected to make sure that the noncoms attached to their companies were properly trained in the essential mechanics of combat. Their mistake was based on the assumption that, since these men were veterans promoted for gallantry in the field, they must know these things from experience. Once contact had been made and the fire fight begun, it became necessary for the officer himself to personally control his men, since most of the noncoms reverted to mere soldiers through sheer ignorance of methods of control. When an officer is forced in this manner to supervise personally a firing line it is not surprising that he becomes a casualty.

At the usual "post mortem" after the battle we were all agreed that the loss of contact between units during the attack and the consequent inability to coordinate fire and movement in attempting to close with the enemy had been responsible for our attack bogging down

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\**Some Lessons of the Spanish War*, by Vincent Usera, Formerly Captain, Spanish Loyalist Infantry, Reprinted, by permission, from the July, 1939, *United States Naval Institute Proceedings*



## SOME LESSONS FROM THE SPANISH WAR

hopelessly within one mile of our chosen objective.

A few months later while in charge of training at our base, I initiated a training schedule which proved highly successful in correcting these weaknesses. Since we were handicapped by being allowed only six weeks for each recruit, it was necessary to place emphasis on those phases most useful to the soldier in combat. After three weeks of basic training in close order and extended order formations with primary emphasis on individual rifle instruction, we dedicated the remaining three weeks to intensive practice of field problems involving fire and movement. Using the most varied terrain available, we would lay out silhouette targets at 5-yard intervals over a front of 500 yards, even using groups of targets in the rear of the first line to simulate command posts, communications groups, etc. Field orders would be issued to company commanders and they were required to make the approach march with all the precautions of a unit going into action. Upon arrival at the line of departure they were required to throw out a screen of combat scouts who were to commence fire as soon as they sighted the targets. The men would then be taught how to form the initial firing line and commence fire on the target as designated by their n.c.o.'s or the scouts. The machine-gun company would deliver overhead fire on the targets from selected positions in the rear, thus giving valuable experience to the machine gunners in laying down overhead fire and accustoming the men to the sound of friendly overhead fire which often rattles the soldier unused to this type of support. The subsequent advance of the men by infiltration or, where the terrain offered adequate cover, by continuous movement forward, gave the men and officers invaluable experience in co-ordination and contact and all the mechanics of

actual combat under conditions approximating the actual fire fight.

A short time later, I had the satisfaction of seeing this training bear fruit when I led these same men into action on the Teruel sector. Under their baptism of fire they acted like seasoned veterans despite vicious attacks by infantry and a constant and telling artillery and aviation bombardment. When the time came to counterattack, they showed the same efficiency they displayed in the safety of the training base although we had no supporting artillery to cover our advance.

But here again I was to learn additional lessons. In the successful final assault we suffered several needless casualties due to indiscriminate bombing by our own men who, in their excitement, would throw grenades from positions some yards in rear of the more advanced elements. Obviously, more training in the use of the grenade was in order. It was necessary to impress the men with the necessity of throwing the grenade only when they were in forward positions or at least in line with the advanced elements.

Of particular interest to the company officers and noncoms is the reaction of men who have completed a successful assault and occupied the enemy's position. I can only compare it with the reckless exuberance that comes from too much strong drink. There is a marked tendency to forget the bonds of discipline which during the advance under fire may have been excellent. Men will invariably leave their basic units to mingle with others in a joyous congratulatory mood and everyone indulges in mild looting. On several occasions, I have tried to force the men back to their units and organize the ground immediately for defense against possible counterattack. It is practically impossible for an officer to accomplish this single-handed. It requires complete cooperation from all noncoms to curb this mood instantly.

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On one occasion at Caspe, after a successful assault, I tried vainly to keep the men from wandering. I would order a group of men to rejoin their section only to find that when I went elsewhere they would promptly resume looting. It was difficult to be severe towards men who had behaved so splendidly and I was guilty of a natural forbearance. When a violent counterattack on our position developed, I suffered the penalty for my lack of severity. I was suddenly deluged with requests for ammunition, stretcher bearers, etc. It was too late—we were forced to retire and I was hard put to effect the withdrawal without panic. It was a bitter lesson which I vowed to remember.

The effect of aerial attacks on ground troops is a question which troubles every officer nowadays. During my service in Spain I personally witnessed many aerial attacks. It is still my firm conviction that even a poorly entrenched unit, if it possesses any firmness, cannot be driven out by planes alone even if its anti-aircraft guns are inadequate. It is true that I have seen undisciplined or demoralized troops leave their positions under aerial bombardment and strafing but invariably these were exceptions traceable directly to lack of morale. I have seen many more attempts to dislodge infantry through the fire power and moral effect of aircraft fail miserably.

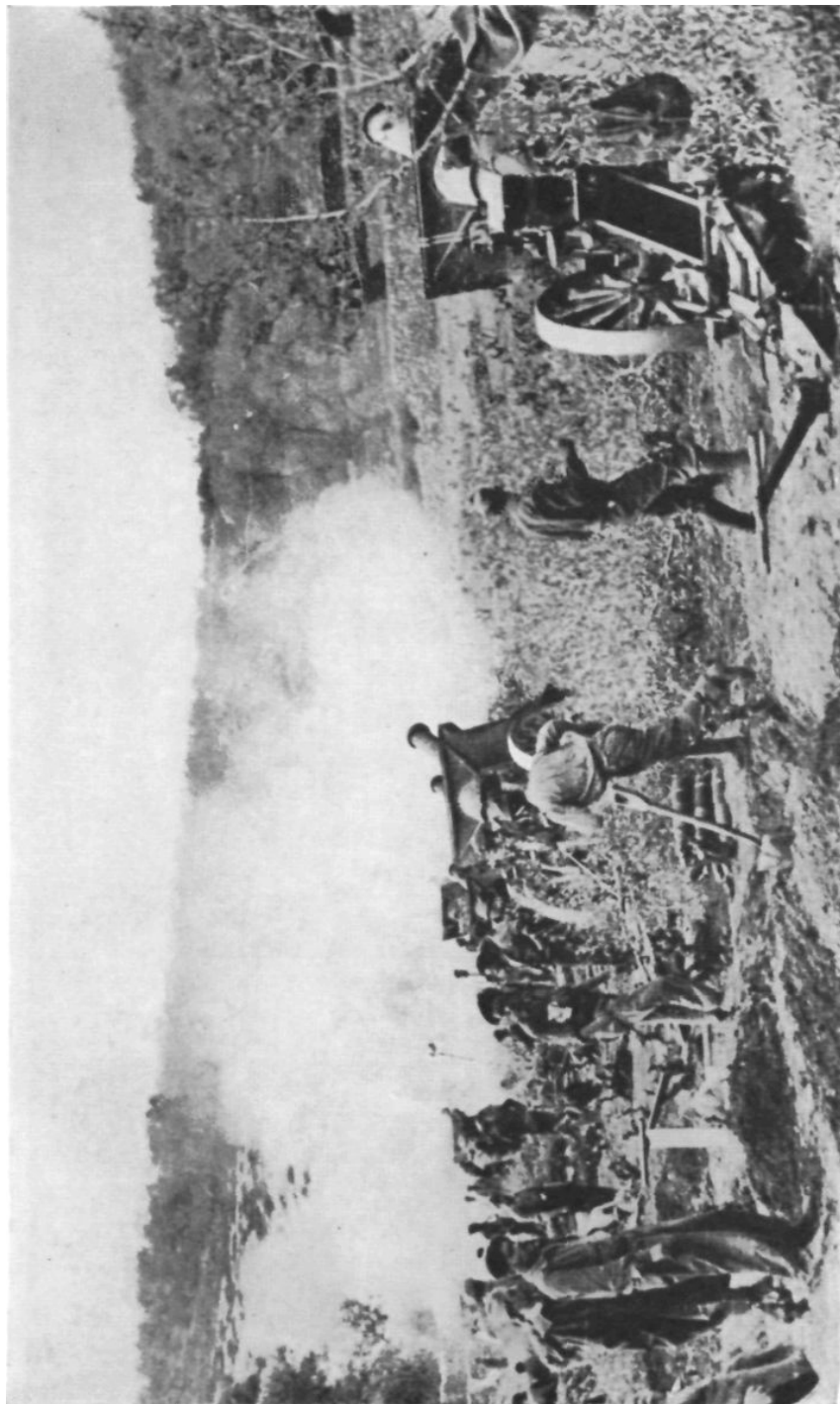
At Azura our battalion of green men was attacked 16 times in one day, each time by 120 planes which bombed and strafed us at ridiculously close range since they soon discovered we had no anti-aircraft guns. Our casualties from the aerial attack were 11 men in the entire battalion — and we had only had time to dig shallow foxholes.

Let none think that I wish to belittle the part aviation takes in modern combat. I only wish to emphasize the fact that aviation has not proved capable of radically changing ordinary tactics

despite exorbitant claims made for it by enthusiasts. On the whole aviation was improperly used by both sides in Spain; this, of course, is an opinion based on my own observation. For example, I take the case above mentioned. During the aerial attacks I observed the same phenomenon which occurred in all such attacks. As soon as aircraft come overhead, there is a complete cessation of fire on *both* sides as though everyone were a mere spectator in the drama to follow. This might be excusable in the force being attacked but scarcely necessary on the part of the troops whose planes were attacking. Not once did I see troops take advantage of this lull in the fire to close within nearly assaulting distance so that when the planes ceased strafing, they could use those precious moments of temporary shock and demoralization to assault with every chance of success.

The plane, despite its definite limitations and lack of accuracy, is still new enough to be terrifying to even the most seasoned soldier. Men can be forced to continue firing even under heavy artillery fire, especially since that arm is usually present on both sides at the same time, but let planes attack and one's fire power is virtually nullified. It is well to remember that it is usual for only one air force to be in the air at any one point at the same instant so that at that moment planes can unquestionably establish fire superiority for their side. It is then that a vigorous assault should be effective.

With tanks there was noticeable the same tendency to regard the weapon as capable of decisive action by itself rather than an invaluable auxiliary for use with advancing infantry. Here again it is the duty of the company officers to see that the men advance with the tanks instead of watching as though wishing that the tanks could get rid of the troublesome enemy without the necessity of their exposing themselves. I saw several tank attacks which failed miserably because



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**NUMBER TWO ON THE WAY**  
Howitzers firing barrage during General Franco's advance on Barcelona, January, 1939.

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they depended on their shock action alone to overcome hostile resistance. In some cases their speed precluded any possibility of infantry support. At Fuentes de Ebro our tanks attacked far in advance of the infantry. We lost 40 of them and the infantry was unable to advance an inch.

On the other hand, at Brunete the tanks traveling slowly with the assault wave were invaluable as mobile artillery and materially aided in reducing hostile resistance.

In Spain cavalry was used very effectively by the Rebels. The mountainous terrain in many places made them valuable for swift flank attacks. It was usually possible to move up cavalry under cover and launch them suddenly at positions not more than 200 yards away. Several times Rebel cavalry appeared so suddenly on our flanks, covered by the heavy small arms fire to our front, which distracted our attention from them, that it was possible for them to cross the intervening ground before our machine guns could be realigned (horizontally and vertically) with this new target. On such occasions their shock action was strongly felt and it was not unusual to see them crumple up a battalion flank before supports could be thrown in.

Another lesson many of us learned, one taught in every manual in the world but often ignored as inconsequential, is the replacement of casualties and reorganization after an action. It is surprising how many officers ignore this important phase in training until their first action when they may be forcefully reminded of it by the dangerously impaired efficiency of their commands.

Junior officers and noncommissioned officers must be taught that this responsibility is squarely up to them and not their senior officer. There are many valuable field exercises in our manuals for practicing the replacement of casualties. Troops being prepared for action should be put through these exercises.

There is little, if anything, new in what I have written. Nearly every officer in our armed services is aware of these things. I merely state these personal observations, many of them relearned through bitter experience, for the benefit of those officers who may some day be called on to lead their men into action so that they may give these factors the importance they merit and thus save themselves and their men the painful necessity of being reminded through unnecessary bloodshed of what in theory they already knew.

The value of efficient officers, capable of putting into practice the theoretical knowledge they possess in order to lessen to their minimum the unforeseen contingencies of combat, cannot be overestimated. I have in mind the Loyalist government of Spain which was defeated in the field because of its inability to train capable officers fast enough to replace casualties. This factor is the primary cause of the failure of their arms and not, as propagandists would make others believe, that the "great difference in technical equipment" is to blame. The disparity in material only slightly outbalanced the superiority in man power of the Loyalists. The real reason was the ability of the Rebels to train and officer a more efficient organization.

## SOME LESSONS FROM THE SPANISH WAR

### II—VIEWS OF GERMAN MILITARY OBSERVERS\*

In the following we shall once more review a few of the essential characteristics of the war in Spain, in order to demonstrate that we must not measure the military operations in that campaign by our own standards, but must give due consideration to the special conditions which apply to the Iberian peninsula.

When, in July, 1936, the heinous assassination of Calvo Sotelo aroused the open indignation of every upright citizen of Spain and resulted in the outbreak of civil war, a call to unite rang out through all Nationalist Spain. However, we must not compare this call to arms with a similar proclamation addressed to the German nation. There was no clear conception of a united people and country in Spain. Protected by natural boundaries, Spain — unlike England, France and Germany — had been spared centuries of fighting for this ideal. "Without a knowledge of the history of one's country, one cannot love one's country." Yet how could the Spanish people possibly have been patriotic; there existed no law of compulsory education, no general instruction in reading and writing, not to mention national history.

The distinction between the possessing and non-possessing classes in Spain is much greater than in any other civilized country. Spain had created a large industry in the brief space of two decades; technique and industry had developed at too rapid a pace as to permit a just form of socialism to accompany this progress. The conditions rendered the country fertile soil for the seeds of communism and its ideas of world revolution.

The military uprising of Nationalist Spain was not successful in all parts of the country, though the Nationalist cause

scored a great initial success by the element of surprise. This initial success was only the beginning of the actual conquest of Spain. By that time the two opposing forces were approximately equal in strength. The Republicans had at their disposal the greater part of the continental army, practically the entire navy and the most important industrial centers (the Basque provinces, Asturia, Catalonia, Valencia, Almaden). General Franco had on his side only a small contingent of the Army, which he was able speedily to reinforce by the voluntary militia units of the "Requetes" and "Phalangists." On the other hand, from the outset of the war his forces included the "cream" of the Spanish army, that is, the troops trained in Africa, the "Legion," the "Tercio" (mainly composed of Spaniards) and the "Regulares (Moroccans). The Nationalists lacked arms and equipment for the militia. Nor was there enough money with which to buy war materials abroad; the gold of the Bank of Spain was in Madrid, where the Republicans used it to finance their end of the war. Thus the Nationalists were forced temporarily to institute a new economic system.

The general officers were not prepared for a war of long duration. Giving no thought to a civil war, they had made plans merely for the restoration of order and the liberation of the Republic from Communist oppression. Like the Republican High Command, General Franco first of all had to organize a large army. The Nationalists had the advantage in this respect. Their officer personnel was of a higher standard; and thousands of officers, who at one time had been dismissed from the service by the Republican Government, rushed to the Nationalist colors. While these former officers possessed only a mediocre standard of military training, they nevertheless were welcome material for the

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\*From the *Militar-Wochenblatt*, Berlin, March 10, 1939. Translated by Technical Sergeant Fred W. Merten, U. S. Army.

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nucleus of a new national army based on compulsory military service. At the conclusion of the war, all classes between the ages of 18 and 30 were in active service, giving General Franco a total of some 800,000 men with the colors. However, some of these troops remained inadequately trained and equipped. Soldiers could be seen dressed in cloth shoes and light-weight cotton uniforms, despite the cold nights. The reason for this was that the shoe and textile industries were located in Catalonia, where they were under the control of the Republicans.

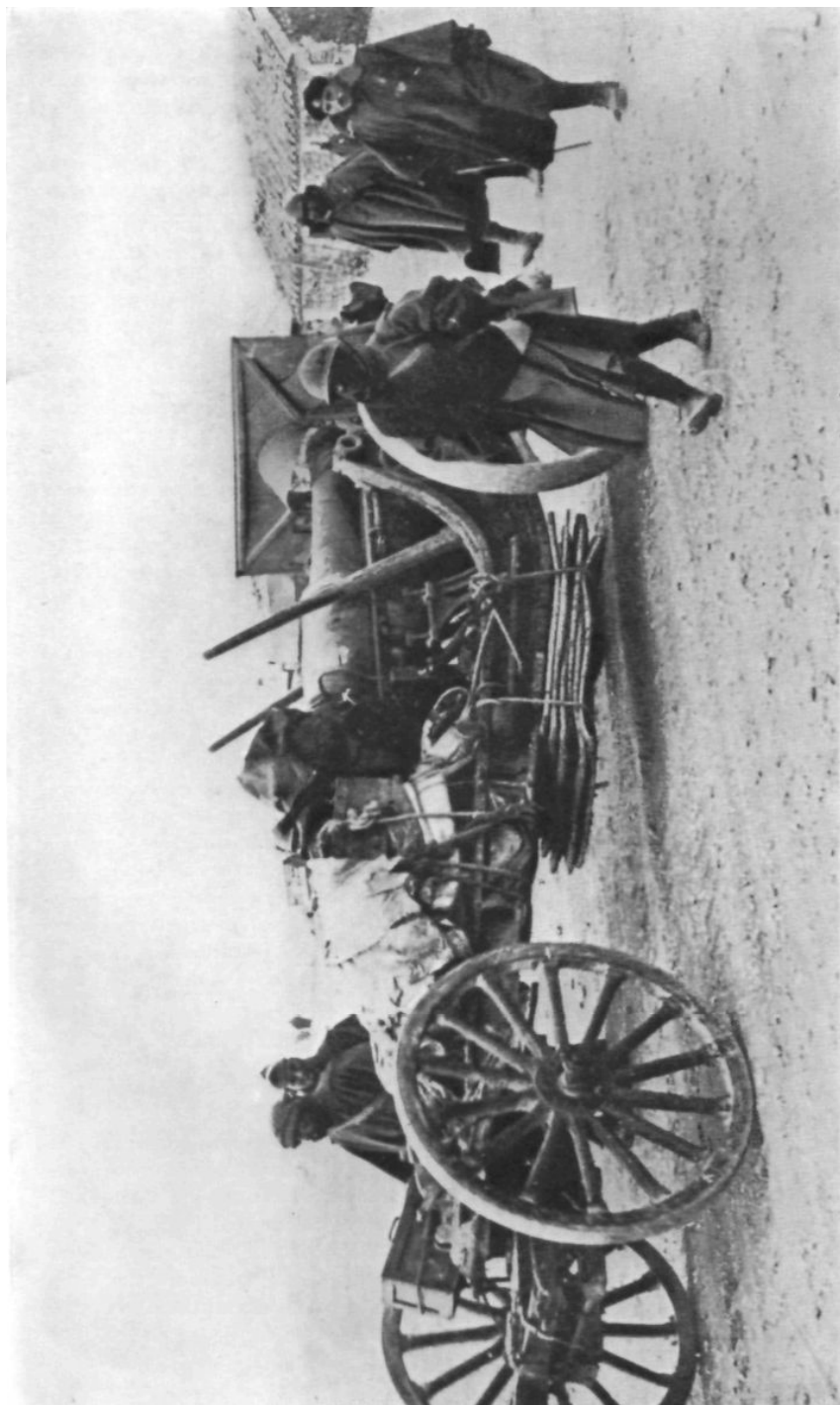
The corps of officers also was in need of numerous reforms. Since 1917, the officers had practically developed into a sort of industrial union (*Cuerpo-Armade*) which jealously aimed at the preservation of the rights of the army officer. Engaging in politics, the officers neglected the training of the troops and failed to safeguard the maintenance of absolute discipline. The ill effects of these conditions were felt quite often in the course of the war; for instance, some general would disregard an order to attack simply because he was envious of the general commanding the adjoining sector.

The Spaniards are splendid soldiers. Even the neutral observers praise highly the courage, the unquestioning readiness to go into battle, the tenacity and the immunity to privations of the Spanish soldiers. In the early weeks of the civil war, the columns of "Requetes" marched out from Navarre, shielded only by their banners upon which was imposed the picture of the Holy Virgin; led by priests and singing religious hymns, they walked upright towards the enemy and his machine guns; theirs was a holy crusade, a *santa cruzada* — they were killed by the thousands. Bravery though it may show, such death defiance is beyond the pale of what is "reasonable." To the very end of the war, Spanish officers in the attack would rush towards the enemy

ahead of their men, never thinking of taking cover. To be sure, the officers knew full well how "unreasonable" their action was—yet, as Spaniards, they did not care to be "reasonable"; their sole aim was to dedicate their lives to honor. Of such is Spanish pride. Hence the enormous losses in young officers among the Nationalist forces, which greatly weakened their strength and was an unnecessary sacrifice of human lives. However, to the Spaniard, the Army officer is first and foremost an example of courage and readiness to die.

It was of great advantage to the Nationalist cause that the command and officers of the Republican forces were of a poor standard. The majority of the professional officers of the Republican army were murdered during the early months of the conflict upon the accusation that they were Fascists. This greatly hindered the organization of a new army on the Republican side. The Spaniards of the Republican forces showed themselves unwilling to fight under the command of Soviet Russian officers. When, in 1937, the Anarcho-Syndicalists of Catalonia openly rose in rebellion against the domination of the Russian Communists in Barcelona, they were shot down by the police under the direction of the GPU. On the other hand, the "free" Spaniards in Republican Spain resented also the officers that had been promoted from their own ranks and were of the same social level.

The difficult terrain and the severe climate greatly obstructed the conduct of the operations. Spain is a mountainous and unusually rugged country. The operations took place mainly in the mountains, at an average elevation of 3,600 feet above sea level. While in the summer the hot sun (95 to 120 degrees F.) would sap the troops of the energy, the winters were accompanied at times by unbearably cold weather (15 to —15 degrees F.) and sharp winds. The



Wide World Photos, Inc.

**WINTER MARCH**

**Battery moving to position behind the Nationalist lines near Teruel late in 1938.**

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equipment of the troops was not adapted to conditions of that kind. At Teruel (December, 1937, to February, 1938) the Nationalist forces lost more men by freezing than by the hostile fire.

The war in Spain was no "totalitarian warfare." Once in possession of the industrial regions of Northern Spain, the Nationalists could produce a large part of the necessary arms and ammunition at home, but continued to depend upon import, especially with regard to modern and heavy arms. There was a chronic shortage in heavy artillery and tanks. Throughout the campaign, the operations time and again would arrive at a stalemate because the offensive lacked the requisite artillery. This circumstance led to all kinds of tactical modifications, as for instance, causing anti-aircraft batteries to be employed in place of ordinary artillery for fire on ground targets. Aviation was also used to replace the artillery fire by systematic bombardments of the hostile line of positions.

Neither gas nor flame projectors were used in the war; and, with few exceptions, there were no ruthless air raids on cities. For humanitarian reasons, General Franco further refrained from cutting off Madrid from the wells which supply the city with water. This is not difficult to understand; it was a civil war, and the Nationalists could not afford a ruthless destruction of their own country, but had to consider that eventually they would have to form a new national community hand in hand with their opponents of the moment. It was for these reasons that the Nationalist aviation, on September 29, 1938, showered Madrid and Barcelona not with bombs, but with bread and cigarettes.

Naturally, these considerations interfered with the speedy conclusion of the war. If Franco had been willing to sacrifice a greater number of human lives and, especially, to destroy more towns

and cities, he could have forced a military decision in a far shorter space of time.

As regards the military aspects, most of the prominent foreign observers agree on the following lessons of the war in Spain:

(1) Whenever two opponents of approximately equal strength meet in action, all motion quickly congeals to a form of position warfare. The defensive invariably is superior to the offensive. In Spain, the speedy increment in automatic weapons and their great defensive power, as opposed to the lack of powerful artillery and infantry mortars on the side of the offensive, further enhanced the superior strength of the defensive. Position warfare is not a passing phenomenon characteristic only of the World War days of 1914-1918.

(2) The infantry is the most essential component of the army; it remains the "queen of battles." The functions of all other arms, including aviation and tanks, consist in clearing the path for the infantry and supporting its advance.

(3) Strong artillery support and powerful artillery preparations remain highly important factors in battle. The old missions of the artillery are increased by that of destroying or neutralizing the hostile antitank defense.

(4) Modern antitank defense is equal to the tank attack.

(5) Tank attacks must be supported by all other arms. A penetration by tanks must be immediately consolidated by the infantry.

(6) Combat aviation has proved to be highly effective. Aviation assigned to army units constitutes a vital auxiliary arm of the ground forces.

(7) While a good road system is favorable for motor transport, the latter requires an efficiently directed organization.



## SOME LESSONS FROM THE SPANISH WAR

### III—MILITARY MOTOR TRANSPORT\*

NO example in military history, not even excepting the "taxicab defense" of Paris during the World War nor the Italian campaign in Ethiopia, affords a more extensive use of motor transport than the recent civil war in Spain. The Loyalist army, possessing few miles of railroad, was forced to depend upon motor vehicles almost entirely for supply and troop movement. Marching by foot troops became almost unknown; the Loyalist soldiers—700,000 of them—rode to battle in trucks. Maneuvers of large forces were accomplished by this means, notably at Guadalajara and Brunete. During the latter operation the Loyalists employed 425 trucks per day for troop movements alone.

Ford trucks, fairly new, were used for troop transport in most cases. Each vehicle carried twenty men with their baggage. This heavy loading was possible because each infantryman carried little impedimenta except his rifle, ammunition, and one blanket. Furthermore, trucks were consistently loaded beyond their rated capacity. For transport of materiel and supplies, Studebaker trucks were used principally, though here again the employment of Fords was noted. Thus it will be seen that American vehicles, with the exception of a number of European-built Diesels, carried the bulk of the load in Loyalist Spain.

The Loyalists discovered early that for efficient operation they would have to organize the motor transport as a separate service, divorcing it entirely from any other arm or service. It had its own chief, who controlled it much as is done in our army by the chief of any arm or service. This Director of Motor Transport was responsible to, and took his orders from, the Chief of Staff and G-3. The service

was quite highly centralized, but many truck battalions (300 to 450 trucks each) were attached to armies. Here they were under the orders of the respective army commanders, except that the Director of the Motor Transport Service continued to issue instructions as to the technique of employment, and arranged for supply and replacement. A varying number of battalions were retained under the direct control of the Director, where they were used on instructions from the commander-in-chief, usually at critical stages of an operation. In other words, a GHQ reserve of trucks was maintained for strategic purposes.

Much of the success of the motor transport service must be attributed to the fact that the drivers were carefully selected. Some were soldiers, some civilians, but in general they were experienced, disciplined operators. Thus it was possible to permit vehicles to travel at what we would consider to be excessive rates of speed. Trucks usually ran at from 38 to 50 MPH, and light cars up to 65 MPH. In order to carry the heavy burden of supply, it being necessary to move goods quickly from the ports at which they were received, cars were kept moving day and night. Drivers were alternated to minimize fatigue, but the trucks themselves were allowed no "rest" except for servicing. There were times, of course, when only night movements were possible. At other times convoys moved with extended intervals and troops were taught to debus promptly and repel air attacks by firing with all available weapons.

Fuels and lubricants were obtained at village or wayside filling stations, which were resupplied by a government-controlled oil company using its own tankers. This system, which seemed to work well, obviated the necessity for diverting military vehicles for this purpose and for hauling large numbers of unwieldy

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\*A resume of reports of Russian and British observers.

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drum or other containers about with the convoys.

Traffic control was handled by a specially trained service which maintained traffic-control posts along the highways and at critical points. Drivers were kept moving, and were not permitted to stop along the road to service their vehicles. It was necessary to keep the traffic flowing continuously and smoothly along the

supply arteries.

Vehicle maintenance was a problem because of the almost complete lack of an automotive industry in Spain. *Observers agree, however, that it was simplified greatly by the relatively small number of types of vehicles in use, which decreased the stockage of spare parts required.* Repair shops were mostly located in the large centers.

## Solutions to Writ

### Solution to Problem No. 1

#### Conduct of Fire, Lateral, Small-T

Commands	Range	Dev	Rn	Def	Remarks
No. 2, 1 Rd	3400	20 R	?		$20 \times .8 = 16.$
L 15	3400	10 L	?		$r/R = \frac{15}{20+10} = .5.$
R 5	3400	Line	—		4 s shift to stay on line. L 2 + R 20 = R 18. Deflection of salvo is +.
L 40	3800	4 R	+	}	
R 20, BL	3600	8 L	?		
		4 L	?		
		2 L	+		
		Line	+	+	
R 20, B 1 Rd	3500	3 L	—		R 10 to center sheaf. R 10 to stay on line.
		1 L	—	} Slightly	Fire for effect started at center of range bracket. Bracket is 3400-3600. Fire for effect is most efficiently conducted by volley, in observed fire.
		1 R	+		
		4 R	+	—	
Next Command:					
L 5	3400				

### Solution to Problem No. 2

#### Conduct of Fire, Lateral, Small-T

$$s = 5, r/R = .5$$

Commands	Rn	Dev	Rn	Def	Remarks
No. 2, 1 Rd	4600	40 R	?		$40 \times .5 = 20.$
L 20	4600	8 L	—		R 4 + R 20 = R 24.
R 25	5000	6 R	+		L 3 + L 10 = L 13.
L 15, BR	4800	3 R	?	}	— R 5 (10) to center sheaf on line, L 5 to stay on line.
		4 L	+		
		9 L	+		
		15 L	?		
Next Command:					
No deflection change, 4700 or R 5, B 1 Rd					Fire for effect commenced at center of range bracket. Bracket is 4800-4600.

SOLUTIONS TO WRIT

**Solution to Problem No. 3**  
**Conduct of Fire, Lateral, Large-T**

$s = 15, d = 20$

Commands	Rn	Dev	Rn	Def	Remarks			
No. 2, 1 Rd	4200	45 L		—	45/20 = 2. Line — at 4000. 4 s def. shift, 400 yd. range change.			
R 60	4400 4500	25 R 18 R		? +	25/20 = 1. Line + at 4600.			
L 30, BR	4300	5 L 12 L 23 L 25 L	? ? ? ?	} —	Btry right to facilitate sensing Sheaf would be centered on the line at 4200 (20/20 = 1).			
R 15	4400	8 R 3 R 10 L 15 L	+ — ? ?			} Slightly —		
Next Command: R 5 (10), B 1 Rd	4400							Splitting range bracket 4200-4600.  Range approximately correct.
								Fire for effect started at center range. Bracket is 4300-4500.

**Solution to Problem No. 4**  
**Conduct of Fire, Lateral, Large-T**

$s = 12, c/d = .3, F = 5$

Commands	Elev	Dev	Rn	Def	Remarks
L 24	220 233	10 L 6 R		—	.3 × 10 = 3. Line — at 223. 2-s deflection shift. 2-F elevation change.
L 24	241	Line		+	Line — at 231. 2-s deflection shift. 2-F elevation change.
R 12	236	9 R		—	Split 2-s deflection bracket and 10-mil elevation bracket. Line — at 233.
L 6, 3 Rds	237	5 L 2 L 4 L	— — —	? — ?	Split 1-s deflection bracket and elevation bracket of 233-241. Range sensed on rule. Def. short obtained. Split 6-mil def. bracket. Increase elev. ½ F since all in same sense.
L 3	240 (239)	2 L	—	?	Six rds fired at 238.5 (238). F = 6, 2 overs, 4 shorts. 2/12 × 6 = 1.
R 2	239.5 (239)	3 R 2 L 3 R Line	+ + — +	? ? ? ?	Split 3-mil def. bracket. Continue in series of 3 rds 'till deflection correct.
(239)	239.5	5 R	+	?	Deflection not changed for next series of 3 rds since a 1-mil deflection bracket has been obtained. 4 overs, 2 shorts. ½ × 2/12 × 6 = .5.
Next Command: 6 Rds	239 (238.5)	1 R 2 L	+ —	+ —	Deflection is correct.

## Awards of Field Artillery Medal

The Field Artillery Association Medal, awarded to one member, in each institution, of the First Year Advanced Course in Senior ROTC units of the Field Artillery, has been won, in 1939—the second year since the award was instituted—by cadets selected at their respective schools. As in the previous year these awards were made to men outstanding not only in soldierly characteristics, but in every field of university activity: Academic, cultural, and athletic. Some of the winners so far reported are listed here. The remainder

will be included in future numbers of the JOURNAL, as records are received.

These young men will become eligible, upon graduation, for commissions in the Field Artillery Reserve. The records they have made as cadets will set the standard for themselves and their comrades in arms in their future service with the armed forces of the Nation. THE FIELD ARTILLERY JOURNAL congratulates them all on their splendid record in winning this medal, and takes pleasure in presenting them to the members of the United States Field Artillery Association.



*COLORADO STATE*

**KENNETH R. GOODWIN**  
Ft. Collins, Colo. Cadet Master Sergeant; Yellow Jackets; Sigma Alpha Epsilon; Scabbard and Blade; ROTC Pistol Team.



*XAVIER*

**RICHARD P. TRAUTH**  
Cincinnati, Ohio. Cadet 2d Lieut.; Xavier Order of Military Merit; Cited Six Times for Merit; Red Stars for Scholarship.



*LOUISIANA STATE*

**JOHN J. OWEN**  
Regimental Sergeant Major; Expert Gunner; Motor Specialist; Rifle Team; Chief of Winning Gun Squad, 1939.



*CORNELL*

**RICHARD J. LINDO**  
Panama, Republic of Panama, Football; wrestling; crew; Scabbard and Blade; Theta Delta Chi; Member Am. Soc. M. E.; Red Key; Expert Gunner; Pistol Expert.



*IOWA STATE*

**EDW. M. STRAUSS, JR.**  
Omaha, Neb. Cadet Sergeant Major; President Student-Governing Body; Scabbard and Blade; Inkhorn Society; Cardinal Key Society; Delta Upsilon; Fencing Squad.



*CULVER*

**BENJ. B. CASSIDAY, JR.**  
Honolulu, Hawaii, Senior Cadet Captain and Regtl. Commander; Varsity Boxing Squad; Varsity Track Squad; Secretary Student Honor Council; Pres. YMCA.

AWARDS OF FIELD ARTILLERY MEDAL



**FLORIDA**  
**FLETCHER G. RUSH, JR.**  
 Cadet 1st Sergt; Pres. Beta  
 Gamma Sigma; Captain  
 Scabbard and Blade;  
 Member Executive Council;  
 Dean's List; Intrafraternity  
 Conference Representative;  
 Vice Pres. Alpha Tau Omega.



**ARKANSAS STATE**  
**THOMAS I. GRAY**  
 403 N. Broadway, Blytheville,  
 Ark, Honor Student; Phi  
 Theta Kappa; Zeta Tau Zeta;  
 Scabbard and Blade; Cadet  
 1st Lieut.; 1st Class Gunner;  
 Winner 4 Citations; Winner  
 ASC Award.



**SANTA CLARA**  
**GEORGE W. CUMMING**  
 Manila, P. I. Cadet  
 Captain; Sabres Society.



**NEBRASKA**  
**W. E. MATSCHULLAT**  
 Page, Nebraska, Cadet  
 Captain.



**SAINT BONAVENTURE**  
**MARTIN J. LAWLER**  
 Cadet Lieut. Col. ROTC  
 Pistol Team; Pres. Beta  
 Beta Chi; Expert Gunner.

Other winners, portraits and complete sketches of whom have not been received, are:

**PRINCETON**—Van Santvoord Merle-Smith, Oyster Bay, N. Y. Active in football, track, yachting, and Dramatics. Colonial and Triangle Clubs.

**YALE**—Thomas James Camp, Jr., Washington, D.C.

**TEXAS A & M**—Robert T. Shiels, Dallas, Texas.

**MISSOURI**—Robert Fred Hopper.

**OKLAHOMA**—William J. Hanks, Purcell, Oklahoma.

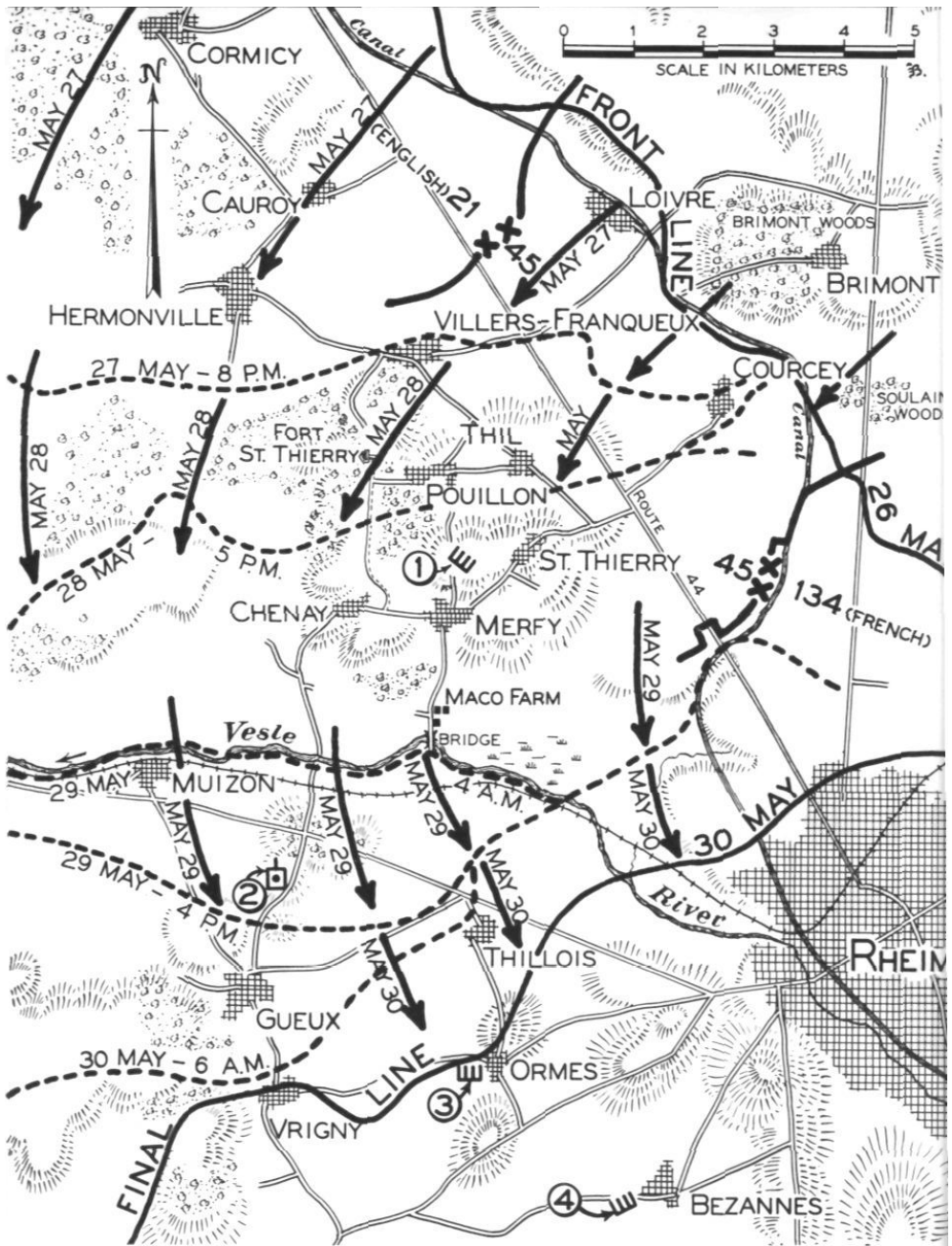
**OHIO STATE**—Cadet 2d Lieut. John Melvin Leiman.



**DUQUESNE**  
**JOSEPH E. KOROLY**  
 Cadet Sergeant; Expert  
 Gunner; Duquesne Medal  
 for Highest Academic  
 Standing, 1938-39;  
 Duquesne Order of  
 Distinguished Cadets;  
 Pistol Sharpshooter; One of  
 Organizers of Duquesne  
 Cannoneers; Staff Sergeant  
 28th Signal Co.



**ILLINOIS**  
**ROBT. CONDIT INGALLS**  
 807 Penna. Ave., Urbana, Ill.;  
 Winner Hazleton Prize Medal;  
 American Legion Medal; Military  
 Excellence Bar and Three Stars;  
 Scabbard and Blade; Alpha  
 Kappa Psi; Varsity, Field  
 Artillery, and Scabbard and Blade  
 Pistol Teams; Varsity Track  
 Team; FA Jumping Team; Expert  
 Gunner; Eagle Scout.



GENERAL SCENE OF ADVENTURES OF 45TH BATTERY

LEGEND:

① Position of 45th Battery until evening of 28 May, 1918.

② Bivouac night of 28-29 May.

③ Position near Ormes.

④ Position at Bezanne, 31 May-2 June.

Arrows indicate direction of German attacks.

# A Battery of Seventy-Fives in the Tempest May, 1918

(Translated by Brig. Gen. Raymond S. McLain)

Note by editor: This study inserted in the *Revue d'Infanterie*, Charles-Lauvauzelle & Co., Editors, Paris, was translated from *Revue d'Artillerie*, issue of March, 1939.

The *Revue d'Artillerie*, in an editorial note, says:

"This moving recital, which recounts in a manner so vividly the role played by a battery of the 45th Infantry Division in the third battle of the Aisne, was published in the December, 1938, number of the *Revue d'Infanterie*, which publication has authorized us to republish it."

AN artilleryman, one of those whom the infantryman considers as a brother, because they were as one in combat, has related the dramatic engagements of his battery during a period of crisis. The *Revue d'Infanterie* has not only been struck by the intense reality of the battle that the author has so brilliantly restored; but also by the applications of tactical principles that our readers will be able to get from it.

No more today than in the past, can an infantry action be conceived without being conducted in intimate association with the artillery. This liaison of the two arms, which has raised so many controversies, always courteous, will never be the source of difficulty so long as the artillery will have the passion to support the infantry. The liaison from higher up is certainly fundamental, but what of the cases where it can not be assured?

On the morning of May 29, 1918, the high command was able to visualize this fully. In the course of two days preceding, because of the confusion and incidence of battle, the higher command had lost the control of the front-line units. *But the liaison from below never failed; the constant preoccupation of the battery commander was to search out his infantry; he went to see for himself, he*

*sent his subordinates on reconnaissance; he made contact with the battalion commander by sending an officer.* No one could think that this liaison is precarious; it reveals, above all, its efficacy. And before such an intimate comprehension of its needs the infantry could do nothing less than to plunge to the rescue of a battery in danger. That is true liaison of the Arms!

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Twenty years after, the return of the month of May revives old and dear memories.

Several times since 1918 we have been able to revisit the corner of Champagne where the observer discovered the "Maison Blindée" of Saint-Thierry; Brimont, the woods of Soullains, the aviation field, the troopers of Courcy and the fort toward the right, the inspiring Cathedral of Rheims, wounded, noble with her dominant towers, amid a sea of the roofs of Rheims. But neither the eternal earth, the reverdant woods, nor the newly rebuilt villages yet speak the heroic language of yesterday. Life has returned, springing from history and, perhaps, from the forgotten past with all the suffering, all the sacrifices which each of our comrades has so equally accepted. We wish to recall their memory in recounting here, without pretending to the cold accuracy of the historian, this that we have seen and lived in artillery combat during those hard days of May and June, 1918.

Between the 3rd and 6th of April, the 45th Division contributed to stopping the German offensive west of the Montdidier; Zouaves, riflemen. "Merry Ones."<sup>1</sup> and artillerymen.—all underwent

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<sup>1</sup>A group of African battalions called the "Merry Ones." Also called "G.B.A."

## THE FIELD ARTILLERY JOURNAL

heavy losses there. In the middle of May, rested and reorganized, the division faced Brimont with the 21st English Infantry Division on its left and the 134th French Infantry Division on its right. Morale was excellent.

The 2nd Battalion of 275th Artillery was in position to the west of Saint-Thierry where the batteries were echeloned from north to south in the following order: 44th, 46th, 45th.

It is the 45th Battery whose adventures we will follow from the 26th of May to the 2nd of June. On the Somme, northwest of Broye, it had fired in three weeks more than 30,000 shells. One of its pieces had been destroyed by the enemy. Thirty percent of the personnel of the firing battery had been put out of action. Officers, noncommissioned officers and privates formed a compact unit. Their discipline equalled their enthusiasm and technical value. The 45th Battery was a fine instrument of the war, ready for daring as well as for sacrifice.

26th of May: For several days the battery had been in position in the edge of a woods about 300 meters south of the brickyard (1 kilometer west of Saint-Thierry). The OP of the battery commander was at the "Maison Blindée" of Saint-Thierry, at the northwest exit of the village.

The sector was calm, but there was a rumor that the Germans were preparing a new offensive. Where would the storm strike?

Towards 9:00 PM the battalion commander learned that two prisoners captured during the day by the 21st English Infantry Division had declared that a strong German attack was about to be launched throughout the sector in the early hours of the 27th. A little later a general counterpreparation was ordered. Lost to view to the left and to the right, the front was luminous beneath the starry sky. Only the allied artillery was firing.

Not a German shell burst in our lines, not an enemy battery was in evidence.

Gradually the silence of the night descended, filled with the light of many rockets. At 1:00 AM on the 27th of May, with sudden crash and in admirable concert, the German preparation began. The fire reddened the horizon. Shells rode through the sky, followed by bursts, while the howling of the trajectories and the tearing explosions made a tremendous uproar. Soon one could get the stench of the laboratory of the battle field—Yperite, palite, surpalite—mingled with the odor of our powder, for the fire was returned furiously by all our artillery.

Dawn broke on this thundering inferno.

The camouflage of the 45th Battery was spared, and the exact emplacement apparently was not known to the enemy artillery. Soon several hundred small-caliber shells fell around the battery. Communications functioned perfectly, both to battalion headquarters and to the OP. Ammunition was plentiful; morale was high; the sky was blue; the day dawned beautifully. But what of the behavior of our infantry?

The 45th Infantry Division had three regiments of infantry in the first line. From left to right: The 6th Riflemen. G.B.A., the 1st Riflemen, to the left rear, and, in reserve, the 3rd *bis* Zouaves. On the night of the 26th orders had been given to use the defensive plan previously made, which was to retire from the first line and to fall back to the reserve position between the canal and highway 44. By this measure the enemy preparation destroyed the abandoned trenches and the defense remained nearly intact.

The 6th Riflemen, which our 2nd Battalion supported, had executed the order in the time desired; small posts remaining in the first line were encircled but resisted until very late on the morning of the 27th.



## A BATTERY OF SEVENTY-FIVES IN THE TEMPEST, MAY, 1918

Towards noon it appeared that the German offensive had failed on the front of the 45th Infantry Division, but that the terrain there had been abandoned voluntarily. Every one was optimistic, in spite of the fury of the enemy artillery hammering our lines and rear areas.

More to the north, however, in the area of the English, mainly at Cauroy-Cormicy, the battlefield presented a disquieting aspect. One could plainly see there a heavy barrage of artillery falling directly on the English position about two good kilometers west of the canal. But, in war, each to his own worries . . .

From the OP perched high on Saint-Thierry one could better meditate on the unhappy eventualities of our neighbors. The order had been given to take under fire all targets of opportunity. Here was a windfall for an artilleryman, especially when there was plenty of ammunition,<sup>2</sup> and moving targets were plentiful. Even the zone of the 45th Battery was filled with them. Towards 5 o'clock in the afternoon one could see the Germans installing machine-gun nests in open terrain in front of a trench west of Soulains woods. They scorned our first rounds for adjustment, but a good shot was sufficient to force them quickly to abandon their materiel and seek safety outside the danger zone. A little afterwards a surprising sight appeared—a caisson drawn by six horses. Then a second, then others came out of the Soulains woods, and cautiously advanced towards the canal through terrain cut by trenches and narrow strips of ground. The instant they appeared, the four pieces of the 45th Battery were all turned on this exceptional quarry. When this group of caissons offered the best target, three or four abreast between two trenches, fire was opened brutally "three rounds sweeping, two turns," with three increasing ranges . . . In two minutes a hundred HE shells

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<sup>2</sup>Nearly 7,000 shells stacked in an underground shelter along the road.

rained on the objective. Drivers fled afoot, horses reared, fell slaughtered. Others threw their caissons in a trench. Two caissons finally exploded. Several shrapnel projectiles finished the operation, and calm reigned in the clearing of the Soulains Woods.

The evening passed without any apparent change in the situation of the 45th Division. The fury of the enemy artillery, the noise of the machine guns, all the tumult which accompanied the attack gradually ceased as night fell. The noise had spread to the 21st English Division, which had been badly battered by the German offensive; in consequence the left of the 45th Division had found it necessary to withdraw and fold back. It was learned, shortly afterwards, that the 3rd *bis* Zouaves had been moved, at the end of the day, to the left of the 6th Riflemen, toward Hermonville, to assure liaison with the English. Apparently the situation was not grave, and at night the division found itself in comparative quiet.

However, at 8:00 AM on the 28th of May the following order arrived from the battalion to the commander of the 45th Battery:

"Reconnoiter immediately and personally an OP in the vicinity of the fort of Saint-Thierry, in order to fire eventually towards the north or northwest."

Brief and startling, but the unexpected is usual in war . . . So, then, we now know that the English are forced in and the left flank of the 45th Division appears seriously menaced.

The first lieutenant took command of the battery, which at present had the mission to support the G.B.A. Accompanied by a telephone operator and armed with a short musket the battery commander set out for Pouillon, then from there to fort of Saint-Thierry, which was now a fort in name only. Pouillon was occupied by some riflemen who said they were of the second line.

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From Pouillon, access to the fort of Saint-Thierry was difficult enough because of the presence of numerous and thick networks of barbed wire emplaced along the border and in the interior of the woods. Over the area covered by the reconnaissance were knapsacks and abandoned rifles. The English riflemen had fled! . . . Fled! Why? Was not this the second line at Pouillon? The sector was relatively calm though occasionally a large shell hissed through the air and exploded on the fort. But, strange thing, the sound of these shells were not those of familiar enemy calibers. Quickly it appeared that they were coming from the south. Our English allies were firing on the fort! Fire, happily, very inaccurate and not observed. But where are they? The situation was suddenly revealed; and gravely. At the fort there was no living being. A grand OP, without doubt used by the division or the Chief of Artillery, had been abandoned and the wires cut. The view was splendid. To the north one could see the smoke from Villers-Franqueux; fighting there was furious and one could already hear the bursting of grenades. To the northwest and to the west, in a confusion of hills, valleys, and woods, the fight seemed violent if one could judge by the noise of the firing. On the battlefield there was *not a cannon shot* from west of Pouillon except those which the English fired in the vicinity of the fort.

On returning, the reconnoitering party noticed a dim trail which descended towards the east and crossed the woods. Now came a surprise. At less than fifty meters a group of German infantry rushed out, yelled and fired. But missed . . . and disappeared as quickly as our two artillerymen.

At this time, now apparently toward ten o'clock, there was fighting in the vicinity of Hermonville-Prouilly. Riflemen still resisted energetically in Villers-Franqueux; parties of the enemy had enfiltered between Villers-Franqueux

and Pouillon; no troops, neither French nor English, occupied the heights of Saint-Thierry, the possession of which was so important for the security of the left of the 45th Division.

Along the woods the reconnoitering party arrived at the station of Pouillon held by part of our own 6th Infantry, which greeted its approach with several rifle shots.

Toward 11:30 AM the commander of the 45th Battery returned to his unit. An order from the battalion commander had arrived, as follows:

"The artillery of the 45th Infantry Division is withdrawing to the south. The 2nd Battalion is charged with covering this withdrawal; following which you will cover the withdrawal of the 44th and 46th Batteries. New orders will reach you about 4 o'clock PM."

A wise plan, certainly; but a very incomplete order! The maneuver of the artillery had been, evidently, in conjunction with the infantry. Where then was the infantry? During this withdrawal what had been the fire missions of the battalion? The staff of the battalion had, itself, withdrawn without making known where it had gone . . . Can one imagine, today, a parallel situation and a parallel order in the course of a maneuver? One would refuse to admit the possibility of such a situation. But war creates amusing situations which mock classical conceptions.

Recent experiences at Montdidier had, fortunately, prepared the 45th Battery for such eventualities.

The danger had been to the north—the 44th and 46th Batteries of the 2nd Battalion had been in position some 500 meters north-northwest of the 45th. It was necessary to face in that direction, and give the pieces a wide field of fire so as to reach from the fort of Saint-Thierry to Thil. The position of the 45th Battery was no longer suitable. In a few minutes the pieces were brought

## A BATTERY OF SEVENTY-FIVES IN THE TEMPEST, MAY, 1918

out of their pits and the battery took position in the open field facing north, its left some 10 meters from the woods which it had just abandoned. The machine guns were installed a hundred meters in advance of the right of the battery, on a small hill which offered a fine field of fire; they could, from there, assure the withdrawal of the battery if the enemy infantry pressed too hard.

It was close to 1:00 PM when a battery of 75's of a neighboring battalion, in position at least 500 meters to the east of the 45th Battery, was taken under sudden and violent artillery fire at the moment it was bringing up its limbers. In spite of this sudden gust from the enemy, hissing and tearing, the movement was accomplished with order and precision. But the teams were cut down, the horses reared, and men fell. As soon as the officers dismounted, they cut the traces from the dead horses, and the cannoneers leaped with ropes to the limbers. The spectacle was thrilling: what a magnificent group of men! In an instant the battery was brought off, and while the fire of the enemy poured furiously on a dozen dead horses, one could see the battery in column, at some distance, moving rapidly and in good order towards the south. Shortly afterwards the 44th and 46th Batteries of the 2nd Battalion displaced, taking the route to Merfy, where they disappeared on the opposite side of this village.

The commanders of these batteries destroyed their munitions before leaving. This was done by fire in the open, for no one heard any loud explosion. But among the shells destroyed there were smoke shells and toxic gas shells. Unhappily, the wind blew from the north, and a thick, malodorous cloud very soon enveloped the 45th Battery. To continue to fight with the mask on the nose would be simple if one could see. But for nearly

an hour the smoke curtain was nearly impenetrable, even with the best glasses.

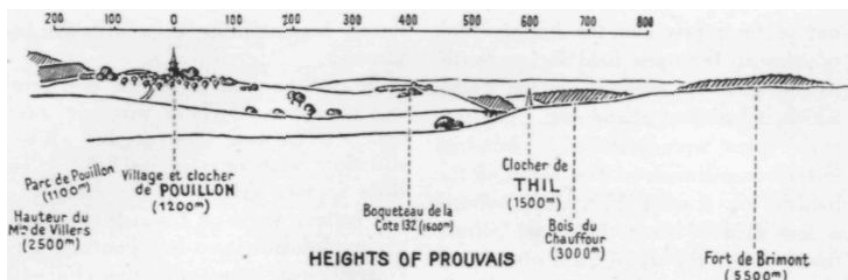
More than ever arose the ever-pressing questions: "Where was our infantry? What were their needs? Where did they wish our fire to fall?" The little groups passing in the vicinity of the battery went off towards the south, giving information often contradictory. Nevertheless it seemed that hill 106 (1,200 meters southwest of Courcey) was solidly held by our G.B.A.; our riflemen continued to defend until about 2:00 PM at Thil; the defenders of Pouillon had withdrawn—some towards the west, some towards the south. It was necessary to get into position correctly and quickly.

Two reconnaissance parties were sent out, one toward Pouillon and one towards Thil. But, without definite information, it was necessary to place fire where it was believed the most of the enemy would assemble: On Loivre, on the Route Loivre-Villers-Franqueux, on the Chauffour Woods, on the crossroads on route 44, and so forth.

The battery fired almost without intermission, but it alone awakened the echoes of the apparently deserted sector. Like the rest of the French artillery, the German artillery was silent. The fire of the infantry from elsewhere slackened, particularly between the woods and the canal. Far to the west, however, the firing seemed well-enough sustained. It was nearly 4 o'clock and no orders had reached the 45th Battery.

One would perhaps think that the 45th had finished its mission, which had been to cover the withdrawal of the other two batteries of the battalion; why not, then, withdraw in its own turn? There were two reasons: First, because the order of the battalion commander prescribed explicitly to await new instructions "about 4 o'clock." The circumstances permitted, it is true, that relatively little importance need be attributed to an order so incomplete. The

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VIEW FROM OP OF 45TH BATTERY, 28 MAY, FACING NORTH

second reason was because the situation did not appear to justify vacating a position so little threatened by the enemy from east of the fort of Saint-Thierry,<sup>3</sup> or to abandon those called the "Merry Ones," who had been passing in small groups near the battery, moving towards the south; some of them were still defending tenaciously the terrain east of Thil. It was distasteful to an artilleryman of the 75's to abandon them. Without doubt the close support of the battery brought them renewed comfort; at the same time it gave the enemy the impression that the French still held the region of Saint Thierry in force.

The reconnaissance parties returned one after the other. The one from Thil stated that they had been fired upon, a little south of the village, by an enemy patrol; the one from Pouillon had run into a section of the 6th Riflemen commanded by a lieutenant, who declared he had brought back the last defenders of the village, which the Germans had entered behind him. As soon as the lieutenant of artillery met this infantry officer, he had asked the latter to place his section at the crossroads south of the brick yard to cover the left of the 45th Battery.

From the OP, one could see the southern outskirts of Pouillon, but could not distinguish anything but some roofs

<sup>3</sup>In fact, the effort of the enemy exerted itself towards Trigny, with the intention to take the 45th Infantry Division in the rear, which perfectly justified its withdrawal.

on a background of orchards at Thil. The terrain lay in an easy saddle, uniting the two villages, offering a very tempting passage to an enemy wishing to avoid areas swept by artillery. It presented a full view at about 1500 meters, somewhat encumbered by fruit trees, and flanked by a gentle declivity where the vegetation was sufficiently high to favor infiltration.

One section covered Thil and one section Pouillon—to give the enemy the impression that two batteries at least held this sector—and at irregular intervals violent bursts of fire were delivered on each of these villages. Soon enemy infantry appeared in the tall weeds of the embankment where the battery was waiting. When they were in sufficient number, a hail of HE shell obliged them to beat a rapid retreat. If there were victims, the vegetation hid them. This little play seemed to last an interminable time. One thing was certain: until the departure of the 45th Battery, the front that it covered between the woods and the orchards of Thil had remained practically void of the enemy. Five o'clock, six o'clock, seven o'clock, the isolation of the battery became a matter of concern. Towards the west the German advance continued. Signal flares fired from rifles marked the direction towards Chenay (even in daytime and especially in wooded and rough terrain, the German infantry frequently used a small rifle flare to indicate its position).

A very large gun (without doubt a 305) now fired every two minutes on

## A BATTERY OF SEVENTY-FIVES IN THE TEMPEST, MAY, 1918

Merfy, thus cutting the best route of retreat towards the south. Soon a patrol of three airplanes swept the battery with a burst of machine-gun bullets; a corporal of cavalry and a guide were killed, and two cannoneers were wounded.<sup>4</sup> Machine-gun fire was also coming from the direction of the fort of Saint-Thierry, and from time to time these bullets whined around the battery.

A little later a group of "The Merry Ones" appeared from the north-east. At their head—living picture of Scott—marched proudly a magnificent, gay young man, a second lieutenant of twenty years, who had his head bandaged with a dressing badly stained with blood. But his eyes were shining, and his bearing virile. He stated very calmly that he, with those who remained of his section, were the last to leave a supporting strong point north of Saint-Thierry, which he had occupied since early that day.

"Leave at once, the Bosches are on our heels," said he.

He left. . . . It was not more than 8:30 PM. Very soon the night would favor a withdrawal, which could not be accomplished now without great danger. The 305's fell constantly on Merfy, and the German infantry must have already passed Chenay.<sup>5</sup>

The limbers were brought up one after the other from concealment in the woods near the position.

The first lieutenant received the following order: "Bring the battery at once to a point 100 meters from the west entrance of Merfy, where you will await me; distance between pieces: 50 meters. The platoons will be formed in column with pieces limbered and the cannoneers at shoulder arms behind each piece."

The movement was executed in

<sup>4</sup>The corporal on horseback was out from head to foot, as was his horse, by projectile which seemed to be of a caliber larger than an ordinary machine-gun bullet.

<sup>5</sup>A section of riflemen of the brickyard garrison stated that about 7:00 P.M. they had been forced to withdraw.

silence and in the best of order. The dead and wounded were placed on the caissons. The battery commander, accompanied by his bugler,<sup>6</sup> waited until the last caisson had disappeared before setting fire to the ammunition dump; then at a gallop he passed the column and placed himself at its head.

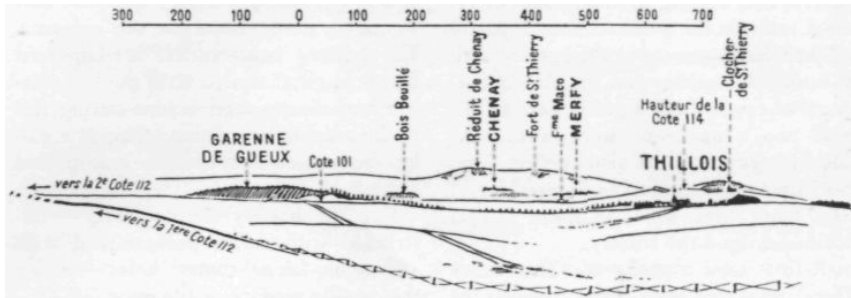
Can the battery hurdle Merfy—obstructed with ruins, pock-marked with enormous, funnel-shaped holes—under the darting menace of the huge 305's?

"Distance between sections, 100 meters. Reassemble 200 meters on the other side of the south exit of Merfy." This instant, by Providence, the 305 became silent, and it fired no more. One by one the pieces filed by, past the battery commander at the crossroads near the church—into the midst of fallen walls, entangled beams, surrounding the craters. . . . The battery passes! . . . It is past!

The battery halted silently and in perfect order in a sunken road near a small military cemetery with poor irregular crosses. Among our cannoneers several were seeing the war for the first time; young men of the class of '19, they had come to replace the killed and wounded of the Somme. Their first experience was to be rude. The cannoneers were reassembled by their pieces in front of the cemetery, chin strap under the chin. They presented arms, rendering honor to the unknown soldiers who had died; whom the enemy, for an instant, had come to trouble in their last sleep. Guard well your emotions! View with pride! In this picture was all the grandeur of this sad epoch, too soon to be forgotten. Two thoughts arise: "We are not vanquished. We are called back here, the better to stop the enemy!" And then to the young men of the class of '19, in whom the secret emotion could not be expressed, nor perhaps trouble them

<sup>6</sup>A brave and devoted soldier, who several months later was severely wounded by a shell which fractured all four limbs.

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VIEW FROM OP OF 45TH BATTERY, 29-30 MAY, NEAR ORMES

less: "To know your duty in the trials to come, look at the veterans and follow their example."

Several minutes later the battery headed towards the mill bridge of Maco, at the hour where, as Coran said, "One could no longer distinguish a white thread from a black thread." It was saluted by several bursts from machine guns, coming, without doubt, from the village of Chenay. Then a violent explosion shook the air. Some 5,000 shells, which had been abandoned at a position, blew up. In the twilight a gray cloud rose slowly like a gigantic mushroom, its summit painted rose by the last rays of the sun, which now set on this tragic day of May 28.

Around the Maco farm, scattered in disorder over five or six acres were cannon (both 75's and 155's), trucks, tractors, all abandoned. . . . There were at least two entire battalions. What surprise! What sudden fire had caused this disaster? Those of the 45th Battery, who were bringing back their materiel and even their dead, gripped the handles of their swords. . . . The night had fallen before the battery reached the bridge in the woods of Maco mill. At 100 meters there were two lanterns swinging in unison. There was a smell of something. Who occupied the bridge? French or German? An officer rode forward at a gallop from the battery and cried

"France." From the darkness a voice responded "Advance with the countersign." These were the French sappers prepared to destroy the bridge. Again in luck, the battery passed. It was just in time!

In its withdrawal of nearly 3 kilometers it had crossed an abandoned zone in dramatic silence, without encountering a single living soul.

To the south of the Vesle, a feeling of life returned feverishly. About 10 PM the 45th Battery entered the woods of Gueux, filled with infantry, combat trains, trucks of all sorts, which with great difficulty flowed little by little towards the south. There it found the battalion commander, a man of great heart, a charming leader who showed without restraint his emotions of seeing again "those whom he believed dead or prisoners."

The following verbal order was given to the battery commander of the 45th Battery:

"Until morning put your battery to rest immediately south of the woods of Gueux where it will occupy position tomorrow according to instructions which I will send to you further. I am going to Vrigny, where the other two batteries of the battalion are."

A word about the general situation: The 45th Division had withdrawn south of the Vesle, the crossing of which it would interdict at all costs.

## A BATTERY OF SEVENTY-FIVES IN THE TEMPEST, MAY, 1918

The battery was reassembled in section column along the road to Gueux, immediately south of the woods. In the reposing freshness of the green grain the horses were grazed, the drivers sleeping with bridle on arm, cannoneers at the pieces. A small guard was posted for the sake of form. The officers were stretched out nearby, under a shelter which looked like a small abandoned barracks. Two kilometers away were the important depots of Muizon, lighted to heaven by a sinister gleaming light. A heavy German piece, a 305 without doubt, fired a shell every three minutes, which exploded with a crash high above the woods, awakening the echoes of the valley. Much noise for nothing.

About 3:00 AM the officers were awakened suddenly. A noncommissioned officer<sup>7</sup> came to report that there were no French infantry in the woods and that, on the contrary, "he had seen a small outpost of Bosche 300 meters from the battery." Along the border of the woods to the northwest at about 200 meters' distance was a small depression. Here were some men grouped about a feeble fire. Even on examination with field glasses it was difficult to say whether they were enemy. It did seem that they wore the little round cap of the Germans. Under such circumstances, prudence demanded abandonment of this woods. It seemed reasonable that the woods would remain but little longer in the hands of the French, even if it now remained so.

The battery was alerted immediately, and put in column. It marched stealthily along the road and over fields. The phantoms of the teams advanced silently in that semidarkness which foretold the gentle approach of dawn.

When within 500 meters of Gueux,

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<sup>7</sup>This noncommissioned officer of a supply section of Colonial artillery, decorated with the *Medaille Militaire*, and several times cited, a type of soldier incapable of fatigue, highly disciplined and very audacious, gave until the end of the war proofs of his exceptional warlike value. It was not the guard which made the discovery in question here.

who are these men scattered by the hundreds all along the route, almost undistinguishable from the soil? The English!

"Call an officer . . ."

"There are no more. All are fallen over there."

"Where are you going? What orders have you received?"

"We have no orders, and we are going to the devil."

There was at least a battalion. The men were weakened and demoralized.

"You had better leave before daylight and go at least to the next village. The Germans are not far from here."

"Well, what of it?"

Here was Gueux, then Vrigny. It was broad daylight, and the battalion was again reunited. Orders arrived to occupy positions towards Ormes, to protect our infantry on a 2-kilometer front, in part, and also the woods at Gueux.

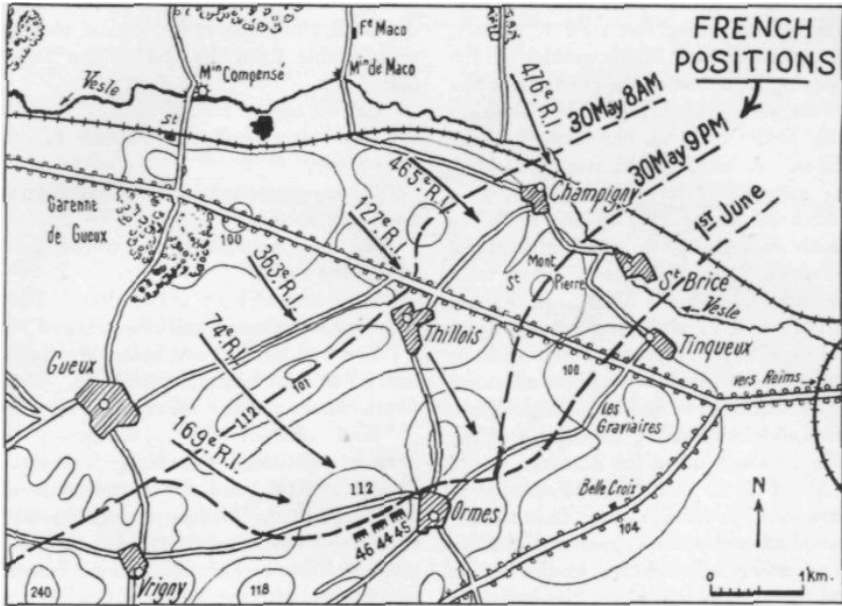
On the 29th of May, at 8:00 AM, the battalion was in position in the order 46th, 44th, 45th from left to right, along a little dirt road which began south of Ormes and ran towards Coulommès la Montagne.

Ammunition, happily, was plentiful. The officer charged with replenishment had discovered some abandoned depots with large stocks, left in this somewhat disorderly recoil.

The OP of the 45th Battery was a perch in a stack of straw, at 250 meters in front of the pieces.<sup>8</sup> From this perch we obtained a broad field of view. The first crest was the network of wire which covered the position at Ormes, and first hill 112; and second crest the line designated at 1800 meters following the terrain around towards Thillois, a second hill 112 by hill 101; the third crest the undulation which ran from the woods of Gueux towards the east, some 20 to 30 meters higher than the bottom land following the Vesle; on the other side of

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<sup>8</sup>The machine guns of the battery were in position at the crossroads north west of Ormes, to protect the front of the battery.



**TERRAIN SOUTH OF VESLE RIVER**

(Note that French symbol for battery is reversed in direction.)

which was the massive fort of Saint-Thierry, a valuable OP for the enemy.

There was no information concerning the location of the first-line elements of our infantry in the sector of the 2nd Battalion. This lack is always the cause of anguish to light artillery in a war of movement. The units of the 89th Territorial were disposed at Ormes in a support position indifferently organized on the first hill 112. In advance and to the left were the elements of the 3rd *bis* Zouaves. Toward Thillois it was understood that the Colonial Infantry could be found. This was the first situation which could have reunited the battalion command. The problem was, then, to see and to know the terrain by reconnaissance. As soon as it had taken position, the 45th Battery was astride three or four points of terrain. A little later some carriages were seen coming from Merfy towards Maco farm. The battery opened rapid

fire with shrapnel on the region immediately north of the bridge at Maco. This fire, in sudden and violent bursts, was frequently renewed during the course of the day.

The morning passed in relative quiet. The enemy certainly had suffered, and must catch his breath. His artillery and supplies must be brought up. This gave us respite.

We could profit by this delay to entrench and complete the position as in 1914, entrenching each piece. It was necessary also to organize resting places for the men, who were fatigued, and to regulate the question of supply. If the supply service furnished less than necessary, the village of Ormes, abandoned by the inhabitants in the first hours of the 29th, offered a surplus which could be used without abuse, under strict control.

The battalion fell furiously to work to establish liaison with the infantry, and in the course of the afternoon exact information



## A BATTERY OF SEVENTY-FIVES IN THE TEMPEST, MAY, 1918

was finally secured on the situation of our first-line elements. On the right we held hill 114 and Thillois: to the left our infantry were abandoning Gueux, which had been rendered untenable,<sup>9</sup> and were taking up a line of resistance a little north of Vrigny, where they connected with Thillois by the second hill 112 and hill 101.

The 2nd Battalion was attached to the groupment under Lieutenant Colonel Martin (3 battalions of 75's), and charged with support of the troops in the subsector under Colonel Richaud, who received the mission to deny the plain to the enemy between the mountain of Rheims and the canal of the Aisne, on a front of 5 kilometers.

The bulk of the 45th Division was to the left towards Rosney and Treslon, where the advance of the enemy had made the situation particularly dangerous. The Richaud groupment was composed principally of colonials (Jacobis regiment and two battalions of Senegalese), the territorial and the 3rd *bis* Zouaves (under command of Lambin), besides some sappers and a platoon of dragoons. Facing these in the attack were the entire 213th Infantry Division (Pomeranians)<sup>10</sup> and half of the 242nd Infantry Division.

Shortly after noon the sector came to life. Furious German blows fell on Gueux, and a counterattack was made against the Zouaves, putting the enemy on the second hill 112 and in Thillois. The German artillery prepared, protected, and supported each of these efforts, and hammered the villages and all that resembled an organized position.

The French artillery was not less active, and the German infantry were surprised to be forced to attack through

violent [protective] barrages. The 45th Battery frequently put down its protective barrage to interdict the enemy advancing from the borders of the woods at Gueux. It had also the great satisfaction of being able to fire on a battery which was in position in the woods northwest of Maco farm. This position was revealed by the dust raised by its own firing and, sometimes, by our shells.

By nightfall the accounts of the day did not appear too favorable to the Richaud groupment, which had, however, maintained its position intact.

This unfortunately was not true in the west subsector (Nogues groupment) where the fall of Gueux, for one thing, and the successes gained by the enemy in the region of Treslon against the 154th Infantry Division, which had relieved the English, forced the 45th Division to abandon all the important line along the high ground which separated the valleys from Andres to the Vesle. On hill 240 (one kilometer west of Vrigny) was an angular rock on the front of the 45th Division. It was the line between this point and Mount Saint Pierre which held the fate of Rheims on the following day.

The morning of the 30th of May passed quietly.

A curious incident: About 11 o'clock the 2nd Battalion received a concentration of about a hundred 75-mm. HE shells fired by a friendly battery newly arrived in this sector and which had taken position towards Les Mesneux.

The activity of the enemy was not apparent until towards 5:00 P.M. Then from Vrigny to Thillois, and more than two kilometers deep, the German artillery delivered a heavy volume of fire of both light and medium calibers.<sup>11</sup> These fires threw a certain amount of uneasiness into the territorials charged with the defense of the first hill 112 and of the village of Ormes. They were little

<sup>9</sup>The first battalion of the A. D. 45 had played a magnificent role, protecting the infantry until it was itself under rifle fire of the enemy.

<sup>10</sup>Since March 1918 the 213th was commanded by a young General von Hammerstein, doubtless the same concerning whom there has been much talk since 1936.

<sup>11</sup>To our knowledge there were but few fires delivered from 21-cm. guns in this sector.

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accustomed to this sort of treatment and their uneasiness caused some anxiety over the solidarity of the defense. While awaiting for the enemy fire to lessen, the battery commander verified his data on a base point, situated at the northeast corner of the woods of Gueux, within his zone of observation. In observing his fire with a glass, he discovered a curious flickering along the edge of the woods and along the main highway which runs towards Rheims. His glasses revealed to him a number of German infantry assembling there; they were preparing to attack with fixed bayonets. It was the glitter of these bayonets which sparkled in the sun. In 30 seconds the pieces were opened 25 mils, "six rounds sweeping, two turns;" the battery covered more than 400 meters of front, and as the first shells fell the hostile infantry launched the attack, officers leading them with sabres in hand. Quickly seeing the situation, our sections, firing by piece at will, redoubled their efforts, firing at a very high rate. There was an admirable view from the OP (at 3,000 meters) over the terrain where the attack was coming. The shells whistled, raining, bursting in the middle of the "fieldgrey," which in three lines in succession moved to the assault of hill 101, directly into fire which decimated them.

Relentlessly the fire followed the enemy step by step. With the glasses no detail escaped observation; the shells struck every group; the men threw themselves forward to escape others who were withdrawing in disorder behind the main highway. The terrain was strewn with killed; among them were the wounded—crawling, trying to save themselves. In less than ten minutes of fire from hell—where nearly 400 shells swept a 20-acre piece of ground—the enemy forces, estimated at nearly a battalion, had been "stopped, pounded, dispersed."<sup>12 13</sup>

<sup>12</sup>An opposite case, on the 21st of March, a battery of 75's in a well organized position, received

Perhaps a third of the assailants succeeded in passing through the barrage and were able to reach the French position in the direction of hill 101. On this same front of 400 meters, and slightly in advance of our line, the battery executed a defensive barrage of shrapnel. But the range was lengthened presently to that formerly used.

What was going on to the left, in the trenches of the first hill 112, at least 500 meters from the OP of the 45th Battery? Men were running, falling, in a noise of rifle fire mingled with the cracking of grenades.

At this instant, the battery executive telephoned to the OP: "The Bosche have overrun the 46th Battery. The battalion commander gives orders to withdraw immediately."

To withdraw, when the enemy infantry had entered the position! It was somewhat late! Also the limbers, which the battalion commander had ordered forward, had been stopped under the protection of the last houses of Ormes. The left piece was turned facing the west, prepared to fire on the enemy who were now fighting with the cannoners of the 46th Battery in extreme confusion.

Then came the Third Bis Zouaves from the south, under command of Major Lambin, yelling at top of their voices, guns in hand, their white scarfs waving in the air. There were at least a hundred bayonets raised, a hundred men of courage! The situation was immediately reversed—the enemy routed, leaving some sixty prisoners in our

between 4:00 P.M. and 7:20 P.M. at a rate of fire twelve times verified as being 24 rounds per minute, more than 5,000 shells of different caliber until 9:00 o'clock inclusive. It lost one NCO from yperite, and one man wounded. One piece had its platform damaged by a shell from a 210-mm.

<sup>13</sup>On the 18th August, 1918, when passing over the battlefield of the 30th of May, we found graves of fallen Germans collected toward the northeast corner of the Woods of Gueux. The cross of one of them announced that a first lieutenant and 62 "tapfere musket" of the 268 Pomeranian Infantry had fallen there in combat on the 30th of May. Others fallen were a number of the 745th Reserve Infantry (213th Division) and 127th Infantry (242d Division).

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hands. These were immediately divided between the batteries, where the artillerymen received them with enthusiasm. They (the Germans) devoured the bread which they were given, as if famished, declaring that they had not eaten for 48 hours. To repay for this kindness they energetically helped with the ammunition.

But the situation demanded withdrawal of the battalion. For, even though the Zouaves had newly occupied hill 116 at the extreme west of position, the German attack had triumphed over our resistance in two directions. To the left, attacking from Gueux, the enemy (149th and 74th Infantry) had seized both hills 112 and had only been stopped in the attack of hill 116 by the counterattack of Major Lambin. To the right they had seized Thillois and had pushed detachments to the north approach of Ormes.

The limbers were brought up. It was near 9:00 PM. Ormes, crushed by the German artillery, burned in the twilight. At about 300 or 400 meters from the position recently abandoned by the battalion, the enemy infantry made a last effort to reach the road running from Ormes toward Vrigny. They were fortunately stopped by the presence of mind and courage of a machine gunner of the 45th Battery, who quitted his post only after the departure of the last vehicle of the battalion.<sup>14</sup>

The batteries moved out in order, headed south, bringing with them their killed and wounded (one second lieutenant of the 46th Battery had been killed). The village of Mesneux was passed, not too soon, obstructed as it was with combat trains, wounded, and supplies. In the darkness one could see Ormes in flames, and, towards the east, the outskirts of Rheims. The stillness of the night was filled with a million rumors

<sup>14</sup>This cannoneer, an example of courage and modesty, was made a corporal, and decorated with the *Medaille Militaire*, a few days later.

[sic], of an army on the march. About 11:00 PM the battalion halted southwest of Bezannes in an open field. Dead for sleep, the men slept heavily.

At dawn on the 31st of May the reconnaissance party started for Bezannes, where the battalion was to take up a position with a mission to support the infantry between Ormes and Mount Saint-Pierre.

A little later the 45th Battery was emplaced 300 meters from Bezannes. The OP was on hill 105, from which the view was uninterrupted over the entire zone of the battalion.

The enemy was quiet, for he had numerous wounds to dress. For once, the day broke without excitement, thanks to which the position could be organized to some extent, provisions and ammunitions secured, and the men fed. Rest was no longer possible, for it was necessary to work constantly and be very alert.

At dawn the infantry position was again seen to be poorly defined, especially on the right. It was necessary at all costs to get information from the infantry before daylight. An officer of the 45th Battery went to establish liaison towards the front. He found himself at the approach to the "Belle-Croix Equarissage," where the territorials were organizing a strong point. They said they were the second line, but had little information of the first line. He then went towards the Graviaires. Along the route he passed ten or more prisoners of the 465th Infantry (242 Infantry Division) conducted by two or three colonial infantrymen.

At Graviaires he found a battalion command post. The major was not over 30 years old; calm, courteous, precise. He informed the liaison officer of the situation. He had reorganized all those who had drifted into the sector under his command (infantry, metropolitans, colonials, Senegalese), and placed them about his battalion. His first lines passed by Tinquieux, hill 100, and ran

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off towards Ormes to the middle of the road between this village and Graviaires. Precise action was taken on a definite plan to reallocate the forces in the sector. The battalion commander fixed upon a simple code of signal operations which fitted into that of the 2nd Battalion. A type of liaison was designed for utility and efficiency.

At an early hour of the day the lieutenant returned and was able to orient the battalion commander exactly on the situation of our infantry and on the co-operation which they expected from the artillery.

In the early morning an enemy preparation announced an approaching attack. It waited long enough to hammer hill 105 and search actively the small valley where the battalion occupied an exposed position. (In the morning several enemy planes had flown over, low enough to observe the position of the battalion).

A little later, the rolling barrage lifted and advanced . . . but the infantry, as far as could be seen, did not follow. The 213th Pomeranian Division and the 242d Division were certainly exhausted; but the French counterpreparation fires were too light to influence this evident discouragement.

The enemy's artillery had not the same reason for desperation as his infantry, and its fires became more and more dense and murderous.

In the afternoon of the 1st of June the 45th Battery suffered particularly. Early in the afternoon the number one gun was destroyed by a 105 shell which pierced the firing pit and killed all the cannoneers. Before dying the section chief, who had replaced an NCO killed four days before, had the strength to ask the battery commander with heroic simplicity, "Are you satisfied with me, my lieutenant?"<sup>15</sup> A little afterwards the

number three gun was put out of action by a premature burst. The second and fourth guns finally lost half their equipment. This time the telephone operators were more lucky, and had not received a wound.

The command post of the battalion was installed in a large farm at the southern exit of Bezannes. In the great farm house was working space for the officers. Elsewhere there was a collecting station where some fifty wounded lay on mattresses or on straw; behind these were the telephone operators. The enemy aviators believed they saw there an important command post and soon shells of 150 caliber fell in regular cadence. Two horses were struck, the windows were shattered, and the burst of the shells echoed throughout the house. With a terrific crash, a shell struck the telephone switchboard, and amid a cloud of smoke and dust, two men were hurled to the floor, crawling with broken limbs. At the collecting station the young medical lieutenant was a fine example of coolness. He went from one wounded man to another, and eased their suffering, which nevertheless was intense.

By the close of the day the 2nd Battalion had lost heavily, but always held its position. It never ceased to give the enemy full measure of blow for blow.

The enemy did not see fit to follow up his attack on the 2nd of June, between hill 240 and the Vesle; but he intensified his bombardment on the aged cathedral and on the town, where one could count at one time as many as fifty fires. A northeast wind brought a shower of burning leaves from the burning municipal library, together with an odor of smoke.

Rheims had not fallen; Rheims will never fall! Here, after undisputed successes "the offensive for peace," which was to give victory to Germany, was extinguished forever.

If glory is not recompensed except by victory; if it casts its light also on those,

<sup>15</sup>This excellent soldier, born in the hard country sung of by Jean Giono, had already been badly stunned on the 21st of March, and slightly wounded in April before Montdidier.

## NOTICE OF ANNUAL MEETING

who guarding their faith among the most severe trials, had been able to fight, suffer, and die heroically in following the path of duty without ceasing, they would not break faith with the 45th Division, its Zouaves, its riflemen, its "Merry Ones" and a little also its artillerymen, who altogether, by a magnificent resistance, saved Rheims and contributed to the final victory. When the 45th Battery was withdrawn from the front on the 4th of June, it had but two pieces, and in the

entire firing battery but one NCO and 15 men. The two officers had been slightly wounded.

Rested and reorganized, the 2nd Battalion was again in line by the middle of June, in the valley of Marfaux, where it reinforced an Italian division. It was with this ally that it experienced anew the hardships of combat starting on the 15th of July. Here it maintained its high reputation, and continued to do so until final victory was attained.



## NOTICE OF ANNUAL MEETING, U. S. FIELD ARTILLERY ASSOCIATION

In compliance with Article VII. Section I, of the Constitution, notice is hereby given that the Executive Council has fixed 4:45 PM. Friday, December 15, 1939, as the time of the annual meeting of the Association to be held at the Army and Navy Club, Washington, D. C.

The business to be disposed of will be the election of seven members of the Executive Council (of these, three are to be elected from the Regular Army, two from the National Guard, and two from

the Field Artillery section of the Officers' Reserve Corps) and the transaction of such other business as may properly come before the meeting.

Proxy cards are being sent to all active members of the Association within the continental limits of the United States, as required by the Constitution, and it is desired that they be returned promptly. Nominations may be made on the proxy cards, or from the floor at the meeting.



*"Many things hitherto unnoticed even by the thinking public have been brought to light, frequently with new emphasis and implications, through experiences undergone on the China and home fronts in connection with the present conflict. The usefulness of the horse in modern warfare is one of such discoveries. In reality, without the services of this dumb, faithful animal, Japanese troops would not have been able to carry out successful, daring attacks upon enemy positions, particularly in battles on the rugged steeps and in the narrow passes of the Chinese mountains. Contrary to popular expectations, the increasing mechanization of the Army has by no means diminished the utility of Army horses. The present hostilities have certainly established their distinct place in modern warfare."*

—Tokyo (Japan) Gazette, April, 1939.

# The Specialist

BY GEORGE E. LAUGHINGHOUSE

LET us approach the subject of reorganization in fear and trembling. Whether we adopt the double wing or the Notre Dame shift as our basic formation, we won't find out whether it's any good until we try it in scrimmage. In the early days of the Republic, it was no trouble to try out a new play on the aborigines, who were always willing. But in a major league we should abandon the good old punt-and-hold-for-downs with considerable reluctance.

There is, of course, no subject more delightfully intriguing than organization; square or triangular formations, four-, five-, or six-gun batteries, light or medium calibers, all have their adherents, and so do those of combined messes, battalion gunnery officers, roving combat trains, and attached artillery.

There really remains little more to be suggested but calibers half-way between 75-mm. and 155-mm., say, for instance, about 102.5-mm.

Now there appears, in all these recommendations, one common feature: Let us cut down on the personnel, so that everyone will have plenty to do; that less impedimenta must be stowed on the vehicles (this business of getting ready for a march has provoked a good deal of thought, that's plain); and so that we will present a smaller target to the enemy.

The officer who has served much on the staff would like to do away with considerable battery overhead; he can see no reason for so many barbers, tailors, cobblers, messmen, and the like. His friend of the picketline objects to the number of folding chairs he sees in the regimental headquarters truck for the convenience of folk who do their work sitting down.

The picketliner seldom envisions himself, however, as Vishnu, the six-armed Hindu deity who presides over the operations map, arm No. 1 holding the telephone, No. 2 with the coordinate square. No. 3 with the pencil for the journal. No. 4 with the colored pencil for the map, and the remaining two busy with the message blank.

And the staff sahib concerns himself little with the woes of the battery executive, who, told by an umpire all his cannoneers are casualties, must rout out signalmen, gas, security, and circulation sentries, kitchen police, motor mechanics, machine-gunners, and odd jobs from the rear echelon to prove that the guns can still be served. (All the pieces of a battery can still be served by one man, of course, and if the battery be staggered over a width of 100 yards, and he comply with the command. "Zone, 5 mils, 118-128" he will have a busy and instructive afternoon.)

Further: Assume that the war has been carefully selected with a view to comfort; climate, agreeable—hours, ten to two—personnel, superior—materiel, modern—enemy, chivalrous—location, convenient to church and school. And then let the command be: Camouflage and fortify. This will take a deal of doing, friends of the reduced charge.

It has not been so many years since, at a certain artillery headquarters during a great mimic war, the troop commander hurried into a conference with the artillery commander, after which the artillery CO gave the following instructions: "S-3, the communication officer is several miles away, bridging a gulch: I want you to take a line to Umpteenth Hq; S-2, go down the road to Red Tank and meet the Nth Infantry; tell them

## THE SPECIALIST

to build up the regimental reserve line right of the main road; where in hell is the adjutant?"

And is there not some yielding, even unconsciously, to the pressure of experimentalism characteristic of the 1930's? All about us are nations finding themselves new destinies by dyeing their shirts; conscientious civilians warning us that we are a dull, stodgy tribe, still training for the last war; doctors of the newer philosophies prophesying our extinction by death rays; bicycle mechanics with New Departure implements; and folk who promise us a different kind of money and in the meantime would like some of our kind.

The essence of most of these recommendations, also, is the development of a high degree of specialization. They would organize our craft horizontally instead of vertically, so that our tactical inspectors would become walking delegates to assure that none of our paper-hangers were setting type, and the like. This is going backward with a vengeance.

Now it is almost a truism that the specialty of today is the common knowledge of tomorrow. We started a high degree of specialization in 1916, when no soldier was considered competent to drive a truck; instead, civilians, at \$100 a month and found, performed that duty. A year later we found soldiers could drive trucks, all right, but they had to be members of QM Truck Companies, and rated as QM sergeants, junior grade. A few years later we found \$21-a-month men driving \$6,000 tractors.

The French early discovered that even noncoms could chauffeur planes, but their Sergeant Raoul Lufbery, of the American Escadrille, when transferred to us, was promptly made a major.

After all, if the infantry division is to be reorganized, that forces some degree of reorganization upon us. But that is a situation distinctly different from the one

imposed by motorization. That, again, differs from the modifications attributable to improvement in methods of fire. Let us attack these objectives and defeat them in detail before consolidating our impressions.

The first subject, obviously, must be treated last. The second, motorization, permits us to dispense with rail movements. So far, that is all that has been proven. But an idea of the illogicality which prevails with regard to truck-drawn artillery was given in a lecture on artillery ammunition supply. It was shown that because trucks could move the ammunition between dump and guns so much more rapidly than horses, the turn-around was lessened and more projectiles could be delivered. This overlooked the physical handling of the shells at the dump or railhead. More tons per hour means more man-hours of labor; consequently, more personnel, instead of less.

And the third consideration, improvement in gunnery methods, *does* permit a more rapid preparation of data and delivery of fire, and if one can fire effectively more shells in a given length of time, this also will be found to require more personnel rather than otherwise.

The combination of reduced personnel and high degree of specialization inherent in many schemes proposed by contributors to the JOURNAL is evidence to me that it is a long time since some of these authors spent as much as two weeks in the field under an assumed constant state of campaign, unbroken by time out for baths, critiques, and the like.

The prediction is ventured that, some decades from now, the idea that an officer of the present spent all his time cooped up in one small compartment of his profession will appear as absurd as Prince Hohenlohe's ironic strictures on the artilleryman of the 17th Century who so jealously guarded the secret of making paste.



**TWO OF FORT SILL'S FAWNS TRAVEL BY AIR TO NEW YORK WORLD'S FAIR.  
BRANIFF HOSTESS LOUISE STOPPENBECK ASSISTS MAJOR MARSTON IN  
CARING FOR ONE OF THE PASSENGERS.**



## Fort Sill Game Farm

In 1937 the Range Officer at the Field Artillery School, Major Oliver F. Marston, commenced the construction of a game farm between the Frisco railroad station and Quarry Hill. Using the old "I-see-o house" as a headquarters, he built a system of fences, runways, and cages in which game birds could be incubated and raised. After conference with the Oklahoma Game and Fish Commission, he decided to grow principally quail and chukar (East Indian) partridges for use in restocking the Fort Sill reservation. At present the game farm has two each brooders and incubators, and about 160 of each of the two types of partridges. Major Marston also has on hand a few wild turkeys, although he states that these fine game birds are now so plentiful at Fort Sill that it is unnecessary to raise them artificially. In the near future he expects to obtain the nucleus of a covey of prairie chickens. This is indeed good news, for these birds, once native to the Fort Sill country, and very plentiful on the east

range, have been extinct there for many years.

A new cage, the best of its kind, has recently been constructed. Its great size, with natural shrubbery planted within, clean sand on the floor, and a running



**Colonel Augustine McIntyre, Commandant of The Field Artillery School, with Group of Fawns at the Fort Sill Game Farm.**



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stream of fresh water so nearly approximate natural conditions, that Major Marston hopes that the birds will covey naturally within the enclosure. However, in the event that they do not, arrangements have been made to subdivide the cage so as to separate the coveys. Last year 20 coveys of quail were released, and it is expected to increase this number in the future.

The game farm also boasts of four fish pools, to be used for restocking the ponds and streams on the reservation, with perch, bream, crappie, blue gill, catfish, and bass.

By far the most interesting feature of the farm this year has been a pen in which were kept 106 fawns, the largest collection in the world. These beautiful young deer were obtained from the reservation. After an actual count of the deer on the range had been made from a low-flying motorized balloon, disclosing

that there were in excess of one thousand, it was decided to deplete this number by sending to other parts of the state each year a number of fawns. These newly born deer were collected by members of the garrison who employed the simple method of walking along the edge of the wooded watercourses (like children on an Easter-egg hunt) and looking for them where they lay quietly in the tall grass. Hundreds of visitors came to the game farm to see the fawns, especially at feeding time. Major Marston had trained the animals to come running when he blew a BC whistle, whereupon they were fed from long rows of bottles placed in racks. Fifty-three gallons of grade A milk per day were required.

No plans have been made to expand the farm beyond the immediate needs of the reservation, and it is entirely self-supporting.



## DOES JOHN THINK FASTER?

It is not long since an automobile-show commentator wrote, speaking of the more conservative body types characteristic of 1939 models: "You can't streamline an egg by putting ears on it."

Has anybody been able to streamline John Soldier? Apparently he is the same old John. When he runs, he sweats, and when he sweats he gets into the advertising columns. He still hollers. "When do we eat?" and he still can't go any longer without sleep or march on foot any faster than the corporal of Adam's guard. Indeed, in this rubber-tired era it is questionable whether he can do as well.

Before instruments were as precise as they are now, it used to be said that it took a third of a second for a thought to

permeate a human being and get him under way in response to it. If the time is now recorded as any less, put it down to the instrument, not to the man.

But we have vehicles on the road which will travel a considerable distance during that time, and vehicles in the air which will make two round trips over the same distance in equal time. Who operates them?

John.

It would be nice to know that we had Johns whose mental processes had speeded up proportionately, but we can take comfort in the fact that Johann, Jan, Ivan, and the rest are also working with equipment much too advanced for human capability.

—LIEUT. J. R. CYLINDER

## Mechanical Correction Board

CAPTAIN M. Poraj Jankowski, Artillery, Polish Army, has designed and patented a device for mechanically converting deviations reported by an aerial observer into corrective data applicable to the battery in adjustment of fire. This device was tested by the Polish army with a view toward adopting it for inclusion in the fire-control equipment of each battery.

The test model of this board consists essentially of a flat rectangular box about the width and breadth of our Engineer sketching board, and perhaps two or three inches thick. It is stated that production models will be smaller and lighter. On top of the box is mounted a rotating transparent disc graduated around the periphery in mils (or multiples thereof). A 100-meter grid is etched on the disc, the center of which represents the target. Inside the box, and directly under the disc, is a sliding strip of paper mounted at each end on rollers like film in a camera. The center line of this strip is directly under the N-S axis of the disc, and is graduated in 100-meter range increments. On either side of this median line are diverging rays 10 mils apart, whose center is at the gun position. Other features of the device can best be illustrated by telling how it is used.

In the late Polish army the target was designated by coordinates. Fire was by volley, deviations of the center of impact of each volley being reported with respect to N-S and E-W lines drawn through the target. Prior to opening fire, the BC plots gun and target on his firing chart and scales off the gun-target range and azimuth of the target as measured from the gun. The disc on the correction board is set at this azimuth and the paper strip is wound on the rollers until the scaled

range is set under the center of the disc. The board is now ready for use. The deviation of each volley is plotted on the disc with a pencil. The deflection correction is read (by interpolation) on one of the direction rays of the paper strip. The range correction is read, both in yards and in quadrant elevation, from another narrow paper strip near the left edge of the board. This strip is mounted like the first, and when the board is first set up it is turned so that the gun-target range on the strip is set opposite the X-axis of the disc. This range strip is graduated in convenient increments to correspond to the same scale as the rest of the device. The strip can be replaced quickly by other strips to agree with the weapon and ammunition being used. A sliding rule mounted on top of the board facilitates reading the range correction corresponding to the plotted position of the burst. The whole thing is but an extension of our range-deflection fan idea, with the added feature of enabling the operator to read quadrant elevations direct without the necessity of referring to a firing table. In addition, an electric light and battery contained within the board provide for night illumination. At one end of the board is a handle which permits the device to be carried like a brief case.

Polish officers appeared to be favorably impressed with the board during a recent demonstration. For fourteen problems fired, an average of slightly over three volleys were required for adjustment in each case. Speed of operation compared favorably with our own rapid-data method. Obviously the board can be used for any fire using air-ground methods, or for lateral conduct of fire.

## Alexander Hamilton Battery Receives Special Guidon

ON MAY 1, 1939, Battery D, 5th Field Artillery, was reactivated at Madison Barracks, New York— Captain Seward L. Mains, Jr., assuming command, per Special Orders No. 29. Headquarters Madison Barracks, New York. On June 27, 1939, the Chamber of Commerce of the City of Watertown, New York, presented the battery with a special guidon similar to the guidon that was authorized by War Department Orders of March 1, 1882.

The battery assembled the afternoon of June 27, 1939, and marched to Watertown. The 155-mm. howitzers, M 1918 A1, with which the battery is armed, were placed in position in front of the Historical Building, and the equipment displayed. The battery then marched dismounted to Paddock Park for the presentation ceremony. Judge Crandall F. Phillips, prominent jurist of Watertown, delivered the presentation address, extracts of which follow:

"The American people owe Alexander Hamilton a debt they can never repay. As Hamilton the individual, the soldier, and the statesman left his mark carved deeply upon the very foundations of this great nation, so his brain child, this battery of United States Field Artillery, has left a long line of brilliant and distinguished action as its service record during the one hundred and sixty-three years of its continuous existence as a military unit.

"Battery D. now a unit of the 5th Field Artillery, was formed by a resolution of the Second Provincial Congress, January 6, 1776. Its purpose was to aid in the defense of the American Colonies in the Revolutionary War. Since that early date it has had continuous existence (with but one or two short exceptions) and is the oldest organization in the U. S. Army.



**Captain S. L. Mains receiving guidon from Mrs. John D. Barnard, Mrs. Barnard is wearing a gown worn by an ancestor at Alexander Hamilton's wedding.**

"As a matter of fact, at one time Battery D constituted the entire American Army. This extraordinary circumstance came about when Congress in 1784 discharged all Federal troops with the exception of this battery—then known as Doughty's Company of Artillery—and a caretaking detachment of twenty - five men stationed at Fort Pitt.

"Battery D is the only organization in the regular army that can trace an unbroken record of service dating from the Revolutionary War. During the Civil War this battery was the first organization to arrive in Washington for the protection of our capital. During the Spanish - American War it served

## ALEXANDER HAMILTON BATTERY RECEIVES SPECIAL GUIDON

with honor at the Battle of Santiago. During the World War it was a part of the first brigade of artillery to see service in France, and was the last to return to America.

"It is interesting to note that when the battery was first conceived, Alexander Hamilton was a student at King's College, now known as Columbia University. His extreme patriotism was well demonstrated by the fact that as soon as he had been certified as captain of the battery, he spent the last penny of his personal allowance to defray the expense of its organization.

"It is interesting also to note that while the term of service was only a few months in the Continental Army, Hamilton was instructed to enlist his men for the duration of the war. The uniforms worn by the men in those early days were quite spectacular. The coat was blue, reaching to the knee and full trimmed, long lapels fastened back, with ten open-worked button holes in yellow silk at the breast of each lapel, and then larger yellow metal buttons, at equal distance on each side; three large yellow metal buttons were on each cuff, and a like number on each pocket flap. The skirts of the coat hooked back, showing the red lining. The bottom was cut square; red lapels and red linings and standing capes completed the garment.

"Now a brief word about early armament. The field pieces used by the battery during the Revolution were of brass and iron. At the close of that war, both field and siege guns of English, Hessian, and French make—the first two undoubtedly involuntary gifts—were used, together with a few of American manufacture.

"For nearly fifty years after the creation of the battery, whiskey was a regular part of the soldier's ration, instead of tea or coffee. This custom was discontinued in 1830, after which the soldier was given the money value, 31½ cents a month, instead.

"The several names by which this battery has been known, with the dates, are as follows: January 6, 1776, N. Y. Provisional Company of Artillery; July 4, 1776, N. Y. State Company of Artillery; March 1, 1777, Doughty's Company, 2d Regt. Continental Corps of Artillery; 1783, Doughty's Company, Artillery Battalion Continental Corps of Artillery; 1784, Doughty's Company, Corps of Artillery; 1786, Bradford's Company, Battalion of Artillery; 1792, Ford's Company, 1st Sub-Legion, Legion of the U. S.; 1794, Ford's Company, Corps of Artillerists and Engineers; 1801, Livingston's Company, 4th Battalion, 2d Artillerists and Engineers; 1802, Sterret's Company, 1st Regt. of Artillerists; 1816, Co. A 3d Battalion, Southern Division, Corps of Artillery; 1821, Co. F 4th U. S. Artillery; 1901, 8th Battery Field Artillery; 1907, Battery D 5th Field Artillery; 1933, Battery D 36th Field Artillery.

"Now for the names of a few of the more important actions in which the battery participated: 1776-1781—Long Island, White Plains, Trenton, Princeton, Brandywine, Germantown, Valley Forge, Monmouth, Springfield, and Siege of Yorktown; 1791-1797—Northwest Indian War; War of 1812; 1836—Creek Indian War; 1837—Seminole Indian War; 1847—Mexican War—Vera Cruz, Cerro Gorde, Contreras, and Mexico City; Civil War—Falling Waters, Slaughter Mountain, Antietam, Chancellorsville, and Gettysburg; 1876—Sioux Indian War; Bannock Campaign; Sioux Indian Campaign, 1890-91; Spanish-American War; Philippine Insurrection; World War—Cantigny, Montdidier-Noyon, Aisne-Marne, St. Mihiel, Meuse-Argonne, Occupation of Germany.

"We can never repay those brave men who have carried the heroic tradition of the American military service up through the years as exemplified by the officers and men of this battery."

# Field Artillery Polo Team at Colorado Springs

BY CAPTAIN A. R. S. BARDEN, FA

**I**N JULY the Field Artillery Polo Team was invited by the Pikes Peak Polo Association to play in a series of tournaments to be held at Broadmoor, Colorado. As this was a fine opportunity to get experience for some green ponies and several young players equally as green, the team accepted with pleasure.

This group of players consisted of Captain A. R. S. Barden, team captain. Captain A. E. Solem (both members of last year's Field Artillery Polo Team). Captain M. W. Brewster, regular substitute for last year. Lieut. R. E. Weber and Lieut. H. H. Critz, students at Fort Sill. Thus we had two experienced players to steady the team and three younger players to fill out the line-up and get experience in teamwork and match play. Of the ponies making the trip, eight were veterans of polo play, six were playing their second or third year of polo, and six were playing their first year.

The convoy for the trip to Broadmoor consisted of a tanker and four Dodges, each with a trailer for five horses. By getting on the road early in the morning we were able to cover three hundred miles in a day's march with very little difficulty, and with negligible fatigue to the horses. At night the trailers were pulled off the road at any convenient spot (a fair grounds the first night and a small pasture the second) the horses unloaded, walked for a half hour, and watered and fed while tied to the trailers. Cots were taken for the men, who spent the night near the horses, thus enabling us to get an early start each morning. We spent part of three days on the road, leaving Fort Sill in the afternoon of July 12th and arriving in

Colorado Springs at the Broadmoor at noon July 14th.

The horses were rested the day following their arrival, playing their first game on Sunday the 16th. This was a warm-up game consisting of a nine-period round-robin. We succeeded in winning this game. The stories we had heard about the altitude affecting our horses proved to be exaggerated, the players suffering more than the horses did. The cool weather seemed to help our horses after all the hot weather they had been through in Oklahoma and Kansas. We noticed no great difference in our ponies except that at first they tired a little quicker than usual before the end of each period. They were very soon acclimated, however, and long before our return to Fort Sill were in tiptop shape.

The first tournament, the Plum Creek Ranch (trophy given by Mr. and Mrs. Reginald Sinclair of the Plum Creek Ranch), started the Tuesday after we arrived. There were only three teams at Broadmoor at this time. The Artillery team. Broadmoor, and the Plum Creek Ranch team played this event as a round-robin without handicaps. The Artillery team defeated the Broadmoor team 7 to 5 and defeated the Plum Creek Ranch team 10 to 6 in the finals. Our line-up for this first tournament was:

	Handicap
No. 1 Captain A. E. Solem	2
No. 2 Lieut. H. H. Critz	1
No. 3 Captain A. R. S. Barden	2
No. 4 Captain M. W. Brewster	1
	—
Total	6

## FIELD ARTILLERY POLO TEAM AT COLORADO SPRINGS

This tournament was completed during the first week, the games being held on Tuesday, Friday, and Sunday. These were the general days for tournament games, weather permitting, during the time that we were at Colorado Springs.

On the following Tuesday play started in the Remount Open Championship, for trophies presented by the Southwestern Remount Area Headquarters. This tournament was again a three-team affair, participated in by the same teams which played in the first tournament, with the addition of a few new players who had arrived to strengthen the Broadmoor and Plum Creek Ranch teams. The Artillery team played as before except that Captain Barden dropped down and Lieut. Weber went in at back, Captain Brewster going up to three. The Field Artillery team won this event also, the scores being as follows:

1st game: F. A. Team, 9; Plum Creek Ranch, 5.

Finals: F. A. Team, 6; Broadmoor, 4.

In the final game of this tournament Captain Brewster was struck on the elbow by a mallet and disabled for the rest of the summer. Captain Barden took his place in the last game.

With the team reduced to four players. Captain Solem was injured during a practice game the next Tuesday and was out of play for two weeks, further reducing our team strength to three. As another player could not be obtained from Sill in time for the next tournament (the Foxhall Keene Trophy), which was to start the next day, it was necessary to recruit a replacement locally. Mr. Lawrence Phipps (Captain, Q.M. Reserve, Remount) kindly consented to fill in. Our line-up now became:

	Handicap
No. 1 Mr. Phipps	1
No. 2 Lieut. H. H. Critz	1
No. 3 Capt. A. R. S. Barden	2
No. 4 Lieut. Weber	0
	—
Total	4

In the meantime a strong ten-goal team from Wichita, Kansas, had arrived. This tournament, however, was to be played on a handicap basis, and our team felt that they still had a good chance. This confidence was justified, as we eliminated Wichita by the close score of 11 to 10. In the finals of this tournament we also succeeded in defeating Plum Creek Ranch, 11 to 8, our handicap in both games being 5 goals.

The fourth tournament, begun immediately after the finish of the preceding, was the Penrose Gold Cup. This was played without handicap. Captain Solem was again able to play, raising our team handicap to six goals. We won our first game from the Broadmoor quartet, 8 to 4, but again were opposed by that fine Wichita team in the finals. By this time their players and horses were accustomed to the climate and were really in top shape. The Wichita team now played under the name of the Southern Hills Country Club, but their line-up was as before. This time, however, we were playing "on the flat." It was a hard fought, clean game from the start, being surprisingly free from fouls, and with no favors asked or given. They forged ahead during the first two periods. At the end of the second period the game was delayed for about a half hour on account of a rain and hail storm. Upon resuming play the Artillery actually outplayed and outscored the Southern Hills team but could never quite overcome the lead that had been taken from them in the first two periods. We lost, 9 to 7. There was consolation even in defeat, for the losers shared the champagne with which the gold cups were filled when they were presented at the end of the game by the Baroness Francois de Selys Longchamps of Brussels, Belgium, granddaughter of Mr. Spencer Penrose, the donor of the trophy.

At the conclusion of this tournament the Wichita team returned home. Lt. Critz of our team also had to leave.

which reduced us again to three players, Mr. Phipps again came to our rescue, filling in at number one. This was another round-robin. We lost the first game to Southern Hills, 11 to 8.

In retrospect, we find that we won three out of the five tournaments in which we played at Colorado Springs, all of

them against teams carrying higher ratings than we did, and all but one tournament played without handicap. We feel that the season was a great success. Our young ponies received excellent experience, and our young players had a good season of stiff tournament competition.

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## Attack in Wisconsin

ONE fine autumn day last year Battery F 14th Field Artillery (75-mm. horse-drawn), with battalion liaison section attached, was clomping southeast along a dusty road as part of the advance guard of an infantry brigade. The mission of the advance guard was to seize a low ridge called Bald Bluff, about five thousand yards to the east. Presently the battery halted on orders near a fork where the road branches off to the east. Low, hilly ground, partly covered with woods, lay immediately to the south. A broad level clearing extended to the east for a half mile or more, terminating in rolling terrain.

Word came back that hostile covering forces were in position on high ground three thousand yards or more to the east and southeast. The enemy was known to have at least a company of light tanks, with which he might be expected to make attacks or raids at any time. The reconnaissance officer, Battery F, who was acting as liaison officer, was with the advance-guard commander on a hill about a mile away in the direction of the enemy. The advance guard was preparing to attack. Battery F was ordered to support the attack; for this purpose it was to occupy, with all possible speed, a position a thousand yards south of its present location.

Only one officer was with the battery—the battery commander. He was

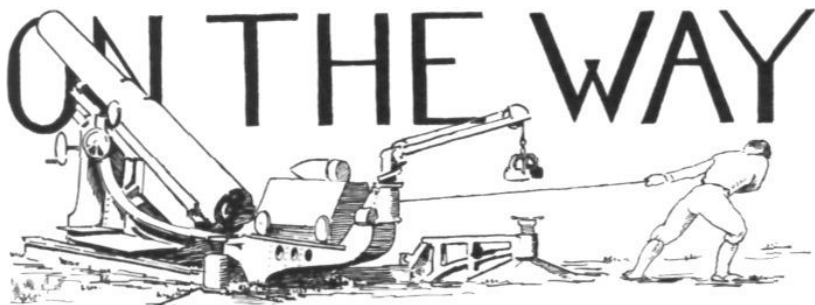
also acting as executive. At once he moved off with the battery to the south through the woods. As the column rounded a curve in the trail, where the route paralleled the edge of the clearing, a hostile tank was sighted about seven hundred yards to the left rear. It was moving rapidly toward the battery.

There has been no warning other than the knowledge that a tank attack might occur at any time. The battery went into action immediately, attacking the tank with the left platoon. Simultaneously the right platoon was registered on a lone tree seen to be prominent on the ridge in the hostile area to the southeast. The battery commander radioed a message to the liaison officer: "Am registering on base point."

Within fifty-eight seconds after the tank appeared the two left guns were firing at it. The first round was 100 yards over. Three shots were within fifteen yards, two were direct hits. Meantime the registration of the right platoon was completed. Two and one half minutes were required to shift the left platoon 700 yds and lay the battery parallel. A call came from the liaison officer for fire on a target near the base point. It was but a matter of seconds for the battery to open fire on this target.

It is understood that an additional hazard was introduced by the knowledge that the corps area commander, making a tactical inspection, was standing nearby with a stop watch in his hand.





## Dismounted Drill Regulations

A supplement to Field Artillery Book 20 is being published at the Field Artillery School, which will include the paragraphs of the Basic Field Manual 22-5. Infantry Drill Regulations, applicable to field artillery. The paragraphs of this manual which will be reprinted in Field Artillery Book 20 are: 1-32, 83-93, 95-103, 104-110, 114-126, 129-142, 144-158, 211-234, 237-242, and Appendixes 1-3.

**Application.** — In general, the provisions of Basic Field Manual, FM 22-5, Infantry Drill Regulations, apply to dismounted field artillery drills, with the modifications indicated below.

### To Form the Battery.

*a. 75-mm. truck-drawn gun battery.*— The provisions of paragraph 149 of Basic Field Manual, FM 22-5, apply with the following modifications:

(1) At the command *Fall in*, the battery falls in, in general, as indicated in Figure A. The battery headquarters falls in on the right, in four ranks, each rank arranged in the order prescribed by the battery commander. The four gun sections fall in in numerical order from front to rear, each section arranged in the order, from right to left, chief of section, gunner, cannoneers in numerical order, drivers (chauffeurs), automatic riflemen, and bugler (1st section). The fifth section and the maintenance section fall in on the left, fifth section in the front rank, maintenance section in the rear rank, the men in each section arranged in the order prescribed by the battery

commander.

(2) Reports are not made within platoons or by platoons. At the command *Report*, given by the first sergeant, the senior noncommissioned officers of the various subdivisions report in the following order: Battery headquarters, first section, second section, third section, fourth section, fifth section, and maintenance section.

(3) For close-order drill and for ceremonies, the first sergeant equalizes the strengths of the subdivisions (Fig. A), which are considered as platoons. Sufficient personnel should be shifted to the fifth and maintenance sections to form a third rank, or, if it is desired to form two platoons only, these sections should be broken up and the personnel attached to the battery headquarters or the gun sections.

(4) The first sergeant then designates a platoon guide for each of the platoons. No platoon sergeant or second in command is designated. As soon as the platoon guides have taken their posts the first sergeant makes his report to the battery commander.

(5) The battery headquarters is commanded by the reconnaissance officer, the gun sections by the executive, and the fifth and maintenance sections by the assistant executive. The battery has no second in command.

*b. 75-mm. horse-drawn gun battery.*— The battery falls in, in general, as indicated

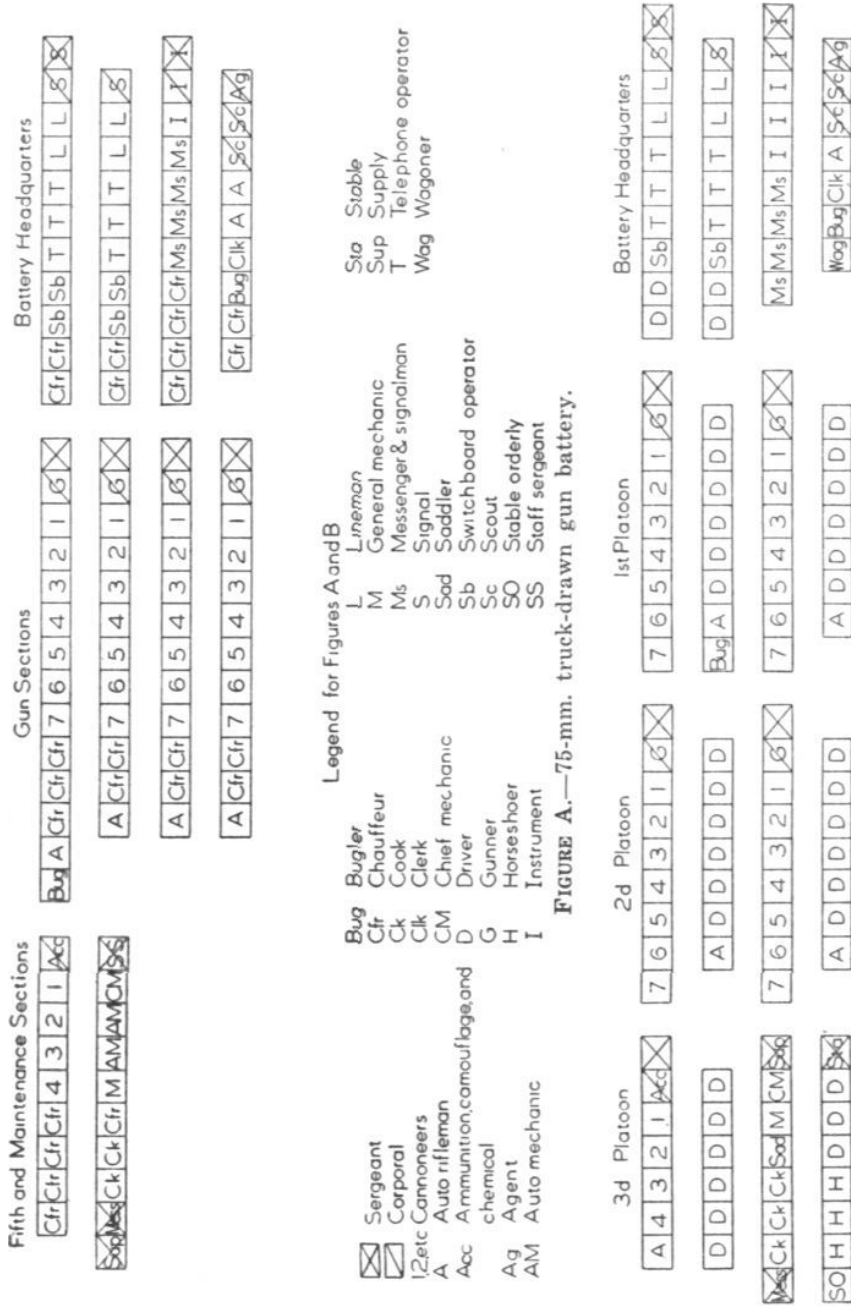


FIGURE B.—75-mm. horse-drawn gun battery.

## ON THE WAY

in Figure B. The provisions of *a*, above, apply with the following exceptions:

(1) Four platoons are formed as follows: Battery headquarters, first platoon, second platoon, and third platoon.

(2) The first platoon consists of the first and second gun sections; the second platoon, of the third and fourth gun sections. Each section falls in in two ranks, the chief of section and the gun squad in the front rank, the drivers, automatic riflemen, and bugler (1st section) in the rear rank. In the third platoon, the fifth section and the

maintenance section each fall in in two ranks in the order prescribed by the battery commander.

(3) The battery headquarters is commanded by the reconnaissance officer, the first platoon by the executive, the second platoon by the assistant executive, and the fifth and maintenance sections by a noncommissioned officer designated by the battery commander.

*c. Other batteries.*—All other batteries and detachments form dismounted in accordance with the principles described in *a* and *b*, above.

## Field Manuals

**I**N ORDER to simplify the present method of referring to field manuals by their volume numbers and titles, a numbering system for field manuals has been adopted. The following basic numbers for the arm and service field manuals will be the same as now used for Tables of Organization:

<i>Basic number</i>	<i>Arm or service</i>
1	Air Corps
2	Cavalry
3	Chemical Warfare Service
4	Coast Artillery Corps
5	Corps of Engineers
6	Field Artillery
7	Infantry
8	Medical Department
9	Ordnance Department
10	Quartermaster Corps
11	Signal Corps

The basic numbers for the basic field manuals will be in the 21 to 50 group. Examples: Basic Field Manual, Infantry Drill Regulations, is numbered FM 22-5; the Field Service Pocket Book, Sketching, is numbered FM 21-35; the Motor Transport Manual is numbered 25-

10; and the Animal Transport Manual, 25-5. Of the four preceding manuals, the first two have been issued, the third will probably be out by November 30, and the date of release of the fourth is not known. Other basic field manuals are in process of preparation. The basic numbers of Field Service Regulations, and field manuals pertaining to the larger units will be in the 100 group. For example, the new Field Service Regulations, which is now in the manuscript stage, will be numbered FM 100-5.

The first Field Artillery Field Manual off the press, Volume IV, dealing with the Observation Battalion, will be numbered FAFM 6-120. It will be out about September 15.

The complete plan for the Field Artillery Field Manuals is shown by the following chart:

<i>Volume</i>	<i>Part</i>	<i>Subject</i>
		<i>Organization and Drill</i>
I	One	Organization, Training and Mounted Ceremonies
	Two	Traction and Drill
	Three	Marches and Shelter

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<i>Tactics and Technique</i>	
II One	Reconnaissance, Occupation, and Organization of Position
Two	Signal Communications
Three	Tactical Employment of Field Artillery
Four	Logistics
Five	Firing
Six	Service of the Piece (consisting of 11 chapters, each published as a separate pamphlet)
III	Pack Artillery
IV	The Observation Battalion (FA)
V	Reference Data

Volumes I and IV are in the hands of the printer, Volume I to be issued about February 1, 1940, and Volume IV about September 15, 1939. Part 5 and a portion of Part 6 of Volume II are also at the printer and should be out early in 1940. The other portions of the FAFM are still in process of preparation or revision.

## FIELD ARTILLERY BOOKS

Field Artillery Book 200, THE BATTERY DETAIL, has recently been published in the 1939 edition. Minor changes have been made throughout from the 1933 edition, and Part 5, dealing with reconnaissance and occupation of position for the motorized 75-mm. battery, has been entirely rewritten. The former edition was for the tractor-drawn battery, the new one for the truck-drawn battery. The general format of these books remains unchanged except for the binding tape, which now being red instead of black permits the printing of the title on the back edge of the book. This is a worthwhile improvement.

## ARMY EXTENSION COURSES

Changes in the extension-course program, and the addition of new sub-courses and the revision of old ones, are now in progress. It is considered advisable to defer announcements with regard to this program until the next issue of the FIELD ARTILLERY JOURNAL, when more definite information will be available.



## ABOVE AND BEYOND THE CALL OF DUTY

Thomas Macaulay made the name of Horatius Cocles familiar to every school boy. Elbert Hubbard did the same for Lieutenant Andrew S. Rowan. But there was no Macaulay or Hubbard to record, for posterity, the names of two soldiers killed while "spiking" an enemy "gun" during an action fought in 67 A.D. The details of the incident have fortunately been preserved by Cornelius Tacitus, the Roman historian.

During a battle fought near Cremona between the armies of Vitellius and Vespasian "the fifteenth legion (of the Vitellians) had an engine (catapult) of

enormous size, which was played off with dreadful execution and discharged massy stones of a weight to crush whole ranks at once. Inevitable ruin must have followed if two soldiers had not signalized themselves by a brave exploit. Covering themselves with shields of the enemy which they found among the slain, they advanced undiscovered to the battering-engine and cut its ropes and springs. In this bold adventure they both perished and with them two names that deserved to be immortal."

—ALLEN PENNELL WESCOTT

# Our Foreign Contemporaries

## *A Current Resume*

### GREAT BRITAIN

*The Journal of the Royal Artillery,  
July, 1939*

This number contains the Duncan Silver Medal essay by Major R. Hilton, M.C., D.F.C., R.A. The subject which he discusses is: "The battlefield of the future should present great possibilities for the employment of artillery fire observed from the air, both against stationary targets such as the enemy's artillery, and moving targets, such as reserves of mechanized troops. Do our present methods take full advantage of these possibilities, and if not what steps do you suggest might be taken to improve them?"

Major Hilton points out in his excellent essay that the popular conception of a modern battlefield as being apparently devoid of life or movement is applicable only to that period before "the curtain goes up." After the action really gets under way many targets will be visible. At least they can be seen from what he terms "air OP's." In particular there will be many gun flashes from artillery, and considerable motor transport movements along the roads. The initial force of the offensive will only dent the front, so that in order to follow through and exploit his success the attacker will have to rush forward, *during daylight hours*, masses of motorized and mechanized troops. Consequently there will be a critical period when there will be a surfeit of targets. The routes—or at least the defiles—over which these motorized forces must pass can be foreseen, and the artillery can be ready to fire on them with preadjusted data. The principal value of the air OP will be in *designating* targets, and in allotting the proper amounts of artillery to their

neutralization. Counterbattery, though much more difficult, will have to be handled similarly.

Major Hilton draws several significant conclusions from the above reasoning. Although a great many worthwhile targets will appear almost simultaneously, very few planes will be available to observe. Obviously the present slow method of aerial conduct of fire, largely a hold-over from the World War, will be totally inadequate. Everything will have to be arranged for ahead of time. The observer will call for fire at or near a predetermined point, and this fire will be delivered immediately, with little or no adjustment at the time.

Actually the situation appears to call for fire direction rather than conduct of fire. Hence the personnel manning these all-important air OP's must be artillery officers of considerable experience, judgment, and authority. They cannot be youthful subalterns of the Royal Air Force.

The solution advanced is that several squadrons of observing planes, detached from the R.A.F., be assigned to, and actually become a part of, the artillery. These planes should be, according to Major Hilton, a slow-flying type of craft, specially designed for this kind of work, and capable of carrying at least three men (a pilot, a machine gunner, and an observer).

*Journal Royal United Service Institution, August, 1939, Anti-tank Tactics:* By Brevet Lieut.-Colonel R. Hilton, M.C., D.F.C., Royal Artillery. We are accustomed to think of artillery action against tanks as consisting of direct fire at short range. We must not forget that tanks must form for an attack, especially when the assault is launched in mass, and that

## THE FIELD ARTILLERY JOURNAL

sometimes (even though the tank commanders would like to avoid it) many tanks must be concealed for a brief time in covered areas behind the front but within artillery range. "Admittedly the chances of getting a direct hit on a definite tank by long range indirect fire are not good. But—let us put ourselves in the mind of the opposing tank commander. How would we like to have an intense concentration of 25 lb. shells falling into the wood where our unit was preparing for the attack? Possibly even heavier calibers may be used; and here the theory that only direct hits count is definitely open to challenge. A few minutes intense bombardment by an 8-inch battery, for example, on a tank-crowded wood might well result in the complete cancellation of the impending tank attack. . . ."

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### GERMANY

*Artilleristische Rundschau (Monthly Review for the German Artillery), Munich, Germany, July, 1939.*

*Thoughts on the Study of Foreign Tactical Regulations.* Captain Lenhard. Basing himself on the French "Instructions for the Tactical Employment of Large Units," the author demonstrates the steps to be taken by an artillery in action against hostile infantry fighting according to French tactics.

*NCO Training during the Summer Half - Year.* First Lieutenant Nonnig. Brief remarks on the training of NCO's preparatory to the arrival of new recruits in the fall of the year.

*An Example of the Employment of a Battalion Communication Section in the Offensive.* Lieutenant Schübeler.

*Directions for the Use of the Weather Chart with the Aid of the Special Weather Influence Table and without the Use of the Artillery Slide Rule.* Captain Langkau, Instructor Artillery School.

*The Organization, Employment and Missions of the "Advanced Communication Section."* Captain Rathelbeck. A description of the functions of a radio section assigned to the reconnaissance detail of the sound ranging battery for the purpose of gaining advance information about the hostile artillery positions.

*Laying for Direction on the Sun with the Parallel Sheaf.* First Sergeant Faber. *Artilleristische Rundschau (Monthly Review for the German Artillery), Munich, Germany, August, 1939.*

*The Origin and World War Lessons of the Rolling Barrage.* General of Artillery von Berendt. General remarks stating that, while the rolling barrage is a useful method of fire, its preparation requires much time and it is costly in ammunition.

*The Movement and Employment of a French Battalion of Motorized Heavy Artillery.* Lieutenant Colonel Kruse. A review of an article by Colonel Le Nôtre in the *Revue d'Artillerie*, February, 1939.

*Mountain Artillery in Level Country.* Major Eder. While mountain artillery is less mobile on level ground than horse artillery (the pack animals move at the walk only), it can readily take advantage of natural cover and lend effective support to the infantry. However, unlike the accompanying guns of the infantry, mountain artillery must adhere to artillery tactics.

*Hardening the Army Horse.* Major Paul Buhle. Shows the causes of the casualties among horses during the World War, and proper methods of toughening the animal.

*The Effect of the Angle of Impact or the Angle of Fall, respectively, Upon the Fragmentation of High Explosive Shell.* Captain Röhr.

*Table to Determine Percentages in Estimating Distances.* Pfc. Wigand. A simple method of arriving at the errors made in estimating ranges.

## OUR FOREIGN CONTEMPORARIES

### RUSSIA

*Artilleriskiy Zhurnal, Moscow, January, 1939, Artillery Preparations*, by D. Kalashnikov: The author works out the requirements for a theoretical case, assuming that his artillery density is that prescribed as a minimum by the Russian 1936 Field Service Regulations; that is, 36 guns per kilometer of front, with two tank battalions per infantry division. He also assumes that the defensive position to be attacked corresponds with what might be encountered where the enemy has the same organization and tactics as the Germans. On a kilometer of front this would consist of 6 platoon "centers of resistance," 60 light machine guns, 30 heavy machine guns, and about 16 antitank guns. Based on the number of shells which he can fire in a given time, the author decides that 90 minutes is insufficient time to neutralize such a position, and that longer than two hours is too much because of the loss of surprise. He concludes, therefore, that if greater effectiveness is required of the artillery preparation, it should be obtained by thickening the fire rather than lengthening the preparation.

For the attack of a fortified zone, he decides that a minimum of eight hours will be required to neutralize the hostile weapons and destroy the field works.

He also reaches the novel conclusion that where the density of artillery weapons is as great as 60 per kilometer of front, an artillery preparation is inexpedient. In this case he advocates a overwhelming mass of fire delivered simultaneously with the attack, creeping forward as the attack progresses. This will insure success by surprise and by power, he asserts. He claims that this amount of artillery will paralyze the defender without the necessity of a preparation.

In a meeting engagement, however, the quick concentration of such large masses of artillery will not be possible. Since the density of weapons will not exceed 30 to 35 guns per kilometer of front, an artillery preparation will be necessary.

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**Why not send *The Field Artillery Journal* as a Christmas present to a friend or relative?**



*3d Battalion 123d FA is honor battalion for drill attendance in June (Ill NG).*



*156th FA (NY NG) acts as guard of honor to King and Queen of England at Poughkeepsie, June 10.*



*166th FA (Pa NG), newly organized field artillery regiment of 22d Cavalry Division, doffs horse-cavalry habiliments and buzzes off to July maneuvers with mechanized cavalry.*



*Canadian troops join with U. S. units in colorful ninety-minute parade in Seattle to dedicate new armory of 146th FA (Washn NG).*



*Have you ever felt like writing to the editor concerning something you read in *The Field Artillery Journal*? Or felt the urge to become vocal over some other random thought which you wished to share with others? Well, here's your chance, "Muzzle Bursts" will accept interesting explosions; and will pay for them. But make them brief.*

## **TWO KINDS OF STRAWBERRY SHORTCAKE**

A good many years ago that eminent man of American letters, Irwin S. Cobb under the title "There is no room in America for two kinds of strawberry shortcake," fully discussed the gastronomic disappointments incident to such confusion. Being a rabid adherent of the biscuit-dough-soaked-with-crushed-berries-and-bathed-in-coffee-cream type and being heartily opposed to the sponge-cake-covered-with-stiff-whipped cream-and-decorated-with-one-lone-berry brand, his article made a lasting impression on me.

I bring this matter up because it seems an apt and descriptive simile to the condition in the Field Artillery regarding the words *Sight*, *Site*, and *Right*. This condition has existed for a long time and, although universally deplored by battery executives, ROTC instructors, and others who labor with the intricacies of verbal instruction in Firing Battery or Elementary Gunnery, little or nothing has been done to liquidate the situation. I have fretted and grumbled regarding this matter for the past twenty years, and finally have decided to try to earn my pay and become articulate in the hope that others will agree with me to the end that our training literature may be changed in terminology, and that this insidious and perilous similarity may be eliminated.

A few illustrations would be to the point. In 1922 I well remember three

rounds that went astray on Mission Ridge and sailed over the top of Rabbit Hill to hit "I know not where." This in spite of the fact that the gunner and chief of section were old and experienced hands and the battery commander, an officer of World War combat experience, was supposedly checking the laying as safety officer. (Note: To quiet certain apprehensions, I had four captains during that year. This one resigned many years ago.) The executive could not see the piece, because of concrete emplacements.

The executive's data check at the problem-end revealed the fact that *site* 320 had been applied as *right* 320.

This battery won the Knox Trophy that year and the following year. To my knowledge the only other two errors the battery made that year in firing some 29,000 rounds, were two minor errors in deflection.

In several instances while using French 75-mm. materiel, both at Camp Meade and in Hawaii, the minus or plus in the *site* command failed to make a mental impression on an otherwise excellent gunner and the command was set off as *right* (so much). Some of these errors were caught by the executive in time to stop the firing, but others, eluding him, usually led to much trouble for the officer firing the problem as well as for the executive.

Consider now the instructors of ROTC students in materiel, field gunnery, and service of the piece: "Gentlemen, this is



## MUZZLE BURSTS

the *sight*. You use it to lay the gun for direction. This is the *angle-of-site* elevating mechanism, with which you place the *line of site* on the target. No, the *line of site* has nothing to do with the *line of sight*. The *site* is set on this scale mounted on the *sight* support. In fact, this gun has *independent line of sighting*. When the *site* is set, changes in range do not affect the *sight*. Yes, you spell it s-i-g-h-t-i-n-g in referring to the *independent line of sighting*, although it places the rocker parallel to the *line of site*. Do not forget that in direct laying one uses the *sight* to lay for *site*."

No wonder our sanity is questioned occasionally, and students leave the armory shaking their heads while giving the instructor queer looks. Read the above aloud. Don't let your eye deceive your ear as to its lucidity.

Now these people, whom we have so successfully succeeded in confusing, are first: Well trained, experienced, and level-headed regulars who likely are better trained cannoneers than we will have in a vast National army; and second: Young men, the cream of the country, to whom, according to our military policy, we look for the majority of our junior officers in time of war. If they are confused, what will be the state of mind of the newly inducted artilleryman, receiving almost all his instruction verbally, who, "dragged from the tender scenes of domestic life," finds himself serving a cannon in battle at 60 M or some such interesting date? We would do well to eliminate this source of confusion at once.

I propose that *sight* be left alone, but that *site* be utterly eliminated from our lexicon. Call it *angle of level*, since most of the good words like *position* and *elevation* have already been used up. *Line of level* will suffice also. *Independent line of level* is really good. Here is the way a fire command would go to the guns: *Right 10, Level plus 10*. There would be

no confusion. No more rounds would go over Rabbit Hill for *this* reason. The Field Artillery would have only one kind of strawberry shortcake.

—CAPTAIN HUGH CORT, FA



## LEADERSHIP—SO WHAT?

That article on leadership in the last JOURNAL was a good one. But it reminded me that no man, unless he be old and famous, can really be an authority on this subject, and by the time he is old and famous he has forgotten how he got that way. I'll not admit that I'm old, and I can't claim that I'm famous, but I've made a stab at being a leader. Maybe I've failed. I wouldn't know. But I do know that I would have been a better one if I'd practiced what I'm about to preach. I didn't. But I've doped out a few of the ingredients, and I'm not going to be selfish about them.

My first battery commander was, in civil life, an able and popular engineer. He had everything needed to make a leader—but his goat was loose. When the pressure was on, he was sharp with his subordinates. That let him out. His National Guard outfit returned from the Border a bit disillusioned in its judgment of men, for it had elected him.

Like the dawn came the War. My new BC was a famous footballer—a giant, but dumb. Those who were ready to worship him and boast of him couldn't stomach his bluffing when the poor fellow feared to lower himself by asking for information he thought he was supposed to know.

Lesson One: Always ask a smart noncom, even if you know the answer. And as a corollary, make your subordinates feel important.

You may be a born leader. If so,

the following calisthenics for developing this quality will be superfluous for you. But here they are:

Take a deep breath, and be the first man to work and the last to leave. Never sit down while your subordinates work standing up. Never wear a raincoat while they are being drenched. Never eat until they have eaten, nor sleep until they are in the hay. Here's a hard one: Bend deeply from the hips and take all the blame. (Lee did it after Gettysburg.) Spread both your arms to the fullest extent, and accord credit the same way. Always make your inspections with a dual mission: To discover what's wrong and correct it quietly; to find what is right and make loud acclaim. Visit your men who are in the hospital. Don't cater to their whimsies, but be sympathetic with their real troubles.

Don't be chummy. Don't expect to have a snappy outfit if the salutes you give in return aren't superior to any you receive.

When in doubt, and rushed, light a cigaret though your pulses hammer. Announce your decision in low, well-modulated tones. Then flick the match away.

Never criticise orders. You'll be old and muddle-headed yourself some day. But if a senior omits to go through you in correcting your command, remind him that it's not done that way in the front armies. Don't be a doormat, in front of your men or elsewhere. Consequently, go through channels yourself. Don't short-circuit your noncoms. Give them definite responsibilities, and hold them strictly to the fulfillment thereof.

Work? Sure. But you can't spend all your time seeing the world through the orderly-room window. A leader can really go places by laying out a Spartan regime for himself, be he the most coldly selfish and calculating fellow alive. It may not be much fun. It gets to be, though, if you really like your men. Try it. They're grand guys.

—WARDMAN PARK ODELL.

## WHAT HATH MAN WROUGHT?

It is highly doubtful that man could assemble, at one place and time, enough horsepower to reproduce a great natural catastrophe, the explosion of Krakatoa, for example. Most earthquakes, even floods, are over in a comparatively short time. However, some, like the great Ohio and Mississippi overflows of the last decade, prevail for days and weeks, counting their dead by hundreds, their hopes by thousands, their dollars by millions. Conceivably they have extended their influence over large portions of the population for a considerable time—and yet, those of us who were fortunately absent from the immediate scenes of desolation would not have learned of them for months had it not been for modern means of communication.

There were whole peoples living in the time of that wholesale assassin, Ghengis Khan, who heard neither of him nor of his victims. Had they radio and newspapers in those days, the nations would have cowered in dread, as almost they do now. Our gregariousness has told against us, and the science of communication has given us stomach ulcers.

Let man gather together a few hundred thousand horsepower destined for the destruction of his fellows and their property and he finds himself near to the mastery of all human thinking, whereas probably incredibly greater force in the form of a summer tornado devastated a western countryside not long back.

God's armory is inexhaustible, however, while man assembles his at the cost of incalculable labor and expense, a treasure soon expended, difficult, if not impossible, to replace.

The key to the world's jitters at this writing is that one of its most important ganglia is exposed, the city of London. Were its bulbous masses of involuntary tissue to be dissolved into finer and more extensive filaments, thus less

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vulnerable to shocks, single or repeated,  
the will of many could assume command  
over the sympathetic reaction of the  
weaker flesh.

That will not, because it cannot, be  
done for many years. The world, in  
consequence, is living in the hurricane  
belt, during the hurricane season.

—M. V. G.



### "FOR YOUR INFORMATION"

#### (In connection with the First Army Maneuver)

Not even G-man Edgar Hoover  
Could analyze, for this maneuver.  
The color scheme kaleidoscopic.  
Which forms the basis for our topic.

Compose your mind to cerebrate  
On what we shall elucidate.  
We here present for you to view.  
The hostile Black; the friendly Blue;  
And, to distinguish friend from foe,  
And Umpires from a So-and-so,  
Each wears a different kind of mark,  
Which can be seen—if not too dark.

So far so good, but as we start,  
Bid Reason fly! Bid Sense depart!

\* \* \* \*

The soldier Black puts on a shirt  
The shade of Colorado dirt:  
His foeman Blue—this thought  
intrigues—

Campaigns in garrison fatigues,  
Umpires, with hearts as black as night,  
Wear on their hats a band of white,  
But if by motor car they're sped,  
They bear a flag of white and red,  
A red flag on a truck or hack  
Means that the troops therein are black.  
Blue aeroplanes will zoom and sail  
With white around the wings and tail.  
A color which, against the sky,  
Eludes the most observing eye.

To simulate the cannon's boom,  
They wave a flag, if there is room;  
And I am here to tell you boys  
There's no one thing that makes less  
noise.

The gunner, whether black or blue,  
Will wave a flag of yellow hue;  
But if he fires after dark,  
He waves a red light through an are;  
That is, he does if he's a blue;  
If not, a white light has to do.  
A flag, white center, borders red,  
Denotes that all in sight are dead,  
And for a hundred yards around.  
The corpses clutter up the ground.

Now, should a white flag meet your gaze,  
It means: "The Umpire's in a daze,"  
"Cease fire, and stifle all derision"  
"Till he arrives at a decision."  
And then perchance he may display  
A flag of red, if it is day,  
Which means: the troops may still  
advance

If they have black upon their pants,  
But if they're blue instead of black,  
They must retire, fall further back,  
Unless the flag waves to and fro,  
In which event the blues can go.

Observers carry, I believe,  
A band of yellow on the sleeve,  
Though when they ride in a machine,  
They bear a pennant painted green.  
The G-2 colors strike one's fancy:  
A brilliant yellow, piped with pansy.

And now if you will scan this list,  
And find some color that's been missed,  
I'm sure it was through no intent,  
But oversight or accident.  
Accept this guide to our maneuvers;  
And may you all be Edgar Hoovers.

\* \* \* \*

No wonder Pacifists won't fight—  
War must be wrong, if this be right!

—MAJOR ARNOLD W. SHUTTER, FA

# Some Forward Observations



THE FIELD ARTILLERY JOURNAL proudly announces that it has acquired the rights to publish serially Major General William J. Snow's memoirs of his service as wartime Chief of Field Artillery. During 1917-18 our arm was expanded from 5,500 to 462,000 officers and men. The tremendous problems confronting General Snow during those hectic days, and the way in which he and his associates solved them, provide a remarkable guide to everyone of us should we be faced with a like situation. But aside from such serious aspects of this important contribution to contemporary military history, General Snow's work is packed with humor, incisive comment, and illuminating pictures of wartime personalities and behind-the-scene events. Readers will find it difficult to wait for each succeeding installment. The serial will commence in an early number of the JOURNAL.

GENERAL FREDRIC CULMANN, in the January-February, 1938, number of THE FIELD ARTILLERY JOURNAL, described in detail the construction and method of employment of the new French type "D" tank. Thus JOURNAL readers were furnished the *first account* published in this country concerning this massive weapon which France is today—nearly a year subsequent to the appearance of General Culmann's article—employing against the Siegfried line.

OUR IMMEDIATE PREDECESSOR, who was Captain Michael V. Gannon, after agreeing with us that the exchange of editors was a matter of acute disinterest to the reading public, violated

a trust and published what purported to be extracts from our brief biography. Our insistence on a measure of revenge resulted in a compromise whereby he agreed to submit his own PCS, a record, according to him, as follows: "Born, Chicago, Ill. At an early age did not run away from home and ship on a whaler. Has not been a lumberjack, never toiled in the harvest fields, hence never qualified as a writer. During one summer vacation was pronounced an unprecedented failure as a collector for the telephone company. During others, was an electrician's helper, washed windows in a music store, and chased fires for various newspapers. For a few months after return from service on the Border in 1916 was sports editor of the Davenport (Iowa) Democrat, leaving this to participate in the World War at extremely long range, 5000 miles. Distinguished graduate of no schools, graduate of few. Was lieutenant for 16 years and still salutes everyone wearing leather leg-gins."

Be that as it may, the Field Artillery Association will never have a more able Secretary-Treasurer, nor its JOURNAL a better editor, than Mike Gannon. Following in trace behind a list of able and distinguished predecessors, he continued their efforts, as secretary-treasurer, by adding materially to the tangible assets of the Association. As editor, he contributed assets both tangible and intangible; his influence will be felt (and gratefully acknowledged by the present incumbent) for years to come.

CAPTAIN CONRAD L. BOYLE, whose discussion of the close-support problem

## SOME FORWARD OBSERVATIONS

appears in this issue, is a graduate of the Advanced Communication Course of the Field Artillery School. After serving at Fort Sill for several years with the 18th Field Artillery, he recently has been transferred to Purdue University as an instructor in the ROTC. Much fruitful discussion should be stimulated by the presentation of his views on one of our most vital problems. It is interesting to observe that his ideas on the fire-control set-up in the battalion are almost the opposite of those presented by Captain John Burns in the July-August number. Captain Burns favored more centralization, Captain Boyle less. The JOURNAL will welcome further comments on this topic.

THE COMMANDER OF THE 111th Field Artillery, Virginia National Guard, first regiment to establish one hundred per cent membership in the Field Artillery Association, is no longer Colonel William H. Sands. That officer now is Brigadier General William H. Sands, member of the Association's Executive Council. General Sands is a graduate of the Command and General Staff School, 1929, of the G-2 course at the War College in 1928, and has had active duty with the G-3 division of the War Department General Staff.

BRIGADIER GENERAL R. S. McLAIN, whose translation of the story of the adventures of the French 45th Battery appears in this number, is the commander of the 70th Field Artillery Brigade, Oklahoma National Guard. General McLain entered the National Guard in 1912, served overseas as commander of a machine-gun battalion, and since the war has served in the line and staff of the 45th Division. He was made general officer in 1936, and is a graduate of the Command and General Staff School, spring of 1938 course.

THE AMBIDEXTROUS HERO of *Attack in Wisconsin* was Major Lee V. Harris, FA. To him all credit for a splendidly trained battery. And a critical examination of the service-practice reports for 1938 shows that the nature of the training which this battery received was at least partly responsible for its ability to knock out a tank in less than a minute. Out of forty-two problems fired during the year, fifteen were fired by noncommissioned officers, so that when their big moment arrived they were ready. A good example of decentralization. The battery commander could not have handled the entire situation by himself. He had to rely on his chiefs of section to dispose of the tank while he registered the right platoon. Even if all the officers of this unit had become casualties it is reasonable to suppose that it still could have functioned efficiently.

A COMPLETE INDEX of THE FIELD ARTILLERY JOURNAL is now in preparation. This will be a cross-reference index of the dictionary type, and will include everything that has been printed in the JOURNAL since the day of its establishment twenty-nine years ago. The value of such a work to students, authors, or others engaged in military research cannot be overestimated. It is felt that the expense which will be incurred will be justified by the contribution the project will make to the members of the Association. When printed, the index will be furnished without charge to all members. It is expected that 5,000 cards will be used in the preparation of the manuscript, and that the final product will be in the general format of the JOURNAL itself, to facilitate binding with copies of the JOURNAL. It is hoped that the index will be ready for distribution before the end of the current year.

## The European War—A Resume

*Editor's note: Many FIELD ARTILLERY JOURNAL readers haven't time to maintain a file of war news clippings. Neither have they full opportunity to separate fact from assertion. The JOURNAL cannot compete with the daily press in presenting last-minute bulletins; neither can it claim at this early date to possess the final word on what has happened in Europe during the last three weeks. Nevertheless it can furnish a brief factual resume for the benefit of those who wish to refer back to what has occurred so far:*

### The Polish Front

ON SEPTEMBER 1, 1939, at 5:45 AM (Polish time). Germany commenced operations against Poland by land, air, and sea. Offensives started simultaneously from East Prussia and Pomerania against the Corridor, and from Silesia and the Carpathian Mountain region against the industrial section of Poland. The direction and weight of the attacks indicated that four or more army groups were employed, and that the bulk of the armored divisions were concentrated in the Silesian area.

The air force, striking in conjunction with the army rather than embarking on a mission not directly related to the land offensive, and evidently using considerably less than its full strength, directed its blows principally against airdromes, railroads and rail movements, and bridges and other defiles.

The German navy attacked Polish vessels and shore defenses near Danzig, and on September 3 instituted submarine warfare against Allied shipping.

During the first few days the German infantry, supported by artillery, surged over the defenses which paralleled the Polish border. The fortifications covering the industrial section were fairly elaborate, consisting of pillboxes, barbed wire, mine fields, and tank obstacles arranged to make the best use of ponds,

marshes, and other terrain features. This line, however, was much less formidable than the fortified zones on the Franco-German frontier. Certainly in this instance it did not stay the German advance for any appreciable time.

Whether tanks were used for the initial penetration is not known definitely, but it is obvious that once the first defenses were taken the offensive gained momentum quickly. Armored divisions, followed by motorized units, moved rapidly across the Polish plains. The retreating Poles were unable to maintain this pace. Their cordon system of defense had made them weak everywhere, and their plan for withdrawing to positions in rear of rivers was disrupted by the rapid mechanized advance and the fact that the German air force had damaged the crossings. In consequence the Polish army was roughly handled from the outset.

By September 4 heavy fighting had occurred near Grudziadz; the Pomeranian group had reached the lower Vistula near Kulm; isolation of the Polish forces in the Corridor was complete. In the southwest. Czestochowa was evacuated. The Germans had advanced twenty miles into the industrial area. Katowice was captured on the 5th, Krakow on the 6th. The group from East Prussia moved south to Plonsk. Thus there was created a pocket east of Posen, Polish withdrawal from which was endangered by air attacks on railroads and bridges in rear.

Fifteen thousand defenders of the Corridor surrendered on the 6th, but Gydnia, the new Polish seaport west of Danzig, held out until the 14th and another force was still defending the Hela peninsula on the 19th.

On the 7th and 8th there was a violent battle in the Lodz-Kutno area. A mechanized thrust east of Lodz gained a temporary foothold in the suburbs of Warsaw, but there and in the Kutno area

## THE EUROPEAN WAR—A RESUME

stiff Polish resistance held the Germans back. The East Prussian group crossed the Narew along the line Pultusk-Rozan on the 8th, and the Bug River near Wyskow on the 9th, thus narrowing the path of escape for the Poles in the Posen trap. In the vicinity of Radom the Germans approached the Vistula, gradually hemming in against this unfordable barrier remnants of Polish divisions which had withdrawn from the west. In the succeeding few days the Germans captured the equivalent of four divisions in the Radom area. Sandomierz, the last important Polish munitions center, was reached on the 10th, but was still held by the Poles.

The army group from Slovakia, debouching from the Carpathian Mountains, now made rapid progress north and east in conjunction with the Breslau group. On the 11th the German forces reached the San River at Jaroslaw; on the following day they were across and advancing around the old World War fortress of Przemysl toward Lwow. By the 15th several units were beyond Tomaszow.

In the meantime a mechanized division from the East Prussian group had moved south to Minsk-Mazowiecki. Warsaw was presently cut off, and four or more divisions in the Posen pocket were completely surrounded though still fighting desperately to cut their way through the encirclement.

On the 15th Bialystok and Przemysl were taken. An armored division moved south from the Bialystok area and commenced the investment of Brest-Litovsk. South of Sandomierz the advance continued to the line Zamosc-Rawa Rusk, between Lublin and Lwow. Two bridgeheads over the Vistula were gained north of Sandomierz. Mechanized units were in action south of Lwow; the Germans had reached Sambor.

By the 18th Kutno had been taken, and the Germans tightened the circle around Warsaw. In the south, the point of their

advance reached Wlodimierz; mechanized units advancing from here north and from Brest-Litovsk south made contact at Wlodowa. Nevertheless a large force of Poles were still fighting in the Lublin pocket, and scattered groups were resisting elsewhere, notably on the Hela peninsula, in Warsaw, in Modlin, in what remained of the Posen pocket (now squeezed to a small area east of Kutno), and at Lwow.

On September 19 the Germans reported the capture of 50,000 Poles just north of the Bzura marshes, southeast of Kutno. The Polish leaders had gone to Rumania, Russia had invaded Poland on the 17th, and the Germans considered that the campaign was nearly completed.

### Western Front

France and Great Britain entered the war September 3. The British instituted a naval blockade and commenced clearing German merchant ships from the seas. An air raid on the German naval bases at Cuxhaven and Wilhelmshaven produced unknown results.

French units gained contact with the Germans along the frontier on the 3d. and commenced methodically to drive in the covering forces of the Westwall defenses. By September 12 they were near Saarbruecken, and increasing German reaction was being felt. Fighting, principally artillery duels, was occurring on either side of Saarbruecken, and in the valley of the Moselle.

On the 14th it became known that a British expeditionary force had been transported safely to France. German reinforcements were arriving from the east.

On land and in the air Germany remained quiet generally in the west, except for local counterattacks. At sea, however, her submarines were active. They sank an average of 10,000 tons of Allied shipping daily, not including the aircraft carrier *Courageous*, which they bagged on the 18th.

# Reviews

**The Mexican Challenge.** By Frank L. Kluckhohn. Doubleday & Doran, Inc. 1939. 296 pp. \$2.50.

Many FIELD ARTILLERY JOURNAL readers have recently visited Mexico as tourists, or plan to do so in the near future. For this reason a timely, serious study of present conditions in that strange country is of more than passing interest. Frank Kluckhohn, a correspondent of the *New York Times*, contributes a new warning that our relations with Mexico still present problems of anxiety to our government and people, and possibly contain unpredictable dangers for the future.

The book deals principally with the economic, social, and political situation in Mexico today, and discusses in particular the expropriation of foreign properties.

While casting doubt as to the improvement of the lot of the masses under the present policies of the Mexican government, the author nevertheless pays tribute to President Cardenas as a sincere, active, and tireless worker who has of late developed an attractive personality.

Some of Mr. Kluckhohn's warnings are especially interesting. The oil properties expropriation, he says, "has had a tendency to cast Mexico economically, and to a growing extent politically, on the mercy of the European and Asiatic totalitarian states . . . . In an attempt to create a materialistic society, dominated by the State, a system of life and government is being created that is out of line with and probably opposed to that in the United States."

Mexico has recently shown tendencies toward flirting with Germany and Japan, he continues. In line with the traditional United States' policy of keeping our frontiers safe by denying lodgment of possible enemies in this hemisphere,

these tendencies cannot be regarded with equanimity.

—C. B. PINTEL.

**World in Arms.** A Study in Military Geography. By R. Ernest Dupuy, Major, FA. The Military Service Publishing Company, Harrisburg, Pa. 103 pp. \$2.00.

This new book is in the nature of a military atlas, giving in brief, graphical form a statement of the military and naval resources and weakness of seventy-three of the nations of the world. Furnishing, as it does, essential information in a readily accessible and understandable form, it is particularly valuable to one who has to deliver a talk or prepare a paper for delivery before some semi-military or civilian gathering on the subject of military affairs. For such a purpose Major Dupuy's excellent study would save hours of tedious research. A special system of symbols to denote arms of the service is used which differs somewhat from standard military usage, but is probably more readily grasped by civilian readers. In general the plan of the work is to show a map of the country under discussion, giving in clear, simple form the principal geographic features of military interest, together with the probable avenues of approach to vital objectives, lines of permanent fortifications, and a bombing time-table for principal cities. On the opposite page is a short statistical study of the army, navy, and air force.

—J. B. LOWRY.

**Inside Asia.** By John Gunther, Harper and Bros., N. Y. and London. 1939. 600 pp. \$3.50.

A companion best seller to *Inside Europe*, having the same plan of presentation, and built also on the thread of personality of rulers. John Gunther's



## REVIEWS

announced theme is that Japan is waging the *same war* that the other Have-nots are fighting in Europe.

Inside Asia has been extensively and glowingly reviewed elsewhere; hence in the space available here it would be foolish to attempt even the briefest statement of its content. This reviewer wishes to add, however, that the book is intensely interesting, and from the large number of works of nonfiction constantly being introduced it stands out so high that no reader should pass it up. The subject matter is no doubt available in other form and in other places for those who have the time and inclination to dig it out. But

nowhere will it be found written in such superb manner. The reader is advised not to try to gulp it down in large chunks, however, for it is full of nourishment. In only one particular does it seem that Mr. Gunther has perhaps unduly stressed national or racial characteristics. His description of the Japanese people seems a trifle severe. To those who honestly try to become acquainted with Japanese (in this country at least), it is noticeable that they really do not differ greatly from ourselves, except that their children are better behaved. Perhaps environment is potent after all.

—ARTHUR H. EXENDINE.

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